

## **Pool Daily Fuel Scheduling Volume 2: Programming Manual**

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**EL-1659, Volume 2  
Research Project 1048-5**

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## ABSTRACT

This report presents the results and efforts of research and development of methods for daily fuel scheduling performed under EPRI Project RP 1048-5 by Power Technologies, Inc. (PTI). The report is in three volumes: (1) Technical Manual, (2) Programming Manual and (3) Program Listings. Daily fuel scheduling involves the scheduling and dispatching of generating facilities to meet all system loads and operating requirements for periods ranging from a day to a week.

Daily fuel scheduling and computer requirements are defined. The scheduling problem is formulated as a mixed-integer linear programming (MILP) optimization problem in which the total system operating cost is minimized. A potentially practical scheduling procedure, based on a combination of search and MILP approaches, was proposed; these two approaches were investigated, coded in FORTRAN and tested individually. Tests using the New York Power Pool system show that the search approach may produce potential savings for fuel scheduling approaches. Additional efforts are needed to make the MILP approach practical. Finally, a number of special scheduling problems have been identified and recommended for future work.



## EPRI PERSPECTIVE

### PROJECT DESCRIPTION

In recent years, electric utilities have given careful attention to scheduling the use of fuel at each of their power plants. This was caused by the rapid rise in fuel costs and the uncertainties in fuel availability. Of particular importance is the daily scheduling of fuel use, since proper scheduling can result in substantial cost savings.

Prior to the issuing of the EPRI request for proposal for this project, Power Technologies, Inc., (PTI) had been developing a thermal unit commitment digital computer program for the New York Power Pool (NYPP). The PTI proposal to EPRI recommended expanding the PTI-NYPP work to include:

1. The scheduling of nonthermal units such as run-of-the-river hydro, ponded hydro, and pumped storage
2. An advanced optimization method called mixed integer linear programming (MILP) coupled with sparse matrix techniques

### PROJECT OBJECTIVES

This project under RP1048-5 had two objectives:

1. To complete the development of the daily fuel scheduling method for use at NYPP, which included the dynamic programming method for thermal unit commitment and the incremental search method for scheduling of hydro and pumped storage facilities
2. To expand the above method using the MILP and sparse matrix techniques

## PROJECT RESULTS

The work on this project did not produce all the results expected. Both of the computer programs that were developed were intended for daily use at a group of utilities that were organized into a power pool such as the NYPP. The dynamic programming and incremental search method (completed as part of this project) does show some promise for daily use in power pool fuel scheduling and may produce schedules with some cost savings. Feasible economic schedules for fuel use can be obtained for a power pool within acceptable computing time requirements. However, there is no assurance of finding the optimal schedule; that was why research on the second objective was performed.

The augmented method (including MILP and sparse matrix techniques) was able to find the optimum schedule for a very small number of generators. The method as presently programmed is not suitable for use by a power pool or even for use by large utilities. Further development of this approach is required to reduce the large number of integer variables required in finding the optimum schedule of fuel use. PTI found that when the number of integer variables is large, the computing time becomes extremely long and the data storage requirements become unreasonably high.

The computer program for the dynamic programming and the incremental search will be available through the Electric Power Software Center. The MILP computer program will not be available from the Center.

Charles J. Frank, Project Manager  
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## Section 1

### INTRODUCTION

This is the second volume of the three-volume final report which presents the results and efforts of research and development of methods for daily fuel scheduling performed under EPRI Project RP 1048-5 by Power Technologies, Inc. (PTI).

Volume 1 is the Technical Manual and it contains the main body of the report, which includes descriptions and results for two approaches to the daily fuel scheduling problem: Search Approach and Mixed Integer Linear Programming (MILP) Approach. Prototype computer programs on these approaches have been coded in FORTRAN for testing and evaluation purposes using PTI in-house PRIME time-sharing computer.

This volume of the report (Volume 2) is the Programming Manual which describes the organization and structure of the programs. Layout and function of data files, sample outputs and test data are also presented.

Volume 3 of the report contains the FORTRAN listings of all the programs which have been developed during the course of this project.

Program organization and data for the search and MILP approaches are given in Sections 2 and 3 respectively. Preliminary test results, system data descriptions and sample outputs for the search approach are included in Appendices A through E.

## Section 2

### PROGRAM ORGANIZATION AND DATA FOR SEARCH APPROACH

This section gives a description of the program organization and data for the search approach to daily fuel scheduling. Layout and function of the various data files are presented. All input data files for the New York test system are included at the end of this section.

#### 2.1 PROGRAM ORGANIZATION AND STRUCTURE

The overall structure of the search approach to daily fuel scheduling is given in Figure 2-1, which shows a main scheduling program or master module and a number of different scheduling modules. Functional descriptions on these modules have been presented in Section 4 of Volume 1 and therefore will not be repeated here.

The daily fuel scheduling problem is divided into a number of sub-problems and each module is designed to use a specific method which is suited to the particular aspect of the scheduling sub-problem. The main program coordinates the schedules and data from the different modules such that overall system operating requirements are satisfied and economical schedules are obtained. Schedules and data are stored and passed from one module to another in the form of data files. The coding of the modules is such that each module is an independent program and the execution of the successive modules is by the chaining process. Therefore, only the active module resides in the computer central processing unit at one time.

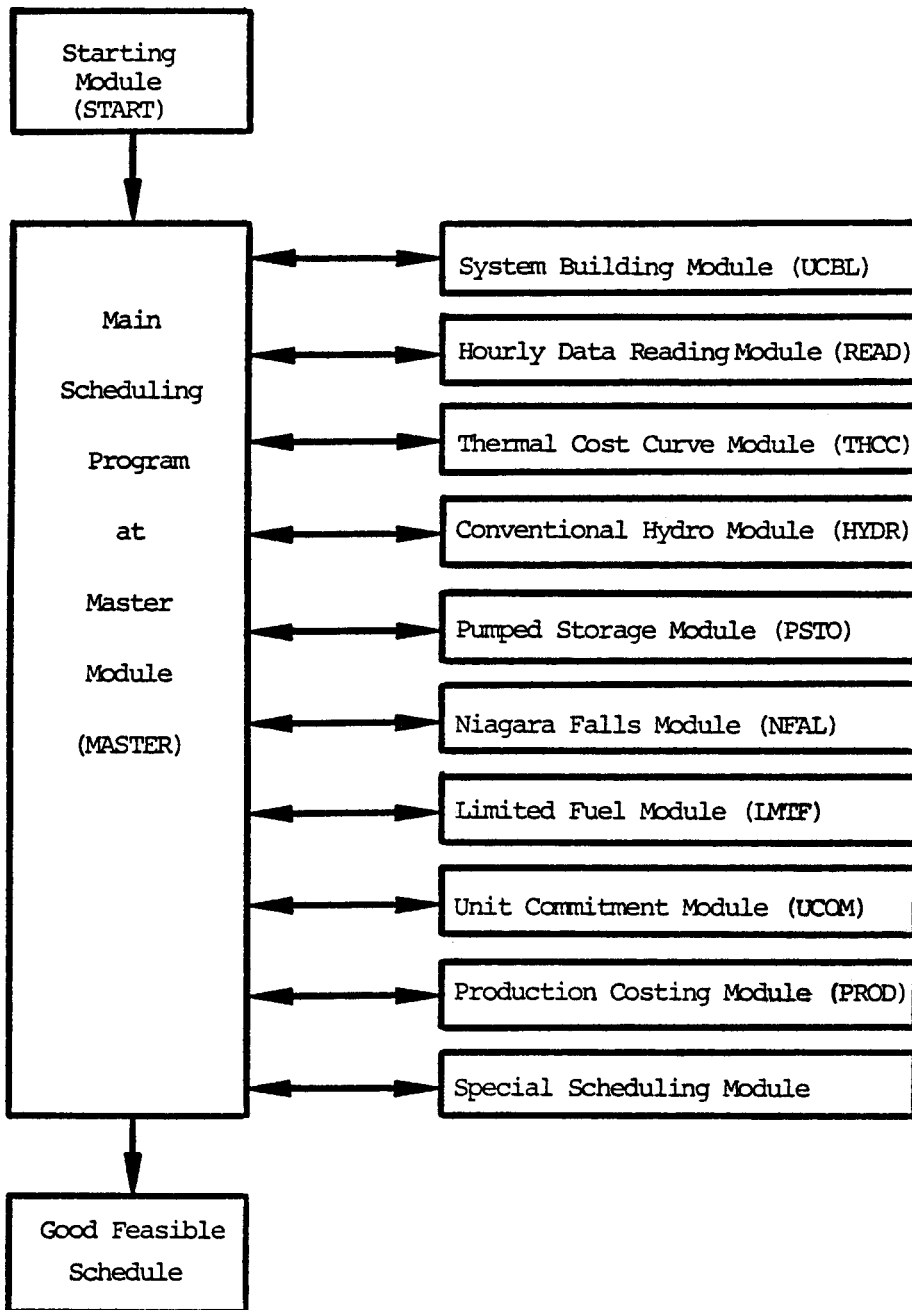


Figure 2-1. Overall Structure of the Search Approach

Figure 2-2 shows the layout of the modules and the various data files used. In this figure, the Energy Limited (E.L.) Module represents those modules for scheduling energy limited generating plants and they include Modules HYDR, PSTO, NFAL and LMTF. The arrows in the figure indicate the direction of flow of data between the files and the modules. There is a general or command input data file which specifies the execution of the modules and their respective data files. The execution of an energy limited module will require a separate input data file on the specific energy limited generating facilities.

Input data files for the New York test system are provided at the end of this section while the corresponding sample program outputs are presented in Appendix E. In addition, data and outputs for a sample test system have been given in Appendices B and C. Descriptions of all the data files are presented below. Except for the input data files which are source files, all other files are of binary type for fast transfer of information:

#COMMAND (Source file): This file is prepared by a user and it specifies the execution of the modules and their respective input data files. The order in the module specification is the order in which the various modules will be executed. Module START reads this file.

UCSYS.DAT (Source file): All data on the thermal units and interconnection or transmission network are included in this input data file. These are the non-hourly data, and the file content is read by Module UCBL.

UCLE.DAT (Source file): This file contains the hourly MW load for each area and the data are read by Module READ.

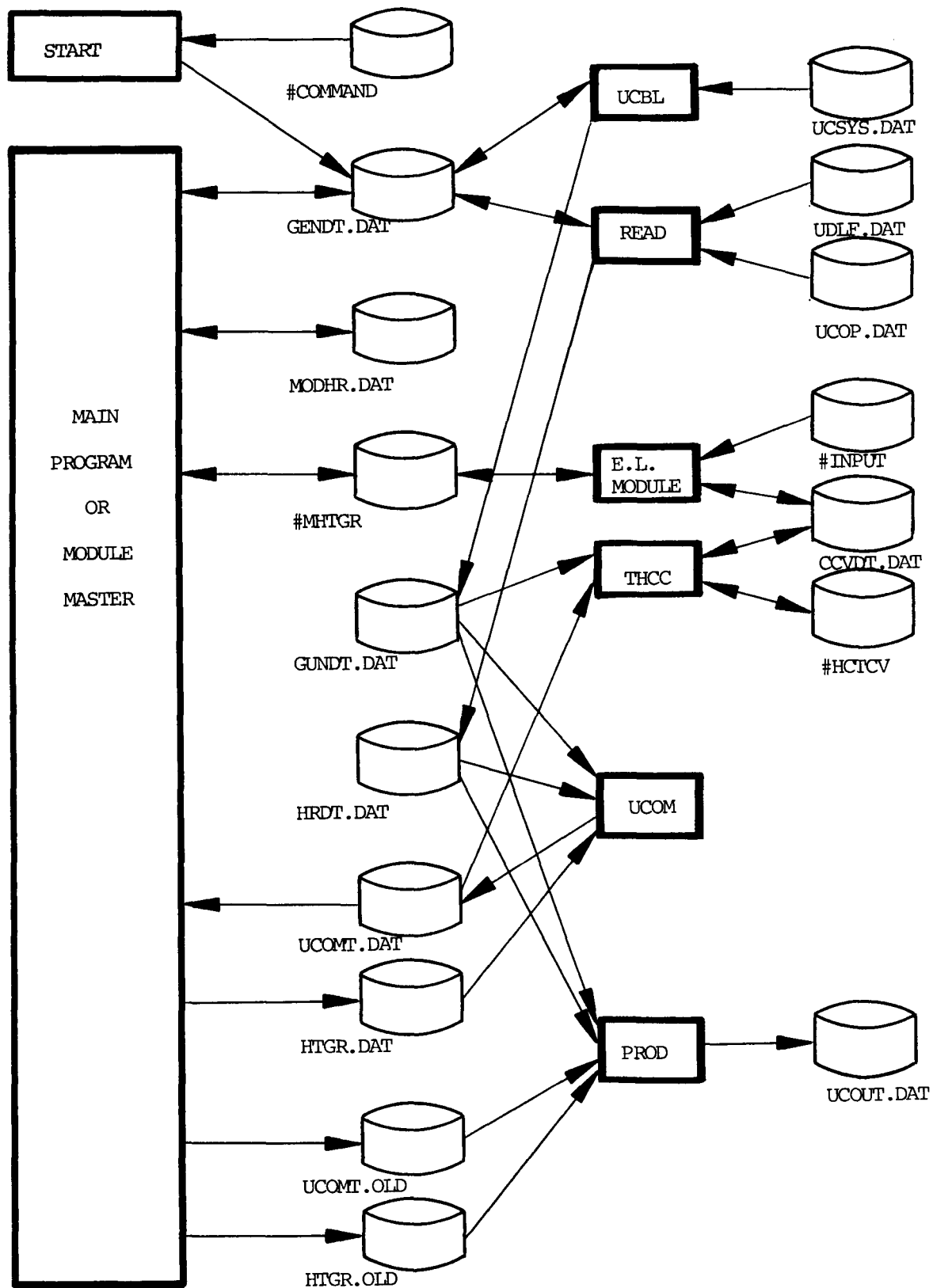


Figure 2-2. Layout of Data Files

UCOP.DAT (Source file): All operating data not contained in the previous two files are included in this file. The data consist of thermal unit status just prior to the scheduling period, reserve requirements, availability of units, preestablished and maintenance schedules of units, and any changes in the transmission capability.

#INPUT (Source file): This is the input file for an energy limited (E.L.) module and its content consists of the data on the generating facilities to be scheduled by the module. There may be a number of such input files, one file for one execution of any one energy limited module.

GENDT.DAT (Binary file): This file is used to store the COMMON BLOCK COMHED which is used by all the modules. Listings for all the COMMON BLOCKS are given in Volume 3 together with the listings for the programs or modules. There is only one record and information includes variables for all the input/output devices, study titles, system data, modules to be executed, pointers to indicate the current stage of the scheduling process, and the total system hourly load.

GUNDT.DAT (Binary file): All non-hourly data for the thermal system are stored in this file. There is only one record and it corresponds to the COMMON BLOCK COMMON. This file is created by Module UCBL and used by Modules THCC, UCOM and PROD.

CCVDT.DAT (Binary file): This file is used to store the COMMON BLOCK COMCCV whose content includes the hourly thermal system cost curves, arrays for the hourly loads, generation and reserve contributions. The thermal system cost curves are constructed by Module THCC for use by the energy limited modules.

HRDT.DAT (SAM binary file):<sup>(1)</sup> The information in this file is practically the same as that in files UCLF.DAT and UCOP.DAT. However, the content of this file is such that each record contains the pertinent operating and load data for each hour of the scheduling period.

#HCTCV (SAM binary file): This file contains the full hourly thermal system cost curves. Each record consists of one set of curves and the range of hours in which the curve is applicable. The curves in file CCVDT.DAT are only portions of the corresponding curves in file #HCTCV. The curves in #HCTCV are built from all the segments of the incremental cost curves for the on-line units at each hour.

#MHTGR (DAM binary file):<sup>(2)</sup> In this file, each record contains the area generation and reserve contributions from all energy limited facilities for each hour of the scheduling period.

MODHR.DAT (DAM binary file): The first record in this file consists of the total hourly system generation and reserve contributions while each of the remaining records contain the hourly generation and reserve contributions by each module executed.

HTGR.DAT (SAM binary file): This file is exactly the same as file #MHTGR except that it is a SAM type instead of DAM type.

HTGR.OLD (SAM binary file): This file is exactly the same as file HTGR.DAT, however, the content is for the iteration with the most economic schedule.

(1) SAM binary file: Sequential Access Binary File

(2) DAM binary file: Direct Access Binary File

UCOMT.DAT (SAM binary file): The unit commitment schedule obtained by Module UCOM is stored in this file. Information for the on-line units for each hour is stored in two records; the first record specifies the number of on-line units and the second record contains the unit numbers of the on-line units.

UCOMT.OLD (SAM binary file): This file is exactly the same as file UCOMT.DAT except that the unit commitment schedule is for the most economic iteration.

UCOUT.DAT (SAM binary file): Each record of this file contains the dispatch of the on-line units and the total reserve contributions for each hour of the scheduling period.

#WKFIL (SAM binary file): This is a working file used by Module HYDR for storing the schedule of each hydro plant when there are two or more plants to be scheduled at one time.

XXXXX (DAM binary file): This is a working file used by Module LMTF for storing the initial and most economical schedule during the scheduling process.

## 2.2 DATA FILES FOR THE NEW YORK TEST SYSTEM

This section contains all the thirteen input data files for the New York test system. General descriptions of these files have been presented above. The data in these files may be verified by comparing the data in Appendix D. All input data files are in free format except where particular formats are specified. The descriptions of these files follow in Sections 2.2.1 through 2.2.8. Specific test case data follow the descriptions and appear in Figures 2-3 through 2-15.

### 2.2.1 Format for Data File #COMMAND

First 2 lines: Title

3rd line: 10 output and control options (not used)

4th line: Starting and ending hours of scheduling period.

5th line: No. of areas in the system

6th line: No. of strategies saved and no. of units in perturbation range, these two numbers are used in Module UCOM.

7th line: Maximum no. of scheduling iterations, DLOAD, THDL; the last two numbers are used in Module THCC.

8th line: "UCOM" - Format (A4) - For execution of Module UCOM.

9th line: Module, data filename, total capacity of facilities - Format (A4, 1X, A6, F6.0)

Last line: "-999" - end of data file.

### 2.2.2 Format for Data File UCLF.DAT

1st line: Title

2nd line: Starting and ending date for the load data.

3rd line: Date, day, hour, total system load and area loads - Format (2I3, 1I, I2, 11I6)

### 2.2.3 Format for Data File UCSYS.DAT

1st 2 lines: Title

3rd line: NUNIT, NTAREA, NCAREA, NTAINT

NUNIT - No. of thermal units  
NTAREA - No. of transmission areas  
NCAREA - No. of control areas  
NTAINT - No. of transmission links or ties.

4th line: ITLPF, TLD1, TLD2

ITLPF - Transmission loss penalty factor code:

1 = compute as function of load  
2 = fixed at lower penalty factor, TLPF1.  
TLD1 - Lower system load for transmission loss penalty factor TLPF1

TLD2 - Upper system load for transmission loss penalty factor TLPF2

5th line: NSTRAG, NRANEE, IGIHRL, IGHTR2, IDSTOP

NSTRAG - Maximum no. of strategies saved at each hour  
NRANGE - Perturbation range to generate multiple unit combinations  
IGIHR1 - First hour of day when gas turbines are allowed on-line  
IGHTR2 - Last hour of day when gas turbines are allowed on-line  
IDSTOP - Flag on the execution of Module UCOM when deficiency in capacity occurs:

0 = continue with the execution  
1 = interrupt the execution.

#### Format for Each Generating Unit

1st line: Name of unit - Format (A8)

2nd line: IUNUMB, IUTRAN, IUCONT, IUTYPE, ICONFG, IDISP, TLPF1, TLPF2

IUNUMB - Unit no.  
IUTRAN - Unit transmission area no.  
IUCONT - Unit control area no.  
IUTYPE - Unit type:

1: fossil fired steam  
2: nuclear  
3: gas turbine

ICONFG - Unit characteristic set no.  
IDISP - Dispatch code  
TLPF1 - Lower transmission loss penalty factor  
TLPF2 - Upper transmission loss penalty factor

3rd line: 7 entries on fuel rate points

4th line: 7 entries on power points

5th line: PMIN, PED, PCAP, SRCAP, NRCAP, ORCAP

PMIN - Minimum capacity  
PED - Upper economic dispatch limit  
PCAP - Maximum capacity  
SRCAP - Maximum 10-minute spinning reserve capability  
NRCAP - Maximum 10-minute non-spinning reserve capability  
ORCAP - Maximum 30-minute operating reserve capability.

6th line: 4 entries on startup cost

7th line:           4 entries on downtime prior to startup

8th line:           BTUON, FCOST, BMAIT, VMAIT, FCFCT, MINUP, MINDN

BTUON - Heat rate at minimum capacity  
FCOST - Fuel cost  
BMAIT - Base maintenance cost  
VMAIT - Variable maintenance cost  
FCFCT - Fuel cost factor  
MINUP - Minimum up time  
MINDN - Minimum down time

Format for Each Transmission Area:

Transmission area name - Format (A8)

Format for Each Control Area:

Control area name - Format (A8)

Format for Each Interconnection:

Transmission area   number   pairs   and   capacity   of  
interconnection.

2.2.4 Format for Data File UCOP.DAT

1st 2 lines:       Heading or title.

3rd line:           Starting date, hour, day of week and no. of hours

Unit Data

1st line:           No. of units

Each other line: JUNUMB, JSTUNT, JUNIHR, JDISP, JDPCAP, JDPED, JDPMIN, RFCOST

JUNUMB: Unit no.  
JSTUNT: Unit status code  
JUNIHR: No. of hours unit has been on-line (positive) or  
         off-line (negative)  
JDISP: Unit dispatch code  
JDPCAP: Maximum capacity  
JDPED: Economic dispatch limit  
JDPMIN: Minimum capacity  
RFCOST: Fuel cost

Note: In the data file, the last five variables are set to their nominal values by entering -99.

### Reserve Requirement Data

1st line: TSRS, TSRN, TSRO

TSRS: Total system 10-minute spinning reserve  
TSRS: Total system 10-minute non-spinning reserve  
TSRO: Total system 30-minute reserve

Each other line: ITAREA, JSRS, JSRN, JSRO

ITAREA: Transmission area no.  
JSRS: Area 10-minute spinning reserve  
JSRN: Area 10-minute non-spinning reserve  
JSRO: Area 30-minute reserve

### Hourly Data

There are no hourly data changes, that is, all unit, transmission and reserve data are assumed to be unchanged throughout the scheduling period. When data changes do occur, a line is needed for the hour and day at which a change occurs and another line for the new data which are in effect.

### 2.2.5 Data File Format for Module HYDR

1st 2 lines: Title

3rd line: 10 output and control options

4th line: No. of plants in data file

### Data For Each Hydro Plant

1st line: Plant name - Format (A6)

2nd line: Transmission area no.

3rd line: Coupling code:

0 - not coupled to previous plant  
1 - coupled to the preceding plant

4th line: NUNIT, CNVFR, UGMIN, UGMAX, URVON, URVOF, PGNRR, ELEMN, ELEMX

NUNIT: No. of units in the plant  
CNVFR: Water conversion coefficient  
UGMIN: Unit minimum capacity  
UGMAX: Unit maximum capacity  
URVON: Unit maximum 10-minute spinning reserve capability  
URVOF: Unit maximum 10-minute non-spinning reserve capability  
PGNRR: Plant generation response rate  
ELEMN: Reservoir minimum elevation or storage  
ELEMX: Reservoir maximum elevation or storage

5th line:           NOUTG, NINFL, PINGN, ELEST, PLMNG, PLMXG

                  NOUTG:   No. of outage data entries  
                  NINFL:   No. of inflow data entries  
                  PINGN:   Plant initial generation  
                  ELEST:   Reservoir starting elevation or storage  
                  PLMNG:   Required minimum plant generation  
                  PLMXG:   Actual maximum plant generation

6th line:           NTRGT, (IHTGT, ELTGT) pairs

                  NTRGT:   No. of targets for reservoir storage  
                  IHTGT:   Hour at which target is to be met  
                  ELTGT:   Target elevation or storage

7th line:           No. of points in elevation-storage characteristics, if  
                          non-zero, another line is needed for the characteristic pairs  
                          (elevation, MWH storage)

8th line:           No. of points in elevation-capacity characteristics, if  
                          non-zero, another line is needed for the characteristic pairs  
                          (elevation, MW)

9th line:           IH, JH, FLOW

                  IH:       Starting hour  
                  JH:       Ending hour  
                  FLOW:   Hourly inflow from IH to JH.

#### 2.2.6 Data File Format for Module PSTO

1st 2 lines:       Title

3rd line:           Output and control options

4th line:           No. of plants and outage data entries

5th line:           Plant name - Format (A6)

6th line:           Transmission area no.

7th line:           NUNIT, CYEFY, UPCAP, UGMIN, UGMAX, ELEMN, ELEMX, ELEST, ELEMN

                  NUNIT:   No. of units  
                  CYEFY:   Cycle efficiency in per unit  
                  UPCAP:   Unit pumping capacity  
                  UGMIN:   Unit minimum generating capacity  
                  UGMAX:   Unit maximum generating capacity  
                  ELEMN:   Reservoir minimum elevation or storage  
                  ELEMX:   Reservoir maximum elevation or storage  
                  ELEST:   Reservoir starting elevation or storage  
                  ELEMN:   Reservoir ending elevation or storage

8th line:           No. of points in elevation-storage characteristics, if  
                          non-zero, more lines are needed for the characteristic pairs  
                          (elevation, MWH)

Next line: No. of points in elevation-capacity characteristics, if non-zero, more lines are needed for the characteristic pairs (elevation, MW).

#### 2.2.7 Data File Format for Module NFAL

1st 2 lines: Title

3rd line: Output and control options

4th line: Transmission area no.

5th line: Name of pumped storage plant - Format (A6)

6th line: NUNIT, CYLST, WCFLW, UPLST, UGMIN, UGMAX, ELEMN, ELEMN, ELEST, ELEMN

NUNIT: No. of units  
CYLST: Cycle efficiency in per unit for pumped storage plant only  
WCFLW: Water conversion coefficient  
UPLST: Unit pumping capacity  
UGMIN: Unit minimum generating capacity  
UGMAX: Unit maximum generating capacity  
ELEMN: Reservoir minimum elevation  
ELEMN: Reservoir maximum elevation  
ELEST: Reservoir starting elevation  
ELEMN: Reservoir ending elevation

7th line: NPSGO, NPSPO

NPSGO: No. of outage data entries for generation, each entry is specified by one line showing starting and ending hours, and the unit maximum capacity  
NPSPO: No. of outage data entries for pumping, each entry is specified by one line showing starting and ending hours, and the no. of units available for pumping.

8th line: Name of hydro plant - Format (A6)

9th line: WCFMS, UHYMN, UHYMX

WCFMS: Water conversion coefficient  
UHYMN: Plant minimum capacity  
UHYMX: Plant maximum capacity

10th line: NHYGO (same as NPSGO above)

11th line: No. of inflow entries

12th line: IH, JF, FLOW

IH: Starting hour  
JH: Ending hour  
FLOW: Plant hourly inflow

### 2.2.8 Data File Format for Module LMTF

1st 2 lines: Title

3rd line: Output and control options

4th line: Transmission area no.

5th line: NUNIT, NUS, NOUTG

NUNIT: No. of units in plant  
NUS: No. of segments in fuel rate characteristics  
NOUTG: No. of outage data entries

6th line: Fuel conversion factor

7th line: Name of plant - Format (A6)

8th line: Minimum and maximum fuel limits

9th line: Price of fuel

#### Format For Each Unit

1st line: Name of unit - Format (A6)

Next 2 lines: UGMIN, UGMAX, UFRMN, UCSBTU, UHSBTU, IHMNUP, IHMNDN, IHCOLD, INIUST, UINGN, UNORR, UEMRR, UFRR, UTRR, UFSR

UGMIN: Minimum capacity  
UGMAX: Maximum capacity  
UFRMN: Fuel rate at minimum capacity  
UCSBTU: Fuel requirement for cold startup  
UHSBTU: Fuel requirement for hot starting  
IHMNUP: Minimum up time  
IHMNDN: Minimum down time  
IHCOLD: Down time for which cold startup applies  
INIUST: Initial unit status (no. of hours unit has been up or down)  
UINGN: Unit initial generation  
UNORR: Normal response rate  
UEMRR: Emergency response rate  
UFRR: 10-minute non-spinning reserve capability  
UTRR: 30-minute non-spinning reserve capability  
UFSR: 10-minute spinning reserve capability

Next 2 lines: Fuel rate characteristics (MW, fuel rate) pairs.

```

NYPP SYSTEM FOR TESTING DAILY FUEL DISPATCHING
COMMAND FILE WITH ALL 4 TYPES OF ENERGY-LIMITED PLANTS
0,0,0,0,0,0,0,0,0,0,0,
1,168,          STARTING AND ENDING HOURS OF PERIOD
5,             NO. OF AREAS IN THE SYSTEM
10,1,         NSTRAG,NRANGE : FOR UNIT COMMITMENT MODULE
4,0.02,2000., MAX. NO. ITERATIONS, DLOAD, THOLD,
UCOM,
HYDR,#STLAW,900,  MODULE, DATA FILE NAME, TOTAL CAPACITY,
HYDR,#KAGUT,160,
HYDR,#BYBLK,100,
HYDR,#NMCHY,160,
HYDR,#NMEHY,220,
HYDR,#MISCH,200,
NFAL,#NIAGF,2600,
PSTQ,#GILBO,1000,
LMTF,#FULIM,200,
-999

```

Figure 2-3. Data File #COMMAND

NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78  
78,7,17,78,7,31,

|    |        |   |       |      |      |      |      |      |
|----|--------|---|-------|------|------|------|------|------|
| 78 | 7171   | 1 | 10507 | 1272 | 3190 | 1615 | 2235 | 2195 |
| 78 | 7171   | 2 | 9861  | 1170 | 2949 | 1526 | 2124 | 2092 |
| 78 | 7171   | 3 | 9507  | 1115 | 2627 | 1487 | 2041 | 2037 |
| 78 | 7171   | 4 | 9350  | 1078 | 2769 | 1471 | 2019 | 2013 |
| 78 | 7171   | 5 | 9281  | 1057 | 2771 | 1457 | 1998 | 1998 |
| 78 | 7171   | 6 | 9606  | 1075 | 2874 | 1500 | 2088 | 2069 |
| 78 | 7171   | 7 | 10815 | 1158 | 3479 | 1619 | 2304 | 2255 |
| 78 | 7171   | 8 | 12828 | 1378 | 4383 | 1851 | 2621 | 2595 |
| 78 | 7171   | 9 | 15102 | 1662 | 5436 | 2124 | 2955 | 2925 |
| 78 | 717110 |   | 16294 | 1889 | 5953 | 2257 | 3114 | 3081 |
| 78 | 717111 |   | 16938 | 2059 | 6150 | 2340 | 3207 | 3182 |
| 78 | 717112 |   | 17220 | 2111 | 6236 | 2378 | 3256 | 3239 |
| 78 | 717113 |   | 17172 | 2123 | 6243 | 2370 | 3205 | 3231 |
| 78 | 717114 |   | 17306 | 2135 | 6295 | 2389 | 3234 | 3253 |
| 78 | 717115 |   | 17157 | 2120 | 6296 | 2351 | 3168 | 3222 |
| 78 | 717116 |   | 16891 | 2066 | 6325 | 2269 | 3109 | 3122 |
| 78 | 717117 |   | 16760 | 2065 | 6198 | 2274 | 3104 | 3119 |
| 78 | 717118 |   | 16331 | 2051 | 5902 | 2294 | 3028 | 3056 |
| 78 | 717119 |   | 15487 | 1980 | 5418 | 2243 | 2899 | 2947 |
| 78 | 717120 |   | 14744 | 1907 | 4965 | 2214 | 2803 | 2855 |
| 78 | 717121 |   | 14688 | 1953 | 4906 | 2204 | 2812 | 2813 |
| 78 | 717122 |   | 14924 | 1970 | 4923 | 2218 | 2910 | 2903 |
| 78 | 717123 |   | 14085 | 1808 | 4637 | 2134 | 2743 | 2763 |
| 78 | 717124 |   | 12719 | 1605 | 4158 | 1908 | 2521 | 2527 |
| 78 | 7182   | 1 | 11468 | 1418 | 3640 | 1724 | 2344 | 2342 |
| 78 | 7182   | 2 | 10604 | 1284 | 3298 | 1601 | 2223 | 2198 |
| 78 | 7182   | 3 | 10165 | 1205 | 3145 | 1543 | 2156 | 2136 |
| 78 | 7182   | 4 | 9915  | 1164 | 3046 | 1510 | 2123 | 2072 |
| 78 | 7182   | 5 | 9822  | 1149 | 3017 | 1500 | 2075 | 2081 |
| 78 | 7182   | 6 | 9958  | 1150 | 3082 | 1514 | 2111 | 2101 |
| 78 | 7182   | 7 | 10903 | 1221 | 3498 | 1633 | 2280 | 2271 |
| 78 | 7182   | 8 | 13216 | 1478 | 4571 | 1896 | 2635 | 2636 |
| 78 | 7182   | 9 | 15361 | 1754 | 5669 | 2127 | 2891 | 2920 |
| 78 | 718210 |   | 16657 | 1997 | 6254 | 2268 | 3059 | 3079 |
| 78 | 718211 |   | 17325 | 2153 | 6436 | 2359 | 3178 | 3199 |
| 78 | 718212 |   | 17721 | 2245 | 6545 | 2424 | 3235 | 3272 |
| 78 | 718213 |   | 17678 | 2260 | 6522 | 2418 | 3201 | 3257 |
| 78 | 718214 |   | 17890 | 2325 | 6594 | 2448 | 3215 | 3314 |
| 78 | 718215 |   | 17950 | 2361 | 6677 | 2435 | 3179 | 3298 |
| 78 | 718216 |   | 18020 | 2394 | 6792 | 2427 | 3136 | 3269 |
| 78 | 718217 |   | 17975 | 2435 | 6737 | 2431 | 3143 | 3229 |
| 78 | 718218 |   | 17433 | 2401 | 6329 | 2411 | 3114 | 3178 |
| 78 | 718219 |   | 15835 | 2194 | 5791 | 2332 | 2449 | 3069 |
| 78 | 718220 |   | 15548 | 2042 | 5347 | 2259 | 2926 | 2974 |
| 78 | 718221 |   | 15436 | 2021 | 5284 | 2245 | 2935 | 2951 |
| 78 | 718222 |   | 15599 | 2062 | 5351 | 2248 | 2973 | 2965 |
| 78 | 718223 |   | 14733 | 1998 | 4978 | 2114 | 2811 | 2832 |
| 78 | 718224 |   | 13409 | 1773 | 4595 | 1930 | 2538 | 2573 |
| 78 | 7193   | 1 | 12197 | 1553 | 4209 | 1730 | 2346 | 2359 |
| 78 | 7193   | 2 | 11254 | 1405 | 3675 | 1639 | 2268 | 2267 |
| 78 | 7193   | 3 | 10703 | 1313 | 3459 | 1583 | 2166 | 2182 |
| 78 | 7193   | 4 | 10379 | 1257 | 3331 | 1547 | 2111 | 2133 |
| 78 | 7193   | 5 | 10296 | 1223 | 3285 | 1540 | 2117 | 2131 |
| 78 | 7193   | 6 | 10397 | 1221 | 3356 | 1544 | 2136 | 2140 |

Figure 2-4. Load Data File UCLF.DAT

|    |        |   |       |      |      |      |      |      |
|----|--------|---|-------|------|------|------|------|------|
| 78 | 7193   | 7 | 11249 | 1288 | 3757 | 1641 | 2282 | 2281 |
| 78 | 7193   | 8 | 13541 | 1541 | 4788 | 1909 | 2654 | 2649 |
| 78 | 7193   | 9 | 15750 | 1821 | 5870 | 2154 | 2946 | 2959 |
| 78 | 719310 |   | 17192 | 2075 | 6522 | 2323 | 3125 | 3147 |
| 78 | 719311 |   | 17983 | 2240 | 6796 | 2423 | 3227 | 3297 |
| 78 | 719312 |   | 18335 | 2325 | 6877 | 2500 | 3295 | 3338 |
| 78 | 719313 |   | 18387 | 2363 | 6907 | 2506 | 3271 | 3340 |
| 78 | 719314 |   | 18695 | 2411 | 7032 | 2543 | 3316 | 3393 |
| 78 | 719315 |   | 18821 | 2448 | 7126 | 2549 | 3279 | 3419 |
| 78 | 719316 |   | 18899 | 2474 | 7213 | 2547 | 3267 | 3398 |
| 78 | 719317 |   | 18807 | 2494 | 7130 | 2552 | 3236 | 3395 |
| 78 | 719318 |   | 18278 | 2472 | 6707 | 2530 | 3222 | 3347 |
| 78 | 719319 |   | 17246 | 2373 | 6095 | 2450 | 3112 | 3216 |
| 78 | 719320 |   | 16334 | 2245 | 5557 | 2380 | 3027 | 3125 |
| 78 | 719321 |   | 16321 | 2265 | 5526 | 2388 | 3019 | 3123 |
| 78 | 719322 |   | 16536 | 2257 | 5508 | 2431 | 3124 | 3216 |
| 78 | 719323 |   | 15626 | 2064 | 5210 | 2295 | 2964 | 3073 |
| 78 | 719324 |   | 14116 | 1850 | 4676 | 2078 | 2692 | 2820 |
| 78 | 7204   | 1 | 12806 | 1641 | 4196 | 1886 | 2501 | 2582 |
| 78 | 7204   | 2 | 11990 | 1487 | 3841 | 1789 | 2401 | 2472 |
| 78 | 7204   | 3 | 11426 | 1399 | 3665 | 1718 | 2264 | 2380 |
| 78 | 7204   | 4 | 11059 | 1345 | 3524 | 1670 | 2191 | 2329 |
| 78 | 7204   | 5 | 10963 | 1317 | 3441 | 1658 | 2211 | 2336 |
| 78 | 7204   | 6 | 11101 | 1307 | 3517 | 1669 | 2246 | 2362 |
| 78 | 7204   | 7 | 12027 | 1379 | 3972 | 1752 | 2422 | 2502 |
| 78 | 7204   | 8 | 14250 | 1613 | 4996 | 2008 | 2776 | 2857 |
| 78 | 7204   | 9 | 16463 | 1893 | 6133 | 2249 | 3029 | 3159 |
| 78 | 720410 |   | 17874 | 2152 | 6719 | 2425 | 3201 | 3377 |
| 78 | 720411 |   | 18579 | 2310 | 6905 | 2552 | 3304 | 3508 |
| 78 | 720412 |   | 19116 | 2396 | 7132 | 2619 | 3404 | 3565 |
| 78 | 720413 |   | 19191 | 2438 | 7139 | 2644 | 3414 | 3556 |
| 78 | 720414 |   | 19448 | 2483 | 7261 | 2673 | 3441 | 3590 |
| 78 | 720415 |   | 19468 | 2513 | 7323 | 2662 | 3396 | 3574 |
| 78 | 720416 |   | 19489 | 2521 | 7363 | 2691 | 3370 | 3544 |
| 78 | 720417 |   | 19346 | 2528 | 7211 | 2712 | 3352 | 3543 |
| 78 | 720418 |   | 18697 | 2516 | 6719 | 2679 | 3306 | 3477 |
| 78 | 720419 |   | 17818 | 2427 | 6128 | 2612 | 3231 | 3420 |
| 78 | 720420 |   | 17075 | 2307 | 5747 | 2540 | 3149 | 3332 |
| 78 | 720421 |   | 16916 | 2310 | 5649 | 2521 | 3145 | 3291 |
| 78 | 720422 |   | 17048 | 2318 | 5586 | 2552 | 3233 | 3359 |
| 78 | 720423 |   | 16182 | 2186 | 5205 | 2436 | 3107 | 3248 |
| 78 | 720424 |   | 14736 | 1880 | 4767 | 2227 | 2865 | 2997 |
| 78 | 7215   | 1 | 13399 | 1656 | 4318 | 2027 | 2632 | 2766 |
| 78 | 7215   | 2 | 12492 | 1506 | 3974 | 1910 | 2497 | 2605 |
| 78 | 7215   | 3 | 11928 | 1413 | 3774 | 1832 | 2396 | 2513 |
| 78 | 7215   | 4 | 11465 | 1356 | 3655 | 1737 | 2307 | 2410 |
| 78 | 7215   | 5 | 11281 | 1328 | 3604 | 1709 | 2262 | 2378 |
| 78 | 7215   | 6 | 11412 | 1331 | 3720 | 1706 | 2272 | 2383 |
| 78 | 7215   | 7 | 12219 | 1386 | 4077 | 1801 | 2434 | 2521 |
| 78 | 7215   | 8 | 14637 | 1645 | 5168 | 2096 | 2827 | 2901 |
| 78 | 7215   | 9 | 16878 | 1935 | 6296 | 2338 | 3118 | 3191 |
| 78 | 721510 |   | 18385 | 2197 | 6914 | 2535 | 3323 | 3416 |
| 78 | 721511 |   | 19155 | 2374 | 7125 | 2662 | 3445 | 3549 |
| 78 | 721512 |   | 19605 | 2502 | 7286 | 2712 | 3506 | 3599 |
| 78 | 721513 |   | 19714 | 2582 | 7343 | 2736 | 3461 | 3592 |
| 78 | 721514 |   | 20100 | 2639 | 7495 | 2816 | 3522 | 3628 |

Figure 2-4. Load Data File UCLF.DAT (continued)

|    |        |       |      |      |      |      |      |
|----|--------|-------|------|------|------|------|------|
| 78 | 721515 | 26107 | 2643 | 7624 | 2806 | 3480 | 3554 |
| 78 | 721516 | 26027 | 2691 | 7657 | 2774 | 3412 | 3493 |
| 78 | 721517 | 19757 | 2689 | 7515 | 2757 | 3369 | 3427 |
| 78 | 721518 | 19046 | 2634 | 6944 | 2724 | 3351 | 3393 |
| 78 | 721519 | 18126 | 2562 | 6465 | 2652 | 3205 | 3242 |
| 78 | 721520 | 17332 | 2432 | 6067 | 2585 | 3105 | 3143 |
| 78 | 721521 | 17161 | 2424 | 5953 | 2581 | 3079 | 3124 |
| 78 | 721522 | 17057 | 2371 | 5871 | 2578 | 3091 | 3146 |
| 78 | 721523 | 16183 | 2199 | 5605 | 2445 | 2937 | 2997 |
| 78 | 721524 | 14887 | 2011 | 5204 | 2225 | 2691 | 2756 |
| 78 | 7226 1 | 13611 | 1805 | 4740 | 2047 | 2480 | 2539 |
| 78 | 7226 2 | 12728 | 1649 | 4409 | 1911 | 2355 | 2404 |
| 78 | 7226 3 | 12075 | 1540 | 4199 | 1809 | 2232 | 2295 |
| 78 | 7226 4 | 11672 | 1489 | 3956 | 1772 | 2161 | 2254 |
| 78 | 7226 5 | 11448 | 1443 | 3823 | 1762 | 2156 | 2264 |
| 78 | 7226 6 | 11248 | 1407 | 3726 | 1732 | 2151 | 2232 |
| 78 | 7226 7 | 11277 | 1395 | 3747 | 1731 | 2168 | 2236 |
| 78 | 7226 8 | 12110 | 1515 | 4055 | 1851 | 2304 | 2385 |
| 78 | 7226 9 | 13562 | 1766 | 4622 | 2039 | 2532 | 2603 |
| 78 | 722610 | 15033 | 2085 | 5196 | 2226 | 2724 | 2802 |
| 78 | 722611 | 16178 | 2367 | 5597 | 2372 | 2885 | 2957 |
| 78 | 722612 | 16697 | 2536 | 5831 | 2414 | 2917 | 2999 |
| 78 | 722613 | 16840 | 2610 | 5900 | 2435 | 2902 | 2993 |
| 78 | 722614 | 16829 | 2650 | 5888 | 2425 | 2883 | 2983 |
| 78 | 722615 | 16751 | 2660 | 5888 | 2408 | 2841 | 2954 |
| 78 | 722616 | 16723 | 2684 | 5868 | 2396 | 2831 | 2924 |
| 78 | 722617 | 16819 | 2733 | 5889 | 2410 | 2849 | 2938 |
| 78 | 722618 | 16946 | 2769 | 5855 | 2444 | 2900 | 2978 |
| 78 | 722619 | 16614 | 2692 | 5705 | 2410 | 2867 | 2940 |
| 78 | 722620 | 16169 | 2615 | 5569 | 2351 | 2787 | 2847 |
| 78 | 722621 | 16274 | 2637 | 5640 | 2360 | 2792 | 2845 |
| 78 | 722622 | 16591 | 2656 | 5742 | 2398 | 2871 | 2924 |
| 78 | 722623 | 16022 | 2509 | 5637 | 2289 | 2760 | 2827 |
| 78 | 722624 | 15129 | 2341 | 5422 | 2130 | 2583 | 2653 |
| 78 | 7237 1 | 14146 | 2146 | 5106 | 1969 | 2443 | 2482 |
| 78 | 7237 2 | 13363 | 1961 | 4796 | 1870 | 2348 | 2388 |
| 78 | 7237 3 | 12698 | 1827 | 4526 | 1788 | 2252 | 2305 |
| 78 | 7237 4 | 12237 | 1736 | 4373 | 1735 | 2169 | 2224 |
| 78 | 7237 5 | 11936 | 1667 | 4283 | 1690 | 2116 | 2180 |
| 78 | 7237 6 | 11661 | 1608 | 4140 | 1667 | 2095 | 2151 |
| 78 | 7237 7 | 11446 | 1555 | 4044 | 1652 | 2069 | 2126 |
| 78 | 7237 8 | 11899 | 1620 | 4164 | 1719 | 2178 | 2218 |
| 78 | 7237 9 | 12960 | 1822 | 4461 | 1888 | 2382 | 2407 |
| 78 | 723710 | 14078 | 2082 | 4838 | 2055 | 2530 | 2573 |
| 78 | 723711 | 14913 | 2314 | 5131 | 2174 | 2625 | 2669 |
| 78 | 723712 | 15500 | 2498 | 5326 | 2254 | 2677 | 2745 |
| 78 | 723713 | 15762 | 2550 | 5449 | 2293 | 2699 | 2771 |
| 78 | 723714 | 15774 | 2611 | 5454 | 2300 | 2666 | 2743 |
| 78 | 723715 | 15610 | 2586 | 5502 | 2271 | 2592 | 2667 |
| 78 | 723716 | 15524 | 2577 | 5502 | 2255 | 2569 | 2621 |
| 78 | 723717 | 15614 | 2613 | 5510 | 2276 | 2587 | 2628 |
| 78 | 723718 | 15570 | 2602 | 5491 | 2272 | 2599 | 2606 |
| 78 | 723719 | 15483 | 2574 | 5494 | 2256 | 2577 | 2582 |
| 78 | 723720 | 15310 | 2522 | 5523 | 2213 | 2536 | 2516 |
| 78 | 723721 | 15749 | 2640 | 5787 | 2229 | 2567 | 2526 |
| 78 | 723722 | 16197 | 2725 | 5957 | 2270 | 2629 | 2616 |

Figure 2-4. Load Data File UCLF.DAT (continued)

|    |        |       |      |      |      |      |      |
|----|--------|-------|------|------|------|------|------|
| 78 | 723723 | 15742 | 2645 | 5842 | 2195 | 2523 | 2537 |
| 78 | 723724 | 14740 | 2385 | 5578 | 2032 | 2345 | 2400 |
| 78 | 7241 1 | 13620 | 2107 | 5149 | 1876 | 2225 | 2263 |
| 78 | 7241 2 | 12883 | 1973 | 4821 | 1781 | 2141 | 2167 |
| 78 | 7241 3 | 12407 | 1666 | 4615 | 1712 | 2089 | 2125 |
| 78 | 7241 4 | 12024 | 1785 | 4477 | 1655 | 2029 | 2078 |
| 78 | 7241 5 | 11848 | 1726 | 4395 | 1629 | 2027 | 2071 |
| 78 | 7241 6 | 11939 | 1681 | 4455 | 1624 | 2089 | 2090 |
| 78 | 7241 7 | 12665 | 1701 | 4772 | 1710 | 2251 | 2231 |
| 78 | 7241 8 | 14750 | 1905 | 5661 | 1990 | 2599 | 2595 |
| 78 | 7241 9 | 16732 | 2142 | 6565 | 2235 | 2875 | 2915 |
| 78 | 724110 | 17533 | 2470 | 7075 | 2339 | 3009 | 3040 |
| 78 | 724111 | 18337 | 2413 | 7252 | 2406 | 3113 | 3153 |
| 78 | 724112 | 18441 | 2457 | 7210 | 2432 | 3150 | 3192 |
| 78 | 724113 | 18255 | 2451 | 7073 | 2407 | 3130 | 3194 |
| 78 | 724114 | 18322 | 2452 | 7071 | 2429 | 3152 | 3218 |
| 78 | 724115 | 18304 | 2462 | 7070 | 2419 | 3125 | 3228 |
| 78 | 724116 | 18289 | 2469 | 7184 | 2398 | 3084 | 3154 |
| 78 | 724117 | 18112 | 2480 | 7044 | 2383 | 3070 | 3135 |
| 78 | 724118 | 17552 | 2501 | 6564 | 2361 | 3030 | 3094 |
| 78 | 724119 | 16794 | 2463 | 6080 | 2305 | 2954 | 2992 |
| 78 | 724120 | 14744 | 1907 | 4965 | 2214 | 2803 | 2855 |
| 78 | 724121 | 14688 | 1953 | 4906 | 2204 | 2812 | 2813 |
| 78 | 724122 | 14924 | 1970 | 4923 | 2218 | 2910 | 2903 |
| 78 | 724123 | 14085 | 1808 | 4637 | 2134 | 2743 | 2763 |
| 78 | 724124 | 12719 | 1605 | 4158 | 1908 | 2521 | 2527 |
| 78 | 7252 1 | 11468 | 1418 | 3640 | 1724 | 2344 | 2342 |
| 78 | 7252 2 | 10604 | 1284 | 3298 | 1601 | 2223 | 2198 |
| 78 | 7252 3 | 10185 | 1205 | 3145 | 1543 | 2156 | 2136 |
| 78 | 7252 4 | 9915  | 1164 | 3046 | 1510 | 2123 | 2072 |
| 78 | 7252 5 | 9822  | 1149 | 3017 | 1500 | 2075 | 2081 |
| 78 | 7252 6 | 9958  | 1150 | 3082 | 1514 | 2111 | 2101 |
| 78 | 7252 7 | 10903 | 1221 | 3498 | 1633 | 2280 | 2271 |
| 78 | 7252 8 | 13216 | 1478 | 4571 | 1896 | 2635 | 2636 |
| 78 | 7252 9 | 15361 | 1754 | 5669 | 2127 | 2891 | 2920 |
| 78 | 725210 | 16657 | 1997 | 6254 | 2268 | 3059 | 3075 |
| 78 | 725211 | 17325 | 2153 | 6436 | 2359 | 3178 | 3199 |
| 78 | 725212 | 17721 | 2245 | 6545 | 2424 | 3235 | 3272 |
| 78 | 725213 | 17678 | 2280 | 6522 | 2418 | 3201 | 3257 |
| 78 | 725214 | 17896 | 2325 | 6594 | 2448 | 3215 | 3314 |
| 78 | 725215 | 17950 | 2361 | 6677 | 2435 | 3179 | 3298 |
| 78 | 725216 | 18020 | 2394 | 6792 | 2427 | 3138 | 3269 |
| 78 | 725217 | 17975 | 2435 | 6737 | 2431 | 3143 | 3229 |
| 78 | 725218 | 17433 | 2401 | 6329 | 2411 | 3114 | 3178 |
| 78 | 725219 | 15835 | 2194 | 5791 | 2332 | 2449 | 3069 |
| 78 | 725220 | 15548 | 2042 | 5347 | 2259 | 2926 | 2974 |
| 78 | 725221 | 15436 | 2021 | 5284 | 2245 | 2935 | 2951 |
| 78 | 725222 | 14362 | 1861 | 4661 | 2141 | 2849 | 2850 |
| 78 | 725223 | 13783 | 1757 | 4458 | 2054 | 2760 | 2754 |
| 78 | 725224 | 12466 | 1540 | 3979 | 1873 | 2527 | 2547 |
| 78 | 7263 1 | 11301 | 1352 | 3564 | 1701 | 2334 | 2350 |
| 78 | 7263 2 | 10569 | 1220 | 3255 | 1626 | 2238 | 2230 |
| 78 | 7263 3 | 10125 | 1156 | 3067 | 1569 | 2163 | 2170 |
| 78 | 7263 4 | 9920  | 1129 | 3005 | 1540 | 2119 | 2127 |
| 78 | 7263 5 | 9821  | 1110 | 2989 | 1523 | 2093 | 2106 |
| 78 | 7263 6 | 10003 | 1119 | 3040 | 1544 | 2151 | 2149 |

Figure 2-4. Load Data File UCLF.DAT (continued)

|    |      |    |       |      |      |      |      |      |
|----|------|----|-------|------|------|------|------|------|
| 78 | 7263 | 7  | 10330 | 1192 | 2883 | 1709 | 2271 | 2275 |
| 78 | 7263 | 8  | 12123 | 1417 | 3634 | 1892 | 2594 | 2586 |
| 78 | 7263 | 9  | 14294 | 1668 | 4716 | 2122 | 2890 | 2898 |
| 78 | 7263 | 10 | 15587 | 1909 | 5347 | 2193 | 3163 | 2975 |
| 78 | 7263 | 11 | 16190 | 2044 | 5506 | 2318 | 3160 | 3162 |
| 78 | 7263 | 12 | 16446 | 2104 | 5567 | 2360 | 3197 | 3218 |
| 78 | 7263 | 13 | 16417 | 2110 | 5527 | 2370 | 3184 | 3226 |
| 78 | 7263 | 14 | 17018 | 2133 | 5983 | 2397 | 3227 | 3278 |
| 78 | 7263 | 15 | 17496 | 2150 | 6443 | 2396 | 3225 | 3282 |
| 78 | 7263 | 16 | 17483 | 2163 | 6416 | 2384 | 3220 | 3300 |
| 78 | 7263 | 17 | 17315 | 2172 | 6298 | 2357 | 3213 | 3275 |
| 78 | 7263 | 18 | 16763 | 2169 | 5917 | 2306 | 3162 | 3209 |
| 78 | 7263 | 19 | 15708 | 2079 | 5306 | 2225 | 3026 | 3072 |
| 78 | 7263 | 20 | 14987 | 1979 | 4915 | 2174 | 2962 | 2957 |
| 78 | 7263 | 21 | 15136 | 2041 | 4876 | 2210 | 3004 | 3005 |
| 78 | 7263 | 22 | 15183 | 2035 | 4819 | 2230 | 3047 | 3052 |
| 78 | 7263 | 23 | 14229 | 1861 | 4484 | 2095 | 2890 | 2899 |
| 78 | 7263 | 24 | 12968 | 1651 | 4092 | 1916 | 2636 | 2673 |
| 78 | 7274 | 1  | 11811 | 1472 | 3648 | 1760 | 2465 | 2466 |
| 78 | 7274 | 2  | 11041 | 1330 | 3335 | 1678 | 2352 | 2346 |
| 78 | 7274 | 3  | 10553 | 1243 | 3128 | 1645 | 2261 | 2276 |
| 78 | 7274 | 4  | 10285 | 1204 | 3082 | 1584 | 2198 | 2217 |
| 78 | 7274 | 5  | 10100 | 1181 | 3022 | 1565 | 2154 | 2178 |
| 78 | 7274 | 6  | 10284 | 1197 | 3101 | 1592 | 2187 | 2207 |
| 78 | 7274 | 7  | 11216 | 1268 | 3580 | 1706 | 2329 | 2333 |
| 78 | 7274 | 8  | 13403 | 1503 | 4639 | 1964 | 2686 | 2611 |
| 78 | 7274 | 9  | 15532 | 1777 | 5701 | 2163 | 3022 | 2809 |
| 78 | 7274 | 10 | 16982 | 2042 | 6340 | 2328 | 3144 | 3128 |
| 78 | 7274 | 11 | 17648 | 2186 | 6521 | 2420 | 3258 | 3263 |
| 78 | 7274 | 12 | 18023 | 2256 | 6661 | 2471 | 3310 | 3325 |
| 78 | 7274 | 13 | 18054 | 2283 | 6716 | 2467 | 3287 | 3301 |
| 78 | 7274 | 14 | 18288 | 2338 | 6829 | 2496 | 3310 | 3315 |
| 78 | 7274 | 15 | 18383 | 2274 | 7059 | 2484 | 3276 | 3290 |
| 78 | 7274 | 16 | 18464 | 2408 | 7076 | 2487 | 3241 | 3252 |
| 78 | 7274 | 17 | 18458 | 2436 | 7058 | 2501 | 3221 | 3242 |
| 78 | 7274 | 18 | 17874 | 2419 | 6634 | 2483 | 3170 | 3168 |
| 78 | 7274 | 19 | 16922 | 2333 | 6111 | 2407 | 3048 | 3023 |
| 78 | 7274 | 20 | 16172 | 2248 | 5681 | 2344 | 2972 | 2927 |
| 78 | 7274 | 21 | 16220 | 2324 | 5650 | 2371 | 2968 | 2907 |
| 78 | 7274 | 22 | 16171 | 2309 | 5577 | 2390 | 2967 | 2928 |
| 78 | 7274 | 23 | 15215 | 2147 | 5273 | 2248 | 2783 | 2764 |
| 78 | 7274 | 24 | 13728 | 1935 | 4748 | 1995 | 2526 | 2524 |
| 78 | 7285 | 1  | 12209 | 1681 | 4073 | 1786 | 2341 | 2328 |
| 78 | 7285 | 2  | 11409 | 1510 | 3730 | 1685 | 2268 | 2216 |
| 78 | 7285 | 3  | 10844 | 1402 | 3501 | 1631 | 2162 | 2148 |
| 78 | 7285 | 4  | 10574 | 1353 | 3371 | 1610 | 2122 | 2118 |
| 78 | 7285 | 5  | 10470 | 1329 | 3323 | 1601 | 2108 | 2109 |
| 78 | 7285 | 6  | 10653 | 1318 | 3417 | 1615 | 2159 | 2144 |
| 78 | 7285 | 7  | 11524 | 1385 | 3875 | 1706 | 2297 | 2261 |
| 78 | 7285 | 8  | 13644 | 1603 | 4884 | 1948 | 2636 | 2573 |
| 78 | 7285 | 9  | 15740 | 1856 | 5943 | 2186 | 2894 | 2861 |
| 78 | 7285 | 10 | 16762 | 2059 | 6406 | 2293 | 3030 | 2974 |
| 78 | 7285 | 11 | 17224 | 2159 | 6545 | 2347 | 3116 | 3057 |
| 78 | 7285 | 12 | 17449 | 2224 | 6603 | 2411 | 3123 | 3088 |
| 78 | 7285 | 13 | 17355 | 2236 | 6623 | 2363 | 3072 | 3061 |
| 78 | 7285 | 14 | 17437 | 2264 | 6683 | 2388 | 3066 | 3036 |

Figure 2-4. Load Data File UCLF.DAT (continued)

|    |        |       |      |      |      |      |      |
|----|--------|-------|------|------|------|------|------|
| 78 | 728515 | 17258 | 2300 | 6625 | 2362 | 2983 | 2988 |
| 78 | 728516 | 17312 | 2338 | 6790 | 2331 | 2927 | 2926 |
| 78 | 728517 | 17152 | 2351 | 6723 | 2308 | 2881 | 2889 |
| 78 | 728518 | 16808 | 2332 | 6470 | 2238 | 2920 | 2848 |
| 78 | 728519 | 15511 | 2253 | 5467 | 2244 | 2816 | 2731 |
| 78 | 728520 | 14728 | 2144 | 5053 | 2189 | 2700 | 2642 |
| 78 | 728521 | 14633 | 2153 | 4941 | 2172 | 2712 | 2655 |
| 78 | 728522 | 14540 | 2128 | 4868 | 2120 | 2749 | 2675 |
| 78 | 728523 | 13605 | 1956 | 4542 | 1997 | 2580 | 2530 |
| 78 | 728524 | 12408 | 1743 | 4090 | 1837 | 2388 | 2350 |
| 78 | 7296 1 | 11296 | 1533 | 3655 | 1692 | 2229 | 2187 |
| 78 | 7296 2 | 10466 | 1367 | 3357 | 1564 | 2108 | 2070 |
| 78 | 7296 3 | 9898  | 1244 | 3192 | 1479 | 2001 | 1982 |
| 78 | 7296 4 | 9581  | 1186 | 3062 | 1439 | 1952 | 1942 |
| 78 | 7296 5 | 9382  | 1147 | 2976 | 1412 | 1930 | 1917 |
| 78 | 7296 6 | 9284  | 1112 | 2912 | 1407 | 1940 | 1913 |
| 78 | 7296 7 | 9333  | 1104 | 2950 | 1420 | 1944 | 1915 |
| 78 | 7296 8 | 10157 | 1226 | 3227 | 1541 | 2104 | 2059 |
| 78 | 7296 9 | 11293 | 1425 | 3660 | 1697 | 2281 | 2230 |
| 78 | 729610 | 12372 | 1633 | 4012 | 1846 | 2472 | 2409 |
| 78 | 729611 | 13120 | 1780 | 4298 | 1937 | 2591 | 2514 |
| 78 | 729612 | 13336 | 1840 | 4387 | 1964 | 2605 | 2540 |
| 78 | 729613 | 13292 | 1870 | 4367 | 1953 | 2577 | 2525 |
| 78 | 729614 | 13115 | 1861 | 4286 | 1934 | 2538 | 2496 |
| 78 | 729615 | 12932 | 1854 | 4233 | 1905 | 2481 | 2459 |
| 78 | 729616 | 12910 | 1848 | 4203 | 1904 | 2494 | 2461 |
| 78 | 729617 | 12968 | 1862 | 4180 | 1921 | 2534 | 2471 |
| 78 | 729618 | 13068 | 1891 | 4171 | 1939 | 2568 | 2499 |
| 78 | 729619 | 12871 | 1843 | 4035 | 1948 | 2561 | 2484 |
| 78 | 729620 | 12760 | 1822 | 4008 | 1939 | 2532 | 2459 |
| 78 | 729621 | 12695 | 1898 | 4108 | 1961 | 2556 | 2472 |
| 78 | 729622 | 12994 | 1892 | 4157 | 1950 | 2534 | 2461 |
| 78 | 729623 | 12368 | 1772 | 4058 | 1834 | 2379 | 2325 |
| 78 | 729624 | 11640 | 1657 | 3911 | 1695 | 2215 | 2162 |
| 78 | 7307 1 | 10847 | 1519 | 3674 | 1555 | 2079 | 2020 |
| 78 | 7307 2 | 10255 | 1404 | 3412 | 1481 | 2019 | 1939 |
| 78 | 7307 3 | 9764  | 1311 | 3239 | 1419 | 1928 | 1867 |
| 78 | 7307 4 | 9457  | 1258 | 3131 | 1384 | 1865 | 1819 |
| 78 | 7307 5 | 9227  | 1226 | 3054 | 1351 | 1812 | 1784 |
| 78 | 7307 6 | 9086  | 1195 | 2993 | 1333 | 1801 | 1764 |
| 78 | 7307 7 | 8928  | 1152 | 2924 | 1325 | 1781 | 1746 |
| 78 | 7307 8 | 9322  | 1207 | 3025 | 1395 | 1877 | 1818 |
| 78 | 7307 9 | 10062 | 1335 | 3239 | 1509 | 2030 | 1949 |
| 78 | 730710 | 10805 | 1503 | 3480 | 1610 | 2149 | 2063 |
| 78 | 730711 | 11366 | 1628 | 3666 | 1679 | 2244 | 2149 |
| 78 | 730712 | 11745 | 1726 | 3793 | 1728 | 2293 | 2205 |
| 78 | 730713 | 11955 | 1781 | 3865 | 1750 | 2321 | 2238 |
| 78 | 730714 | 11836 | 1777 | 3859 | 1726 | 2268 | 2206 |
| 78 | 730715 | 11636 | 1752 | 3817 | 1689 | 2220 | 2158 |
| 78 | 730716 | 11501 | 1727 | 3784 | 1672 | 2187 | 2131 |
| 78 | 730717 | 11524 | 1720 | 3767 | 1682 | 2202 | 2153 |
| 78 | 730718 | 11532 | 1701 | 3737 | 1693 | 2221 | 2180 |
| 78 | 730719 | 11412 | 1654 | 3696 | 1674 | 2231 | 2157 |
| 78 | 730720 | 11461 | 1760 | 3712 | 1651 | 2201 | 2137 |
| 78 | 730721 | 11905 | 1731 | 3947 | 1720 | 2294 | 2213 |
| 78 | 730722 | 12404 | 1792 | 4099 | 1784 | 2403 | 2326 |

Figure 2-4. Load Data File UCLF.DAT (continued)

|    |        |       |      |      |      |      |      |
|----|--------|-------|------|------|------|------|------|
| 78 | 730723 | 12008 | 1708 | 3980 | 1728 | 2323 | 2268 |
| 78 | 730724 | 11020 | 1522 | 3669 | 1596 | 2127 | 2114 |
| 78 | 7311 1 | 10216 | 1355 | 3334 | 1497 | 2022 | 2008 |
| 78 | 7311 2 | 9657  | 1240 | 3105 | 1425 | 1967 | 1920 |
| 78 | 7311 3 | 9289  | 1169 | 2976 | 1387 | 1891 | 1866 |
| 78 | 7311 4 | 9145  | 1140 | 2915 | 1371 | 1868 | 1851 |
| 78 | 7311 5 | 9097  | 1140 | 2866 | 1376 | 1861 | 1854 |
| 78 | 7311 6 | 9434  | 1167 | 3007 | 1414 | 1939 | 1907 |
| 78 | 7311 7 | 10421 | 1239 | 3485 | 1529 | 2102 | 2066 |
| 78 | 7311 8 | 12432 | 1419 | 4401 | 1771 | 2447 | 2394 |
| 78 | 7311 9 | 14576 | 1669 | 5516 | 1980 | 2736 | 2675 |
| 78 | 731110 | 15670 | 1875 | 5993 | 2109 | 2867 | 2826 |
| 78 | 731111 | 16287 | 1991 | 6110 | 2211 | 3010 | 2965 |
| 78 | 731112 | 16516 | 2037 | 6203 | 2236 | 3044 | 2996 |
| 78 | 731113 | 16399 | 2043 | 6095 | 2232 | 3024 | 3005 |
| 78 | 731114 | 16360 | 1988 | 6082 | 2237 | 3043 | 3010 |
| 78 | 731115 | 16130 | 1958 | 6050 | 2195 | 2977 | 2950 |
| 78 | 731116 | 15943 | 1930 | 5983 | 2186 | 2928 | 2916 |
| 78 | 731117 | 15903 | 1924 | 5917 | 2186 | 2957 | 2919 |
| 78 | 731118 | 15413 | 1943 | 5563 | 2158 | 2902 | 2847 |
| 78 | 731119 | 14667 | 1883 | 5087 | 2103 | 2835 | 2759 |
| 78 | 731120 | 14160 | 1828 | 4777 | 2074 | 2774 | 2707 |
| 78 | 731121 | 14087 | 1852 | 4665 | 2078 | 2779 | 2713 |
| 78 | 731122 | 13776 | 1773 | 4476 | 2045 | 2763 | 2719 |
| 78 | 731123 | 12713 | 1601 | 4072 | 1914 | 2565 | 2561 |

Figure 2-4. Load Data File UCLF.DAT (concluded)

```

**UCSYS.NYPP - SYSTEM DATA FILE
PT1 - EPRI 1048-S : NYPP SYSTEM DATA FOR FUEL DISPATCHING
113,5,1,4, /NUNIT,NTAREA,NCAREA,NTAINT
1,10000,20000, /ITLFF,TLD1,TLD2
50,1,9,19,1, /NSTRAG,NRANG,IGTHR1,IGTHR2,IDSTOP
**GENERATING UNIT DATA
ARTKILL2
1 2 1 1 1 1.0 1.0
8010 8200 8350 8510 8690 9000 -1
1 147 187 236 286 30000 0
75 345 345 30 0 0
139. 266. 382. 490.
42 84 126 30000
741.0 3.6420 0.0 2.695 1.0000 6 12
ARTKILL3
2 2 1 1 1 1.0 1.0
8010 8160 8240 8520 8830 8910 -1
1 168 240 333 427 30000 0
140 505 505 20 0 0
157. 284. 390. 478.
42 84 126 30000
1341.0 3.7120 0.0 2.695 1.0000 6 12
ASTORIA1
3 2 1 1 1 1.0 1.0
8360 8400 8430 8600 8640 9180 -1
1 41 69 96 124 30000 0
40 70 80 30 0 0
39. 77. 112. 147.
12 24 36 30000
392.0 4.1680 0.0 2.695 1.0000 6 12
ASTORIA2
4 2 1 1 1 1.0 1.0
8360 8400 8430 8600 8640 9180 -1
1 41 69 96 124 30000 0
40 150 150 30 0 0
39. 77. 112. 147.
12 24 36 30000
392.0 4.0260 0.0 2.695 1.0000 6 12
ASTORIA3
5 2 1 1 1 1.0 1.0
8050 8300 8450 8610 8920 9120 -1
1 172 217 266 339 30000 0
75 390 390 70 0 0
96. 144. 173. 192.
42 84 126 30000
1040.0 3.8150 0.0 2.695 1.0000 6 12
ASTORIA4
6 2 1 1 1 1.0 1.0
7120 7900 8240 8380 8740 9190 -1
1 115 164 220 283 30000 0
100 392 392 100 0 0
139. 269. 389. 501.
42 84 126 30000
1053.0 3.8500 0.0 2.695 1.0000 6 12
ASTORIA5
7 2 1 1 1 1.0 1.0

```

Figure 2-5. System Data File UCSYS.DAT

```

7120 7900 8240 8380 8740 9190 -1
1 115 164 220 283 30000 0
100 370 370 80 0 0
139. 269. 389. 501.
42 84 126 30000
1053.0 4.0970 0.0 2.695 1.0000 6 12
ASTORIA6
8 2 1 1 1 1.0 1.0
8000 8900 -1 0 0 0 0
1 30000 0 0 0 0 0
100 600 600 20 0 0
139. 269. 389. 501.
42 84 126 30000
1053.0 4.0970 0.0 2.695 1.0000 4 12
ASTGTT01
9 2 1 3 1 1.0 1.0
13360 13370 17890 17900 -1 0 0
1 483 504 30000 0 0 0
0 513 513 513 513 513
10. -1. 0. 0.
30000 0 0 0
10.0 5.0370 0.0 3.000 1.0000 0 0
74ST3911
11 2 1 1 1 1.0 1.0
8700 9630 9680 9690 9920 10350 -1
20 38 40 47 65 30000 0
40 70 70 70 0 0
170. 251. 299. 330.
42 84 126 30000
920.0 2.9600 0.0 7.221 1.0000 3 12
RIVER56
12 2 1 1 1 1.0 1.0
8940 9040 9200 9240 10140 10430 -1
1 84 183 200 242 30000 0
80 252 252 100 0 0
139. 252. 345. 422.
42 84 126 30000
1227.0 3.7920 0.0 2.695 1.0000 6 12
RIVER 7
13 2 1 1 1 1.0 1.0
7910 8310 8560 8640 8780 9250 -1
1 75 122 135 157 30000 0
80 145 145 60 0 0
39. 76. 112. 146.
12 24 36 30000
709.0 3.9320 0.0 2.695 1.0000 6 12
GOW13TOT
14 2 1 3 1 1.0 1.0
19020 19040 -1 0 0 0 0
1 30000 0 0 0 0 0
0 91 91 91 91 91
10. -1. 0. 0.
30000 0 0 0
10.0 4.0000 0.0 3.000 1.0000 0 0
GOW24TOT
17 2 1 3 1 1.0 1.0

```

Figure 2-5. System Data File UCSYS.DAT (continued)

```

19020 19030 -1 0 0 0 0
1 30000 0 0 0 0 0
0 176 176 176 176 176
10. -1. 0. 0.
30000 0 0 0
10.0 4.6700 0.0 3.000 1.0000 0 0
IDIANPT1
27 2 1 1 1 1.0 1.0
11030 11360 -1 0 0 0 0
1 30000 0 0 0 0 0
30 200 200 10 0 0
46. 86. 120. 150.
50 100 150 30000
390.0 0.5100 0.0 1.503 1.0000 168 168
IDIANPT2
28 2 1 2 1 1.0 1.0
9520 9600 9800 9880 -1 0 0
90 400 600 30000 0 0 0
150 870 870 100 0 0
46. 86. 120. 150.
50 100 150 30000
2240.0 1.1870 0.0 2.106 1.0000 168 168
IDIANPT3
29 2 1 2 1 1.0 1.0
10000 10080 -1 0 0 0 0
1 30000 0 0 0 0 0
200 900 900 10 0 0
244. 369. 444. 494.
50 100 150 30000
2500.0 0.5100 0.0 1.503 1.0000 168 168
RAVW0001
31 2 1 1 1 1.0 1.0
8170 8250 8370 8530 8950 9440 -1
1 119 213 262 316 30000 0
150 387 387 30 0 0
140. 270. 391. 505.
42 84 126 30000
1319.0 3.7010 0.0 2.695 1.0000 4 12
RAVW0002
32 2 1 1 1 1.0 1.0
8170 8250 8370 8530 8950 9440 -1
1 119 213 262 316 30000 0
150 389 389 100 0 0
140. 270. 391. 505.
42 84 126 30000
1319.0 3.7360 0.0 2.695 1.0000 4 12
RAVW0003
33 2 1 1 1 1.0 1.0
7940 8050 8180 8250 8380 8520 -1
1 149 334 430 633 30000 0
350 600 600 30 0 0
141. 274. 400. 519.
42 84 126 30000
3680.0 3.7700 0.0 2.695 1.0000 4 12
RAVGTT01
34 2 1 3 1 1.0 1.0

```

Figure 2-5. System Data File UCSYS.DAT (continued)

```

13360 13370 15180 15190 16450 16460 -1
  1    63    84    364   404 30000  0
  0   167   167   167   167   167
  10.   =1.    0.    0.
30000  0    0    0
  10.0 4.9360  0.0 3.0000 1.0000  0  0
NARGTTOT
35 2 1 3 1 1 1.0 1.0
14290 14300 -1    0    0    0    0
  1 30000  0    0    0    0    0
  0   264   264   264   264   264
  10.   =1.    0.    0.
30000  0    0    0
  10.0 4.5710  0.0 3.0000 1.0000  0  0
59 ST 15
40 2 1 1 1 1 1.0 1.0
13060 13300 -1    0    0    0    0
  10 30000  0    0    0    0    0
  9    26    26    10    0    0
  170. 251. 299. 330.
  42    84   126 30000
  137.0 4.4410  0.0 7.221 1.0000  3  12
HUDSNA23
41 2 1 1 1 1 1.0 1.0
15650 16700 -1    0    0    0    0
  10 30000  0    0    0    0    0
  0    84    84    10    0    0
  12.   25.   36.   48.
  2     4     6 30000
  10.0 3.8590  0.0 7.221 1.0000  3  8
GEMISCGT
96 2 1 3 1 1 1.0 1.0
19000 19020 -1    0    0    0    0
  1 30000  0    0    0    0    0
  0   177   177   177   177   177
  10.   =1.    0.    0.
30000  0    0    0
  10.0 4.5710  0.0 3.0000 1.0000  0  0
HADA5010
105 2 1 1 1 1 1.0 1.0
11100 11110 11730 12860 13260 14360 -1
  1    32    58    90   107 30000  0
  20   95   100   35    0    0
  12.   25.   36.   48.
  2     4     6 30000
  350.0 3.8590  0.0 7.221 1.0000  3  8
WSIDE415
129 2 1 1 1 1 1.0 1.0
4860  9450  9980 10520 10970 12360 -1
  111   142   204   232   278 30000  0
  136  246  246  120    0    0
  220.  379.  500.  594.
  42    84   126 30000
  2883.0 3.8160  0.0 7.221 1.0000  3  12
59S17814
132 2 1 1 1 1 1.0 1.0

```

Figure 2-5. System Data File UCSYS.DAT (continued)

```

10710 11570 -1 0 0 0 0
22 30000 0 0 0 0 0
10 43 43 10 0 0
170. 251. 299. 330.
42 84 126 30000
148.0 4.4410 0.0 7.221 1.0000 3 12
59 ST 13
133 2 1 1 1 1.0 1.0
9050 9270 9670 10270 10720 -1 0
13 28 38 48 30000 0 0
22 45 45 10 0 0
170. 251. 299. 330.
42 84 126 30000
250.0 4.4410 0.0 7.221 1.0000 3 12
BARRETT1
151 1 1 1 1 1.0 1.0
8040 8490 8800 9060 9220 9230 -1
21 74 103 132 161 30000 0
40 191 191 30 0 0
174. 320. 444. 552.
12 24 36 30000
307.0 3.2820 0.0 0.918 1.0000 4 8
BARRETT2
152 1 1 1 1 1.0 1.0
8040 8490 8800 9060 9220 9230 -1
21 74 103 132 161 30000 0
40 120 120 30 0 0
31. 62. 91. 119.
2 4 6 30000
307.0 3.2820 0.0 0.918 1.0000 4 8
FARKWAY4
154 1 1 1 1 1.0 1.0
8340 8980 9150 9380 9700 10580 -1
5 52 66 81 96 30000 0
10 104 104 30 0 0
75. 142. 203. 257.
6 12 18 30000
120.0 3.4190 0.0 3.138 1.0000 3 24
NRTHPK11
157 1 1 1 1 1.0 1.0
8560 8720 8860 9070 9370 9710 -1
70 177 232 286 340 30000 0
100 375 375 50 0 0
177. 331. 465. 584.
12 24 36 30000
754.0 2.2400 0.0 0.895 1.0000 4 48
NRTHPK12
158 1 1 1 1 1.0 1.0
8560 8720 8860 9070 9370 9710 -1
70 177 232 286 340 30000 0
100 350 350 140 0 0
177. 331. 465. 584.
12 24 36 30000
754.0 2.2400 0.0 0.895 1.0000 4 48
NRTHPK13
159 1 1 1 1 1.0 1.0

```

Figure 2-5. System Data File UCSYS.DAT (continued)

```

8560 8720 8840 9070 9370 9710 -1
70 177 232 286 340 30000 0
100 345 345 140 0 0
31. 62. 92. 121.
2 4 6 30000
754.0 2.2400 0.0 0.895 1.0000 4 48
NRTHPRT4
160 1 1 1 1 1 1.0 1.0
8640 8750 8960 9220 9540 9591 -1
70 177 232 286 340 30000 0
94 374 378 140 0 0
31. 62. 92. 121.
2 4 6 30000
754.0 3.0640 0.0 0.895 1.0000 4 48
GLNW0002
163 1 1 1 1 1 1.0 1.0
11170 12510 13150 13760 14330 15700 -1
18 45 56 63 68 30000 0
40 75 75 20 0 0
26. 50. 73. 95.
2 4 6 30000
690.0 3.2820 0.0 5.117 1.0000 2 8
GLNW0003
164 1 1 1 1 1 1.0 1.0
11170 12520 13160 13770 14340 15710 -1
18 45 56 63 68 30000 0
40 75 75 20 0 0
26. 50. 73. 95.
2 4 6 30000
690.0 3.2820 0.0 5.117 1.0000 2 8
GLNW0004
165 1 1 1 1 1 1.0 1.0
8330 8970 9220 9470 9700 10200 -1
10 50 72 86 96 30000 0
15 120 120 20 0 0
140. 248. 334. 405.
12 24 36 30000
163.0 3.2820 0.0 3.577 1.0000 4 8
GLNW0005
166 1 1 1 1 1 1.0 1.0
8330 8970 9220 9470 9700 10190 -1
10 50 72 86 96 30000 0
15 105 105 20 0 0
26. 51. 75. 97.
2 4 6 30000
163.0 3.2820 0.0 3.577 1.0000 4 8
PRTJEFF1
167 1 1 1 1 1 1.0 1.0
7140 8540 9610 10290 11210 12130 -1
5 12 23 36 45 30000 0
10 51 51 10 0 0
32. 62. 90. 115.
2 4 6 30000
113.0 3.0210 0.0 5.635 1.0000 2 8
PRTJEFF2
168 1 1 1 1 1 1.0 1.0

```

Figure 2-5. System Data File UCSYS.DAT (continued)

```

7140 8540 9610 10290 11210 12130 -1
5 12 23 36 45 30000 0
10 51 51 10 0 0
32. 62. 90. 115.
2 4 6 30000
113.0 3.0210 0.0 5.635 1.0000 2 8
PRTJEFF3
169 1 1 1 1 1 1.0 1.0
8040 8340 8600 8860 9170 9200 -1
21 59 84 109 149 30000 0
40 180 180 30 0 0
31. 61. 90. 117.
2 4 6 30000
307.0 2.2780 0.0 0.834 1.0000 4 8
PRTJEFF4
170 1 1 1 1 1 1.0 1.0
8040 8340 8600 8860 9170 9200 -1
21 59 84 109 149 30000 0
40 198 198 30 0 0
31. 61. 90. 117.
2 4 6 30000
307.0 2.2780 0.0 0.834 1.0000 4 8
GROUP3GT
171 1 1 3 1 1 1.0 1.0
13870 13880 13890 13900 13910 13920 -1
1 40 80 120 160 30000 0
0 122 122 122 122 122
10. -1. 0. 0.
30000 0 0 0
10.0 3.8650 0.0 12.67 1.0000 0 0
GROUP4GT
172 1 1 3 1 1 1.0 1.0
15550 15560 15570 15580 15590 15600 -1
1 30 60 90 120 30000 0
0 98 98 98 98 98
10. -1. 0. 0.
30000 0 0 0
10.0 3.8650 0.0 17.28 1.0000 0 0
GROUP2GT
173 1 1 3 1 1 1.0 1.0
13630 13640 13650 13660 13670 13680 -1
1 135 270 405 540 30000 0
0 440 440 440 440 440
10. -1. 0. 0.
30000 0 0 0
10.0 3.6080 0.0 11.60 1.0000 0 0
GROUP5GT
174 1 1 3 1 1 1.0 1.0
15110 15120 15130 15140 15150 15160 -1
1 30 60 90 120 30000 0
0 85 85 85 85 85
10. -1. 0. 0.
30000 0 0 0
10.0 3.8250 0.0 16.14 1.0000 0 0
GROUP1GT
175 1 1 3 1 1 1.0 1.0

```

Figure 2-5. System Data File UCSYS.DAT (continued)

|          |        |       |       |        |       |         |
|----------|--------|-------|-------|--------|-------|---------|
| 13910    | 13920  | 13930 | 13940 | 13950  | 13960 | -1      |
| 1        | 50     | 100   | 150   | 200    | 30000 | 0       |
| 0        | 190    | 190   | 190   | 190    | 190   |         |
| 10.      | -1.    | 0.    | 0.    |        |       |         |
| 30000    | 0      | 0     | 0     |        |       |         |
| 1.0      | 3.4450 | 0.0   | 17.70 | 1.0000 | 0     | 0       |
| GROUP6GT |        |       |       |        |       |         |
| 176      | 1      | 1     | 3     | 1      | 1     | 1.0 1.0 |
| 17800    | 17810  | 17820 | 17830 | 17840  | 17850 | -1      |
| 1        | 15     | 30    | 40    | 50     | 30000 | 0       |
| 0        | 42     | 42    | 42    | 42     | 42    |         |
| 10.      | -1.    | 0.    | 0.    |        |       |         |
| 30000    | 0      | 0     | 0     |        |       |         |
| 1.0      | 3.5370 | 0.0   | 19.03 | 1.0000 | 0     | 0       |
| ALBANY 1 |        |       |       |        |       |         |
| 201      | 3      | 1     | 1     | 1      | 1     | 1.0 1.0 |
| 7840     | 8050   | 8580  | 9000  | 9600   | 10430 | -1      |
| 1        | 15     | 53    | 73    | 88     | 30000 | 0       |
| 15       | 100    | 100   | 20    | 0      | 0     |         |
| 185.     | 322.   | 427.  | 511.  |        |       |         |
| 15       | 30     | 45    | 30000 |        |       |         |
| 166.0    | 2.4310 | 0.0   | 0.906 | 1.0000 | 4     | 60      |
| ALBANY 2 |        |       |       |        |       |         |
| 202      | 3      | 1     | 1     | 1      | 1     | 1.0 1.0 |
| 7840     | 8050   | 8580  | 9000  | 9600   | 10430 | -1      |
| 1        | 15     | 53    | 73    | 88     | 30000 | 0       |
| 15       | 90     | 90    | 20    | 0      | 0     |         |
| 185.     | 322.   | 427.  | 511.  |        |       |         |
| 15       | 30     | 45    | 30000 |        |       |         |
| 166.0    | 2.4310 | 0.0   | 0.906 | 1.0000 | 4     | 60      |
| ALBANY 3 |        |       |       |        |       |         |
| 203      | 3      | 1     | 1     | 1      | 1     | 1.0 1.0 |
| 7840     | 8050   | 8580  | 9000  | 9600   | 10430 | -1      |
| 1        | 15     | 53    | 73    | 88     | 30000 | 0       |
| 15       | 93     | 93    | 20    | 0      | 0     |         |
| 185.     | 322.   | 427.  | 511.  |        |       |         |
| 15       | 30     | 45    | 30000 |        |       |         |
| 166.0    | 2.4310 | 0.0   | 0.906 | 1.0000 | 4     | 60      |
| ALBANY 4 |        |       |       |        |       |         |
| 204      | 3      | 1     | 1     | 1      | 1     | 1.0 1.0 |
| 7840     | 8050   | 8580  | 9000  | 9600   | 10430 | -1      |
| 1        | 15     | 53    | 73    | 88     | 30000 | 0       |
| 15       | 100    | 100   | 20    | 0      | 0     |         |
| 185.     | 322.   | 427.  | 511.  |        |       |         |
| 15       | 30     | 45    | 30000 |        |       |         |
| 166.0    | 2.4310 | 0.0   | 0.906 | 1.0000 | 4     | 60      |
| DUNKIRK1 |        |       |       |        |       |         |
| 207      | 5      | 1     | 1     | 1      | 1     | 1.0 1.0 |
| 7700     | 7880   | 8250  | 8710  | 9270   | 10270 | -1      |
| 1        | 15     | 46    | 67    | 83     | 30000 | 0       |
| 15       | 100    | 100   | 20    | 0      | 0     |         |
| 185.     | 322.   | 427.  | 511.  |        |       |         |
| 15       | 30     | 45    | 30000 |        |       |         |
| 184.0    | 1.3060 | 0.0   | 1.548 | 1.0000 | 4     | 60      |
| DUNKIRK2 |        |       |       |        |       |         |
| 208      | 5      | 1     | 1     | 1      | 1     | 1.0 1.0 |

Figure 2-5. System Data File UCSYS.DAT (continued)

```

7700 7880 8250 8710 9270 10270 -1
  1 15 43 67 83 30000 0
  15 95 95 20 0 0
  185. 322. 427. 511.
  15 30 45 30000
  184.0 1.3060 0.0 1.548 1.0000 4 60
DUNKIRK3
209 5 1 1 1 1 1.0 1.0
7320 7480 7790 8710 10000 10800 -1
  1 30 88 154 200 30000 0
  30 200 200 40 0 0
  201. 375. 526. 659.
  15 30 45 30000
  253.0 1.3060 0.0 1.548 1.0000 4 12
DUNKIRK4
210 5 1 1 1 1 1.0 1.0
7320 7480 7790 8710 10000 10800 -1
  1 30 88 154 200 30000 0
  30 200 200 40 0 0
  201. 375. 526. 659.
  15 30 45 30000
  253.0 1.3060 0.0 1.548 1.0000 4 12
HUNTLY63
211 5 1 1 1 1 1.0 1.0
9300 9640 10310 11000 11860 12790 -1
  1 15 45 64 79 30000 0
  15 70 70 20 0 0
  182. 314. 413. 491.
  15 30 45 30000
  177.0 1.7640 0.0 1.320 1.0000 4 12
HUNTLY64
212 5 1 1 1 1 1.0 1.0
8370 8710 9500 10470 11450 12980 -1
  1 15 50 72 86 30000 0
  15 94 94 20 0 0
  185. 322. 427. 511.
  15 30 45 30000
  181.0 1.7640 0.0 1.320 1.0000 4 12
HUNTLY65
213 5 1 1 1 1 1.0 1.0
7780 7880 8250 8710 9270 10270 -1
  1 15 46 67 83 30000 0
  15 100 100 20 0 0
  190. 331. 439. 525.
  15 30 45 30000
  184.0 1.7640 0.0 1.320 1.0000 4 12
HUNTLY66
214 5 1 1 1 1 1.0 1.0
8120 8320 8720 9260 9850 10630 -1
  1 15 45 68 85 30000 0
  15 100 100 20 0 0
  185. 321. 426. 509.
  15 30 45 30000
  175.0 1.8538 0.0 1.320 1.0000 4 12
HUNTLY67
215 5 1 1 1 1 1.0 1.0

```

Figure 2-5. System Data File UCSYS.DAT (continued)

```

7320 7480 7790 8710 10000 10800 -1
1 30 88 154 200 30000 0
30 200 200 40 0 0
201. 375. 526. 659.
15 30 45 30000
253.0 1.5209 0.0 1.320 1.0000 4 12
HUNILY68
216 5 1 1 1 1.0 1.0
7320 7480 7790 8710 10000 10800 -1
1 30 88 154 200 30000 0
30 200 200 40 0 0
201. 375. 526. 659.
15 30 45 30000
253.0 1.5209 0.0 1.320 1.0000 4 12
ALBANYGT
217 3 1 3 1 1.0 1.0
13250 13260 13270 13280 13290 13310 -1
1 45 89 134 178 30000 0
0 105 105 105 105 105
10. -1. 0. 0.
30000 0 0 0
10.0 4.0090 0.0 6.000 1.0000 0 0
NINEMILL
218 4 1 2 1 1.0 1.0
8560 10300 -1 0 0 0 0
1 30000 0 0 0 0 0
120 599 599 10 0 0
46. 86. 120. 150.
50 100 150 30000
1520.0 0.3980 0.0 0.867 1.0000 168 168
OSWEGO 1
219 4 1 1 1 1.0 1.0
8950 9280 9650 10400 11900 14300 -1
1 15 32 56 76 30000 0
15 65 65 20 0 0
182. 313. 412. 489.
15 30 45 30000
173.0 2.4440 0.0 1.281 1.0000 4 12
OSWEGO 2
220 4 1 1 1 1.0 1.0
8950 9280 9650 10400 11900 14300 -1
1 15 32 56 76 30000 0
15 45 45 20 0 0
20. 55. 81. 105.
2 4 6 30000
173.0 2.4440 0.0 1.281 1.0000 4 8
OSWEGO 3
221 4 1 1 1 1.0 1.0
8610 8850 9260 10090 11090 12140 -1
1 15 40 63 82 30000 0
15 85 85 20 0 0
184. 318. 420. 500.
15 30 45 30000
176.0 2.4440 0.0 1.281 1.0000 4 12
OSWEGO 4
222 4 1 1 1 1.0 1.0

```

Figure 2-5. System Data File UCSYS.DAT (continued)

```

7850 8050 8650 9050 9700 11230 -1
1 15 60 73 84 30000 0
15 80 80 20 0 0
185. 322. 427. 511.
15 30 45 30000
182.0 2.4440 0.0 1.281 1.0000 4 12
RTTRDMGT
223 3 1 3 1 1 1.0 1.0
14610 14620 14630 14640 14650 -1 0
1 42 84 126 30000 0 0
0 120 120 120 120 120
10. -1. 0. 0.
30000 0 0 0
10.0 4.6090 0.0 3.000 1.0000 0 0
OSWEGO 5
233 4 1 1 1 1 1.0 1.0
7450 8200 8440 8660 8940 -1 0
1 350 500 650 30000 0 0
250 750 750 100 0 0
1050. 1391. 1560. 1661.
15 30 45 30000
2400.0 2.4440 0.0 1.281 1.0000 4 12
GOODY 7
301 4 1 1 1 1 1.0 1.0
10280 10750 12130 -1 0 0 0
17 26 30000 0 0 0 0
15 40 44 10 0 0
21. 41. 60. 79.
2 4 6 30000
211.0 1.3600 0.0 1.930 1.0000 2 8
GOODY 8
302 4 1 1 1 1 1.0 1.0
8900 9410 11060 -1 0 0 0
1 52 30000 0 0 0 0
15 82 82 50 0 0
783. 973. 1059. 1108.
50 100 150 30000
175.0 1.3600 0.0 1.930 1.0000 2 8
GRNIDGE3
304 4 1 1 1 1 1.0 1.0
10380 12060 -1 0 0 0 0
24 30000 0 0 0 0
20 55 55 10 0 0
59. 114. 165. 213.
2 4 6 30000
270.0 1.3810 0.0 1.930 1.0000 2 8
GRNIDGE4
305 4 1 1 1 1 1.0 1.0
8480 9290 9670 11250 -1 0 0
1 60 90 30000 0 0
15 75 75 20 0 0
846. 1073. 1179. 1240.
50 100 150 30000
148.0 1.3810 0.0 1.930 1.0000 2 8
HMEHCITY
307 4 1 1 1 1 1.0 1.0

```

Figure 2-5. System Data File UCSYS.DAT (continued)

```

7660 8300 8500 -1 0 0 0
200 400 30000 0 0 0 0
150 600 600 10 0 0
3333. 4000. 4200. 4444.
50 100 150 30000
1480.0 1.3810 0.0 1.930 1.0000 4 8
MLLIKEN1
309 4 1 1 1 1 1.0 1.0
7110 8580 9680 -1 0 0 0
1 79 30000 0 0 0 0
20 140 140 30 0 0
1140. 1594. 1839. 1991.
50 100 150 30000
236.0 1.3840 0.0 1.930 1.0000 4 8
MLLIKEN2
310 4 1 1 1 1 1.0 1.0
7110 8580 9760 -1 0 0 0
1 79 30000 0 0 0 0
20 147 147 30 0 0
1141. 1596. 1841. 1993.
50 100 150 30000
236.0 1.3840 0.0 1.930 1.0000 4 8
NYSMISCO
311 4 1 3 1 1 1.0 1.0
10400 -1 0 0 0 0 0
30000 0 0 0 0 0 0
0 8 8 8 8 8
10. -1. 0. 0.
30000 0 0 0
10.0 3.2520 0.0 1.930 1.0000 0 0
GRNIDGE1
314 4 1 1 1 1 1.0 1.0
11080 12430 -1 0 0 0 0
13 30000 0 0 0 0 0
5 16 16 10 0 0
74. 136. 190. 237.
2 4 6 30000
62.0 1.3810 0.0 1.930 1.0000 2 8
GRNIDGE2
315 4 1 1 1 1 1.0 1.0
9480 11680 -1 0 0 0 0
1 30000 0 0 0 0 0
5 16 16 10 0 0
71. 127. 172. 210.
2 4 6 30000
69.0 1.3810 0.0 1.930 1.0000 2 8
HCKLING1
316 4 1 1 1 1 1.0 1.0
10920 11780 14340 -1 0 0 0
1 18 30000 0 0 0 0
5 30 30 10 0 0
64. 108. 139. 163.
2 4 6 30000
68.0 1.0840 0.0 1.930 1.0000 2 8
HCKLING2
317 4 1 1 1 1 1.0 1.0

```

Figure 2-5. System Data File UCSYS.DAT (continued)

```

10600 12220 -1 0 0 0 0
 7 30000 0 0 0 0 0
 5 22 22 10 0 0
402. 447. 464. 473.
 50 100 150 30000
67.0 1.0840 0.0 1.930 1.0000 2 8
JNNISON1
318 4 1 1 1 1.0 1.0
11550 12420 12610 13850 -1 0 0
 11 23 25 30000 0 0 0
 10 35 35 10 0 0
275. 385. 445. 482.
 12 24 36 30000
153.0 1.1740 0.0 1.355 1.0000 2 8
JNNISON2
319 4 1 1 1 1.0 1.0
10710 12110 -1 0 0 0 0
 5 30000 0 0 0 0 0
 10 30 30 10 0 0
300. 437. 515. 565.
 12 24 36 30000
136.0 1.1740 0.0 1.930 1.0000 2 8
CXSACKGT
351 3 1 3 1 1.0 1.0
12900 13150 13350 13500 13760 13770 -1
 1 9 15 19 21 30000 0
 0 19 19 19 19 19
10. -1. 0. 0.
30000 0 0 0
10.0 4.0450 0.0 6.000 1.0000 0 0
DNSKMMR1
352 3 1 1 1 1.0 1.0
9400 9480 9540 9760 10160 16000 -1
 15 30 40 45 50 30000 0
 20 60 60 20 0 0
114. 191. 248. 291.
 12 24 36 30000
221.0 2.8890 0.0 0.954 1.0000 6 6
DNSKMMR2
353 3 1 1 1 1.0 1.0
9170 9240 9350 9460 9860 15800 -1
 15 30 40 45 50 30000 0
 30 64 64 20 0 0
22. 43. 63. 81.
 2 4 6 30000
227.0 1.7900 0.0 0.954 1.0000 6 6
DNSKMMR3
354 3 1 1 1 1.0 1.0
8080 8370 8520 8690 9050 9640 -1
 40 60 70 80 100 30000 0
 40 100 100 80 0 0
29. 57. 84. 109.
 2 4 6 30000
521.0 2.8890 0.0 0.954 1.0000 6 8
DNSKMMR4
355 3 1 1 1 1.0 1.0

```

Figure 2-5. System Data File UCSYS.DAT (continued)

```

8560 8570 8670 8850 9120 10410 -1
60 120 140 160 180 30000 0
120 215 215 120 0 0
164. 292. 395. 479.
12 24 36 30000
1682.0 2.6890 0.0 0.954 1.0000 6 48
ROSETON1
359 3 1 1 1 1.0 1.0
7450 7920 9230 9270 9310 9330 -1
1 150 570 580 595 30000 0
100 550 550 100 0 0
192. 370. 536. 690.
12 24 36 30000
1010.0 2.3990 0.0 0.641 1.0000 4 48
ROSETON2
360 3 1 1 1 1.0 1.0
7470 7920 9180 9210 9260 9280 -1
1 150 570 580 595 30000 0
100 550 550 100 0 0
192. 370. 536. 690.
12 24 36 30000
1010.0 2.3990 0.0 0.641 1.0000 4 48
SCAIROGT
361 3 1 3 1 1.0 1.0
12900 13150 13350 13500 13760 13770 -1
1 9 15 19 21 30000 0
0 20 20 20 20 20
10. -1. 0. 0.
30000 0 0 0
10.0 4.0450 0.0 6.000 1.0000 0 0
DANSKDSL
366 3 1 3 1 1.0 1.0
11400 -1 0 0 0 0 0
30000 0 0 0 0 0 0
0 5 5 5 5 5
10. -1. 0. 0.
30000 0 0 0
20.0 4.0450 0.0 6.000 1.0000 0 0
BLINEPT1
386 3 1 1 1 1.0 1.0
7630 8035 8410 8925 9610 9816 -1
1 200 300 400 500 30000 0
150 572 601 100 0 0
4250. -1. 0. 0.
30000 0 0 0
1216.0 3.1900 0.0 0.850 1.0000 2 4
BLINEPT2
387 3 1 1 1 1.0 1.0
7845 8070 8405 8940 9725 9838 -1
1 200 300 400 500 30000 0
150 567 600 50 0 0
4250. -1. 0. 0.
30000 0 0 0
1221.0 3.1900 0.0 0.850 1.0000 2 4
HLLBRNG1
389 3 1 3 1 1.0 1.0

```

Figure 2-5. System Data File UCSYS.DAT (continued)

```

10025 10180 11020 12380 13945 14031 -1
  1 10 20 30 35 30000 0
    0 40 40 40 40 40
    10, -1, 0, 0,
  30000 0 0 0
    10,0 4.1600 0.0 6.0000 1.0000 0 0
LOVETT 4
390 3 1 1 1 1.0 1.0
  8450 8905 9455 10005 10765 12085 -1
    30 50 80 110 140 30000 0
    50 140 198 30 0 0
  2780, -1, 0, 0,
  30000 0 0 0
    782,0 3.3400 0.0 1.314 1.0000 2 4
LOVETT 5
391 3 1 1 1 1.0 1.0
  8378 8880 9376 9874 10418 10954 -1
    50 80 110 140 170 30000 0
    50 195 202 30 0 0
  2780, -1, 0, 0,
  30000 0 0 0
    769,0 3.3400 0.0 1.314 1.0000 2 4
SHOEMKGT
393 3 1 3 1 1.0 1.0
  10070 10265 11105 12475 14010 14053 -1
    1 10 20 30 35 30000 0
    0 37 37 37 37 37
    40, -1, 0, 0,
  30000 0 0 0
    10,0 4.1600 0.0 6.0000 1.0000 0 0
LOVETT 1
394 3 1 1 1 1.0 1.0
  10045 10476 10946 11410 11841 -1 0
    2 6 11 16 30000 0 0
    5 20 20 10 0 0
  540, -1, 0, 0,
  30000 0 0 0
    113,0 3.3400 0.0 3.321 1.0000 2 4
LOVETT 2
395 3 1 1 1 1.0 1.0
  9934 10341 10792 11250 11658 -1 0
    2 6 11 16 30000 0 0
    5 20 20 10 0 0
  540, -1, 0, 0,
  30000 0 0 0
    80,0 3.3400 0.0 3.321 1.0000 2 4
LOVETT 3
396 3 1 1 1 1.0 1.0
  9596 9676 9759 9847 9941 9965 -1
    20 30 40 50 60 30000 0
    20 60 63 10 0 0
  1740, -1, 0, 0,
  30000 0 0 0
    339,0 3.3400 0.0 3.321 1.0000 2 4
FIZPTKK1
421 4 1 2 1 1.0 1.0

```

Figure 2-5. System Data File UCSYS.DAT (continued)

```

8900 9000 9040 9080 -1 0 0
1 150 650 30000 0 0 0
100 800 900 30 0 0
1050, 1391, 1560, 1661,
15 30 45 30000
1200,0 0.3980 0,0 0.867 1.0000 168 168
BEE1-11
456 5 1 1 1 1,0 1,0
11140 14570 16020 16740 17210 18460 -1
1 53 75 86 93 30000 0
1 41 41 20 0 0
8, 15, 23, 33,
2 4 6 30000
29,0 3,0000 0,0 7.842 1.0000 6 9
BEEBEEGT
457 5 1 3 1 1,0 1,0
10280 11830 11940 12280 12390 -1 0
1 14 15 18 30000 0 0
0 14 14 14 14 14
10, -1, 0, 0,
30000 0 0 0
10,0 3,4000 0,0 3,000 1,0000 0 0
GINNA 1
459 5 1 2 1 1,0 1,0
8560 9100 9660 10200 10290 -1 0
105 225 350 470 30000 0 0
105 415 415 10 0 0
244, 369, 444, 494,
50 100 150 30000
1519,0 0,5000 0,0 2,790 1,0000 200 200
RSSLL1-4
461 5 1 1 1 1,0 1,0
7470 8720 9460 9800 9920 11180 -1
37 110 143 187 235 30000 0
37 244 244 80 0 0
201, 375, 526, 659,
15 30 45 30000
477,0 1,9670 0,0 1,652 1,0000 4 48
STA 9 GT
462 5 1 3 1 1,0 1,0
10410 12290 12430 12830 12970 -1 0
1 14 15 18 30000 0 0
0 15 15 15 15 15
10, -1, 0, 0,
30000 0 0 0
10,0 1,9670 0,0 3,000 1,0000 0 0
BEEBEE12
463 5 1 1 1 1,0 1,0
7420 7670 8520 9270 9550 -1 0
12 20 47 71 30000 0 0
12 80 80 20 0 0
169, 293, 388, 463,
50 100 150 30000
155,0 1,4530 0,0 1,652 1,0000 4 12
FICT-401
941 4 1 1 1 1,0 1,0

```

Figure 2-5. System Data File UCSYS.DAT (continued)

```

10000    -1      0      0      0      0      0
30000      0      0      0      0      0      0
  100 2500 2500      0      0      0
  10.0    -1.      0.      0.
30000      0      0      0
1000.0 9.9900      0.0 0.000 1.0000      0      0
FICT=501
951 5 1 1 1 1 1.0 1.0
10000    -1      0      0      0      0      0
30000      0      0      0      0      0      0
  100 2500 2500      0      0      0
  10.0    -1.      0.      0.
30000      0      0      0
1000.0 9.9900      0.0 0.000 1.0000      0      0
**TRANSMISSION AREA DATA
LILCO 1
CON ED 2
CHORNME3
NYSENMC4
RGENMW 5
**CONTROL AREA DATA
SYSTEM
**INTERCONNECTION DATA
1,2,2000
2,3,3000
3,4,2000
4,5,2000
**END OF DATA

```

Figure 2-5. System Data File UCSYS.DAT (concluded).

```

**HEADER
NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS
  78      7      24      8      1      168
**UNIT DATA
113
  1      4      -50      -99      -99      -99      -99      -99.00
  2      4      -50      -99      -99      -99      -99      -99.00
  3      4      -50      -99      -99      -99      -99      -99.00
  4      4      -50      -99      -99      -99      -99      -99.00
  5      4      -50      -99      -99      -99      -99      -99.00
  6      4      -50      -99      -99      -99      -99      -99.00
  7      4      -50      -99      -99      -99      -99      -99.00
  8      4      -50      -99      -99      -99      -99      -99.00
  9      4      -50      -99      -99      -99      -99      -99.00
 11      4      -50      -99      -99      -99      -99      -99.00
 12      4      -50      -99      -99      -99      -99      -99.00
 13      4      -50      -99      -99      -99      -99      -99.00
 14      4      -50      -99      -99      -99      -99      -99.00
 17      4      -50      -99      -99      -99      -99      -99.00
 27      4     -200      -99      -99      -99      -99      -99.00
 28      1     -200      -99      -99      -99      -99      -99.00
 29      5      200      -99      -99      -99      -99      -99.00
 31      4      -50      -99      -99      -99      -99      -99.00
 32      4      -50      -99      -99      -99      -99      -99.00
 33      5      200      -99      -99      -99      -99      -99.00
 34      4      -50      -99      -99      -99      -99      -99.00
 35      4      -50      -99      -99      -99      -99      -99.00
 40      4      -50      -99      -99      -99      -99      -99.00
 41      4      -50      -99      -99      -99      -99      -99.00
 96      4      -50      -99      -99      -99      -99      -99.00
105      4      -50      -99      -99      -99      -99      -99.00
129      4      -50      -99      -99      -99      -99      -99.00
132      4      -50      -99      -99      -99      -99      -99.00
133      4      -50      -99      -99      -99      -99      -99.00
151      4      -50      -99      -99      -99      -99      -99.00
152      4      -50      -99      -99      -99      -99      -99.00
154      4      -50      -99      -99      -99      -99      -99.00
157      1      -50      -99      -99      -99      -99      -99.00
158      4      -50      -99      -99      -99      -99      -99.00
159      4      -50      -99      -99      -99      -99      -99.00
160      4      -50      -99      -99      -99      -99      -99.00
163      4      -50      -99      -99      -99      -99      -99.00
164      4      -50      -99      -99      -99      -99      -99.00
165      4      -50      -99      -99      -99      -99      -99.00
166      4      -50      -99      -99      -99      -99      -99.00
167      4      -50      -99      -99      -99      -99      -99.00
168      4      -50      -99      -99      -99      -99      -99.00
169      4      -50      -99      -99      -99      -99      -99.00
170      4      -50      -99      -99      -99      -99      -99.00
171      4      -50      -99      -99      -99      -99      -99.00
172      4      -50      -99      -99      -99      -99      -99.00
173      4      -50      -99      -99      -99      -99      -99.00
174      4      -50      -99      -99      -99      -99      -99.00
175      4      -50      -99      -99      -99      -99      -99.00
176      4      -50      -99      -99      -99      -99      -99.00
201      4      -80      -99      -99      -99      -99      -99.00

```

Figure 2-6. Operating Data File UCOP.DAT

|     |   |      |     |     |     |     |        |
|-----|---|------|-----|-----|-----|-----|--------|
| 202 | 4 | -80  | -99 | -99 | -99 | -99 | -99.00 |
| 203 | 4 | -80  | -99 | -99 | -99 | -99 | -99.00 |
| 204 | 4 | -80  | -99 | -99 | -99 | -99 | -99.00 |
| 207 | 4 | -80  | -99 | -99 | -99 | -99 | -99.00 |
| 208 | 4 | -80  | -99 | -99 | -99 | -99 | -99.00 |
| 209 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 210 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 211 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 212 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 213 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 214 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 215 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 216 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 217 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 218 | 5 | 200  | -99 | -99 | -99 | -99 | -99.00 |
| 219 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 220 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 221 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 222 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 223 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 233 | 5 | 200  | -99 | -99 | -99 | -99 | -99.00 |
| 301 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 302 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 304 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 305 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 307 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 309 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 310 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 311 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 314 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 315 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 316 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 317 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 318 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 319 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 351 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 352 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 353 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 354 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 355 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 359 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 360 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 361 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 366 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 386 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 387 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 389 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 390 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 391 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 393 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 394 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 395 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 396 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 421 | 1 | -200 | -99 | -99 | -99 | -99 | -99.00 |
| 456 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |
| 457 | 4 | -50  | -99 | -99 | -99 | -99 | -99.00 |

Figure 2-6. Operating Data File UCOP.DAT (continued)

|     |   |     |     |     |     |     |        |
|-----|---|-----|-----|-----|-----|-----|--------|
| 459 | 5 | 200 | -99 | -99 | -99 | -99 | -99.00 |
| 461 | 4 | -50 | -99 | -99 | -99 | -99 | -99.00 |
| 462 | 4 | -50 | -99 | -99 | -99 | -99 | -99.00 |
| 463 | 4 | -50 | -99 | -99 | -99 | -99 | -99.00 |
| 941 | 4 | -50 | -99 | -99 | -99 | -99 | -99.00 |
| 951 | 4 | -50 | -99 | -99 | -99 | -99 | -99.00 |

\*\*RESERVE DATA  
 500 500 500  
 1 70 70 70  
 2 150 150 150  
 3 80 80 80  
 4 100 100 100  
 5 100 100 100  
 \*\*HOURLY DATA  
 \*\*UNIT DATA  
 0/  
 \*\*TRANSMISSION DATA  
 0/  
 \*\*RESERVE DATA  
 0/  
 \*\*END OF DATA

Figure 2-6. Operating Data File UCOP.DAT (concluded)

DATA ON ST. LAWRENCE PROJECT FOR FUEL DISPATCH  
ALL UNITS AVAILABLE

0,1,0,0,0,0,0,0,0,0,  
1  
ST,LAW  
4  
0  
1,1,0,0,912,60,60,2,4000.0,5760.0,  
0,1,600,5000.0,480,660,  
1,168,5000.0,  
0  
0  
1,168,568.7,

Figure 2-7. Data file #STLAW for Module HYDR

DATA ON RAGLETTE RIVER PLANTS FOR FUEL DISPATCH  
TWO COUPLED EQUIVALENT PLANTS

0,1,0,0,0,0,0,0,0,0,  
2  
URAGUT  
4,  
0,  
1,34.07,1,104,100,100,10,20000.0,51000.0,  
0,1,0,35000.0,0,0,104,  
1,168,35000.0,  
0,  
0,  
1,168,0.600,  
LRAQUT  
4  
1  
1,23.70,1,00,60,60,5,1.0,1683.0,  
0,1,0,1000.0,7,00,  
1,168,1000.0,  
0,  
0,  
1,168,0.0,

Figure 2-8. Data file #RAQUT for Module HYDR

```

DATA ON BEAVER/BLACK RIVER PLANTS FOR FUEL DISPATCH
ONE EQUIVALENT PLANT ON BEAVER AND ONE ON BLACK
0,1,0,0,0,0,0,0,0,
2
BEAVER
4,
0,
1,53.92,1,46,40,40,3,30000.0,79000.0,
0,1,0,60000.0,0,46,
1,168,60000.0,
0,
0,
1,168,0,382,
BLACK
4,
1,
1,13.47,1,45,40,40,3,1.0,270.0,
0,1,0,150.0,13,45,
1,168,150.0,
0,
0,
1,168,0.561,

```

Figure 2-9. Data File #BVBLK for Module HYDR

OTHER NIAGARA MOHAWK CENTRAL HYDRO PLANTS FOR FUEL DISPATCH  
FIVE EQUIVALENT PLANTS : GATCHI, OSWEGO, BENNET, PORTER, MISCHY

```

0,1,0,0,0,0,0,0,0,
5
GATCHI
4,
0,
1,34,9,1,33,30,30,3,10000,0,24700,0,
0,1,0,20000,0,33,
1,168,20000,0,
0,
0,
1,168,0.137,
PORTER
4,
0,
1,29,64,1,46,40,40,3,10000,0,28360,0,
0,1,0,20000,0,4,46,
1,168,20000,0,
0,
0,
1,168,0.314,
BENNET
4,
0,
1,1,0,1,33,30,30,2,5000,0,10000,0,
0,1,0,8000,0,0,33,
1,168,8000,0,
0,
0,
1,168,2.10,
OSWEGO
4,
0,
1,1,0,1,32,30,30,3,1,0,30,0,
0,1,0,15,0,0,32,
1,168,15,0,
0,
0,
1,168,4.13,
MISCHY
4,
0,
1,1,0,1,20,20,20,2,0,0,20,0,
0,1,0,10,0,0,20,
1,168,10,0,
0,
0,
1,168,4.07,

```

Figure 2-10. Data file #NMCHY for Module HYDR

DATA ON NIAGARA-MOHAWK EASTERN HYDRO FOR FUEL DISPATCH  
THREE EQUIVALENT PLANTS

0,1,0,0,0,0,0,0,0,0,

3

SPIER

3,

0,

1,1.0,1,144,100,144,10,600.0,1234.0,

0,1,0,1000.0,3,144,

1,168,1000.0,

0,

0,

1,168,20.14,

INGHAM

3

0

1,1.0,1,27,27,27,10,100.0,251.0,

0,1,0,200.0,0,27,

1,168,200.0,

0,

0,

1,168,1.75,

NOTROY

3,

0,

1,1.0,1,79,70,70,5,10.0,215.0,

0,1,0,170.0,5,79,

1,168,170.0,

0,

0,

1,168,5.31,

Figure 2-11. Data File #NMEHY for Module HYDR

```

MISC, HYDRU PLANTS IN NMW, RGE, NYSEG, CH & OR
THREE EQUIVALENT PLANTS : RNKRGE, NYSEHY, & CHORHY
0,1,0,0,0,0,0,0,0,0,
3
RNKRGE
5,
0,
1,1,0,1,80,80,80,10,10,0,100,0,
0,1,0,80,0,0,80,
1,168,80,0,
0,
0,
1,168,3.33,
NYSEHY
4
0
1,1,0,1,37,30,30,5,0,0,40,0,
0,1,0,30,0,0,37,
1,168,30,0,
0,
0,
1,168,6.67,
CHORHY
3
0
1,1,0,1,67,60,60,5,0,0,70,0,
0,1,0,40,0,0,67,
1,168,40,0,
0,
0,
1,168,6.67,

```

Figure 2-12. Data File #MISCH for Module HYDR

```

DATA ON GILECA PUMPED STORAGE PLANT FOR FUEL DISPATCH
ALL 4 UNITS AVAILABLE, CYCLE EFFICIENCY = 0.70
0,2,0,0,0,0,0,0,0,0,
1,0, NPSPL, NOUTG
GILBOA
3,
4,0,70,290,125,250,1070.0,1140.0,1140.0,1140.0,
5, NO. OF STORAGE POINTS : FT. VS. MWH
1069.0, 0.0, 1070.0, 100.0, 1100.0, 5000.0, 1120, 8220.0,
1140.0,11400.0,
0, NO. OF CAPACITY STEPS : FT. VS. MW

```

Figure 2-13. Data File #GILBO for Module PSTO

```

DATA ON NIAGARA FALLS PROJECT FOR FUEL DISPATCH
ALL UNITS AVAILABLE, CONSTANT INFLOW = 26.7 KCFS
0,1,0,0,0,0,0,0,0,0,0,
5
LWSTON ID OF PUMPED STORAGE PLANT = LEWISTON
12,0,70,7.0,30.0,10.0,360.0,0,0,800.0,800.0,800.0,
0,0,
RMOSES ID OF DOWNSTREAM HYDRO PLANT = ROBERT MOSES
23,0,100,0,2275.0,
0,
1
1,160,26.7,

```

Figure 2-14. Data File #NIAGF for Module NFAL

```

TEST FUEL CONSTRAINED PLANT FOR NYPP SYSTEM FUEL DISPATCH
TWO UNITS WITH MINIMUM AND MAXIMUM FUEL LIMITS
0,1,0,0,0,0,0,0,0,0,
4,
2,7,0,
0.001
FLIMIT 10 CF PLANT
50000.0,120000.0,
1.456, $/MBTL
UNIT#1 10 CF UNIT 1
25,100,10000.0,220.0,120.0,3,5,12,-10,0,
3.0,6.0,0,0,0,30
25, 8000.0, 50, 9000.0, 70, 9800.0, 85,11200.0,
100,12000.0,100,12000.0,100,12000.0,
UNIT#2 10 CF UNIT 2
25,100,10300.0,250.0,150.0,3,5,12,-15,0,
3.0,5.0,0,0,0,25
25, 8100.0, 50, 9200.0, 70,10000.0, 85,11500.0,
100,12700.0,100,12700.0,100,12700.0,

```

Figure 2-15. Data File #FULIM for Module LMTF

### Section 3

#### PROGRAM ORGANIZATION AND FUNCTION FOR MILP APPROACH

This section gives a description of the program structure of the Mixed Integer Linear Program (MILP) approach to daily fuel scheduling. Functional descriptions of the routines are also presented. In addition, a sample program output and the corresponding data file are included at the end of this section.

##### 3.1 PROGRAM STRUCTURE AND FUNCTIONAL DESCRIPTION OF ROUTINES

The overall MILP program module hierarchy is depicted in Figure 3-1, which also delineates those routines constituting the Linear Program (LP) and Integer Program (IP) submodules. Subroutine DPASS functions as a data link between the two submodules, each of which has its own independent COMMON area.

In addition to the routines shown in Figure 3-1, several utility routines are available. Several are used for printed selected portions of the data base. These routines are: APRNT, BIPRNT, CNPRNT, LPPRNT, LPRNT, PIPRNT, SPRNT, SVPRNT, SVTOFV, TPRNT, and UPRNT. Functional definitions for these routines are given below:

|        |                                                                                                                                                   |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| ALTPIV | Generate pivot row and pivot column for pivots which are intended to eliminate basic artificial variables after Phase 1 optimum has been reached. |
| APRNT  | Utility routine to print the constraint matrix, A, mainly for debug purposes.                                                                     |



BIPRNT      Utility routine to print the basis indicator tables for debug purposes.

BLDABR      The main purpose of this routine is to solve for the representation of the incoming column of the constraint matrix in terms of the current basis. The resultant vector is called the "A-BAR" vector. An intermediate vector in the solution process, referred to as the "ABL" vector is also saved for use by other subroutines (See Def. of the variables ABRFST and ABLFST in Volume 3 ). This routine has one subroutine argument which is normally the column number of the incoming constraint matrix column.

             An additional function is performed by this routine when its argument has a value of zero. The subroutine will solve for the vector given by:  $(\text{BINV}) * (\text{AX})$ , where BINV is the current basis inverse. The "AX" vector is described in Volume 3 (See Def. of variable AXFST), and is required in solving for the values of the basic variables.

CNPRNT      Utility routine to print LP control variables and dimensions for debug purposes.

COMPUT      (MILP ROUTINE) Subroutine to determine initial condition parameters for daily fuel dispatch IP.

CSTFN      Routine to evaluate the LP objective function value in terms of unscaled LP variables.

DIMCHK      Subroutine called once per Simplex iteration to ascertain that no tables have overflowed.

DPASS      This subroutine functions as the main data link between the LP and IP submodules, each of which has its own totally separate COMMON areas. (A single variable is passed as an argument of subroutine SIMPLX).

FNL CST      Routine to evaluate the LP objective function value in terms of unscaled and scaled LP variables.

GETCOL      Subroutine to locate the nonbasic column of the constraint matrix with the most negative relative cost.

GETPIV      Routine to locate the next pivot following the normal pivot selection rules (See Subroutine ALTPIV).

GETROW      This subroutine locates the row which will be used in the next pivot operation.

INIT (MILP ROUTINE) Initialize MILP data base.

LPPRNT Utility routine to print the LP data base for debug purposes.

LPRNT Utility routine to print the lower triangular factor of the basis matrix for debug purposes.

MILP (MILP ROUTINE) Functionally, the main routine which controls the mixed integer linear program optimization process via a modified Balas algorithm.

PHASE1 Subroutine to solve Phase 1 after it has been setup by subroutine SETUP1.

PHASE2 Subroutine to solve Phase 2 after it has been setup by subroutine SETUP2.

PIPRNT Utility routine to print internal (optimally ordered for sparsity of basis inverse) row and column numbers versus external row and column numbers. Used mainly for debug purposes.

PRCLFL Subroutine to price out a nonbasic column of the constraint matrix, A, when the PI vector is full.

PRCLSP Subroutine to price out a nonbasic column of the constraint matrix, A, when the PI vector is sparse.

PRICE Routine to price out all nonbasic columns of the constraint matrix and return the number of the column with the most negative relative cost.

READD (MILP ROUTINE) Subroutine which reads the MILP input data file.

SETUP1 Subroutine to setup Phase 1 of the LP, including adding necessary slack and artificial variables.

SETUP2 Subroutine to setup Phase 2 of the LP.

SIMVEC This routine solves for the vector of Simplex multipliers (PI vector).

SMPLX Functionally, this routine is the main LP control routine. It sets up Phase 1 by calling SETUP1, solves it by calling PHASE1, and then, if a feasible solution was found for Phase 1, it continues on and sets up Phase 2 by calling SETUP2 and solves it by calling PHASE2.

SPARSE (MILP ROUTINE) This subroutine sets up the Balas constraint matrix for the IP in sparse format.

SPRNT Utility routine to print the reverse spike tables for debug purposes.

SVPRNT Utility routine to print a general sparse vector (handed to the subroutine as arguments) for debug purposes.

SVIOFV Utility routine used by all other routines that generate vectors. As vectors are generated or operated upon, they are tested for sparsity by comparing the number of nonzero elements with the maximum theoretical dimension for the given vector. When this ratio reaches a specified tolerance, the vector is automatically converted to "full" format by this subroutine.

TPRNT Utility routine to print the eta file for debug purposes.

UPDAXN This subroutine keeps the "AX" vector updated. For explanations of the "AX" vector, see description of subroutine BLDABR above, and variable AXFST in Volume 3.

UPDBBR This routine updates the basic variables after each pivot operation. In addition, it ascertains that one variable has indeed been driven to zero as a check on numerical stability.

UPDBMX This routine updates the basis matrix factors after each pivot operation. Also updated are the permutation indicators: each new column is brought in so as to result in as little increase in the number of nonzero elements as possible. The reverse spike tables are also updated: each column entering represents an additional spike.

UPDY1 This routine performs a partial update on the vector containing the values of all LP variables; the update is completed by subroutine UPDY2.

UPDY2 This subroutine completes the update of the vector containing all LP variables which was started by subroutine UPDY1.

UPRNT Utility routine to print the upper triangular factor of the basis matrix for debug purposes.

### 3.2 SAMPLE PROGRAM OUTPUT

This section contains sample program output for a six hour two unit problem. Figure 3-2 shows this program output. The corresponding input data file is given in Figure 3.3.

The first portion of the output is a listing of the input data which can be compared to the input data file given in Section 3.3. The data are divided into two categories: generation data and load data. Following this is a printout of all feasible MILP solutions which were found along with the corresponding objective function value. The final item on the output is a printout of the optimum schedule and optimum cost.

The feasible and optimum schedules are given in terms of the Balas variables. The variables for this problem are:

(Unit 1, Step 1) (Unit 1, Step 2) ——— (Unit 2, Step 6)

with 1 representing a unit up and 0 representing a unit down.

### 3.3 DATA FILE FOR SAMPLE CASE

This section contains an example input data file for the MILP/LP program module. It corresponds to the example output given in Section 3.2.

The format of the data file given in Figure 3-3 is as follows:

1 LINE:                    The number of generating units.  
                          \*

1 LINE PER UNIT:        Unit minimum generation,

POWER TECHNOLOGIES, INCORPORATED  
 EPRI DAILY FUEL DISPATCHING PROGRAM  
 MIXED INTEGER LINEAR PROGRAMMING VERSION

INPUT CONDITIONS:

\*\*\*\* GENERATION MODEL \*\*\*\*

| UNIT | MINIMUM<br>CAPACITY | MAXIMUM<br>CAPACITY | MINIMUM<br>UP TIME | MINIMUM<br>DOWN TIME | INITIAL<br>CONDITIONS | COST<br>INTERCEPT | INCREMENTAL<br>COST | STARTUP<br>COST |
|------|---------------------|---------------------|--------------------|----------------------|-----------------------|-------------------|---------------------|-----------------|
| 1    | 4.0                 | 8.0                 | 2                  | 2                    | 2                     | 10.00             | 1.10                | 0.5             |
| 2    | 3.0                 | 6.0                 | 1                  | 1                    | 1                     | 11.00             | 1.50                | 1.0             |

LOAD MODEL  
 LOADS IN MW

5.000000 10.000000 8.000000 4.000000 12.000000 8.000000

\*\*\*\*\* SOLUTION \*\*\*\*\*

FEAS. SOL., STEP 9. TIME 1 COST 153.50  
 1 1 1 1 1 1 0 1 1 0 1 0

FEAS. SOL., STEP 12. TIME 3 COST 142.50  
 1 1 1 1 1 1 0 1 0 0 1 0

TIME= 3 TOTAL NO. OF ITERATIONS = 20.

\*\*\*\*\*  
 \* + + + + + +  
 \* OPTIMAL SOLUTION 1 1 1 1 1 1 0 1 0 0 1 0  
 \* OPTIMAL VALUE OF OBJECTIVE FUNCTION = 142.50  
 \*\*\*\*\*

Figure 3-2. Sample MILP Program Output

Unit maximum generation,  
 Unit minimum up time (hrs.),  
 Unit minimum down time (hrs.),  
 Unit initial status: +K if up for K hrs.,  
                               -K if down for K hrs.  
 Unit incremental cost curve zero intercept (\$),  
 Unit incremental cost,  
 Type of fuel constraint: 0 if unconstrained, 1  
 for .LE. constraint, or 2 for .GE. constraint,  
 Unit MBTU of fuel per MW generated,  
 Unit MBTU of fuel expended per start,  
 Unit MBTU limit.

1 LINE:           The number of time steps.

1 LINE:           System load in each time step.

1 LINE:           The number of entries in the initial Balas  
 solution vector; 0 if no initial solution is to  
 be input.

1 LINE:           Initial Balas solution vector (only if previous  
 record was nonzero).

```

2
4,8,2,2,2,10,1.1,.5,1,1.0,0,30
3,6,1,1,1,11,1.5,1.0,0,0,0,0
6
5,10,8,4,12,8
0
  
```

Figure 3-3. Data File for Sample Case

## Appendix A

### PRELIMINARY MODULE TESTS FOR THE SEARCH APPROACH

As described in Section 4 of Volume 1, the search approach to daily fuel scheduling uses different modules to schedule different types of generating facilities. Four specific scheduling modules were developed during this project:

- Conventional Hydro Module - HYDR
- Pumped Storage Module - PSTO
- Niagara Falls Module - NFAL
- Limited Fuel Module - LMTF

Preliminary sample cases were used to test and verify the logic and coding of the above four modules. Results of these preliminary tests are reported in this appendix. In these tests, the scheduling period was 40 hours and composed of five 8-hour load cycles. The loads for the last two load cycles were lower than the corresponding loads for the first three load cycles; this resembles the variations of loads between weekdays and weekends which exist in practice. Operating costs for the thermal system were represented by thermal system incremental cost curves which were used by the above modules in scheduling the respective generating facilities.

#### A.1 PRELIMINARY RESULTS FOR CONVENTIONAL HYDRO MODULE

A number of preliminary sample cases were used to test and verify the logic of the Conventional Hydro Module. The following sets of studies were carried out:

- Variation in plant inflow
- Increase in the number of units
- Effects of outages
- Increase in the number of plants
- Change in the number of storage targets
- Effects of plant response rate
- Effects of minimum plant generation.

Variation in Plant Inflow. Table A-1 shows the results for four cases with total inflows ranging from 0 to 3600 MWH of equivalent energy. The plant scheduled had a 100 MW unit, and the starting and the ending storage levels were 1800 MWH and 250 MWH respectively.

Table A-1

EFFECTS OF VARIATION IN PLANT INFLOW

| Case   | Total Inflow<br>MWH | Total Gen.<br>MWH | Gen. Worth<br>\$ | Ave. Worth<br>\$/MWH |
|--------|---------------------|-------------------|------------------|----------------------|
| #HY001 | None                | 1550              | 52,580           | 33.92                |
| #HY003 | 800                 | 2350              | 63,110           | 26.86                |
| #HY010 | 2000                | 3550              | 71,680           | 20.19                |
| #HY004 | 3600                | 4000              | 73,480           | 18.37                |

As the inflow increased, the total generation and the corresponding total worth also increased. However, the average generation worth decreased progressively; such a trend is expected since the scheduling procedure always schedules the generation at the hour for which the worth is the largest at any instant. Hence, the average worth of generation becomes smaller as the scheduling progresses.

There was no spillage for all the cases except Case #HY004 which had the highest total inflow. For this case, the hourly inflow was 150 MWH for the first 10 hours so that even with full generation, the storage reached the maximum of 2000 MWH at the end of hour 4. Thus, hourly water spillage, equivalent to 50 MWH, occurred during the following six hours. The final pond storage was 1100 MWH instead of the specified 250 MWH, this was due to the high inflow and the minimization of spillage in the scheduling.

Increase in the Number of Units. Four sets of cases were performed to show the effects of increasing the number of units in a plant; one set for each level of inflow. The results are given in Table A-2. Except for the set with the largest total inflow, an identical unit was added to the plant. Total generation remained the same but the generation worth increased, and thus the average worth also increased. With the additional unit, more generation can be scheduled in those hours for which the worth is larger thereby resulting in greater cost saving.

Table A-2

EFFECTS OF INCREASE IN THE NUMBER OF UNITS

| TOTAL INFLOW<br>MWH | CASE   | # OF UNITS | TOTAL GEN.<br>MWH | GEN. WORTH<br>\$ | AVE. WORTH<br>\$/MWH |
|---------------------|--------|------------|-------------------|------------------|----------------------|
| None                | #HY001 | 1          | 1550              | 52,580           | 33.92                |
|                     | #HY002 | 2          | 1550              | 59,260           | 38.23                |
| 800                 | #HY003 | 1          | 2350              | 63,110           | 26.86                |
|                     | #HY005 | 2          | 2350              | 77,090           | 32.80                |
| 2000                | #HY010 | 1          | 3550              | 71,680           | 20.19                |
|                     | #HY011 | 2          | 3550              | 100,820          | 28.40                |
| 3600                | #HY004 | 1          | 4000              | 73,480           | 18.37                |
|                     | #HY006 | 2          | 5150              | 121,270          | 23.55                |
|                     | #HY007 | 3          | 5150              | 138,610          | 26.91                |

In the fourth set of cases with the highest total inflow, the number of units was increased to three. With two or more units, spillage was eliminated and the specified ending pond storage target was met; hence the total generation for Cases #HY006 and #HY007 were the same and greater than that for Case #HY004 which had only one unit. Again, the average generation worth increased with more units available.

It may be pointed out that the average generation worth will eventually reach a point of diminishing returns as more and more units are added. Therefore, there is a limit at which additional plant capacity will no longer reduce the total system operating cost.

Effects of Outages. When a generating unit outage occurs, there is less capacity available for generation during the period of outage. Therefore, less generation is possible during the outage period. If the average generation worth is large in this period, the total system saving would be reduced since some generation has to be scheduled to those hours for which the average worth is lower. Thus the effects of outages on the scheduling of a plant are the opposite of those due to increasing the number of units in a plant; the latter has been discussed in the preceding section.

Results presented in Table A-3 are for the three cases having one plant with two identical units: (1) Case #HY005 - no outage, (2) Case #HY008 - partial outage on Unit #1 from hour 6 to hour 20, and (3) Case #HY009 - total outage on Unit #1 from hour 6 to hour 20. The total generation remained the same for all the three cases, but the average generation worth decreased as the extent of the outage increased.

Table A-3  
EFFECTS OF OUTAGES

| Case   | Outage                  | Total Gen.<br>MWH | Gen. Worth<br>\$ | Ave. Worth<br>\$/MWH |
|--------|-------------------------|-------------------|------------------|----------------------|
| #HY005 | None                    | 2350              | 77,090           | 32.80                |
| #HY008 | #1, Partial<br>HR. 6-20 | 2350              | 75,730           | 32.23                |
| #HY009 | #1, Total<br>HR. 6-20   | 2350              | 72,930           | 31.03                |

Increase in the Number of Plants. Table A-4 gives the results for three test cases with one, two and three plants. The plant for Case #HY005 had two units and it was also the first plant in the other two cases. The second plant for the other two cases were the same plant and it had three units. There was only one unit in the third plant for Case #HY014. All three plants were assumed to be isolated and for the two cases with two or more plants, the plants were scheduled in a specified order. Therefore, the schedule for the first plant was identical in all the three cases, and that for the second plant was the same in the cases with two and three plants.

Table A-4  
EFFECTS OF INCREASE IN THE NUMBER OF PLANTS

| Case   | No. of Plants | Total Gen.<br>MWH | Gen. Worth<br>\$ | Ave. Worth<br>\$/MWH |
|--------|---------------|-------------------|------------------|----------------------|
| #HY005 | 1             | 2350              | 77,090           | 32.80                |
| #HY013 | 2             | 3550              | 113,930          | 32.09                |
| #HY014 | 3             | 4350              | 134,320          | 30.88                |

The average generation worth decreased as more plants were added to this system. Such a trend is due to the scheduling procedure which schedules

the generation to the hours for which the average worth is the largest at any instant. Therefore, the average generating worth of successive scheduled plant decreases.

Addition of Storage Targets. The scheduling or dispatch period for daily fuel scheduling may vary from a few hours to a week. In the scheduling of conventional storage hydro plant, the ending storage targets are normally specified. However, for plants with a daily cycle, the storage targets at the end of each day may be designated so that for a scheduling period of a week, there will be a number of storage targets, each for a point in time within the scheduling period.

Two test cases were performed for a one-unit plant with no inflow. In the first case, only the storage target at the end of the period was specified. Two additional intermediate storage targets were introduced for the other case. Results are shown in Table A-5. The same amount of water was used so that both cases had the same total generation. However, the two resulting schedules were different and so were the generation worth. The addition of intermediate storage targets resulted in lower average generation worth since there is less flexibility in scheduling the generation.

Table A-5

EFFECTS OF CHANGE IN THE NUMBER OF STORAGE TARGETS

| Case   | No. of Targets | Total Gen.<br>MWH | Gen. Worth<br>\$ | Ave. Worth<br>\$/MWH |
|--------|----------------|-------------------|------------------|----------------------|
| #HY001 | 1              | 1550              | 52,580           | 33.92                |
| #HY015 | 3              | 1550              | 43,690           | 28.19                |

Effects of Plant Response Rate. Most hydro plants have fast response rates so that for hour-by-hour scheduling, plant response rate can be ignored. However, there exist plants for which the condition of the rivers imposes a limit on the rate of change of water release such that the resulting plant response rates are much slower than the corresponding plant capabilities. For example, navigational and/or recreational requirements may limit the starting or shutting down of no more than one unit at each hour.

Table A-6 gives the results of two cases: (1) the first case with no constraint on the plant response rate so that it can change from no load to full load or vice versa in one hour, and (2) the second case with response rate constraint such that the maximum change in generation from one hour to the next was 60 percent of plant capacity. The added constraint on the plant response rate reduced the average generation worth from \$33.92 per MWH to \$32.88 MWH as shown in Table A-6. Such reduction is expected since full plant capacity cannot be scheduled during certain hours.

Table A-6  
EFFECTS OF PLANT RESPONSE RATE

| Case   | Constraint on Response Rate | Total Gen. MWH | Gen. Worth \$ | Ave. Worth \$/MWH |
|--------|-----------------------------|----------------|---------------|-------------------|
| #HY001 | None                        | 1550           | 52,580        | 33.92             |
| #HY016 | Yes                         | 1550           | 50,970        | 32.88             |

Effects of Minimum Plant Generation. One of the common constraints imposed on a multi-purpose river system is the requirement to maintain a minimum rate of water release and hence minimum plant generation. This requirement

causes the scheduling of some generation to less economical hours and thereby reducing the total generation worth. Such a trend is verified by the sample test cases.

Results for the following two cases are presented in Table A-7; (1) Case #HY008 with zero minimum generation, and (2) #HY018 with a minimum generation of 70 MW. The hydro system consisted of three plants in cascade with total capacity of 350 MW. There was no other inflow into the two downstream plants.

Table A-7  
EFFECTS OF MINIMUM GENERATION

| Case   | Min. Gen.<br>MW | Total Gen.<br>MWH | Gen. Worth<br>\$ | Ave. Worth<br>\$/MWH |
|--------|-----------------|-------------------|------------------|----------------------|
| #HY018 | 0               | 6011.0            | 154,348          | 25.68                |
| #HY019 | 70              | 6070.5            | 144,588          | 23.82                |

Results in Table A-7 show that the total generation for Case #HY018 was less than that for Case #HY019 by 59.5 MW. 2.5 MWH was due to drawing extra water from storage to meet the minimum generation requirement in Case #HY019 and the remaining 57 MWH was the result of spillage in Case #HY018. Spillage occurred because the upstream plant had a higher discharge rate than the one downstream. To minimize spillage, the smallest plant discharge rate should have been used for all the three plants. Despite the lower total generation for Case #HY018, the total and the average generation worth were higher, being \$154,384 compared to \$144,588 and \$25.68 per MWH compared to \$23.82 per MWH for Case #HY019.

Results for these two cases also verified the part of the program logic which takes care of the hydraulic coupling between cascading plants.

## A.2 PRELIMINARY RESULTS FOR PUMPED STORAGE MODULE

Table A-8 shows the results from preliminary test cases on the scheduling of one sample pumped storage plant. These results are grouped into smaller tables to illustrate the various studies. There were two identical reversible units for all the cases, except Case #PS004 which had three. For each unit, the minimum and maximum generating capacities were 25 MW and 100 MW respectively, and the full pumping load was 100 MW. The upper reservoir was full at the beginning and the end of the scheduling period which was 40 hours. In the first or base case, #PS001, the plant cycle efficiency was 0.75, maximum reservoir storage was 1200 MWH and maximum generating capacity was assumed to be constant.

Change in Plant Cycle Efficiency. As the plant cycle efficiency improves, one would expect greater system savings. This is illustrated by Cases #PS002, #PS001, and #PS003 which had cycle efficiencies of 0.65, 0.75, and 0.85 respectively (see Table A-9). The corresponding savings for these cases were \$37,484, \$42,260, and \$46,570; the greater savings being that for plant with the higher cycle efficiency.

Increase in the Number of Units. An increase from two units in Case #PS001 to three units in Case #PS004 resulted in additional plant operation, and system savings increased from \$42,260 to \$45,090 (Table A-10). This trend is correct since with more units, additional operation can be scheduled at hours which would result in further savings. However, a continual increase in the number of units will eventually yield the maximum savings possible. Economically, it is undesirable to have too many units or too much capacity for a plant.

Table A-8  
RESULTS FROM PRELIMINARY TEST CASES ON PUMPED STORAGE HYDRO

| CASE       | # OF UNITS | OUTAGE                  | CYCLE EFFICIENCY | MAX. STORAGE MWH | MAX. GEN CAPACITY | TOTAL GEN. MWH | TOTAL PUMP MWH | GEN. WORTH \$ | PUMP COST \$ | SAVINGS \$ |
|------------|------------|-------------------------|------------------|------------------|-------------------|----------------|----------------|---------------|--------------|------------|
| 1. #PS001  | 2          | None                    | 0.75             | 1200             | Constant          | 1725           | 2300           | 62,600        | 20,600       | 42,260     |
| 2. #PS002  | 2          | None                    | 0.65             | 1200             | Constant          | 1625           | 2500           | 59,864        | 22,380       | 37,484     |
| 3. #PS003  | 2          | None                    | 0.85             | 1200             | Constant          | 2040           | 2400           | 68,830        | 22,260       | 46,570     |
| 4. #PS004  | 3          | None                    | 0.75             | 1200             | Constant          | 2025           | 2700           | 71,700        | 26,610       | 45,090     |
| 5. #PS005  | 2          | #1, Partial<br>HR 12-20 | 0.75             | 1200             | Constant          | 1732.5         | 2310           | 62,795        | 21,000       | 41,795     |
| 6. #PS006  | 2          | None                    | 0.75             | 1600             | Constant          | 2100           | 2800           | 75,440        | 25,680       | 49,760     |
| 7. #PS007  | 2          | None                    | 0.75             | 980              | Constant          | 1575           | 2100           | 55,520        | 18,420       | 37,100     |
| 8. #PS008  | 2          | None                    | 0.75             | 1200             | Varying           | 1725           | 2300           | 62,552        | 20,340       | 42,212     |
| 9. #PS009  | 2          | #1, Total<br>HR 12-20   | 0.75             | 1200             | Constant          | 1650           | 2200           | 60,470        | 20,430       | 40,040     |
| 10. #PS010 | 2          | #1, Partial<br>HR 12-20 | 0.75             | 1200             | Varying           | 1732.5         | 2310           | 62,717        | 21,000       | 41,717     |

Table A-9

## EFFECTS OF CHANGE IN PLANT CYCLE EFFICIENCY

| Case   | Cycle Efficiency | Total Gen.<br>MWH | Savings<br>\$ |
|--------|------------------|-------------------|---------------|
| #PS002 | 0.65             | 1,625             | 37,474        |
| #PS001 | 0.75             | 1,725             | 42,260        |
| #HY003 | 0.85             | 2,040             | 46,570        |

Table A-10

## EFFECTS OF CHANGE IN THE NUMBER OF UNITS

| Case   | # of Units | Total Gen.<br>MWH | Savings<br>\$ |
|--------|------------|-------------------|---------------|
| #PS001 | 2          | 1,725             | 42,260        |
| #PS004 | 3          | 2,025             | 45,090        |

Effects of Outages. The effects of unit outage are the same as reducing the number of units; that is, system savings should decrease or at least remain the same. Table A-11 shows that system savings decreased from \$42,260 in Case #PS001 to \$40,040 in Case #PS009 when the first unit was on total outage for part of the period.

Table A-11

## EFFECTS OF OUTAGES

| Case   | Outage               | Total Gen.<br>MWH | Savings<br>\$ |
|--------|----------------------|-------------------|---------------|
| #PS001 | None                 | 1,725             | 42,260        |
| #PS009 | #1 Total<br>HR 12-20 | 1,650             | 40,040        |

Change in Reservoir Storage Capacity. The schedule for Case #PS001 shows that the upper reservoir was at its minimum for a number of hours. This implies that the maximum reservoir storage capacity of 1200 MWH was an ac-

tive constraint. To study the effect of reservoir size, the maximum reservoir storage was reduced to 980 MWH for Case #PS007 and increased to 1600 MW for Case #PS006. Results from these three cases showed progressively increasing plant operation from 1575 to 2100 MW of generation and system savings from \$37,100 to \$49,760 when the maximum reservoir storage capacity was increased from 980 to 1600 MWH (Table A-12).

Table A-12

EFFECTS OF CHANGE IN POND STORAGE

| Case   | Pond Storage<br>MWH | Total Gen.<br>MWH | Savings<br>\$ |
|--------|---------------------|-------------------|---------------|
| #PS007 | 980                 | 1,575             | 37,100        |
| #PS001 | 1,200               | 1,725             | 42,260        |
| #PS006 | 1,600               | 2,100             | 49,760        |

Variation in Unit Maximum Generating Capacity. For most of the existing pumped storage plants, the unit maximum generating capacity depends on the available hydraulic head. The variation of maximum generating capacity could be as large as 10 percent of the nominal value. Hence, for a 1000 MW plant, a discrepancy of 100 MW could arise; this is a significant error for daily fuel scheduling purposes. It is imperative that scheduling of pumped storage plant recognizes the variation in unit maximum generating capacity. The Pumped Storage Module has such capability; a constant maximum is first assumed for the initial scheduling and then followed by an adjustment on any generation which exceeds the limit used.

In Cases #PS008 and #PS010 the unit maximum generating varied from 85 MW to 100 MW instead of being held constant at 100 MW. Comparing the results from these two cases with those from Case #PS001 and #PS005, showed that savings were reduced by less than \$100 when the variation was recognized

(Table A-13). Such reductions were caused by the shifting of excess generation to other hours in which the generation worth was lower; further, these savings reductions represented less than 0.2 percent of the savings from the plant operation. Though the change in savings was insignificant, it was important that physically realizable schedules were established.

Table A-13

EFFECTS OF VARIATION IN MAXIMUM GENERATING CAPACITY

|                        | Case   | Max. Gen.<br>Capacity | Total Gen.<br>MWH | Savings<br>\$ |
|------------------------|--------|-----------------------|-------------------|---------------|
| No outage              | #PS001 | Constant              | 1,725             | 42,260        |
|                        | #PS008 | Varying               | 1,725             | 42,212        |
| #1 Partial<br>HR 12-20 | PS005  | Constant              | 1,732.5           | 41,795        |
|                        | #PS010 | Varying               | 1,732.5           | 41,717        |

Constant at 100 MW; Varying from 85 MW to 100 MW

### A.3 PRELIMINARY RESULTS FOR NIAGARA FALLS MODULE

Sample test cases were performed to verify the program logic in the Niagara Falls Module. The setup of the generating facility in the test system was similar to the actual Niagara Falls Project except smaller generating and storage capacities were used. Section 4.2.8 in Volume 1 gives a description of the Niagara Falls Project which is a combination of a conventional hydro plant and a pumped storage plant.

Different Storage Pond Conditions. Table A-14 shows the results for three cases with different storage pond conditions. Case #NF001 had the starting and ending storage values at the maximum of 20 KCFSH. The second case, #NF002, started with 20 KCFSH in storage and the ending storage target was

15 KCFSH. Thus, additional 5 KCFSH was available for generation. This is reflected in the increased generation and the total worth. On the other hand, Case #NF003 had to perform additional pumping since the starting and ending storage levels were 10 and 20 KCFSH respectively. The results do indicate the increase in pumping and decrease in generation over Case #NF001.

Table A-14

EFFECTS OF DIFFERENT STORAGE POND CONDITIONS

| CASE   | Pond Storage (KCFSH) |          |        | Total Pump.<br>MWH | Generation (MWH) |       |       | Net Worth<br>\$ |
|--------|----------------------|----------|--------|--------------------|------------------|-------|-------|-----------------|
|        | Maximum              | Starting | Ending |                    | P.S.             | Hydro | Total |                 |
| #NF001 | 20                   | 20       | 20     | 460                | 322              | 4968  | 5290  | 116,063         |
| #NF002 | 20                   | 20       | 15     | 420                | 329              | 5083  | 5412  | 117,060         |
| #NF003 | 20                   | 10       | 20     | 510                | 287              | 4738  | 5025  | 108,571         |

Effects of Outages. Three sets of results are presented in Table A-15 which shows the effects of plant outages. Each set is used to compare the situation having no outage with one having one type of outage. In all instances, outage reduced the pumping, the generation and the net worth of the operation of the project. The net worth is equal to the total generation worth less the pumping cost as based on the thermal system costs represented by the thermal system incremental cost curves.

Table A-15  
EFFECTS OF OUTAGES

| Pond Storage (KCFSH) |        | Case   | Outage                                 | Total Pump.<br>MWH | Generation (MWH) |       |       | Net Worth<br>\$ |
|----------------------|--------|--------|----------------------------------------|--------------------|------------------|-------|-------|-----------------|
| Starting             | Ending |        |                                        |                    | P.S.             | Hydro | Total |                 |
| 20                   | 20     | #NF001 | None                                   | 460                | 322              | 4968  | 5290  | 116,063         |
|                      |        | #NF006 | Total outage<br>on P.S.<br>HR. 1-40    | 0                  | 0                | 4885  | 4885  | 90,684          |
| 20                   | 15     | #NF002 | None                                   | 420                | 329              | 5083  | 5412  | 117,060         |
|                      |        | #NF005 | Partial outage<br>on Hydro<br>HR. 6-20 | 380                | 301              | 5072  | 5373  | 111,740         |
| 10                   | 20     | #NF003 | None                                   | 510                | 287              | 4738  | 5025  | 108,571         |
|                      |        | #NF004 | Partial outage<br>on P.S.<br>HR. 6-20  | 420                | 224              | 4731  | 4955  | 103,657         |

Case #NF006 had the pumped storage plant on total outage for the whole period so that only the hydro plant was operational. Therefore, the increase in net worth for Case #NF001 over that for Cases #NF006 was completely due to the operation of the pumped storage plant.

Variation in Inflow. The amount of total inflow was varied while all other system conditions remained the same. Results for the three cases studied are presented in Table A-16. As inflow increased, the total generation and the net worth also increased. Such a trend is expected since more water is available for generation. The amount of scheduled pumping corresponding to cases with inflows 128, 216 and 248 KCFSH were 430, 460 and 400 MW respectively. Such a behavior is consistent: when the inflow is zero, no pumping is possible; when there is surplus inflow no pumping is needed; therefore one would expect the pumping to increase with increased inflow and then decrease as inflow continues to increase.

Table A-16  
EFFECTS OF VARIATION IN INFLOW

| Case   | Total Inflow<br>KCFSH | Total Pump.<br>MMH | Generation (MMH) |       |       | Net Worth<br>\$ |
|--------|-----------------------|--------------------|------------------|-------|-------|-----------------|
|        |                       |                    | P.S.             | Hydro | Total |                 |
| #NF008 | 128                   | 430                | 301              | 2944  | 3245  | 88,289          |
| #NF001 | 216                   | 460                | 322              | 4968  | 5290  | 116,063         |
| #NF007 | 248                   | 400                | 280              | 5584  | 5864  | 119,548         |

#### A.4 PRELIMINARY RESULTS FOR LIMITED FUEL MODULE

Results from preliminary tests are given in Table A-17. Tables A-18 through A-22 contain specific results extracted from the first table. System conditions are the same for all of the eleven cases except for the unit and fuel data which are shown in the table. There were two generating units; only the first of the two generating units was used for those cases with one unit. These tests provided a sufficient variation for the verification of the program logic:

- Change in maximum fuel
- Increase in the number of units
- Effects of unit outage
- Variation in fuel cost
- Change in minimum fuel

Change in Maximum Fuel. Increase in the maximum available fuel resulted in increased generation and system cost savings as long as the operation of the fuel constrained plant is economical. This is illustrated by Cases #FTS01 and #FTS02, and Cases #FTS03 and #FTS09 (see Table A-18). Since there is extra unused fuel in Cases #FTS01 and #FTS09 increasing the maximum fuel limit for Cases #FTS01 and #FTS09 will no change the schedule at all.

Table A-17

## RESULTS FROM PRELIMINARY TEST CASES ON LIMITED FUEL MODULE

| CASE       | # OF UNITS | OUTAGE                   | FUEL COST<br>\$/MBTU | MIN. FUEL<br>MBTU | MAX. FUEL<br>MBTU | FUEL USED<br>MBTU | TOTAL GEN.<br>MWH | GEN. WORTH<br>\$ | FUEL COST<br>\$ | SAVINGS<br>\$ |
|------------|------------|--------------------------|----------------------|-------------------|-------------------|-------------------|-------------------|------------------|-----------------|---------------|
| 1. #FTS01  | 1          | None                     | \$1.20               | 15,000            | 30,000            | 20,770            | 1990              | 58,650           | 24,924          | 33,726        |
| 2. #FTS02  | 1          | None                     | \$1.20               | 15,000            | 20,000            | 20,000            | 1911              | 57,689           | 24,000          | 33,688        |
| 3. #FTS03  | 2          | None                     | \$1.20               | 15,000            | 30,000            | 30,000            | 2637              | 85,341           | 36,000          | 49,341        |
| 4. #FTS04  | 1          | Partial<br>2-12 HR       | \$1.20               | 15,000            | 30,000            | 16,815            | 1615              | 44,825           | 20,178          | 24,647        |
| 5. #FTS05  | 1          | Total<br>6-12 HR         | \$1.20               | 15,000            | 30,000            | 16,785            | 1350              | 39,200           | 20,142          | 19,058        |
| 6. #FTS06  | 2          | Unit 1, Total<br>6-12 HR | \$1.20               | 15,000            | 30,000            | 30,000            | 2399              | 75,084           | 36,000          | 39,084        |
| 7. #FTS07  | 1          | None                     | \$1.00               | 15,000            | 30,000            | 25,437            | 2485              | 64,075           | 25,437          | 38,638        |
| 8. #FTS08  | 1          | None                     | \$1.60               | 15,000            | 30,000            | 19,388            | 1840              | 56,820           | 31,021          | 25,799        |
| 9. #FTS09  | 2          | None                     | \$1.20               | 0                 | 40,000            | 39,845            | 3625              | 102,670          | 47,815          | 54,855        |
| 10. #FTS10 | 2          | None                     | \$1.60               | 15,000            | 30,000            | 30,000            | 2637              | 85,341           | 48,000          | 37,341        |
| 11. #FTS11 | 1          | None                     | \$1.20               | 30,000            | 30,000            | 30,000            | 2960              | 67,994           | 36,000          | 31,994        |

Table A-18

## EFFECTS OF CHANGE IN MAXIMUM FUEL

|         | CASE   | MAX. FUEL<br>MBTU | FUEL USED<br>MBTU | GENERATION<br>MWH | SAVINGS<br>\$ |
|---------|--------|-------------------|-------------------|-------------------|---------------|
| 1 Unit  | #FTS02 | 20,000            | 20,000            | 1911              | 33,688        |
|         | #FTS01 | 30,000            | 20,770            | 1990              | 33,726        |
| 2 Units | #FTS03 | 30,000            | 30,000            | 2637              | 49,341        |
|         | #FTS09 | 40,000            | 39,845            | 3625              | 54,855        |

Increase in the Number of Units. Increasing the number of units will increase the capability of the plant so that it is possible to schedule more generation in those hours which yield more savings. Therefore, total system savings will increase. Such a trend is shown in Cases #FTS01 and #FTS03, and Cases #FTS08 and #FTS10 for which additional system savings were realized when two units were used instead of one. Table A-19 summarizes the results for the above cases.

Table A-19

## EFFECTS OF INCREASE IN THE NUMBER OF UNITS

|             | CASE    | # OF UNITS | FUEL USED<br>MBTU | GENERATION<br>MWH | SAVINGS<br>\$ |
|-------------|---------|------------|-------------------|-------------------|---------------|
| \$1.20/MBTU | #FTS001 | 1          | 20,770            | 1990              | 33,726        |
|             | #FTS003 | 2          | 30,000            | 2637              | 49,341        |
| \$1.60/MBTU | #FTS008 | 1          | 19,388            | 1840              | 25,799        |
|             | #FTS010 | 2          | 30,000            | 2637              | 37,341        |

Effects of Unit Outages. When a unit is on outage, either partial or total, less capacity is available for generation so that it has the opposite effect of increasing the number of units. Therefore, system savings is expected to decrease when unit outages occur as shown in Table A-20. Cases #FTS01, #FTS04 and #FTS05 show a progressive decline in system savings as the unit went into partial and then total outage. Similar results are also obtained in Case #FTS03 and #FTS06.

Table A-20  
EFFECTS OF OUTAGES

|         | CASE    | OUTAGE                   | FUEL USED<br>MBTU | GENERATION<br>MWH | SAVINGS<br>\$ |
|---------|---------|--------------------------|-------------------|-------------------|---------------|
| 1 Unit  | #FTS001 | None                     | 20,770            | 1,990             | 33,726        |
|         | #FTS004 | Partial, HR 2-12         | 16,815            | 1,615             | 24,647        |
|         | #FTS005 | Total, HR 6-12           | 16,785            | 1,350             | 19,058        |
| 2 Units | #FTS003 | None                     | 30,000            | 2,637             | 49,341        |
|         | #FTS006 | Unit 1, Total<br>HR 6-12 | 30,000            | 2,399             | 39,084        |

Variation in Fuel Cost. The fuel costs in \$/MBTU for Cases #FTS07, #FTS01 and #FTS08 are \$1.00, \$1.20 and \$1.60 respectively. This steady increase in fuel cost resulted in the reduction of both the generation of the fuel constrained unit and the system savings (Table A-21). Such a trend is expected as increasing fuel cost yields less economical generation. The dispatches for Cases #FTS03 and #FTS10 were identical despite the higher fuel cost for the latter. In both cases the same maximum fuel was used up; therefore additional economical generation could be scheduled even with the higher fuel cost, had there been more fuel available.

Table A-21

## EFFECTS OF VARIATION IN FUEL COSTS

|         | CASE    | FUEL COST<br>\$/MBTU | FUEL USED<br>MBTU | GENERATION<br>MWH | SAVINGS<br>\$ |
|---------|---------|----------------------|-------------------|-------------------|---------------|
| 1 Unit  | #FTS007 | \$1.00               | 25,437            | 2,485             | 38,638        |
|         | #FTS001 | \$1.20               | 20,770            | 1,990             | 33,726        |
|         | #FTS008 | \$1.60               | 19,388            | 1,840             | 25,799        |
| 2 Units | #FTS003 | \$1.20               | 30,000            | 2,637             | 49,341        |
|         | #FTS010 | \$1.60               | 30,000            | 2,637             | 37,341        |

Change in Minimum Fuel. For Case #FTS01, the total fuel used was 20,770 MBTU. When the minimum fuel was set equal to the maximum of 30,000 MBTU, all the fuel was used up by the unit. This was Case #FTS11 which showed an increase in generation from 1,990 MWh to 2,960 MWh. However, the total system savings declined from \$33,726 to \$31,994 (Table A-22). Such a decrease in system savings is due to forcing the unit to operate uneconomically. This type of situation in which the minimum fuel is not zero is normally the result of inadequate fuel storage capacity.

Table A-22

## EFFECTS OF CHANGE IN MINIMUM FUEL LIMIT

| CASE    | MINIMUM FUEL<br>MBTU | FUEL USED<br>MBTU | GENERATION<br>MWH | SAVINGS<br>\$ |
|---------|----------------------|-------------------|-------------------|---------------|
| #FTS001 | 15,000               | 20,770            | 1,990             | 33,726        |
| #FTS011 | 30,000               | 30,000            | 2,960             | 31,994        |

## Appendix B

### DATA FOR SAMPLE SYSTEM

The sample system for testing the search approach has four distinct areas connected in a chain. Transfer or tie capacities between the areas are assumed to be large so that there is no constraint on the transfer of power from one area to another. This is not a necessary requirement since the unit commitment program is capable of recognizing any transfer limits between areas in the scheduling and dispatching of generating units.

This sample system is used for preliminary testing of the prototype computer programs to verify program logic before performing tests using the New York system.

#### B.1 HOURLY SYSTEM LOADS

Total system hourly loads in MW are shown in Table B.1, they are for the period Monday, March 26, 1979 to the following Monday, April 2, 1979. It is assumed that each area hourly load is proportional to the total system hourly load, but this is not a necessary condition since individual area hourly loads can be used instead.

#### B.2 THERMAL UNIT AND SYSTEM DATA

Detailed data on the 25 thermal units are given in Table B-2. It is assumed that there is no limit on the fuel these units can use and they shall be scheduled by the unit commitment module. Also included in the last part of Table B.2 are information on the proportion of area loads, reserve requirements and interarea transfer or tie capabilities.

### B.3 HYDRO PLANT DATA

There are two conventional storage hydro plants coupled together. Data on the upstream and downstream plants are shown in Tables B-3 and B-4 respectively. The upstream plant has a constant inflow of 15 KCFS and all the discharge from this plant flows into the other plant which has no natural inflow. Both the plants are located in Area 1 (BARTHOLD). For both the plants, the pond or reservoir elevation is equivalent to the storage in MWH.

### B.4 PUMPED STORAGE PLANT DATA

This pumped storage plant is located in Area 3 (RINGLEE) and data on the plant are shown in Table B-5. The upper reservoir is full initially and is required to be full again at the end of the scheduling period.

### B.5 SPECIAL PLANT DATA

This special plant is a scaled-down version of the Niagara Falls Project which has a pumped storage plant and a hydro plant. Natural plant inflow can be either pumped directly into the storage reservoir or allowed to pass through the hydro plant for power generation. Any release of water from the reservoir will be used twice for power generation: the first time at the pumped storage plant and the second at the hydro plant. Plant and inflow data are given in Table B-6, and this plant is located in Area 2 (DEMELLO).

### B.6 FUEL LIMITED FUEL DATA

There are two thermal units in this plant which has limits on the total amount of fuel the plant can use within the scheduling period. This plant is located in Area 4 (AJWOOD) and is to be scheduled by the fuel-constrained unit scheduling module. Table B-7 shows all the pertinent plant and unit data.

Table B-1

## SYSTEM HOURLY LOAD IN MW

HOURLY LOAD FOR 3/26 TO 4/2/1979

79,3,26,79,4,2

|           |      |      |      |      |      |      |      |      |      |      |      |      |
|-----------|------|------|------|------|------|------|------|------|------|------|------|------|
| 79 326101 | 1000 | 950  | 900  | 800  | 800  | 850  | 950  | 1100 | 1300 | 1600 | 1800 | 1820 |
| 79 326102 | 1750 | 1650 | 1500 | 1300 | 1250 | 1200 | 1300 | 1450 | 1400 | 1300 | 1170 | 1050 |
| 79 327201 | 1000 | 950  | 900  | 800  | 800  | 850  | 950  | 1100 | 1300 | 1600 | 1800 | 1820 |
| 79 327202 | 1750 | 1650 | 1500 | 1300 | 1250 | 1200 | 1300 | 1450 | 1400 | 1300 | 1170 | 1050 |
| 79 328301 | 1000 | 950  | 900  | 800  | 800  | 850  | 950  | 1100 | 1300 | 1600 | 1800 | 1820 |
| 79 328302 | 1750 | 1650 | 1500 | 1300 | 1250 | 1200 | 1300 | 1450 | 1400 | 1300 | 1170 | 1050 |
| 79 329401 | 1050 | 970  | 900  | 830  | 810  | 870  | 950  | 1150 | 1280 | 1550 | 1750 | 1800 |
| 79 329402 | 1730 | 1680 | 1500 | 1320 | 1250 | 1200 | 1300 | 1450 | 1400 | 1300 | 1170 | 1050 |
| 79 330501 | 1000 | 950  | 910  | 820  | 790  | 820  | 940  | 1080 | 1300 | 1580 | 1830 | 1800 |
| 79 330502 | 1740 | 1700 | 1550 | 1300 | 1210 | 1180 | 1250 | 1390 | 1350 | 1280 | 1100 | 1000 |
| 79 331601 | 910  | 900  | 880  | 820  | 780  | 790  | 870  | 930  | 1050 | 1200 | 1350 | 1400 |
| 79 331602 | 1500 | 1480 | 1350 | 1250 | 1100 | 1120 | 1150 | 1220 | 1300 | 1280 | 1250 | 1200 |
| 79 4 1701 | 1050 | 1000 | 920  | 850  | 780  | 730  | 700  | 720  | 800  | 880  | 1050 | 1200 |
| 79 4 1702 | 1250 | 1300 | 1250 | 1200 | 1100 | 1100 | 1240 | 1350 | 1300 | 1250 | 1100 | 1050 |
| 79 4 2101 | 1000 | 950  | 900  | 800  | 800  | 850  | 950  | 1100 | 1300 | 1600 | 1800 | 1820 |
| 79 4 2102 | 1750 | 1650 | 1500 | 1300 | 1250 | 1200 | 1300 | 1450 | 1400 | 1300 | 1170 | 1050 |

Table B-2

## THERMAL UNIT AND SYSTEM DATA

## UNIT COMMITMENT PROGRAM

PTI UNIT AND SYSTEM DATA FOR UC-1980  
 TEST CASE #UC002, UC ONLY WITH RESERVE REQ.  
 HOURLY LOAD FOR 3/26 TO 4/2/1979

## IGEN -UNIT IDENTIFICATION

| IS<br>NO. | --UNIT--<br>NAME | EXT<br>REF# | -TRANSM-<br>AREA | -CONTRL-<br>AREA | NOMINAL<br>LOW | LIMITS<br>HIGH | CAPC | RESRV<br>SYNC | CAPABILITY<br>NONS | UNIT<br>OPER | DISP<br>TYPE | STAT |
|-----------|------------------|-------------|------------------|------------------|----------------|----------------|------|---------------|--------------------|--------------|--------------|------|
| 1         | B-75STB1         | 121         | BARTHOLD         | SYSTEM           | 25             | 75             | 75   | 15            | Ø                  | Ø            | FFST         | ECON |
| 2         | B-75STB2         | 122         | BARTHOLD         | SYSTEM           | 25             | 75             | 75   | 15            | Ø                  | Ø            | FFST         | ECON |
| 3         | B15ØSTC3         | 133         | BARTHOLD         | SYSTEM           | 75             | 141            | 15Ø  | 3Ø            | Ø                  | Ø            | FFST         | ECON |
| 4         | B15ØSTC4         | 134         | BARTHOLD         | SYSTEM           | 75             | 141            | 15Ø  | 3Ø            | Ø                  | Ø            | FFST         | ECON |
| 5         | R-5ØSTB1         | 221         | RINGLEE          | SYSTEM           | 17             | 5Ø             | 5Ø   | 1Ø            | Ø                  | Ø            | FFST         | ECON |
| 6         | R-5ØSTB2         | 222         | RINGLEE          | SYSTEM           | 17             | 5Ø             | 5Ø   | 1Ø            | Ø                  | Ø            | FFST         | ECON |
| 7         | R-2ØSTC1         | 231         | RINGLEE          | SYSTEM           | 7              | 2Ø             | 2Ø   | 5             | Ø                  | Ø            | FFST         | ECON |
| 8         | R-2ØSTC2         | 232         | RINGLEE          | SYSTEM           | 7              | 2Ø             | 2Ø   | 5             | Ø                  | Ø            | FFST         | ECON |
| 9         | R225STD3         | 243         | RINGLEE          | SYSTEM           | 9Ø             | 214            | 225  | 5Ø            | Ø                  | Ø            | FFST         | ECON |
| 1Ø        | R225STD4         | 244         | RINGLEE          | SYSTEM           | 9Ø             | 214            | 225  | 5Ø            | Ø                  | Ø            | FFST         | ECON |
| 11        | A-5ØSTA1         | 311         | AJWOOD           | SYSTEM           | 17             | 5Ø             | 5Ø   | 1Ø            | Ø                  | Ø            | FFST         | ECON |
| 12        | A-5ØSTA2         | 312         | AJWOOD           | SYSTEM           | 17             | 5Ø             | 5Ø   | 1Ø            | Ø                  | Ø            | FFST         | ECON |
| 13        | A-5ØSTA3         | 313         | AJWOOD           | SYSTEM           | 17             | 5Ø             | 5Ø   | 1Ø            | Ø                  | Ø            | FFST         | ECON |
| 14        | A-75STB4         | 324         | AJWOOD           | SYSTEM           | 25             | 75             | 75   | 15            | Ø                  | Ø            | FFST         | ECON |
| 15        | A-75STB5         | 325         | AJWOOD           | SYSTEM           | 25             | 75             | 75   | 15            | Ø                  | Ø            | FFST         | ECON |
| 16        | A235STC6         | 336         | AJWOOD           | SYSTEM           | 9Ø             | 228            | 235  | 5Ø            | Ø                  | Ø            | FFST         | ECON |
| 17        | A235STC7         | 337         | AJWOOD           | SYSTEM           | 9Ø             | 235            | 235  | 5Ø            | Ø                  | Ø            | FFST         | ECON |
| 18        | B-45GT-1         | 651         | BARTHOLD         | SYSTEM           | 16             | 4Ø             | 45   | 45            | 45                 | 45           | GT           | ECON |
| 19        | B-45GT-2         | 652         | BARTHOLD         | SYSTEM           | 16             | 4Ø             | 45   | 45            | 45                 | 45           | GT           | ECON |
| 2Ø        | B-45GTRT         | 661         | BARTHOLD         | SYSTEM           | 16             | 4Ø             | 45   | 45            | 45                 | 45           | GT           | ECON |

Table B-2

THERMAL UNIT AND SYSTEM DATA (continued)

UNIT COMMITMENT PROGRAM

PTI UNIT AND SYSTEM DATA FOR UC-1980  
 TEST CASE #UC002, UC ONLY WITH RESERVE REQ.  
 HOURLY LOAD FOR 3/26 TO 4/2/1979

IGEN -UNIT IDENTIFICATION

| IS  | --UNIT-- | EXT  | -TRANSM- | -CONTRL- | NOMINAL LIMITS |      |      | RESRV | CAPABILITY |      |      | UNIT | DISP |
|-----|----------|------|----------|----------|----------------|------|------|-------|------------|------|------|------|------|
| NO. | NAME     | REF# | AREA     | AREA     | LOW            | HIGH | CAPC | SYNC  | NONS       | OPER | TYPE | STAT |      |
| 21  | M-45GTR1 | 641  | DEMELLO  | SYSTEM   | 16             | 40   | 45   | 45    | 45         | 45   | GT   | ECON |      |
| 22  | M-45GTR2 | 642  | DEMELLO  | SYSTEM   | 16             | 40   | 45   | 45    | 45         | 45   | GT   | ECON |      |
| 23  | R-40GTNA | 631  | RINGLEE  | SYSTEM   | 12             | 35   | 40   | 40    | 40         | 40   | GT   | ECON |      |
| 24  | A-45GTTV | 611  | AJWOOD   | SYSTEM   | 16             | 40   | 45   | 45    | 45         | 45   | GT   | ECON |      |
| 25  | A-45GTAN | 621  | AJWOOD   | SYSTEM   | 16             | 40   | 45   | 45    | 45         | 45   | GT   | ECON |      |

Table B-2

## THERMAL UNIT AND SYSTEM DATA (continued)

## UNIT COMMITMENT PROGRAM

PTI UNIT AND SYSTEM DATA FOR UC-1980  
 TEST CASE #UC002, UC ONLY WITH RESERVE REQ.  
 HOURLY LOAD FOR 3/26 TO 4/2/1979

## IGEN - UNIT THERMAL CHARACTERISTICS

| IS # | UNIT NAME | INCREMENTAL HEAT RATE BTU/KWH VS MW |                 |                 |                 |         |         | MIN MBTU/HR | FUEL COST \$/MBTU | COST FACT | CHAR NO. |   |
|------|-----------|-------------------------------------|-----------------|-----------------|-----------------|---------|---------|-------------|-------------------|-----------|----------|---|
| 1    | B-75STB1  | 8730.<br>22                         | 9740.<br>30     | 11235.<br>68    | 12970.<br>30000 | 0.<br>0 | 0.<br>0 | 0.<br>0     | 243.0             | 1.560     | 1.00     | 1 |
| 2    | B-75STB2  | 11205.<br>53                        | 11670.<br>68    | 12235.<br>30000 | 0.<br>0         | 0.<br>0 | 0.<br>0 | 0.<br>0     | 280.0             | 1.560     | 1.00     | 1 |
| 3    | B150STC3  | 10060.<br>30                        | 10125.<br>90    | 10845.<br>105   | 10975.<br>30000 | 0.<br>0 | 0.<br>0 | 0.<br>0     | 759.0             | 1.400     | 1.00     | 1 |
| 4    | B150STC4  | 10420.<br>45                        | 10455.<br>105   | 10710.<br>30000 | 0.<br>0         | 0.<br>0 | 0.<br>0 | 0.<br>0     | 784.0             | 1.400     | 1.00     | 1 |
| 5    | R-50STB1  | 11275.<br>35                        | 13585.<br>30000 | 0.<br>0         | 0.<br>0         | 0.<br>0 | 0.<br>0 | 0.<br>0     | 192.0             | 1.800     | 1.00     | 1 |
| 6    | R-50STB2  | 11385.<br>30                        | 13150.<br>45    | 13760.<br>30000 | 0.<br>0         | 0.<br>0 | 0.<br>0 | 0.<br>0     | 194.0             | 1.800     | 1.00     | 1 |
| 7    | R-20STC1  | 14500.<br>30000                     | 0.<br>0         | 0.<br>0         | 0.<br>0         | 0.<br>0 | 0.<br>0 | 0.<br>0     | 101.0             | 1.800     | 1.00     | 1 |
| 8    | R-20STC2  | 14500.<br>30000                     | 0.<br>0         | 0.<br>0         | 0.<br>0         | 0.<br>0 | 0.<br>0 | 0.<br>0     | 101.0             | 1.800     | 1.00     | 1 |
| 9    | R225STD3  | 8615.<br>113                        | 9625.<br>180    | 10970.<br>30000 | 0.<br>0         | 0.<br>0 | 0.<br>0 | 0.<br>0     | 775.0             | 1.200     | 1.00     | 1 |
| 10   | R225STD4  | 8315.<br>45                         | 8955.<br>135    | 10570.<br>203   | 10960.<br>30000 | 0.<br>0 | 0.<br>0 | 0.<br>0     | 806.0             | 1.200     | 1.00     | 1 |
| 11   | A-50STA1  | 12140.<br>35                        | 12625.<br>45    | 14545.<br>30000 | 0.<br>0         | 0.<br>0 | 0.<br>0 | 0.<br>0     | 206.0             | 1.900     | 1.00     | 1 |
| 12   | A-50STA2  | 12095.<br>30                        | 12760.<br>45    | 13475.<br>30000 | 0.<br>0         | 0.<br>0 | 0.<br>0 | 0.<br>0     | 206.0             | 1.900     | 1.00     | 1 |
| 13   | A-50STA3  | 9780.<br>10                         | 11455.<br>30    | 12775.<br>45    | 13090.<br>30000 | 0.<br>0 | 0.<br>0 | 0.<br>0     | 195.0             | 1.900     | 1.00     | 1 |
| 14   | A-75STB4  | 10780.<br>30                        | 11130.<br>60    | 12145.<br>30000 | 0.<br>0         | 0.<br>0 | 0.<br>0 | 0.<br>0     | 269.0             | 1.700     | 1.00     | 1 |
| 15   | A-75STB5  | 10780.<br>30                        | 11130.<br>60    | 12145.<br>30000 | 0.<br>0         | 0.<br>0 | 0.<br>0 | 0.<br>0     | 269.0             | 1.700     | 1.00     | 1 |

Table B-2

## THERMAL UNIT AND SYSTEM DATA (continued)

## UNIT COMMITMENT PROGRAM

PTI UNIT AND SYSTEM DATA FOR UC-1980  
 TEST CASE #UC002, UC ONLY WITH RESERVE REQ.  
 HOURLY LOAD FOR 3/26 TO 4/2/1979

## IGEN - UNIT THERMAL CHARACTERISTICS

| IS # | UNIT NAME | INCREMENTAL HEAT RATE BTU/KWH VS MW |             |             |             |     |     | MIN MBTU/HR | FUEL COST \$/MBTU | COST FACT | CHAR NO. |   |
|------|-----------|-------------------------------------|-------------|-------------|-------------|-----|-----|-------------|-------------------|-----------|----------|---|
| 16   | A235STC6  | 7715.47                             | 9040.141    | 10055.212   | 11020.30000 | 0.0 | 0.0 | 0.0         | 814.0             | 1.250     | 1.00     | 1 |
| 17   | A235STC7  | 9285.118                            | 9525.212    | 11710.30000 | 0.0         | 0.0 | 0.0 | 0.0         | 836.0             | 1.250     | 1.00     | 1 |
| 18   | B-45GT-1  | 13500.32                            | 15000.30000 | 0.0         | 0.0         | 0.0 | 0.0 | 0.0         | 216.0             | 2.500     | 1.00     | 1 |
| 19   | B-45GT-2  | 13500.32                            | 15000.30000 | 0.0         | 0.0         | 0.0 | 0.0 | 0.0         | 216.0             | 2.500     | 1.00     | 1 |
| 20   | B-45GTRT  | 13500.32                            | 15000.30000 | 0.0         | 0.0         | 0.0 | 0.0 | 0.0         | 216.0             | 2.500     | 1.00     | 1 |
| 21   | M-45GTR1  | 13500.32                            | 15000.30000 | 0.0         | 0.0         | 0.0 | 0.0 | 0.0         | 216.0             | 2.500     | 1.00     | 1 |
| 22   | M-45GTR2  | 13500.32                            | 15000.30000 | 0.0         | 0.0         | 0.0 | 0.0 | 0.0         | 216.0             | 2.500     | 1.00     | 1 |
| 23   | R-40GTNA  | 13500.32                            | 15000.30000 | 0.0         | 0.0         | 0.0 | 0.0 | 0.0         | 162.0             | 2.500     | 1.00     | 1 |
| 24   | A-45GTTV  | 13500.32                            | 15000.30000 | 0.0         | 0.0         | 0.0 | 0.0 | 0.0         | 216.0             | 2.500     | 1.00     | 1 |
| 25   | A-45GTAN  | 13500.32                            | 15000.30000 | 0.0         | 0.0         | 0.0 | 0.0 | 0.0         | 216.0             | 2.500     | 1.00     | 1 |

Table B-2

## THERMAL UNIT AND SYSTEM DATA (continued)

## UNIT COMMITMENT PROGRAM

PTI UNIT AND SYSTEM DATA FOR UC-1980  
 TEST CASE #UC002, UC ONLY WITH RESERVE REQ.  
 HOURLY LOAD FOR 3/26 TO 4/2/1979

## IGEN - OTHER UNIT CHARACTERISTICS

| IS<br># | --UNIT--<br>NAME | TR.LOSS<br>LOW | PEN.FACT<br>HIGH | MINIMUM (HOURS) |          | -HOURS- | UNIT    |
|---------|------------------|----------------|------------------|-----------------|----------|---------|---------|
|         |                  |                |                  | UPTIME          | DOWNTIME | UP/DOWN | STATUS  |
| 1       | B-75STB1         | 1.0000         | 1.0000           | 4               | 10       | -50     | OFF-AV  |
| 2       | B-75STB2         | 1.0000         | 1.0000           | 4               | 10       | -50     | OFF-AV  |
| 3       | B150STC3         | 1.0000         | 1.0000           | 8               | 12       | 50      | ON-CBSD |
| 4       | B150STC4         | 1.0000         | 1.0000           | 8               | 12       | -50     | OFF-AV  |
| 5       | R-50STB1         | 1.0000         | 1.0000           | 4               | 8        | -50     | OFF-AV  |
| 6       | R-50STB2         | 1.0000         | 1.0000           | 4               | 8        | -50     | OFF-AV  |
| 7       | R-20STC1         | 1.0000         | 1.0000           | 4               | 4        | -50     | OFF-AV  |
| 8       | R-20STC2         | 1.0000         | 1.0000           | 4               | 4        | -50     | OFF-AV  |
| 9       | R225STD3         | 1.0000         | 1.0000           | 24              | 34       | 50      | ON-CBSD |
| 10      | R225STD4         | 1.0000         | 1.0000           | 10              | 12       | 50      | ON-CBSD |
| 11      | A-50STA1         | 1.0000         | 1.0000           | 4               | 8        | -50     | OFF-AV  |
| 12      | A-50STA2         | 1.0000         | 1.0000           | 4               | 8        | -50     | OFF-AV  |
| 13      | A-50STA3         | 1.0000         | 1.0000           | 4               | 8        | -50     | OFF-AV  |
| 14      | A-75STB4         | 1.0000         | 1.0000           | 4               | 12       | -50     | OFF-AV  |
| 15      | A-75STB5         | 1.0000         | 1.0000           | 4               | 12       | -50     | OFF-AV  |
| 16      | A235STC6         | 1.0000         | 1.0000           | 24              | 36       | 50      | ON-CBSD |
| 17      | A235STC7         | 1.0000         | 1.0000           | 24              | 36       | 50      | ON-CBSD |
| 18      | B-45GT-1         | 1.0000         | 1.0000           | 1               | 0        | -50     | OFF-AV  |
| 19      | B-45GT-2         | 1.0000         | 1.0000           | 1               | 0        | -50     | OFF-AV  |
| 20      | B-45GTRT         | 1.0000         | 1.0000           | 1               | 0        | -50     | OFF-AV  |

Table B-2

## THERMAL UNIT AND SYSTEM DATA (continued)

## UNIT COMMITMENT PROGRAM

PTI UNIT AND SYSTEM DATA FOR UC-1980  
 TEST CASE #UC002, UC ONLY WITH RESERVE REQ.  
 HOURLY LOAD FOR 3/26 TO 4/2/1979

## IGEN - OTHER UNIT CHARACTERISTICS

| IS<br># | --UNIT--<br>NAME | TR.LOSS<br>LOW | PEN.FACT<br>HIGH | MINIMUM (HOURS)<br>UPTIME | (HOURS)<br>DOWNTIME | -HOURS-<br>UP/DOWN | UNIT<br>STATUS |
|---------|------------------|----------------|------------------|---------------------------|---------------------|--------------------|----------------|
| 21      | M-45GTR1         | 1.000          | 1.000            | 1                         | 0                   | -50                | OFF-AV         |
| 22      | M-45GTR2         | 1.000          | 1.000            | 1                         | 0                   | -50                | OFF-AV         |
| 23      | R-40GTNA         | 1.000          | 1.000            | 1                         | 0                   | -50                | OFF-AV         |
| 24      | A-45GTTV         | 1.000          | 1.000            | 1                         | 0                   | -50                | OFF-AV         |
| 25      | A-45GTAN         | 1.000          | 1.000            | 1                         | 0                   | -50                | OFF-AV         |

Table B-2

## THERMAL UNIT AND SYSTEM DATA (continued)

## UNIT COMMITMENT PROGRAM

PTI UNIT AND SYSTEM DATA FOR UC-1980  
 TEST CASE #UC002, UC ONLY WITH RESERVE REQ.  
 HOURLY LOAD FOR 3/26 TO 4/2/1979

## IGEN - UNIT COST AND PRIORITY RANK

| IS<br># | --UNIT--<br>NAME | MAINT.<br>BASE | COST<br>VAR. | -----<br>\$ | STARTUP<br>VS DOWN | COST<br>HOURS | -----<br>AVG. FULL<br>LOAD COST | PRIOR<br>RANK |    |
|---------|------------------|----------------|--------------|-------------|--------------------|---------------|---------------------------------|---------------|----|
| 1       | B-75STB1         | 0.             | 0.           | 250.<br>5   | 620.<br>10         | 930.<br>19    | 1260.<br>30000                  | 16.84         | 7  |
| 2       | B-75STB2         | 0.             | 0.           | 250.<br>5   | 620.<br>10         | 930.<br>19    | 1260.<br>30000                  | 17.77         | 8  |
| 3       | B150STC3         | 0.             | 0.           | 340.<br>5   | 960.<br>10         | 1410.<br>18   | 1910.<br>30000                  | 14.63         | 5  |
| 4       | B150STC4         | 0.             | 0.           | 340.<br>5   | 960.<br>10         | 1410.<br>18   | 1910.<br>30000                  | 14.74         | 6  |
| 5       | R-50STB1         | 0.             | 0.           | 120.<br>5   | 300.<br>10         | 450.<br>19    | 620.<br>30000                   | 21.55         | 11 |
| 6       | R-50STB2         | 0.             | 0.           | 120.<br>5   | 300.<br>10         | 450.<br>19    | 620.<br>30000                   | 21.89         | 12 |
| 7       | R-20STC1         | 0.             | 0.           | 120.<br>5   | 300.<br>10         | 450.<br>19    | 620.<br>30000                   | 26.05         | 17 |
| 8       | R-20STC2         | 0.             | 0.           | 120.<br>5   | 300.<br>10         | 450.<br>19    | 620.<br>30000                   | 26.05         | 16 |
| 9       | R225STD3         | 0.             | 0.           | 530.<br>5   | 1230.<br>9         | 1820.<br>17   | 2520.<br>30000                  | 11.26         | 1  |
| 10      | R225STD4         | 0.             | 0.           | 530.<br>5   | 1230.<br>9         | 1820.<br>17   | 2520.<br>30000                  | 11.57         | 2  |
| 11      | A-50STA1         | 0.             | 0.           | 120.<br>5   | 300.<br>10         | 450.<br>19    | 620.<br>30000                   | 23.69         | 15 |
| 12      | A-50STA2         | 0.             | 0.           | 120.<br>5   | 300.<br>10         | 450.<br>19    | 620.<br>30000                   | 23.64         | 14 |
| 13      | A-50STA3         | 0.             | 0.           | 120.<br>5   | 300.<br>10         | 450.<br>19    | 620.<br>30000                   | 22.84         | 13 |
| 14      | A-75STB4         | 0.             | 0.           | 250.<br>5   | 620.<br>10         | 930.<br>19    | 1260.<br>30000                  | 19.02         | 10 |
| 15      | A-75STB5         | 0.             | 0.           | 250.<br>5   | 620.<br>10         | 930.<br>19    | 1260.<br>30000                  | 19.02         | 9  |

Table B-2

## THERMAL UNIT AND SYSTEM DATA (continued)

## UNIT COMMITMENT PROGRAM

PTI UNIT AND SYSTEM DATA FOR UC-1980  
 TEST CASE #UC002, UC ONLY WITH RESERVE REQ.  
 HOURLY LOAD FOR 3/26 TO 4/2/1979

## IGEN - UNIT COST AND PRIORITY RANK

| IS<br># | --UNIT--<br>NAME | MAINT.<br>BASE | COST<br>VAR. | -----<br>\$ VS | STARTUP<br>DOWN | COST<br>HOURS     | -----<br>AVG. FULL<br>LOAD COST | PRIOR<br>RANK |
|---------|------------------|----------------|--------------|----------------|-----------------|-------------------|---------------------------------|---------------|
| 16      | A235STC6         | 0.             | 0.           | 530.<br>5      | 1230.<br>9      | 1820.<br>17 30000 | 2520.<br>30000                  | 11.93 3       |
| 17      | A235STC7         | 10.            | 1.           | 530.<br>5      | 1230.<br>9      | 1820.<br>17 30000 | 2520.<br>30000                  | 13.07 4       |
| 18      | B-45GT-1         | 0.             | 0.           | 10.<br>30000   | 0.<br>0         | 0.<br>0           | 0.<br>0                         | 34.83 24      |
| 19      | B-45GT-2         | 0.             | 0.           | 10.<br>30000   | 0.<br>0         | 0.<br>0           | 0.<br>0                         | 34.83 23      |
| 20      | B-45GTRT         | 0.             | 0.           | 10.<br>30000   | 0.<br>0         | 0.<br>0           | 0.<br>0                         | 34.83 22      |
| 21      | M-45GTR1         | 0.             | 0.           | 10.<br>30000   | 0.<br>0         | 0.<br>0           | 0.<br>0                         | 34.83 21      |
| 22      | M-45GTR2         | 0.             | 0.           | 10.<br>30000   | 0.<br>0         | 0.<br>0           | 0.<br>0                         | 34.83 20      |
| 23      | R-40GTNA         | 10.            | 1.           | 10.<br>30000   | 0.<br>0         | 0.<br>0           | 0.<br>0                         | 35.75 25      |
| 24      | A-45GTTV         | 0.             | 0.           | 10.<br>30000   | 0.<br>0         | 0.<br>0           | 0.<br>0                         | 34.83 19      |
| 25      | A-45GTAN         | 0.             | 0.           | 10.<br>30000   | 0.<br>0         | 0.<br>0           | 0.<br>0                         | 34.83 18      |

Table B-2

## THERMAL UNIT AND SYSTEM DATA (continued)

## UNIT COMMITMENT PROGRAM

PTI UNIT AND SYSTEM DATA FOR UC-1988  
 TEST CASE #UC002, UC ONLY WITH RESERVE REQ.  
 HOURLY LOAD FOR 3/26 TO 4/2/1979

-----  
 IGEN - TRANSMISSION AREA INFORMATION

| AREA<br>NO. | AREA NAME | LOAD<br>RATIO | RESERVE REQUIREMENT (MW) |             |           |
|-------------|-----------|---------------|--------------------------|-------------|-----------|
|             |           |               | SYNCHRONOUS              | NON. SYNCH. | OPERATING |
| 1           | BARTHOLD  | 37.62         | 20                       | 20          | 20        |
| 2           | DEMELLO   | 6.19          | 0                        | 0           | 0         |
| 3           | RINGLEE   | 34.37         | 20                       | 20          | 20        |
| 4           | AJWOOD    | 21.82         | 10                       | 10          | 10        |

-----  
 IGEN - TRANSMISSION TIE CAPABILITIES

| NO. | FROM AREA | TO AREA | LIMITS(MW) |
|-----|-----------|---------|------------|
| 1   | BARTHOLD  | DEMELLO | 1000       |
| 2   | DEMELLO   | RINGLEE | 1000       |
| 3   | RINGLEE   | AJWOOD  | 1000       |

Table B-3

UPSTREAM HYDRO PLANT DATA

|                                      |   |         |
|--------------------------------------|---|---------|
| PLANT ID                             | : | PTIHY1  |
| NO. OF UNITS                         | : | 2       |
| MIN UNIT GEN CAP MW                  | : | 10      |
| MAX UNIT GEN CAP MW                  | : | 50      |
| UNIT ON-LINE RES MW                  | : | 40      |
| UNIT OFF-LINE RE MW                  | : | 50      |
| PLANT R.R. MW/MIN                    | : | 5       |
| PLANT INI. GEN. MW                   | : | 0       |
| RSVOIR MIN STO FT                    | : | 100.00  |
| RSVOIR MAX STO FT                    | : | 1000.00 |
| RSVOIR STO START FT                  | : | 800.00  |
| RSVOIR STO END FT                    | : | 600.00  |
| RSVOIR MIN STO MWH                   | : | 100.00  |
| RSVOIR MAX STO MWH                   | : | 1000.00 |
| RSVOIR STO START MWH                 | : | 800.00  |
| RSVOIR STO END MWH                   | : | 600.00  |
| INFLOW CONVERSION<br>FACTOR MWH/KCFS | : | 1.2000  |
| MIN. GENERATION MW                   | : | 0       |

PLANT INFLOW DATA

| NO. | FR. HR | TO HR | FLOW |
|-----|--------|-------|------|
| 1   | 1      | 168   | 15.0 |

Table B-4

DOWNSTREAM HYDRO PLANT DATA

|                                      |   |        |
|--------------------------------------|---|--------|
| PLANT ID                             | : | PTIHY2 |
| NO. OF UNITS                         | : | 2      |
| MIN UNIT GEN CAP MW                  | : | 10     |
| MAX UNIT GEN CAP MW                  | : | 30     |
| UNIT ON-LINE RES MW                  | : | 20     |
| UNIT OFF-LINE RE MW                  | : | 30     |
| PLANT R.R. MW/MIN                    | : | 3      |
| PLANT INI. GEN. MW                   | : | 0      |
| RSVOIR MIN STO FT                    | : | 100.00 |
| RSVOIR MAX STO FT                    | : | 900.00 |
| RSVOIR STO START FT                  | : | 700.00 |
| RSVOIR STO END FT                    | : | 700.00 |
| RSVOIR MIN STO MWH                   | : | 100.00 |
| RSVOIR MAX STO MWH                   | : | 900.00 |
| RSVOIR STO START MWH                 | : | 700.00 |
| RSVOIR STO END MWH                   | : | 700.00 |
| INFLOW CONVERSION<br>FACTOR MWH/KCFS | : | 0.9000 |
| MIN. GENERATION MW                   | : | 0      |

Table B-5

## PUMPED STORAGE PLANT DATA

## PUMPED STORAGE PLANT DATA

1

PLANT ID : PTIPS1  
 NO. OF UNITS : 2  
 CYCLE EFFY. P.U. : 0.7400  
 UNIT PUMPING CAP : 50  
 MIN UNIT GEN CAP MW : 20  
 MAX UNIT GEN CAP MW : 50  
 UP RES MIN STO FT : 960.00  
 UP RES MAX STO FT : 1150.00  
 UP RES STO START FT : 1150.00  
 UP RES STO END FT : 1150.00  
 UP RES MIN STO MWH : 100.00  
 UP RES MAX STO MWH : 1200.00  
 UP RES STO START MWH : 1200.00  
 UP RES STO END MWH : 1200.00

## -----POND ELEVATION-STORAGE CHARACTERISTICS-----

---PLANT NO.: 1 PTIPS1

| ELEV   | ENERGY | ELEV   | ENERGY | ELEV   | ENERGY | ELEV   | ENERGY |
|--------|--------|--------|--------|--------|--------|--------|--------|
| ----   | -----  | ----   | -----  | ----   | -----  | ----   | -----  |
| 900.0  | 0.0    | 930.0  | 40.0   | 960.0  | 100.0  | 1000.0 | 200.0  |
| 1040.0 | 350.0  | 1080.0 | 550.0  | 1100.0 | 700.0  | 1120.0 | 870.0  |
| 1150.0 | 1200.0 | 1180.0 | 1800.0 |        |        |        |        |

MAX. GENERATION IS CONSTANT AND DOES NOT VARY WITH ELEVATION.

Table B-6

SPECIAL PLANT DATA

|                            |   |        |
|----------------------------|---|--------|
| P.S. PLANT ID              | : | LWSTON |
| CYCLE EFFY. P.U.           | : | 0.7000 |
| NO. OF PUMPING UNITS       | : | 3      |
| UNIT PUMPING CAP MW        | : | 10.00  |
| MIN PLANT GEN CAP MW       | : | 0.00   |
| MAX PLANT GEN CAP MW       | : | 30.00  |
| WATER CONV FACTOR MW/KCFS: |   | 7.00   |
| RSVOIR MIN KCFSH           | : | 0.00   |
| RSVOIR MAX KCFSH           | : | 20.00  |
| RSVOIR START KCFSH         | : | 20.00  |
| RSVOIR ENDING KCFSH        | : | 20.00  |

|                            |   |        |
|----------------------------|---|--------|
| HYDRO PLANT ID             | : | RMOSES |
| MIN PLANT GEN CAP MW       | : | 0.00   |
| MAX PLANT GEN CAP MW       | : | 200.00 |
| WATER CONV FACTOR MW/KCFS: |   | 23.00  |

TOTAL EQUIVALENT PLANT PARAMETERS :

|                            |   |        |
|----------------------------|---|--------|
| CYCLE EFFY. P.U.           | : | 0.9091 |
| UNIT PUMPING CAP MW        | : | 33.00  |
| WATER CONV FACTOR MW/KCFS: |   | 30.00  |

INFLOW DATA :

| FR. HR | TO HR | INFLOW |
|--------|-------|--------|
| 1      | 14    | 6.00   |
| 15     | 15    | 10.00  |
| 16     | 24    | 4.00   |

Table B-7

## FUEL LIMITED PLANT DATA

## -----PLANT PARAMETERS-----

AREA IN WHICH PLANT IS IN : 4  
 PLANT I.D. : PTIPL1  
 NO. OF UNITS : 2  
 MINIMUM FUEL (MBTU) : 15000.0  
 MAXIMUM FUEL (MBTU) : 30000.0  
 FUEL COST \$/MBTU : 1.20

\*FUEL ADJUSTMENT FACTOR = 0.0010

0.001 - FUEL RATE IN BTU/KWH & FUEL IN MBTU,  
 1.0 - ALL FUEL PARAMETERS ARE IN MWH.

## -----NORMAL UNIT CHARACTERISTICS-----

|                                |   |         |         |
|--------------------------------|---|---------|---------|
| UNIT NO.                       | : | 1       | 2       |
| UNIT I.D.                      | : | AJWOOD  | LOBART  |
| MINIMUM GENERATION MW          | : | 25      | 30      |
| MAXIMUM GENERATION MW          | : | 100     | 90      |
| MINIMUM UP TIME HR             | : | 2       | 3       |
| MINIMUM DOWN TIME HR           | : | 3       | 3       |
| COLD START TIME HR             | : | 6       | 6       |
| HOT START FUEL MBTU            | : | 1000.0  | 1500.0  |
| HOT START COST \$              | : | 1200.0  | 1800.0  |
| COLD START FUEL MBTU           | : | 2000.0  | 2500.0  |
| COLD START COST \$             | : | 2400.0  | 3000.0  |
| FUEL RATE AT MIN. GEN. BTU/KWH | : | 10000.0 | 11000.0 |
| AVERAGE FULL LOAD RATE BTU/KWH | : | 9450.0  | 10088.9 |
| NORMAL RESPONSE RATE MW/MIN    | : | 3.00    | 3.00    |
| EMERGENCY RESPONSE RATE MW/MIN | : | 6.00    | 5.00    |
| 5-MIN. SPINNING RESERVE MW     | : | 30      | 25      |
| 5-MIN. NON-SPIN RESERVE MW     | : | 0       | 0       |
| 30-MIN. NON-SPIN RESERVE MW    | : | 0       | 0       |
| INITIAL UNIT STATUS HR         | : | -10     | -15     |
| INITIAL GENERATION MW          | : | 0       | 0       |

\*NO. OF HRS UNIT HAS BEEN UP,  
 NEGATIVE DENOTES NO. OF HRS DOWN.

## UNIT FUEL RATE:

| UNIT | MW  | BTU/KWH | MW  | BTU/KWH | MW  | BTU/KWH |
|------|-----|---------|-----|---------|-----|---------|
| ---  | --  | -----   | --  | -----   | --  | -----   |
| 1    | 25  | 8000.0  | 50  | 9000.0  | 70  | 9800.0  |
|      | 85  | 11200.0 | 100 | 12000.0 | 100 | 12000.0 |
|      | 100 | 12000.0 |     |         |     |         |
| 2    | 30  | 8000.0  | 50  | 9200.0  | 65  | 10000.0 |
|      | 75  | 11500.0 | 85  | 13000.0 | 90  | 13000.0 |
|      | 90  | 13000.0 |     |         |     |         |

## Appendix C

### RESULTS FOR SAMPLE CASE 1

This appendix contains some of the detailed results for the sample Case 1 described in Section 4.3 of Volume 1. The system consists of twenty-five thermal units, two coupled hydro plants, and one pumped storage plant, and the scheduling period is twenty-four hours. The tables in this appendix show the hourly schedule of all the generating facilities for the final iteration. Unit and plant data for the sample system are given in Appendix B.

Table C-1 gives the unit commitment schedule of the twenty-five thermal units and the various costs. Definitions of the symbols are:

1. U - unit is dispatched at its upper economic limit.
2. L - unit is dispatched at its lower economic limit.
3. \* - unit generation is between the lower and the upper economic limits.

Hourly system result summaries for the first four hours are presented in Table C-2. These summaries show the generation and reserve contributions by area and by type, operating costs and area interchanges or transfers. Generation type "OTHER" consists of all generation not scheduled by the unit commitment module and it includes hydro, pumped storage and energy or fuel-limited plants.

Table C-3 shows the dispatches and related data for the twenty-five thermal units for the first four hours of the scheduling period. Complete schedules for the hydro and pumped storage plants are given in Tables C-4 and C-5 respectively. In these two figures, RSVON is the on-line synchronous reserve, RSVOF or RSOF1 is the off-line ten-minute reserve, and RVOF2 is the off-line 30-minute reserve.

C-2

### UNIT STARTUP AND SHUTDOWN SCHEDULE

|                    |  |         |         |           |
|--------------------|--|---------|---------|-----------|
| OPER. COST(1000\$) |  | MONDAY  | TUESDAY | WEDNESDAY |
| FUEL COST          |  | 305.310 | 81.869  | 0.000     |
| MAINT COST         |  | 293.062 | 80.307  | 0.000     |
| START COST         |  | 4.058   | 1.562   | 0.000     |
|                    |  | 8.190   | 0.000   | 0.000     |

|          |           |             |                 |                 |                 |
|----------|-----------|-------------|-----------------|-----------------|-----------------|
| UNIT NO. | UNIT NAME | STAT. IN FN | 111 11111112222 | 111 11111112222 | 111 11111112222 |
| 243      | R225STD3  | 7 7         | UUUUU           | UUUUUUUUUUUU    | UUU**UU         |
| 244      | R225STD4  | 7 7         | UUUUU           | UUUUUUUUUUUU    | UUUUUUUU        |
| 336      | A235STC6  | 7 7         | UUUUU           | UUUUUUUUUUUU    | UUU**UU         |
| 337      | A235STC7  | 7 7         | **UUU           | UUUU**UUUU**    | *****           |
| 133      | B150STC3  | 7 3         | *UUUU           | UUUU**UUUU*     |                 |
| 134      | B150STC4  | 6 7         | UUUUU           | UUUUUUUUUU*U    | **LL**          |
| 121      | B-75STB1  | 4 3         | ***             | *****L***L*     |                 |
| 122      | B-75STB2  | 4 3         | **UU            | UU***L***L      |                 |
| 325      | A-75STB5  | 4 3         | UU              | **LLLLLLLLLL    |                 |
| 324      | A-75STB4  | 4 3         | ***             | **LLLLLLLLLL    |                 |
| 221      | R-50STB1  | 4 4         | **              | **              |                 |
| 222      | R-50STB2  | 4 4         | **              | LL              |                 |
| 313      | A-50STA3  | 4 4         |                 |                 |                 |
| 312      | A-50STA2  | 4 4         |                 |                 |                 |
| 311      | A-50STA1  | 4 4         |                 |                 |                 |
| 232      | R-20STC2  | 4 4         |                 |                 |                 |
| 231      | R-20STC1  | 4 4         |                 |                 |                 |
| 621      | A-45GTAN  | 4 4         |                 |                 |                 |
| 611      | A-45GTTV  | 4 4         |                 |                 |                 |
| 642      | M-45GTR2  | 4 4         |                 |                 |                 |
| 641      | M-45GTR1  | 4 4         |                 |                 |                 |
| 661      | B-45GTRT  | 4 4         |                 |                 |                 |
| 652      | B-45GT-2  | 4 4         |                 |                 |                 |
| 651      | B-45GT-1  | 4 4         |                 |                 |                 |
| 631      | R-40GTNA  | 4 4         |                 |                 |                 |

|                                                    |         |              |              |             |
|----------------------------------------------------|---------|--------------|--------------|-------------|
| TOTAL OPERATION COST FOR THIS INTERVAL ( 1000 \$ ) | 387.179 | UNIT STATUS: | 1 = OFF-FO   | 2 = OFF-MNT |
| TOTAL FUEL COST                                    | 373.369 | (INIT/FINAL) | 3 = OFF-TIME | 4 = OFF-AV  |
| TOTAL MAINTENANCE COST                             | 5.620   |              | 5 = ON-MUST  | 6 = ON-TIME |
| TOTAL STARTUP COST                                 | 8.190   |              | 7 = ON-CBSD  |             |

Table C-2

## HOURLY SYSTEM RESULT SUMMARIES

## UNIT COMMITMENT PROGRAM

PTI UNIT AND SYSTEM DATA FOR UC-1980  
 TEST CASE #UC002, UC ONLY WITH RESERVE REQ.  
 HOURLY LOAD FOR 3/26 TO 4/2/1979

\*\*\*\*\*  
 \* SYSTEM SUMMARY FOR MONDAY HOUR 8 \*  
 \*\*\*\*\*

| AREA<br>NAME | AREA<br>LOAD | ---GENERATION OUTPUT--- |     |       |      | --SYNCHRONOUS RESERVE-- |     |     |     |      | --NONE SYNCHR. RESERVE-- |     |     |     |      | ---OPERATING RESERVE--- |     |     |     |      |
|--------------|--------------|-------------------------|-----|-------|------|-------------------------|-----|-----|-----|------|--------------------------|-----|-----|-----|------|-------------------------|-----|-----|-----|------|
|              |              | STEAM                   | GAS | OTHER | SURP | REQ.                    | STM | GAS | OTH | SURP | REQ.                     | STM | GAS | OTH | SURP | REQ.                    | STM | GAS | OTH | SURP |
| BARTHOLD     | 414          | 232                     | 0   | 0     | -182 | 20                      | 39  | 0   | 0   | 19   | 20                       | 0   | 135 | 160 | 294  | 20                      | 29  | 0   | 0   | 303  |
| DEMELLO      | 68           | 0                       | 0   | 0     | -68  | 0                       | 0   | 0   | 0   | 0    | 0                        | 0   | 90  | 0   | 90   | 0                       | 0   | 0   | 0   | 90   |
| RINGLEE      | 378          | 428                     | 0   | 0     | 50   | 20                      | 22  | 0   | 0   | 2    | 20                       | 0   | 40  | 100 | 122  | 20                      | 0   | 0   | 0   | 102  |
| AJWOOD       | 240          | 440                     | 0   | 0     | 200  | 10                      | 30  | 0   | 0   | 20   | 10                       | 0   | 90  | 0   | 100  | 10                      | 0   | 0   | 0   | 90   |
| SYSTEM       | 1100         | 1100                    | 0   | 0     | 0    | 50                      | 91  | 0   | 0   | 41   | 50                       | 0   | 355 | 260 | 606  | 50                      | 29  | 0   | 0   | 585  |

## SYSTEM OPERATING COST ( 1000 \$ )

|                  | THERMAL | OTHERS | SUM    |
|------------------|---------|--------|--------|
| FUEL COST        | 13.410  | 0.000  | 13.410 |
| MAINTANENCE COST | 0.222   | 0.000  | 0.222  |
| STARTUP COST     | 1.910   | 0.000  | 1.910  |
| --- TOTAL ---    | 15.542  | 0.000  | 15.542 |

## AREA INTERCHANGE:

| FROM AREA | TO AREA | LIMIT | TRANSFER |
|-----------|---------|-------|----------|
| BARTHOLD  | DEMELLO | 1000  | -182     |
| DEMELLO   | RINGLEE | 1000  | -250     |
| RINGLEE   | AJWOOD  | 1000  | -200     |

Table C-2

## HOURLY SYSTEM RESULT SUMMARIES (continued)

## UNIT COMMITMENT PROGRAM

PTI UNIT AND SYSTEM DATA FOR UC-1980  
 TEST CASE #UC002, UC ONLY WITH RESERVE REQ.  
 HOURLY LOAD FOR 3/26 TO 4/2/1979

\*\*\*\*\*  
 \* SYSTEM SUMMARY FOR MONDAY HOUR 9 \*  
 \*\*\*\*\*

| AREA<br>NAME | AREA<br>LOAD | ---GENERATION OUTPUT--- | STEAM | GAS | OTHER | SURP | --SYNCHRONOUS RESERVE-- | REQ. | STM | GAS | OTH | SURP | --NONE SYNCHR. RESERVE-- | REQ. | STM | GAS | OTH | SURP | ---OPERATING RESERVE--- | REQ. | STM | GAS | OTH | SURP |
|--------------|--------------|-------------------------|-------|-----|-------|------|-------------------------|------|-----|-----|-----|------|--------------------------|------|-----|-----|-----|------|-------------------------|------|-----|-----|-----|------|
| BARTHOLD     | 489          | 412                     | 0     | 0   | 0     | -77  | 20                      | 38   | 0   | 0   | 0   | 18   | 20                       | 0    | 0   | 135 | 160 | 293  | 20                      | 0    | 0   | 0   | 0   | 273  |
| DEMELLO      | 80           | 0                       | 0     | 0   | 0     | -80  | 0                       | 0    | 0   | 0   | 0   | 0    | 0                        | 0    | 0   | 90  | 0   | 90   | 0                       | 0    | 0   | 0   | 0   | 90   |
| RINGLEE      | 447          | 428                     | 0     | 0   | 0     | -19  | 20                      | 22   | 0   | 0   | 0   | 2    | 20                       | 0    | 0   | 40  | 100 | 122  | 20                      | 0    | 0   | 0   | 0   | 102  |
| AJWOOD       | 284          | 460                     | 0     | 0   | 0     | 176  | 10                      | 10   | 0   | 0   | 0   | 0    | 10                       | 0    | 0   | 90  | 0   | 80   | 10                      | 0    | 0   | 0   | 0   | 70   |
| SYSTEM       | 1300         | 1300                    | 0     | 0   | 0     | 0    | 50                      | 70   | 0   | 0   | 0   | 20   | 50                       | 0    | 0   | 355 | 260 | 585  | 50                      | 0    | 0   | 0   | 0   | 535  |

## SYSTEM OPERATING COST ( 1000 \$ )

|                  | THERMAL | OTHERS | SUM    |
|------------------|---------|--------|--------|
| FUEL COST        | 16.679  | 0.000  | 16.679 |
| MAINTANENCE COST | 0.242   | 0.000  | 0.242  |
| STARTUP COST     | 2.520   | 0.000  | 2.520  |
| --- TOTAL ---    | 19.441  | 0.000  | 19.441 |

## AREA INTERCHANGE:

| FROM AREA | TO AREA | LIMIT | TRANSFER |
|-----------|---------|-------|----------|
| BARTHOLD  | DEMELLO | 1000  | -77      |
| DEMELLO   | RINGLEE | 1000  | -157     |
| RINGLEE   | AJWOOD  | 1000  | -176     |

Table C-2

## HOURLY SYSTEM RESULT SUMMARIES (continued)

## UNIT COMMITMENT PROGRAM

PTI UNIT AND SYSTEM DATA FOR UC-1980  
 TEST CASE #UC002, UC ONLY WITH RESERVE REQ.  
 HOURLY LOAD FOR 3/26 TO 4/2/1979

\*\*\*\*\*  
 \* SYSTEM SUMMARY FOR MONDAY HOUR 10 \*  
 \*\*\*\*\*

| AREA<br>NAME | AREA<br>LOAD | ---GENERATION OUTPUT--- |     |       |      | --SYNCHRONOUS RESERVE-- |     |     |     |      | --NONE SYNCHR. RESERVE-- |     |     |     |      | ---OPERATING RESERVE--- |     |     |     |      |
|--------------|--------------|-------------------------|-----|-------|------|-------------------------|-----|-----|-----|------|--------------------------|-----|-----|-----|------|-------------------------|-----|-----|-----|------|
|              |              | STEAM                   | GAS | OTHER | SURP | REQ.                    | STM | GAS | OTH | SURP | REQ.                     | STM | GAS | OTH | SURP | REQ.                    | STM | GAS | OTH | SURP |
| BARTHOLD     | 602          | 419                     | 0   | 160   | -23  | 20                      | 31  | 0   | 0   | 11   | 20                       | 0   | 135 | 0   | 126  | 20                      | 0   | 0   | 0   | 106  |
| DEMELLO      | 99           | 0                       | 0   | 0     | -99  | 0                       | 0   | 0   | 0   | 0    | 0                        | 0   | 90  | 0   | 90   | 0                       | 0   | 0   | 0   | 90   |
| RINGLEE      | 550          | 428                     | 0   | 70    | -52  | 20                      | 22  | 0   | 30  | 32   | 20                       | 0   | 40  | 0   | 52   | 20                      | 0   | 0   | 0   | 32   |
| AJWOOD       | 349          | 523                     | 0   | 0     | 174  | 10                      | 22  | 0   | 0   | 12   | 10                       | 0   | 90  | 0   | 92   | 10                      | 0   | 0   | 0   | 82   |
| SYSTEM       | 1600         | 1370                    | 0   | 230   | 0    | 50                      | 75  | 0   | 30  | 55   | 50                       | 0   | 355 | 0   | 360  | 50                      | 0   | 0   | 0   | 310  |

## SYSTEM OPERATING COST ( 1000 \$ )

|                  | THERMAL | OTHERS | SUM    |
|------------------|---------|--------|--------|
| FUEL COST        | 17.968  | 0.000  | 17.968 |
| MAINTANANCE COST | 0.245   | 0.000  | 0.245  |
| STARTUP COST     | 1.260   | 0.000  | 1.260  |
| --- TOTAL ---    | 19.473  | 0.000  | 19.473 |

## AREA INTERCHANGE:

| FROM AREA | TO AREA | LIMIT | TRANSFER |
|-----------|---------|-------|----------|
| BARTHOLD  | DEMELLO | 1000  | -23      |
| DEMELLO   | RINGLEE | 1000  | -122     |
| RINGLEE   | AJWOOD  | 1000  | -174     |

Table C-2

## HOURLY SYSTEM RESULT SUMMARIES (continued)

## UNIT COMMITMENT PROGRAM

PTI UNIT AND SYSTEM DATA FOR UC-1980  
 TEST CASE #UC002, UC ONLY WITH RESERVE REQ.  
 HOURLY LOAD FOR 3/26 TO 4/2/1979

\*\*\*\*\*  
 \* SYSTEM SUMMARY FOR MONDAY HOUR 11 \*  
 \*\*\*\*\*

| AREA<br>NAME | AREA<br>LOAD | ---GENERATION OUTPUT--- |     |       |      | --SYNCHRONOUS RESERVE-- |     |     |     |      | --NONE SYNCHR. RESERVE-- |     |     |     |      | ---OPERATING RESERVE--- |     |     |     |      |
|--------------|--------------|-------------------------|-----|-------|------|-------------------------|-----|-----|-----|------|--------------------------|-----|-----|-----|------|-------------------------|-----|-----|-----|------|
|              |              | STEAM                   | GAS | OTHER | SURP | REQ.                    | STM | GAS | OTH | SURP | REQ.                     | STM | GAS | OTH | SURP | REQ.                    | STM | GAS | OTH | SURP |
| BARTHOLD     | 677          | 430                     | 0   | 160   | -87  | 20                      | 20  | 0   | 0   | 0    | 20                       | 0   | 135 | 0   | 115  | 20                      | 0   | 0   | 0   | 95   |
| DEMELLO      | 111          | 0                       | 0   | 0     | -111 | 0                       | 0   | 0   | 0   | 0    | 0                        | 0   | 90  | 0   | 90   | 0                       | 0   | 0   | 0   | 90   |
| RINGLEE      | 619          | 500                     | 0   | 100   | -19  | 20                      | 42  | 0   | 0   | 22   | 20                       | 0   | 40  | 0   | 42   | 20                      | 8   | 0   | 0   | 30   |
| AJWOOD       | 393          | 610                     | 0   | 0     | 217  | 10                      | 10  | 0   | 0   | 0    | 10                       | 0   | 90  | 0   | 80   | 10                      | 0   | 0   | 0   | 70   |
| SYSTEM       | 1800         | 1540                    | 0   | 260   | 0    | 50                      | 72  | 0   | 0   | 22   | 50                       | 0   | 355 | 0   | 327  | 50                      | 8   | 0   | 0   | 285  |

## SYSTEM OPERATING COST ( 1000 \$ )

|                  | THERMAL | OTHERS | SUM    |
|------------------|---------|--------|--------|
| FUEL COST        | 21.350  | 0.000  | 21.350 |
| MAINTANENCE COST | 0.245   | 0.000  | 0.245  |
| STARTUP COST     | 2.500   | 0.000  | 2.500  |
| --- TOTAL ---    | 24.095  | 0.000  | 24.095 |

## AREA INTERCHANGE:

| FROM AREA | TO AREA | LIMIT | TRANSFER |
|-----------|---------|-------|----------|
| BARTHOLD  | DEMELLO | 1000  | -87      |
| DEMELLO   | RINGLEE | 1000  | -198     |
| RINGLEE   | AJWOOD  | 1000  | -217     |

Table C-3

## HOURLY DISPATCHES FOR THERMAL UNITS

## UNIT COMMITMENT PROGRAM

PTI UNIT AND SYSTEM DATA FOR UC-1980  
 TEST CASE #UC002, UC ONLY WITH RESERVE REQ.  
 HOURLY LOAD FOR 3/26 TO 4/2/1979

## UNIT DISPATCH DATA FOR 8.00 HRS MONDAY

| FUEL COST |             | 13.410   |                   | MAIN. COST          |               | 0.222            |       | STARTUP COST   |                           | 1.910                        |                | TOTAL OPER. COST (1000\$) |  | 15.542 |  |
|-----------|-------------|----------|-------------------|---------------------|---------------|------------------|-------|----------------|---------------------------|------------------------------|----------------|---------------------------|--|--------|--|
| NO        | -UNIT NAME- | -STATUS- | LOWER ED<br>LIMIT | UPPER E.D.<br>LIMIT | E.D.<br>DERAT | DAILY OP.<br>CAP | DERAT | UNIT<br>OUTPUT | AVERAGE FULL<br>LOAD COST | AVERAGE COST<br>AT THIS LOAD | CONFIG<br>CODE |                           |  |        |  |
| 121       | B-75STB1    | OFF-AV   | 25                | 75                  | 0             | 75               | 0     | 0              | 16.84                     | 0.00                         | 1              |                           |  |        |  |
| 122       | B-75STB2    | OFF-AV   | 25                | 75                  | 0             | 75               | 0     | 0              | 17.77                     | 0.00                         | 1              |                           |  |        |  |
| 133       | B150STC3    | ON-CBSD  | 75                | 141                 | 0             | 150              | 0     | 91             | 14.63                     | 14.18                        | 1              |                           |  |        |  |
| 134       | B150STC4    | ON-TIME  | 75                | 141                 | 0             | 150              | 0     | 141            | 14.74                     | 14.73                        | 1              |                           |  |        |  |
| 221       | R-50STB1    | OFF-AV   | 17                | 50                  | 0             | 50               | 0     | 0              | 21.55                     | 0.00                         | 1              |                           |  |        |  |
| 222       | R-50STB2    | OFF-AV   | 17                | 50                  | 0             | 50               | 0     | 0              | 21.89                     | 0.00                         | 1              |                           |  |        |  |
| 231       | R-20STC1    | OFF-AV   | 7                 | 20                  | 0             | 20               | 0     | 0              | 26.05                     | 0.00                         | 1              |                           |  |        |  |
| 232       | R-20STC2    | OFF-AV   | 7                 | 20                  | 0             | 20               | 0     | 0              | 26.05                     | 0.00                         | 1              |                           |  |        |  |
| 243       | R225STD3    | ON-CBSD  | 90                | 214                 | 0             | 225              | 0     | 214            | 11.26                     | 11.16                        | 1              |                           |  |        |  |
| 244       | R225STD4    | ON-CBSD  | 90                | 214                 | 0             | 225              | 0     | 214            | 11.57                     | 11.49                        | 1              |                           |  |        |  |
| 311       | A-50STA1    | OFF-AV   | 17                | 50                  | 0             | 50               | 0     | 0              | 23.69                     | 0.00                         | 1              |                           |  |        |  |
| 312       | A-50STA2    | OFF-AV   | 17                | 50                  | 0             | 50               | 0     | 0              | 23.64                     | 0.00                         | 1              |                           |  |        |  |
| 313       | A-50STA3    | OFF-AV   | 17                | 50                  | 0             | 50               | 0     | 0              | 22.84                     | 0.00                         | 1              |                           |  |        |  |
| 324       | A-75STB4    | OFF-AV   | 25                | 75                  | 0             | 75               | 0     | 0              | 19.02                     | 0.00                         | 1              |                           |  |        |  |
| 325       | A-75STB5    | OFF-AV   | 25                | 75                  | 0             | 75               | 0     | 0              | 19.02                     | 0.00                         | 1              |                           |  |        |  |
| 336       | A235STC6    | ON-CBSD  | 90                | 228                 | 0             | 235              | 0     | 228            | 11.93                     | 11.87                        | 1              |                           |  |        |  |
| 337       | A235STC7    | ON-CBSD  | 90                | 235                 | 0             | 235              | 0     | 212            | 13.07                     | 12.79                        | 1              |                           |  |        |  |
| 651       | B-45GT-1    | OFF-AV   | 16                | 40                  | 0             | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |                           |  |        |  |
| 652       | B-45GT-2    | OFF-AV   | 16                | 40                  | 0             | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |                           |  |        |  |
| 661       | B-45GTRT    | OFF-AV   | 16                | 40                  | 0             | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |                           |  |        |  |
| 641       | M-45GTR1    | OFF-AV   | 16                | 40                  | 0             | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |                           |  |        |  |
| 642       | M-45GTR2    | OFF-AV   | 16                | 40                  | 0             | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |                           |  |        |  |
| 631       | R-40GTNA    | OFF-AV   | 12                | 35                  | 0             | 40               | 0     | 0              | 35.75                     | 0.00                         | 1              |                           |  |        |  |
| 611       | A-45GTTV    | OFF-AV   | 16                | 40                  | 0             | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |                           |  |        |  |
| 621       | A-45GTAN    | OFF-AV   | 16                | 40                  | 0             | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |                           |  |        |  |

Table C-3

## HOURLY DISPATCHES FOR THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI UNIT AND SYSTEM DATA FOR UC-1980  
 TEST CASE #UC002, UC ONLY WITH RESERVE REQ.  
 HOURLY LOAD FOR 3/26 TO 4/2/1979

## UNIT DISPATCH DATA FOR 9.00 HRS MONDAY

| FUEL COST |             | 16.679   | MAIN. COST        |                     | 0.242 | STARTUP COST     |       | 2.520          | TOTAL OPER. COST (1000\$) |                              | 19.441         |
|-----------|-------------|----------|-------------------|---------------------|-------|------------------|-------|----------------|---------------------------|------------------------------|----------------|
| NO        | -UNIT NAME- | -STATUS- | LOWER ED<br>LIMIT | UPPER E.D.<br>LIMIT | DERAT | DAILY OP.<br>CAP | DERAT | UNIT<br>OUTPUT | AVERAGE FULL<br>LOAD COST | AVERAGE COST<br>AT THIS LOAD | CONFIG<br>CODE |
| 121       | B-75STB1    | ON-TIME  | 25                | 75                  | 0     | 75               | 0     | 68             | 16.84                     | 16.49                        | 1              |
| 122       | B-75STB2    | ON-TIME  | 25                | 75                  | 0     | 75               | 0     | 62             | 17.77                     | 17.58                        | 1              |
| 133       | B150STC3    | ON-CBSD  | 75                | 141                 | 0     | 150              | 0     | 141            | 14.63                     | 14.58                        | 1              |
| 134       | B150STC4    | ON-TIME  | 75                | 141                 | 0     | 150              | 0     | 141            | 14.74                     | 14.73                        | 1              |
| 221       | R-50STB1    | OFF-AV   | 17                | 50                  | 0     | 50               | 0     | 0              | 21.55                     | 0.00                         | 1              |
| 222       | R-50STB2    | OFF-AV   | 17                | 50                  | 0     | 50               | 0     | 0              | 21.89                     | 0.00                         | 1              |
| 231       | R-20STC1    | OFF-AV   | 7                 | 20                  | 0     | 20               | 0     | 0              | 26.05                     | 0.00                         | 1              |
| 232       | R-20STC2    | OFF-AV   | 7                 | 20                  | 0     | 20               | 0     | 0              | 26.05                     | 0.00                         | 1              |
| 243       | R225STD3    | ON-CBSD  | 90                | 214                 | 0     | 225              | 0     | 214            | 11.26                     | 11.16                        | 1              |
| 244       | R225STD4    | ON-CBSD  | 90                | 214                 | 0     | 225              | 0     | 214            | 11.57                     | 11.49                        | 1              |
| 311       | A-50STA1    | OFF-AV   | 17                | 50                  | 0     | 50               | 0     | 0              | 23.69                     | 0.00                         | 1              |
| 312       | A-50STA2    | OFF-AV   | 17                | 50                  | 0     | 50               | 0     | 0              | 23.64                     | 0.00                         | 1              |
| 313       | A-50STA3    | OFF-AV   | 17                | 50                  | 0     | 50               | 0     | 0              | 22.84                     | 0.00                         | 1              |
| 324       | A-75STB4    | OFF-AV   | 25                | 75                  | 0     | 75               | 0     | 0              | 19.02                     | 0.00                         | 1              |
| 325       | A-75STB5    | OFF-AV   | 25                | 75                  | 0     | 75               | 0     | 0              | 19.02                     | 0.00                         | 1              |
| 336       | A235STC6    | ON-CBSD  | 90                | 228                 | 0     | 235              | 0     | 228            | 11.93                     | 11.87                        | 1              |
| 337       | A235STC7    | ON-CBSD  | 90                | 235                 | 0     | 235              | 0     | 232            | 13.07                     | 13.03                        | 1              |
| 651       | B-45GT-1    | OFF-AV   | 16                | 40                  | 0     | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |
| 652       | B-45GT-2    | OFF-AV   | 16                | 40                  | 0     | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |
| 661       | B-45GTRT    | OFF-AV   | 16                | 40                  | 0     | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |
| 641       | M-45GTR1    | OFF-AV   | 16                | 40                  | 0     | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |
| 642       | M-45GTR2    | OFF-AV   | 16                | 40                  | 0     | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |
| 631       | R-40GTNA    | OFF-AV   | 12                | 35                  | 0     | 40               | 0     | 0              | 35.75                     | 0.00                         | 1              |
| 611       | A-45GTTV    | OFF-AV   | 16                | 40                  | 0     | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |
| 621       | A-45GTAN    | OFF-AV   | 16                | 40                  | 0     | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |

Table C-3

## HOURLY DISPATCHES FOR THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI UNIT AND SYSTEM DATA FOR UC-1980  
 TEST CASE #UC002, UC ONLY WITH RESERVE REQ.  
 HOURLY LOAD FOR 3/26 TO 4/2/1979

UNIT DISPATCH DATA FOR 10.00 HRS MONDAY  
 -----

| FUEL COST | 17.968      | MAIN. COST | 0.245             | STARTUP COST   | 1.260         | TOTAL OPER. COST (1000\$) | 19.473         |                           |                              |                |
|-----------|-------------|------------|-------------------|----------------|---------------|---------------------------|----------------|---------------------------|------------------------------|----------------|
| NO        | -UNIT NAME- | -STATUS-   | LOWER ED<br>LIMIT | UPPER<br>LIMIT | E.D.<br>DERAT | DAILY OP.<br>CAP DERAT    | UNIT<br>OUTPUT | AVERAGE FULL<br>LOAD COST | AVERAGE COST<br>AT THIS LOAD | CONFIG<br>CODE |
| 121       | B-75STB1    | ON-TIME    | 25                | 75             | 0             | 75                        | 0              | 68                        | 16.84                        | 1              |
| 122       | B-75STB2    | ON-TIME    | 25                | 75             | 0             | 75                        | 0              | 69                        | 17.77                        | 1              |
| 133       | B150STC3    | ON-CBSD    | 75                | 141            | 0             | 150                       | 0              | 141                       | 14.63                        | 1              |
| 134       | B150STC4    | ON-TIME    | 75                | 141            | 0             | 150                       | 0              | 141                       | 14.74                        | 1              |
| 221       | R-50STB1    | OFF-AV     | 17                | 50             | 0             | 50                        | 0              | 0                         | 21.55                        | 1              |
| 222       | R-50STB2    | OFF-AV     | 17                | 50             | 0             | 50                        | 0              | 0                         | 21.89                        | 1              |
| 231       | R-20STC1    | OFF-AV     | 7                 | 20             | 0             | 20                        | 0              | 0                         | 26.05                        | 1              |
| 232       | R-20STC2    | OFF-AV     | 7                 | 20             | 0             | 20                        | 0              | 0                         | 26.05                        | 1              |
| 243       | R225STD3    | ON-CBSD    | 90                | 214            | 0             | 225                       | 0              | 214                       | 11.26                        | 1              |
| 244       | R225STD4    | ON-CBSD    | 90                | 214            | 0             | 225                       | 0              | 214                       | 11.57                        | 1              |
| 311       | A-50STA1    | OFF-AV     | 17                | 50             | 0             | 50                        | 0              | 0                         | 23.69                        | 1              |
| 312       | A-50STA2    | OFF-AV     | 17                | 50             | 0             | 50                        | 0              | 0                         | 23.64                        | 1              |
| 313       | A-50STA3    | OFF-AV     | 17                | 50             | 0             | 50                        | 0              | 0                         | 22.84                        | 1              |
| 324       | A-75STB4    | ON-TIME    | 25                | 75             | 0             | 75                        | 0              | 60                        | 19.02                        | 1              |
| 325       | A-75STB5    | OFF-AV     | 25                | 75             | 0             | 75                        | 0              | 0                         | 19.02                        | 1              |
| 336       | A235STC6    | ON-CBSD    | 90                | 228            | 0             | 235                       | 0              | 228                       | 11.93                        | 1              |
| 337       | A235STC7    | ON-CBSD    | 90                | 235            | 0             | 235                       | 0              | 235                       | 13.07                        | 1              |
| 651       | B-45GT-1    | OFF-AV     | 16                | 40             | 0             | 45                        | 0              | 0                         | 34.83                        | 1              |
| 652       | B-45GT-2    | OFF-AV     | 16                | 40             | 0             | 45                        | 0              | 0                         | 34.83                        | 1              |
| 661       | B-45GTRT    | OFF-AV     | 16                | 40             | 0             | 45                        | 0              | 0                         | 34.83                        | 1              |
| 641       | M-45GTR1    | OFF-AV     | 16                | 40             | 0             | 45                        | 0              | 0                         | 34.83                        | 1              |
| 642       | M-45GTR2    | OFF-AV     | 16                | 40             | 0             | 45                        | 0              | 0                         | 34.83                        | 1              |
| 631       | R-40GTNA    | OFF-AV     | 12                | 35             | 0             | 40                        | 0              | 0                         | 35.75                        | 1              |
| 611       | A-45GTTV    | OFF-AV     | 16                | 40             | 0             | 45                        | 0              | 0                         | 34.83                        | 1              |
| 621       | A-45GTAN    | OFF-AV     | 16                | 40             | 0             | 45                        | 0              | 0                         | 34.83                        | 1              |

Table C-3

## HOURLY DISPATCHES FOR THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI UNIT AND SYSTEM DATA FOR UC-1980  
 TEST CASE #UC002, UC ONLY WITH RESERVE REQ.  
 HOURLY LOAD FOR 3/26 TO 4/2/1979

## UNIT DISPATCH DATA FOR 11.00 HRS MONDAY

| FUEL COST |             | 21.350   | MAIN. COST        |                | 0.245         | STARTUP COST     |       | 2.500          | TOTAL OPER. COST (1000\$) |                              | 24.095         |
|-----------|-------------|----------|-------------------|----------------|---------------|------------------|-------|----------------|---------------------------|------------------------------|----------------|
| NO        | -UNIT NAME- | -STATUS- | LOWER ED<br>LIMIT | UPPER<br>LIMIT | E.D.<br>DERAT | DAILY OP.<br>CAP | DERAT | UNIT<br>OUTPUT | AVERAGE FULL<br>LOAD COST | AVERAGE COST<br>AT THIS LOAD | CONFIG<br>CODE |
| 121       | B-75STB1    | ON-TIME  | 25                | 75             | 0             | 75               | 0     | 73             | 16.84                     | 16.74                        | 1              |
| 122       | B-75STB2    | ON-TIME  | 25                | 75             | 0             | 75               | 0     | 75             | 17.77                     | 17.77                        | 1              |
| 133       | B150STC3    | ON-CBSD  | 75                | 141            | 0             | 150              | 0     | 141            | 14.63                     | 14.58                        | 1              |
| 134       | B150STC4    | ON-TIME  | 75                | 141            | 0             | 150              | 0     | 141            | 14.74                     | 14.73                        | 1              |
| 221       | R-50STB1    | ON-TIME  | 17                | 50             | 0             | 50               | 0     | 35             | 21.55                     | 20.31                        | 1              |
| 222       | R-50STB2    | ON-TIME  | 17                | 50             | 0             | 50               | 0     | 37             | 21.89                     | 21.12                        | 1              |
| 231       | R-20STC1    | OFF-AV   | 7                 | 20             | 0             | 20               | 0     | 0              | 26.05                     | 0.00                         | 1              |
| 232       | R-20STC2    | OFF-AV   | 7                 | 20             | 0             | 20               | 0     | 0              | 26.05                     | 0.00                         | 1              |
| 243       | R225STD3    | ON-CBSD  | 90                | 214            | 0             | 225              | 0     | 214            | 11.26                     | 11.16                        | 1              |
| 244       | R225STD4    | ON-CBSD  | 90                | 214            | 0             | 225              | 0     | 214            | 11.57                     | 11.49                        | 1              |
| 311       | A-50STA1    | OFF-AV   | 17                | 50             | 0             | 50               | 0     | 0              | 23.69                     | 0.00                         | 1              |
| 312       | A-50STA2    | OFF-AV   | 17                | 50             | 0             | 50               | 0     | 0              | 23.64                     | 0.00                         | 1              |
| 313       | A-50STA3    | OFF-AV   | 17                | 50             | 0             | 50               | 0     | 0              | 22.84                     | 0.00                         | 1              |
| 324       | A-75STB4    | ON-TIME  | 25                | 75             | 0             | 75               | 0     | 72             | 19.02                     | 18.95                        | 1              |
| 325       | A-75STB5    | ON-TIME  | 25                | 75             | 0             | 75               | 0     | 75             | 19.02                     | 19.02                        | 1              |
| 336       | A235STC6    | ON-CBSD  | 90                | 228            | 0             | 235              | 0     | 228            | 11.93                     | 11.87                        | 1              |
| 337       | A235STC7    | ON-CBSD  | 90                | 235            | 0             | 235              | 0     | 235            | 13.07                     | 13.07                        | 1              |
| 651       | B-45GT-1    | OFF-AV   | 16                | 40             | 0             | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |
| 652       | B-45GT-2    | OFF-AV   | 16                | 40             | 0             | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |
| 661       | B-45GTRT    | OFF-AV   | 16                | 40             | 0             | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |
| 641       | M-45GTR1    | OFF-AV   | 16                | 40             | 0             | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |
| 642       | M-45GTR2    | OFF-AV   | 16                | 40             | 0             | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |
| 631       | R-40GTNA    | OFF-AV   | 12                | 35             | 0             | 40               | 0     | 0              | 35.75                     | 0.00                         | 1              |
| 611       | A-45GTTV    | OFF-AV   | 16                | 40             | 0             | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |
| 621       | A-45GTAN    | OFF-AV   | 16                | 40             | 0             | 45               | 0     | 0              | 34.83                     | 0.00                         | 1              |

Table C-4

## SCHEDULES FOR HYDRO PLANTS

\*\*\*\* DETAILED RESULTS FOR PLANT 1 PTIHV1 \*\*\*\*

| HR | ORIGL<br>LOAD<br>MW | FINAL<br>LOAD<br>MW | POND<br>STORAGE<br>MWH | PLANT<br>GEN<br>MW | RESERVES<br>RSVON RSVOF<br>MW MW |     | SPILL<br>MW | INFLOW<br>MW |
|----|---------------------|---------------------|------------------------|--------------------|----------------------------------|-----|-------------|--------------|
| 1  | 1100                | 1100                | 818.0                  | 0                  | 0                                | 100 | 0.0         | 18.0         |
| 2  | 1300                | 1300                | 836.0                  | 0                  | 0                                | 100 | 0.0         | 18.0         |
| 3  | 1530                | 1430                | 754.0                  | 100                | 0                                | 0   | 0.0         | 18.0         |
| 4  | 1700                | 1600                | 672.0                  | 100                | 0                                | 0   | 0.0         | 18.0         |
| 5  | 1720                | 1620                | 590.0                  | 100                | 0                                | 0   | 0.0         | 18.0         |
| 6  | 1650                | 1550                | 508.0                  | 100                | 0                                | 0   | 0.0         | 18.0         |
| 7  | 1650                | 1550                | 426.0                  | 100                | 0                                | 0   | 0.0         | 18.0         |
| 8  | 1500                | 1418                | 362.0                  | 82                 | 18                               | 0   | 0.0         | 18.0         |
| 9  | 1300                | 1300                | 380.0                  | 0                  | 0                                | 94  | 0.0         | 18.0         |
| 10 | 1250                | 1250                | 398.0                  | 0                  | 0                                | 99  | 0.0         | 18.0         |
| 11 | 1200                | 1200                | 416.0                  | 0                  | 0                                | 100 | 0.0         | 18.0         |
| 12 | 1300                | 1300                | 434.0                  | 0                  | 0                                | 100 | 0.0         | 18.0         |
| 13 | 1450                | 1400                | 402.0                  | 50                 | 50                               | 0   | 0.0         | 18.0         |
| 14 | 1400                | 1400                | 420.0                  | 0                  | 0                                | 100 | 0.0         | 18.0         |
| 15 | 1300                | 1300                | 438.0                  | 0                  | 0                                | 100 | 0.0         | 18.0         |
| 16 | 1170                | 1170                | 456.0                  | 0                  | 0                                | 100 | 0.0         | 18.0         |
| 17 | 1050                | 1050                | 474.0                  | 0                  | 0                                | 100 | 0.0         | 18.0         |
| 18 | 1000                | 1000                | 492.0                  | 0                  | 0                                | 100 | 0.0         | 18.0         |
| 19 | 1000                | 1000                | 510.0                  | 0                  | 0                                | 100 | 0.0         | 18.0         |
| 20 | 1000                | 1000                | 528.0                  | 0                  | 0                                | 100 | 0.0         | 18.0         |
| 21 | 900                 | 900                 | 546.0                  | 0                  | 0                                | 100 | 0.0         | 18.0         |
| 22 | 900                 | 900                 | 564.0                  | 0                  | 0                                | 100 | 0.0         | 18.0         |
| 23 | 950                 | 950                 | 582.0                  | 0                  | 0                                | 100 | 0.0         | 18.0         |
| 24 | 1000                | 1000                | 600.0                  | 0                  | 0                                | 100 | 0.0         | 18.0         |

Table C-4

## SCHEDULES FOR HYDRO PLANTS (continued)

## \*\*\*\* DETAILED RESULTS FOR PLANT 2 PTIHY2 \*\*\*\*

| HR | ORIGL<br>LOAD<br>MW | FINAL<br>LOAD<br>MW | POND<br>STORAGE<br>MWH | PLANT<br>GEN<br>MW | RESERVES<br>RSVON<br>MW | RSVOF<br>MW | SPILL<br>MW | INFLOW<br>MW |
|----|---------------------|---------------------|------------------------|--------------------|-------------------------|-------------|-------------|--------------|
| 1  | 1100                | 1100                | 700.0                  | 0                  | 0                       | 60          | 0.0         | 0.0          |
| 2  | 1300                | 1300                | 700.0                  | 0                  | 0                       | 60          | 0.0         | 0.0          |
| 3  | 1530                | 1370                | 715.0                  | 60                 | 0                       | 0           | 0.0         | 75.0         |
| 4  | 1700                | 1540                | 730.0                  | 60                 | 0                       | 0           | 0.0         | 75.0         |
| 5  | 1720                | 1560                | 745.0                  | 60                 | 0                       | 0           | 0.0         | 75.0         |
| 6  | 1650                | 1490                | 760.0                  | 60                 | 0                       | 0           | 0.0         | 75.0         |
| 7  | 1650                | 1490                | 775.0                  | 60                 | 0                       | 0           | 0.0         | 75.0         |
| 8  | 1500                | 1358                | 776.5                  | 60                 | 0                       | 0           | 0.0         | 61.5         |
| 9  | 1300                | 1300                | 776.5                  | 0                  | 0                       | 60          | 0.0         | 0.0          |
| 10 | 1250                | 1250                | 776.5                  | 0                  | 0                       | 60          | 0.0         | 0.0          |
| 11 | 1200                | 1200                | 776.5                  | 0                  | 0                       | 60          | 0.0         | 0.0          |
| 12 | 1300                | 1300                | 776.5                  | 0                  | 0                       | 60          | 0.0         | 0.0          |
| 13 | 1450                | 1344                | 758.0                  | 56                 | 4                       | 0           | 0.0         | 37.5         |
| 14 | 1400                | 1342                | 700.0                  | 58                 | 2                       | 0           | 0.0         | 0.0          |
| 15 | 1300                | 1300                | 700.0                  | 0                  | 0                       | 60          | 0.0         | 0.0          |
| 16 | 1170                | 1170                | 700.0                  | 0                  | 0                       | 60          | 0.0         | 0.0          |
| 17 | 1050                | 1050                | 700.0                  | 0                  | 0                       | 60          | 0.0         | 0.0          |
| 18 | 1000                | 1000                | 700.0                  | 0                  | 0                       | 60          | 0.0         | 0.0          |
| 19 | 1000                | 1000                | 700.0                  | 0                  | 0                       | 60          | 0.0         | 0.0          |
| 20 | 1000                | 1000                | 700.0                  | 0                  | 0                       | 60          | 0.0         | 0.0          |
| 21 | 900                 | 900                 | 700.0                  | 0                  | 0                       | 60          | 0.0         | 0.0          |
| 22 | 900                 | 900                 | 700.0                  | 0                  | 0                       | 60          | 0.0         | 0.0          |
| 23 | 950                 | 950                 | 700.0                  | 0                  | 0                       | 60          | 0.0         | 0.0          |
| 24 | 1000                | 1000                | 700.0                  | 0                  | 0                       | 60          | 0.0         | 0.0          |

Table C-4

## SCHEDULES FOR HYDRO PLANTS (continued)

## \*\*\*\* SUMMARY FOR TOTAL HOURLY OPERATION \*\*\*\*

| HOUR | ORIGL<br>LOAD<br>MW | ADJST<br>LOAD<br>MW | TOTAL<br>GEN<br>MW | RSVON<br>MW | RSVOF<br>MW |
|------|---------------------|---------------------|--------------------|-------------|-------------|
| 1    | 1100                | 1100                | 0                  | 0           | 160         |
| 2    | 1300                | 1300                | 0                  | 0           | 160         |
| 3    | 1530                | 1370                | 160                | 0           | 0           |
| 4    | 1700                | 1540                | 160                | 0           | 0           |
| 5    | 1720                | 1560                | 160                | 0           | 0           |
| 6    | 1650                | 1490                | 160                | 0           | 0           |
| 7    | 1650                | 1490                | 160                | 0           | 0           |
| 8    | 1500                | 1358                | 142                | 18          | 0           |
| 9    | 1300                | 1300                | 0                  | 0           | 154         |
| 10   | 1250                | 1250                | 0                  | 0           | 159         |
| 11   | 1200                | 1200                | 0                  | 0           | 160         |
| 12   | 1300                | 1300                | 0                  | 0           | 160         |
| 13   | 1450                | 1344                | 106                | 54          | 0           |
| 14   | 1400                | 1342                | 58                 | 2           | 100         |
| 15   | 1300                | 1300                | 0                  | 0           | 160         |
| 16   | 1170                | 1170                | 0                  | 0           | 160         |
| 17   | 1050                | 1050                | 0                  | 0           | 160         |
| 18   | 1000                | 1000                | 0                  | 0           | 160         |
| 19   | 1000                | 1000                | 0                  | 0           | 160         |
| 20   | 1000                | 1000                | 0                  | 0           | 160         |
| 21   | 900                 | 900                 | 0                  | 0           | 160         |
| 22   | 900                 | 900                 | 0                  | 0           | 160         |
| 23   | 950                 | 950                 | 0                  | 0           | 160         |
| 24   | 1000                | 1000                | 0                  | 0           | 160         |

Table C-5

## SCHEDULE FOR PUMPED STORAGE PLANT

\*\*\*\* DETAILED RESULTS FOR PLANT 1 PTIPS1 \*\*\*\*

| HR | ORIGL      | FINAL      | UPPER POND    |        | GEN +<br>PUMP -<br>MW | RESERVE(MW)<br>CONTRIBUTIONS |       |       |
|----|------------|------------|---------------|--------|-----------------------|------------------------------|-------|-------|
|    | LOAD<br>MW | LOAD<br>MW | STORAGE<br>FT | MWH    |                       | RSVON                        | RVOF1 | RVOF2 |
| 1  | 1100       | 1100       | 1150.0        | 1200.0 | 0                     | 0                            | 100   | 0     |
| 2  | 1300       | 1300       | 1150.0        | 1200.0 | 0                     | 0                            | 100   | 0     |
| 3  | 1440       | 1370       | 1143.6        | 1130.0 | 70                    | 30                           | 0     | 0     |
| 4  | 1640       | 1540       | 1134.5        | 1030.0 | 100                   | 0                            | 0     | 0     |
| 5  | 1660       | 1560       | 1125.5        | 930.0  | 100                   | 0                            | 0     | 0     |
| 6  | 1590       | 1490       | 1115.3        | 830.0  | 100                   | 0                            | 0     | 0     |
| 7  | 1490       | 1490       | 1115.3        | 830.0  | 0                     | 0                            | 100   | 0     |
| 8  | 1358       | 1358       | 1115.3        | 830.0  | 0                     | 0                            | 100   | 0     |
| 9  | 1300       | 1300       | 1115.3        | 830.0  | 0                     | 0                            | 100   | 0     |
| 10 | 1250       | 1250       | 1115.3        | 830.0  | 0                     | 0                            | 100   | 0     |
| 11 | 1200       | 1200       | 1115.3        | 830.0  | 0                     | 0                            | 100   | 0     |
| 12 | 1300       | 1300       | 1115.3        | 830.0  | 0                     | 0                            | 100   | 0     |
| 13 | 1344       | 1344       | 1115.3        | 830.0  | 0                     | 0                            | 100   | 0     |
| 14 | 1342       | 1342       | 1115.3        | 830.0  | 0                     | 0                            | 100   | 0     |
| 15 | 1300       | 1300       | 1115.3        | 830.0  | 0                     | 0                            | 100   | 0     |
| 16 | 1170       | 1170       | 1115.3        | 830.0  | 0                     | 0                            | 100   | 0     |
| 17 | 1050       | 1050       | 1115.3        | 830.0  | 0                     | 0                            | 100   | 0     |
| 18 | 1000       | 1000       | 1115.3        | 830.0  | 0                     | 0                            | 100   | 0     |
| 19 | 950        | 1000       | 1119.6        | 867.0  | -50                   | 50                           | 0     | 100   |
| 20 | 900        | 1000       | 1126.5        | 941.0  | -100                  | 100                          | 0     | 100   |
| 21 | 800        | 900        | 1133.2        | 1015.0 | -100                  | 100                          | 0     | 100   |
| 22 | 800        | 900        | 1139.9        | 1089.0 | -100                  | 100                          | 0     | 100   |
| 23 | 850        | 950        | 1146.6        | 1163.0 | -100                  | 100                          | 0     | 100   |
| 24 | 950        | 1000       | 1150.0        | 1200.0 | -50                   | 50                           | 0     | 100   |

## Appendix D

### DATA FOR NEW YORK TEST SYSTEM

This appendix contains the data on all the generating facilities for the New York test system that was used for testing the search approach to daily fuel scheduling:

- 16 conventional hydro plants
- Niagara Falls project
- Gilboa pumped storage plant
- 1 fuel limited thermal plant with two units
- Thermal system with 113 units.

Table D-1

DATA FOR CONVENTIONAL HYDRO PLANT ST. LAWRENCE

|                                      |   |         |
|--------------------------------------|---|---------|
| PLANT ID                             | : | ST.LAW  |
| NO. OF UNITS                         | : | 1       |
| MIN UNIT GEN CAP MW                  | : | 0       |
| MAX UNIT GEN CAP MW                  | : | 912     |
| UNIT ON-LINE RES MW                  | : | 60      |
| UNIT OFF-LINE RE MW                  | : | 60      |
| PLANT R.R. MW/MIN                    | : | 2       |
| PLANT INI. GEN. MW                   | : | 600     |
| RSVOIR MIN STO FT                    | : | 4000.00 |
| RSVOIR MAX STO FT                    | : | 5760.00 |
| RSVOIR STO START FT                  | : | 5000.00 |
| RSVOIR STO END FT                    | : | 5000.00 |
| RSVOIR MIN STO MWH                   | : | 4000.00 |
| RSVOIR MAX STO MWH                   | : | 5760.00 |
| RSVOIR STO START MWH                 | : | 5000.00 |
| RSVOIR STO END MWH                   | : | 5000.00 |
| MAX. GENERATION MW                   | : | 690     |
| MIN. GENERATION MW                   | : | 510     |
| INFLOW CONVERSION<br>FACTOR MW /KCFS | : | 1.0000  |

Table D-2

DATA FOR CONVENTIONAL HYDRO PLANT URAQUT

|                                      |   |          |
|--------------------------------------|---|----------|
| PLANT ID                             | : | URAQUT   |
| NO. OF UNITS                         | : | 1        |
| MIN UNIT GEN CAP MW                  | : | 1        |
| MAX UNIT GEN CAP MW                  | : | 104      |
| UNIT ON-LINE RES MW                  | : | 100      |
| UNIT OFF-LINE RE MW                  | : | 100      |
| PLANT R.R. MW/MIN                    | : | 10       |
| PLANT INI. GEN. MW                   | : | 0        |
| RSVOIR MIN STO FT                    | : | 20000.00 |
| RSVOIR MAX STO FT                    | : | 51000.00 |
| RSVOIR STO START FT                  | : | 35000.00 |
| RSVOIR STO END FT                    | : | 35000.00 |
| RSVOIR MIN STO MWH                   | : | 20000.00 |
| RSVOIR MAX STO MWH                   | : | 51000.00 |
| RSVOIR STO START MWH                 | : | 35000.00 |
| RSVOIR STO END MWH                   | : | 35000.00 |
| MAX. GENERATION MW                   | : | 104      |
| MIN. GENERATION MW                   | : | 0        |
| INFLOW CONVERSION<br>FACTOR MW /KCFS | : | 34.0700  |

Table D-3

## DATA FOR CONVENTIONAL HYDRO PLANT LRAQUT

|                                      |   |         |
|--------------------------------------|---|---------|
| PLANT ID                             | : | LRAQUT  |
| NO. OF UNITS                         | : | 1       |
| MIN UNIT GEN CAP MW                  | : | 1       |
| MAX UNIT GEN CAP MW                  | : | 60      |
| UNIT ON-LINE RES MW                  | : | 60      |
| UNIT OFF-LINE RE MW                  | : | 60      |
| PLANT R.R. MW/MIN                    | : | 5       |
| PLANT INI. GEN. MW                   | : | 0       |
| RSVOIR MIN STO FT                    | : | 1.00    |
| RSVOIR MAX STO FT                    | : | 1683.00 |
| RSVOIR STO START FT                  | : | 1000.00 |
| RSVOIR STO END FT                    | : | 1000.00 |
| RSVOIR MIN STO MWH                   | : | 1.00    |
| RSVOIR MAX STO MWH                   | : | 1683.00 |
| RSVOIR STO START MWH                 | : | 1000.00 |
| RSVOIR STO END MWH                   | : | 1000.00 |
| MAX. GENERATION MW                   | : | 60      |
| MIN. GENERATION MW                   | : | 7       |
| INFLOW CONVERSION<br>FACTOR MW /KCFS | : | 23.7000 |

Table D-4

## DATA FOR CONVENTIONAL HYDRO PLANT BEAVER

|                                      |   |         |
|--------------------------------------|---|---------|
| PLANT ID                             | : | BEAVER  |
| NO. OF UNITS                         | : | 1       |
| MIN UNIT GEN CAP MW                  | : | 1       |
| MAX UNIT GEN CAP MW                  | : | 46      |
| UNIT ON-LINE RES MW                  | : | 20      |
| UNIT OFF-LINE RE MW                  | : | 20      |
| PLANT R.R. MW/MIN                    | : | 3       |
| PLANT INI. GEN. MW                   | : | 0       |
| RSVOIR MIN STO FT                    | : | 500.00  |
| RSVOIR MAX STO FT                    | : | 1471.00 |
| RSVOIR STO START FT                  | : | 1100.00 |
| RSVOIR STO END FT                    | : | 1100.00 |
| RSVOIR MIN STO MWH                   | : | 500.00  |
| RSVOIR MAX STO MWH                   | : | 1471.00 |
| RSVOIR STO START MWH                 | : | 1100.00 |
| RSVOIR STO END MWH                   | : | 1100.00 |
| INFLOW CONVERSION<br>FACTOR MW /KCFS | : | 53.9200 |
| MIN. GENERATION MW                   | : | 0       |

Table D-5

DATA FOR CONVENTIONAL HYDRO PLANT BLACK

|                                      |   |         |
|--------------------------------------|---|---------|
| PLANT ID                             | : | BLACK   |
| NO. OF UNITS                         | : | 1       |
| MIN UNIT GEN CAP MW                  | : | 1       |
| MAX UNIT GEN CAP MW                  | : | 45      |
| UNIT ON-LINE RES MW                  | : | 20      |
| UNIT OFF-LINE RE MW                  | : | 20      |
| PLANT R.R. MW/MIN                    | : | 3       |
| PLANT INI. GEN. MW                   | : | 0       |
| RSVOIR MIN STO FT                    | : | 1.00    |
| RSVOIR MAX STO FT                    | : | 20.00   |
| RSVOIR STO START FT                  | : | 10.00   |
| RSVOIR STO END FT                    | : | 10.00   |
| RSVOIR MIN STO MWH                   | : | 1.00    |
| RSVOIR MAX STO MWH                   | : | 20.00   |
| RSVOIR STO START MWH                 | : | 10.00   |
| RSVOIR STO END MWH                   | : | 10.00   |
| INFLOW CONVERSION<br>FACTOR MW /KCFS | : | 13.4700 |
| MIN. GENERATION MW                   | : | 13      |

Table D-6

DATA FOR CONVENTIONAL HYDRO PLANT GATCHI

|                                      |   |         |
|--------------------------------------|---|---------|
| PLANT ID                             | : | GATCHI  |
| NO. OF UNITS                         | : | 1       |
| MIN UNIT GEN CAP MW                  | : | 1       |
| MAX UNIT GEN CAP MW                  | : | 33      |
| UNIT ON-LINE RES MW                  | : | 20      |
| UNIT OFF-LINE RE MW                  | : | 20      |
| PLANT R.R. MW/MIN                    | : | 3       |
| PLANT INI. GEN. MW                   | : | 0       |
| RSVOIR MIN STO FT                    | : | 400.00  |
| RSVOIR MAX STO FT                    | : | 700.00  |
| RSVOIR STO START FT                  | : | 600.00  |
| RSVOIR STO END FT                    | : | 600.00  |
| RSVOIR MIN STO MWH                   | : | 400.00  |
| RSVOIR MAX STO MWH                   | : | 700.00  |
| RSVOIR STO START MWH                 | : | 600.00  |
| RSVOIR STO END MWH                   | : | 600.00  |
| INFLOW CONVERSION<br>FACTOR MW /KCFS | : | 34.9000 |
| MIN. GENERATION MW                   | : | 0       |

Table D-7

DATA FOR CONVENTIONAL HYDRO PLANT PORTER

|                                      |   |         |
|--------------------------------------|---|---------|
| PLANT ID                             | : | PORTER  |
| NO. OF UNITS                         | : | 1       |
| MIN UNIT GEN CAP MW                  | : | 1       |
| MAX UNIT GEN CAP MW                  | : | 46      |
| UNIT ON-LINE RES MW                  | : | 30      |
| UNIT OFF-LINE RE MW                  | : | 30      |
| PLANT R.R. MW/MIN                    | : | 3       |
| PLANT INI. GEN. MW                   | : | 0       |
| RSVOIR MIN STO FT                    | : | 500.00  |
| RSVOIR MAX STO FT                    | : | 957.00  |
| RSVOIR STO START FT                  | : | 700.00  |
| RSVOIR STO END FT                    | : | 700.00  |
| RSVOIR MIN STO MWH                   | : | 500.00  |
| RSVOIR MAX STO MWH                   | : | 957.00  |
| RSVOIR STO START MWH                 | : | 700.00  |
| RSVOIR STO END MWH                   | : | 700.00  |
| INFLOW CONVERSION<br>FACTOR MW /KCFS | : | 29.6400 |
| MIN. GENERATION MW                   | : | 4       |

Table D-8

DATA FOR CONVENTIONAL HYDRO PLANT BENNET

|                                      |   |          |
|--------------------------------------|---|----------|
| PLANT ID                             | : | BENNET   |
| NO. OF UNITS                         | : | 1        |
| MIN UNIT GEN CAP MW                  | : | 1        |
| MAX UNIT GEN CAP MW                  | : | 33       |
| UNIT ON-LINE RES MW                  | : | 20       |
| UNIT OFF-LINE RE MW                  | : | 20       |
| PLANT R.R. MW/MIN                    | : | 2        |
| PLANT INI. GEN. MW                   | : | 0        |
| RSVOIR MIN STO FT                    | : | 5000.00  |
| RSVOIR MAX STO FT                    | : | 10000.00 |
| RSVOIR STO START FT                  | : | 8000.00  |
| RSVOIR STO END FT                    | : | 8000.00  |
| RSVOIR MIN STO MWH                   | : | 5000.00  |
| RSVOIR MAX STO MWH                   | : | 10000.00 |
| RSVOIR STO START MWH                 | : | 8000.00  |
| RSVOIR STO END MWH                   | : | 8000.00  |
| INFLOW CONVERSION<br>FACTOR MW /KCFS | : | 1.0000   |
| MIN. GENERATION MW                   | : | 0        |

Table D-9

## DATA FOR CONVENTIONAL HYDRO PLANT OSWEGO

|                                      |   |        |
|--------------------------------------|---|--------|
| PLANT ID                             | : | OSWEGO |
| NO. OF UNITS                         | : | 1      |
| MIN UNIT GEN CAP MW                  | : | 1      |
| MAX UNIT GEN CAP MW                  | : | 32     |
| UNIT ON-LINE RES MW                  | : | 20     |
| UNIT OFF-LINE RE MW                  | : | 20     |
| PLANT R.R. MW/MIN                    | : | 3      |
| PLANT INI. GEN. MW                   | : | 0      |
| RSVOIR MIN STO FT                    | : | 1.00   |
| RSVOIR MAX STO FT                    | : | 30.00  |
| RSVOIR STO START FT                  | : | 15.00  |
| RSVOIR STO END FT                    | : | 15.00  |
| RSVOIR MIN STO MWH                   | : | 1.00   |
| RSVOIR MAX STO MWH                   | : | 30.00  |
| RSVOIR STO START MWH                 | : | 15.00  |
| RSVOIR STO END MWH                   | : | 15.00  |
| INFLOW CONVERSION<br>FACTOR MW /KCFS | : | 1.0000 |
| MIN. GENERATION MW                   | : | 0      |

Table D-10

DATA FOR CONVENTIONAL HYDRO PLANT MISCHY

|                                      |   |        |
|--------------------------------------|---|--------|
| PLANT ID                             | : | MISCHY |
| NO. OF UNITS                         | : | 1      |
| MIN UNIT GEN CAP MW                  | : | 1      |
| MAX UNIT GEN CAP MW                  | : | 20     |
| UNIT ON-LINE RES MW                  | : | 10     |
| UNIT OFF-LINE RE MW                  | : | 10     |
| PLANT R.R. MW/MIN                    | : | 2      |
| PLANT INI. GEN. MW                   | : | 0      |
| RSVOIR MIN STO FT                    | : | 0.00   |
| RSVOIR MAX STO FT                    | : | 20.00  |
| RSVOIR STO START FT                  | : | 10.00  |
| RSVOIR STO END FT                    | : | 10.00  |
| RSVOIR MIN STO MWH                   | : | 0.00   |
| RSVOIR MAX STO MWH                   | : | 20.00  |
| RSVOIR STO START MWH:                | : | 10.00  |
| RSVOIR STO END MWH                   | : | 10.00  |
| INFLOW CONVERSION<br>FACTOR MW /KCFS | : | 1.0000 |
| MIN. GENERATION MW                   | : | 0      |

Table D-11

DATA FOR CONVENTIONAL HYDRO PLANT SPIER

|                                      |   |         |
|--------------------------------------|---|---------|
| PLANT ID                             | : | SPIER   |
| NO. OF UNITS                         | : | 1       |
| MIN UNIT GEN CAP MW                  | : | 1       |
| MAX UNIT GEN CAP MW                  | : | 144     |
| UNIT ON-LINE RES MW                  | : | 100     |
| UNIT OFF-LINE RE MW                  | : | 144     |
| PLANT R.R. MW/MIN                    | : | 10      |
| PLANT INI. GEN. MW                   | : | 0       |
| RSVOIR MIN STO FT                    | : | 600.00  |
| RSVOIR MAX STO FT                    | : | 1234.00 |
| RSVOIR STO START FT                  | : | 1000.00 |
| RSVOIR STO END FT                    | : | 1000.00 |
| RSVOIR MIN STO MWH                   | : | 600.00  |
| RSVOIR MAX STO MWH                   | : | 1234.00 |
| RSVOIR STO START MWH                 | : | 1000.00 |
| RSVOIR STO END MWH                   | : | 1000.00 |
| INFLOW CONVERSION<br>FACTOR MW /KCFS | : | 1.0000  |
| MIN. GENERATION MW                   | : | 3       |

Table D-12

## DATA FOR CONVENTIONAL HYDRO PLANT INGHAM

|                                      |   |        |
|--------------------------------------|---|--------|
| PLANT ID                             | : | INGHAM |
| NO. OF UNITS                         | : | 1      |
| MIN UNIT GEN CAP MW                  | : | 1      |
| MAX UNIT GEN CAP MW                  | : | 27     |
| UNIT ON-LINE RES MW                  | : | 27     |
| UNIT OFF-LINE RE MW                  | : | 27     |
| PLANT R.R. MW/MIN                    | : | 10     |
| PLANT INI. GEN. MW                   | : | 0      |
| RSVOIR MIN STO FT                    | : | 100.00 |
| RSVOIR MAX STO FT                    | : | 251.00 |
| RSVOIR STO START FT                  | : | 200.00 |
| RSVOIR STO END FT                    | : | 200.00 |
| RSVOIR MIN STO MWH                   | : | 100.00 |
| RSVOIR MAX STO MWH                   | : | 251.00 |
| RSVOIR STO START MWH                 | : | 200.00 |
| RSVOIR STO END MWH                   | : | 200.00 |
| INFLOW CONVERSION<br>FACTOR MW /KCFS | : | 1.0000 |
| MIN. GENERATION MW                   | : | 0      |

Table D-13

DATA FOR CONVENTIONAL HYDRO PLANT NOTROY

|                                      |   |        |
|--------------------------------------|---|--------|
| PLANT ID                             | : | NOTROY |
| NO. OF UNITS                         | : | 1      |
| MIN UNIT GEN CAP MW                  | : | 1      |
| MAX UNIT GEN CAP MW                  | : | 79     |
| UNIT ON-LINE RES MW                  | : | 20     |
| UNIT OFF-LINE RE MW                  | : | 40     |
| PLANT R.R. MW/MIN                    | : | 5      |
| PLANT INI. GEN. MW                   | : | 0      |
| RSVOIR MIN STO FT                    | : | 10.00  |
| RSVOIR MAX STO FT                    | : | 215.00 |
| RSVOIR STO START FT                  | : | 170.00 |
| RSVOIR STO END FT                    | : | 170.00 |
| RSVOIR MIN STO MWH                   | : | 10.00  |
| RSVOIR MAX STO MWH                   | : | 215.00 |
| RSVOIR STO START MWH                 | : | 170.00 |
| RSVOIR STO END MWH                   | : | 170.00 |
| INFLOW CONVERSION<br>FACTOR MW /KCFS | : | 1.0000 |
| MIN. GENERATION MW                   | : | 5      |

Table D-14

## DATA FOR CONVENTIONAL HYDRO PLANT RNKRGE

|                                      |   |        |
|--------------------------------------|---|--------|
| PLANT ID                             | : | RNKRGE |
| NO. OF UNITS                         | : | 1      |
| MIN UNIT GEN CAP MW                  | : | 1      |
| MAX UNIT GEN CAP MW                  | : | 88     |
| UNIT ON-LINE RES MW                  | : | 28     |
| UNIT OFF-LINE RE MW                  | : | 88     |
| PLANT R.R. MW/MIN                    | : | 18     |
| PLANT INI. GEN. MW                   | : | 8      |
| RSVOIR MIN STO FT                    | : | 18.88  |
| RSVOIR MAX STO FT                    | : | 188.88 |
| RSVOIR STO START FT                  | : | 88.88  |
| RSVOIR STO END FT                    | : | 88.88  |
| RSVOIR MIN STO MWH                   | : | 18.88  |
| RSVOIR MAX STO MWH                   | : | 188.88 |
| RSVOIR STO START MWH                 | : | 88.88  |
| RSVOIR STO END MWH                   | : | 88.88  |
| INFLOW CONVERSION<br>FACTOR MW /KCFS | : | 1.8888 |
| MIN. GENERATION MW                   | : | 8      |

Table D-15

## DATA FOR CONVENTIONAL HYDRO PLANT NYSEHY

|                                      |   |        |
|--------------------------------------|---|--------|
| PLANT ID                             | : | NYSEHY |
| NO. OF UNITS                         | : | 1      |
| MIN UNIT GEN CAP MW                  | : | 1      |
| MAX UNIT GEN CAP MW                  | : | 37     |
| UNIT ON-LINE RES MW                  | : | 20     |
| UNIT OFF-LINE RE MW                  | : | 30     |
| PLANT R.R. MW/MIN                    | : | 5      |
| PLANT INI. GEN. MW                   | : | 0      |
| RSVOIR MIN STO FT                    | : | 0.00   |
| RSVOIR MAX STO FT                    | : | 40.00  |
| RSVOIR STO START FT                  | : | 30.00  |
| RSVOIR STO END FT                    | : | 30.00  |
| RSVOIR MIN STO MWH                   | : | 0.00   |
| RSVOIR MAX STO MWH                   | : | 40.00  |
| RSVOIR STO START MWH                 | : | 30.00  |
| RSVOIR STO END MWH                   | : | 30.00  |
| INFLOW CONVERSION<br>FACTOR MW /KCFS | : | 1.0000 |
| MIN. GENERATION MW                   | : | 0      |

Table D-16

DATA FOR CONVENTIONAL HYDRO PLANT CHORHY

|                                      |   |        |
|--------------------------------------|---|--------|
| PLANT ID                             | : | CHORHY |
| NO. OF UNITS                         | : | 1      |
| MIN UNIT GEN CAP MW                  | : | 1      |
| MAX UNIT GEN CAP MW                  | : | 67     |
| UNIT ON-LINE RES MW                  | : | 30     |
| UNIT OFF-LINE RE MW                  | : | 30     |
| PLANT R.R. MW/MIN                    | : | 5      |
| PLANT INI. GEN. MW                   | : | 0      |
| RSVOIR MIN STO FT                    | : | 0.00   |
| RSVOIR MAX STO FT                    | : | 70.00  |
| RSVOIR STO START FT                  | : | 40.00  |
| RSVOIR STO END FT                    | : | 40.00  |
| RSVOIR MIN STO MWH                   | : | 0.00   |
| RSVOIR MAX STO MWH                   | : | 70.00  |
| RSVOIR STO START MWH                 | : | 40.00  |
| RSVOIR STO END MWH                   | : | 40.00  |
| INFLOW CONVERSION<br>FACTOR MW /KCFS | : | 1.0000 |
| MIN. GENERATION MW                   | : | 0      |

Table D-17

DATA FOR NIAGARA FALLS PROJECT

|                                     |   |         |
|-------------------------------------|---|---------|
| STUDY PERIOD FROM HOUR 1 TO HOUR 24 |   |         |
| P.S. PLANT ID                       | : | LWSTON  |
| CYCLE EFFY. P.U.                    | : | 0.7000  |
| NO. OF PUMPING UNITS                | : | 12      |
| UNIT PUMPING CAP MW                 | : | 30.00   |
| MIN PLANT GEN CAP MW                | : | 10.00   |
| MAX PLANT GEN CAP MW                | : | 360.00  |
| WATER CONV FACTOR MW/KCFS:          |   | 7.00    |
| RSVOIR MIN KCFSH                    | : | 0.00    |
| RSVOIR MAX KCFSH                    | : | 800.00  |
| RSVOIR START KCFSH                  | : | 800.00  |
| RSVOIR ENDING KCFSH                 | : | 800.00  |
|                                     |   |         |
| HYDRO PLANT ID                      | : | RMOSES  |
| MIN PLANT GEN CAP MW                | : | 100.00  |
| MAX PLANT GEN CAP MW                | : | 2275.00 |
| WATER CONV FACTOR MW/KCFS:          |   | 23.00   |
|                                     |   |         |
| TOTAL EQUIVALENT PLANT PARAMETERS : |   |         |
| CYCLE EFFY. P.U.                    | : | 0.9091  |
| UNIT PUMPING CAP MW                 | : | 99.00   |
| WATER CONV FACTOR MW/KCFS:          |   | 30.00   |

Table D-18

DATA FOR GILBOA PUMPED STORAGE PLANT

PUMPED STORAGE PLANT DATA

1

PLANT ID : GILBOA  
 NO. OF UNITS : 4  
 CYCLE EFFY. P.U. : 0.7000  
 UNIT PUMPING CAP : 290  
 MIN UNIT GEN CAP MW : 125  
 MAX UNIT GEN CAP MW : 250  
 UP RES MIN STO FT : 1070.00  
 UP RES MAX STO FT : 1140.00  
 UP RES STO START FT : 1140.00  
 UP RES STO END FT : 1140.00  
 UP RES MIN STO MWH : 100.00  
 UP RES MAX STO MWH : 11400.00  
 UP RES STO START MWH : 11400.00  
 UP RES STO END MWH : 11400.00

-----POND ELEVATION-STORAGE CHARACTERISTICS-----

---PLANT NO.: 1 GILBOA

| ELEV   | ENERGY  | ELEV   | ENERGY | ELEV   | ENERGY | ELEV   | ENERGY |
|--------|---------|--------|--------|--------|--------|--------|--------|
| 1069.0 | 0.0     | 1070.0 | 100.0  | 1100.0 | 5000.0 | 1120.0 | 8220.0 |
| 1140.0 | 11400.0 |        |        |        |        |        |        |

MAX. GENERATION IS CONSTANT AND DOES NOT VARY WITH ELEVATION.

Table D-19

## DATA FOR FUEL LIMITED THERMAL PLANT

## -----NORMAL UNIT CHARACTERISTICS-----

|                                |   |         |         |
|--------------------------------|---|---------|---------|
| UNIT NO.                       | : | 1       | 2       |
| UNIT I.D.                      | : | UNIT#1  | UNIT#2  |
| MINIMUM GENERATION MW          | : | 25      | 25      |
| MAXIMUM GENERATION MW          | : | 100     | 100     |
| MINIMUM UP TIME HR             | : | 3       | 3       |
| MINIMUM DOWN TIME HR           | : | 5       | 5       |
| COLD START TIME HR             | : | 12      | 12      |
| HOT START FUEL MBTU            | : | 120.0   | 150.0   |
| HOT START COST \$              | : | 174.72  | 218.40  |
| COLD START FUEL MBTU           | : | 220.0   | 250.0   |
| COLD START COST \$             | : | 320.32  | 364.00  |
| FUEL RATE AT MIN. GEN. BTU/KWH | : | 10000.0 | 10300.0 |
| AVERAGE FULL LOAD RATE BTU/KWH | : | 9450.0  | 9665.0  |
| NORMAL RESPONSE RATE MW/MIN    | : | 3.00    | 3.00    |
| EMERGENCY RESPONSE RATE MW/MIN | : | 6.00    | 5.00    |
| SPINNING RESERVE MW            | : | 30      | 25      |
| NON-SPINNING RESERVE MW        | : | 0       | 0       |
| OPERATING RESERVE MW           | : | 0       | 0       |
| INITIAL GENERATION MW          | : | 0       | 0       |
| INITIAL UNIT STATUS HR         | : | -10     | -15     |

NO. OF HRS UNIT HAS BEEN UP,  
NEGATIVE DENOTES NO. OF HRS DOWN.

## UNIT FUEL RATE:

| UNIT | MW  | BTU/KWH | MW  | BTU/KWH | MW  | BTU/KWH |
|------|-----|---------|-----|---------|-----|---------|
| ---- | --  | -----   | --  | -----   | --  | -----   |
| 1    | 25  | 8000.0  | 50  | 9000.0  | 70  | 9800.0  |
|      | 85  | 11200.0 | 100 | 12000.0 | 100 | 12000.0 |
|      | 100 | 12000.0 |     |         |     |         |
| 2    | 25  | 8100.0  | 50  | 9200.0  | 70  | 10000.0 |
|      | 85  | 11500.0 | 100 | 12700.0 | 100 | 12700.0 |
|      | 100 | 12700.0 |     |         |     |         |

Table D-20

## DATA FOR THE THERMAL UNITS

## UNIT COMMITMENT PROGRAM

PT1 - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN -UNIT IDENTIFICATION

| IU<br>NO. | --UNIT--<br>NAME | EXT<br>REF# | -TRANSM-<br>AREA | -CONTRL-<br>AREA | NOMINAL<br>LOW | LIMITS<br>HIGH | CAPC | RESRV<br>SYNC | CAPABILITY<br>NONS | UNIT<br>OPER | DISP<br>TYPE | STAT |
|-----------|------------------|-------------|------------------|------------------|----------------|----------------|------|---------------|--------------------|--------------|--------------|------|
| 1         | ARTKILL2         | 1           | CON ED 2         | SYSTEM           | 75             | 345            | 345  | 30            | 0                  | 0            | FFST ECON    |      |
| 2         | ARTKILL3         | 2           | CON ED 2         | SYSTEM           | 140            | 505            | 505  | 20            | 0                  | 0            | FFST ECON    |      |
| 3         | ASTORIA1         | 3           | CON ED 2         | SYSTEM           | 40             | 70             | 80   | 30            | 0                  | 0            | FFST ECON    |      |
| 4         | ASTORIA2         | 4           | CON ED 2         | SYSTEM           | 40             | 150            | 150  | 30            | 0                  | 0            | FFST ECON    |      |
| 5         | ASTORIA3         | 5           | CON ED 2         | SYSTEM           | 75             | 390            | 390  | 70            | 0                  | 0            | FFST ECON    |      |
| 6         | ASTORIA4         | 6           | CON ED 2         | SYSTEM           | 100            | 392            | 392  | 100           | 0                  | 0            | FFST ECON    |      |
| 7         | ASTORIA5         | 7           | CON ED 2         | SYSTEM           | 100            | 370            | 370  | 80            | 0                  | 0            | FFST ECON    |      |
| 8         | ASTORIA6         | 8           | CON ED 2         | SYSTEM           | 100            | 600            | 600  | 20            | 0                  | 0            | FFST ECON    |      |
| 9         | ASTGTTOT         | 9           | CON ED 2         | SYSTEM           | 0              | 513            | 513  | 513           | 513                | 513          | GT ECON      |      |
| 10        | 74ST3911         | 11          | CON ED 2         | SYSTEM           | 40             | 70             | 70   | 70            | 0                  | 0            | FFST ECON    |      |
| 11        | ERIVER56         | 12          | CON ED 2         | SYSTEM           | 80             | 252            | 252  | 100           | 0                  | 0            | FFST ECON    |      |
| 12        | ERIVER 7         | 13          | CON ED 2         | SYSTEM           | 80             | 145            | 145  | 60            | 0                  | 0            | FFST ECON    |      |
| 13        | GOW13TOT         | 14          | CON ED 2         | SYSTEM           | 0              | 91             | 91   | 91            | 91                 | 91           | GT ECON      |      |
| 14        | GOW24TOT         | 17          | CON ED 2         | SYSTEM           | 0              | 176            | 176  | 176           | 176                | 176          | GT ECON      |      |
| 15        | IDIANPT1         | 27          | CON ED 2         | SYSTEM           | 30             | 200            | 200  | 10            | 0                  | 0            | FFST ECON    |      |
| 16        | IDIANPT2         | 28          | CON ED 2         | SYSTEM           | 150            | 870            | 870  | 100           | 0                  | 0            | NUC ECON     |      |
| 17        | IDIANPT3         | 29          | CON ED 2         | SYSTEM           | 200            | 900            | 900  | 10            | 0                  | 0            | NUC ECON     |      |
| 18        | RAVWOOD1         | 31          | CON ED 2         | SYSTEM           | 150            | 387            | 387  | 30            | 0                  | 0            | FFST ECON    |      |
| 19        | RAVWOOD2         | 32          | CON ED 2         | SYSTEM           | 150            | 389            | 389  | 100           | 0                  | 0            | FFST ECON    |      |
| 20        | RAVWOOD3         | 33          | CON ED 2         | SYSTEM           | 350            | 600            | 600  | 30            | 0                  | 0            | FFST ECON    |      |

Table D-20

## DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN -UNIT IDENTIFICATION

| 1U<br>NO. | --UNIT--<br>NAME | EXT<br>REF# | -TRANSM-<br>AREA | -CONTRL-<br>AREA | NOMINAL<br>LOW | LIMITS<br>HIGH | CAPC | RESRV<br>SYNC | CAPABILITY<br>NONS | UNIT<br>OPER | DISP<br>TYPE | STAT |
|-----------|------------------|-------------|------------------|------------------|----------------|----------------|------|---------------|--------------------|--------------|--------------|------|
| 21        | RAVGTOT          | 34          | CON ED 2         | SYSTEM           | 0              | 167            | 167  | 167           | 167                | 167          | GT           | ECON |
| 22        | NARGTOT          | 35          | CON ED 2         | SYSTEM           | 0              | 264            | 264  | 264           | 264                | 264          | GT           | ECON |
| 23        | 59 ST 15         | 40          | CON ED 2         | SYSTEM           | 9              | 26             | 26   | 10            | 0                  | 0            | FFST         | ECON |
| 24        | HUDSNA23         | 41          | CON ED 2         | SYSTEM           | 0              | 84             | 84   | 10            | 0                  | 0            | FFST         | ECON |
| 25        | GEMISCGT         | 96          | CON ED 2         | SYSTEM           | 0              | 177            | 177  | 177           | 177                | 177          | GT           | ECON |
| 26        | HUDA5810         | 105         | CON ED 2         | SYSTEM           | 20             | 95             | 100  | 35            | 0                  | 0            | FFST         | ECON |
| 27        | WSIDE415         | 129         | CON ED 2         | SYSTEM           | 136            | 246            | 246  | 120           | 0                  | 0            | FFST         | ECON |
| 28        | 59ST7814         | 132         | CON ED 2         | SYSTEM           | 10             | 43             | 43   | 10            | 0                  | 0            | FFST         | ECON |
| 29        | 59 ST 13         | 133         | CON ED 2         | SYSTEM           | 22             | 45             | 45   | 10            | 0                  | 0            | FFST         | ECON |
| 30        | BARRETT1         | 151         | LILCO            | 1 SYSTEM         | 40             | 191            | 191  | 30            | 0                  | 0            | FFST         | ECON |
| 31        | BARRETT2         | 152         | LILCO            | 1 SYSTEM         | 40             | 120            | 120  | 30            | 0                  | 0            | FFST         | ECON |
| 32        | FARKWAY4         | 154         | LILCO            | 1 SYSTEM         | 10             | 104            | 104  | 30            | 0                  | 0            | FFST         | ECON |
| 33        | NRTHPRT1         | 157         | LILCO            | 1 SYSTEM         | 100            | 375            | 375  | 50            | 0                  | 0            | FFST         | ECON |
| 34        | NRTHPRT2         | 158         | LILCO            | 1 SYSTEM         | 100            | 350            | 350  | 140           | 0                  | 0            | FFST         | ECON |
| 35        | NRTHPRT3         | 159         | LILCO            | 1 SYSTEM         | 100            | 345            | 345  | 140           | 0                  | 0            | FFST         | ECON |
| 36        | NRTHPRT4         | 160         | LILCO            | 1 SYSTEM         | 94             | 374            | 378  | 140           | 0                  | 0            | FFST         | ECON |
| 37        | GLNWOOD2         | 163         | LILCO            | 1 SYSTEM         | 40             | 75             | 75   | 20            | 0                  | 0            | FFST         | ECON |
| 38        | GLNWOOD3         | 164         | LILCO            | 1 SYSTEM         | 40             | 75             | 75   | 20            | 0                  | 0            | FFST         | ECON |
| 39        | GLNWOOD4         | 165         | LILCO            | 1 SYSTEM         | 15             | 120            | 120  | 20            | 0                  | 0            | FFST         | ECON |
| 40        | GLNWOOD5         | 166         | LILCO            | 1 SYSTEM         | 15             | 105            | 105  | 20            | 0                  | 0            | FFST         | ECON |

Table D-20

DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN -UNIT IDENTIFICATION

| IU<br>NO. | --UNIT--<br>NAME | EXT<br>REF# | -TRANSM-<br>AREA | -CONTRL-<br>AREA | NOMINAL<br>LOW | LIMITS<br>HIGH | CAPC | RESRV<br>SYNC | CAPABILITY<br>NONS | UNIT<br>OPER | DISP<br>TYPE | STAT |
|-----------|------------------|-------------|------------------|------------------|----------------|----------------|------|---------------|--------------------|--------------|--------------|------|
| 41        | PRTJEFF1         | 167         | LILCO            | 1 SYSTEM         | 10             | 51             | 51   | 10            | 0                  | 0            | FFST         | ECON |
| 42        | PRTJEFF2         | 168         | LILCO            | 1 SYSTEM         | 10             | 51             | 51   | 10            | 0                  | 0            | FFST         | ECON |
| 43        | PRTJEFF3         | 169         | LILCO            | 1 SYSTEM         | 40             | 180            | 180  | 30            | 0                  | 0            | FFST         | ECON |
| 44        | PRTJEFF4         | 170         | LILCO            | 1 SYSTEM         | 40             | 198            | 198  | 30            | 0                  | 0            | FFST         | ECON |
| 45        | GROUP3GT         | 171         | LILCO            | 1 SYSTEM         | 0              | 122            | 122  | 122           | 122                | 122          | GT           | ECON |
| 46        | GROUP4GT         | 172         | LILCO            | 1 SYSTEM         | 0              | 98             | 98   | 98            | 98                 | 98           | GT           | ECON |
| 47        | GROUP2GT         | 173         | LILCO            | 1 SYSTEM         | 0              | 440            | 440  | 440           | 440                | 440          | GT           | ECON |
| 48        | GROUP5GT         | 174         | LILCO            | 1 SYSTEM         | 0              | 85             | 85   | 85            | 85                 | 85           | GT           | ECON |
| 49        | GROUP1GT         | 175         | LILCO            | 1 SYSTEM         | 0              | 190            | 190  | 190           | 190                | 190          | GT           | ECON |
| 50        | GROUP6GT         | 176         | LILCO            | 1 SYSTEM         | 0              | 42             | 42   | 42            | 42                 | 42           | GT           | ECON |
| 51        | ALBANY 1         | 201         | CHORNME3         | SYSTEM           | 15             | 100            | 100  | 20            | 0                  | 0            | FFST         | ECON |
| 52        | ALBANY 2         | 202         | CHORNME3         | SYSTEM           | 15             | 90             | 90   | 20            | 0                  | 0            | FFST         | ECON |
| 53        | ALBANY 3         | 203         | CHORNME3         | SYSTEM           | 15             | 93             | 93   | 20            | 0                  | 0            | FFST         | ECON |
| 54        | ALBANY 4         | 204         | CHORNME3         | SYSTEM           | 15             | 100            | 100  | 20            | 0                  | 0            | FFST         | ECON |
| 55        | DUNKIRK1         | 207         | RGENMW           | 5 SYSTEM         | 15             | 100            | 100  | 20            | 0                  | 0            | FFST         | ECON |
| 56        | DUNKIRK2         | 208         | RGENMW           | 5 SYSTEM         | 15             | 95             | 95   | 20            | 0                  | 0            | FFST         | ECON |
| 57        | DUNKIRK3         | 209         | RGENMW           | 5 SYSTEM         | 30             | 200            | 200  | 40            | 0                  | 0            | FFST         | ECON |
| 58        | DUNKIRK4         | 210         | RGENMW           | 5 SYSTEM         | 30             | 200            | 200  | 40            | 0                  | 0            | FFST         | ECON |
| 59        | HUNTLY63         | 211         | RGENMW           | 5 SYSTEM         | 15             | 70             | 70   | 20            | 0                  | 0            | FFST         | ECON |
| 60        | HUNTLY64         | 212         | RGENMW           | 5 SYSTEM         | 15             | 94             | 94   | 20            | 0                  | 0            | FFST         | ECON |

Table D-20

## DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN -UNIT IDENTIFICATION

| IU<br>NO. | --UNIT--<br>NAME | EXT<br>REF# | -TRANSM-<br>AREA | -CONTRL-<br>AREA | NOMINAL<br>LOW | LIMITS<br>HIGH | CAPC | RESRV<br>SYNC | CAPABILITY<br>NONS | UNIT<br>OPER | DISP<br>TYPE | STAT      |
|-----------|------------------|-------------|------------------|------------------|----------------|----------------|------|---------------|--------------------|--------------|--------------|-----------|
| 61        | HUNTLY65         | 213         | RGENMW           | 5                | SYSTEM         | 15             | 100  | 100           | 20                 | 0            | 0            | FFST ECON |
| 62        | HUNTLY66         | 214         | RGENMW           | 5                | SYSTEM         | 15             | 100  | 100           | 20                 | 0            | 0            | FFST ECON |
| 63        | HUNTLY67         | 215         | RGENMW           | 5                | SYSTEM         | 30             | 200  | 200           | 40                 | 0            | 0            | FFST ECON |
| 64        | HUNTLY68         | 216         | RGENMW           | 5                | SYSTEM         | 30             | 200  | 200           | 40                 | 0            | 0            | FFST ECON |
| 65        | ALBANYGT         | 217         | CHORNME3         |                  | SYSTEM         | 0              | 105  | 105           | 105                | 105          | 105          | GT ECON   |
| 66        | NINEMIL1         | 218         | NYSENMC4         |                  | SYSTEM         | 120            | 599  | 599           | 10                 | 0            | 0            | NUC ECON  |
| 67        | OSWEGO 1         | 219         | NYSENMC4         |                  | SYSTEM         | 15             | 65   | 65            | 20                 | 0            | 0            | FFST ECON |
| 68        | OSWEGO 2         | 220         | NYSENMC4         |                  | SYSTEM         | 15             | 45   | 45            | 20                 | 0            | 0            | FFST ECON |
| 69        | OSWEGO 3         | 221         | NYSENMC4         |                  | SYSTEM         | 15             | 85   | 85            | 20                 | 0            | 0            | FFST ECON |
| 70        | OSWEGO 4         | 222         | NYSENMC4         |                  | SYSTEM         | 15             | 80   | 80            | 20                 | 0            | 0            | FFST ECON |
| 71        | RTTRDMGT         | 223         | CHORNME3         |                  | SYSTEM         | 0              | 120  | 120           | 120                | 120          | 120          | GT ECON   |
| 72        | OSWEGO 5         | 233         | NYSENMC4         |                  | SYSTEM         | 250            | 750  | 750           | 100                | 0            | 0            | FFST ECON |
| 73        | GOUDY 7          | 301         | NYSENMC4         |                  | SYSTEM         | 15             | 44   | 44            | 10                 | 0            | 0            | FFST ECON |
| 74        | GOUDY 8          | 302         | NYSENMC4         |                  | SYSTEM         | 15             | 82   | 82            | 50                 | 0            | 0            | FFST ECON |
| 75        | GRNIDGE3         | 304         | NYSENMC4         |                  | SYSTEM         | 20             | 55   | 55            | 10                 | 0            | 0            | FFST ECON |
| 76        | GRNIDGE4         | 305         | NYSENMC4         |                  | SYSTEM         | 15             | 75   | 75            | 20                 | 0            | 0            | FFST ECON |
| 77        | HMERCITY         | 307         | NYSENMC4         |                  | SYSTEM         | 150            | 600  | 600           | 10                 | 0            | 0            | FFST ECON |
| 78        | MLLIKEN1         | 309         | NYSENMC4         |                  | SYSTEM         | 20             | 140  | 140           | 30                 | 0            | 0            | FFST ECON |
| 79        | MLLIKEN2         | 310         | NYSENMC4         |                  | SYSTEM         | 20             | 147  | 147           | 30                 | 0            | 0            | FFST ECON |
| 80        | NYSMISCD         | 311         | NYSENMC4         |                  | SYSTEM         | 0              | 8    | 8             | 8                  | 8            | 8            | GT ECON   |

Table D-20

## DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN -UNIT IDENTIFICATION

| IU<br>NO. | --UNIT--<br>NAME | EXT<br>REF# | -TRANSM-<br>AREA | -CONTRL-<br>AREA | NOMINAL<br>LOW | LIMITS<br>HIGH | CAPC | RESRV<br>SYNC | CAPABILITY<br>NONS | UNIT<br>OPER | DISP<br>TYPE | STAT |
|-----------|------------------|-------------|------------------|------------------|----------------|----------------|------|---------------|--------------------|--------------|--------------|------|
| 81        | GRNIDGE1         | 314         | NYSENMC4         | SYSTEM           | 5              | 16             | 16   | 10            | 0                  | 0            | FFST         | ECON |
| 82        | GRNIDGE2         | 315         | NYSENMC4         | SYSTEM           | 5              | 16             | 16   | 10            | 0                  | 0            | FFST         | ECON |
| 83        | HCKLING1         | 316         | NYSENMC4         | SYSTEM           | 5              | 30             | 30   | 10            | 0                  | 0            | FFST         | ECON |
| 84        | HCKLING2         | 317         | NYSENMC4         | SYSTEM           | 5              | 22             | 22   | 10            | 0                  | 0            | FFST         | ECON |
| 85        | JNNISON1         | 318         | NYSENMC4         | SYSTEM           | 10             | 35             | 35   | 10            | 0                  | 0            | FFST         | ECON |
| 86        | JNNISON2         | 319         | NYSENMC4         | SYSTEM           | 10             | 30             | 30   | 10            | 0                  | 0            | FFST         | ECON |
| 87        | CXSACKGT         | 351         | CHORNME3         | SYSTEM           | 0              | 19             | 19   | 19            | 19                 | 19           | GT           | ECON |
| 88        | DNCKMMR1         | 352         | CHORNME3         | SYSTEM           | 20             | 60             | 60   | 20            | 0                  | 0            | FFST         | ECON |
| 89        | DNCKMMR2         | 353         | CHORNME3         | SYSTEM           | 30             | 64             | 64   | 20            | 0                  | 0            | FFST         | ECON |
| 90        | DNCKMMR3         | 354         | CHORNME3         | SYSTEM           | 40             | 100            | 100  | 80            | 0                  | 0            | FFST         | ECON |
| 91        | DNCKMMR4         | 355         | CHORNME3         | SYSTEM           | 120            | 215            | 215  | 120           | 0                  | 0            | FFST         | ECON |
| 92        | ROSETON1         | 359         | CHORNME3         | SYSTEM           | 100            | 550            | 550  | 100           | 0                  | 0            | FFST         | ECON |
| 93        | ROSETON2         | 360         | CHORNME3         | SYSTEM           | 100            | 550            | 550  | 100           | 0                  | 0            | FFST         | ECON |
| 94        | SCAIROGT         | 361         | CHORNME3         | SYSTEM           | 0              | 20             | 20   | 20            | 20                 | 20           | GT           | ECON |
| 95        | DANSKDSL         | 366         | CHORNME3         | SYSTEM           | 0              | 5              | 5    | 5             | 5                  | 5            | GT           | ECON |
| 96        | BLINEPT1         | 386         | CHORNME3         | SYSTEM           | 150            | 572            | 601  | 100           | 0                  | 0            | FFST         | ECON |
| 97        | BLINEPT2         | 387         | CHORNME3         | SYSTEM           | 150            | 567            | 600  | 50            | 0                  | 0            | FFST         | ECON |
| 98        | HLLBRNGT         | 389         | CHORNME3         | SYSTEM           | 0              | 40             | 40   | 40            | 40                 | 40           | GT           | ECON |
| 99        | LOVETT 4         | 390         | CHORNME3         | SYSTEM           | 50             | 140            | 198  | 30            | 0                  | 0            | FFST         | ECON |
| 100       | LOVETT 5         | 391         | CHORNME3         | SYSTEM           | 50             | 195            | 202  | 30            | 0                  | 0            | FFST         | ECON |

Table D-20

## DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PT1 - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN -UNIT IDENTIFICATION

| IU<br>NO. | --UNIT--<br>NAME | EXT<br>REF# | -TRANSM-<br>AREA | -CONTRL-<br>AREA | NOMINAL<br>LOW | LIMITS<br>HIGH | CAPC | RESRV<br>SYNC | CAPABILITY<br>NONS | UNIT<br>OPER | DISP<br>TYPE | STAT |
|-----------|------------------|-------------|------------------|------------------|----------------|----------------|------|---------------|--------------------|--------------|--------------|------|
| 101       | SHOEMKGT         | 393         | CHORNME3         | SYSTEM           | 0              | 37             | 37   | 37            | 37                 | 37           | GT           | ECON |
| 102       | LOVETT 1         | 394         | CHORNME3         | SYSTEM           | 5              | 20             | 20   | 10            | 0                  | 0            | FFST         | ECON |
| 103       | LOVETT 2         | 395         | CHORNME3         | SYSTEM           | 5              | 20             | 20   | 10            | 0                  | 0            | FFST         | ECON |
| 104       | LOVETT 3         | 396         | CHORNME3         | SYSTEM           | 20             | 60             | 63   | 10            | 0                  | 0            | FFST         | ECON |
| 105       | FTZPTRK1         | 421         | NYSENMC4         | SYSTEM           | 100            | 800            | 900  | 30            | 0                  | 0            | NUC          | ECON |
| 106       | BBEE1-11         | 456         | RGENMW 5         | SYSTEM           | 1              | 41             | 41   | 20            | 0                  | 0            | FFST         | ECON |
| 107       | BEEBEEGT         | 457         | RGENMW 5         | SYSTEM           | 0              | 14             | 14   | 14            | 14                 | 14           | GT           | ECON |
| 108       | GINNA 1          | 459         | RGENMW 5         | SYSTEM           | 105            | 415            | 415  | 10            | 0                  | 0            | NUC          | ECON |
| 109       | RSSLL1-4         | 461         | RGENMW 5         | SYSTEM           | 37             | 244            | 244  | 80            | 0                  | 0            | FFST         | ECON |
| 110       | STA 9 GT         | 462         | RGENMW 5         | SYSTEM           | 0              | 15             | 15   | 15            | 15                 | 15           | GT           | ECON |
| 111       | BEEBEE12         | 463         | RGENMW 5         | SYSTEM           | 12             | 80             | 80   | 20            | 0                  | 0            | FFST         | ECON |
| 112       | FICT-4U1         | 941         | NYSENMC4         | SYSTEM           | 100            | 2500           | 2500 | 0             | 0                  | 0            | FFST         | ECON |
| 113       | FICT-5U1         | 951         | RGENMW 5         | SYSTEM           | 100            | 2500           | 2500 | 0             | 0                  | 0            | FFST         | ECON |

Table D-20

## DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - UNIT THERMAL CHARACTERISTICS

| IU NO. | UNIT NAME | INCREMENTAL HEAT RATE<br>BTU/KWH VS MW |                 |               |                 |               |                 | MIN<br>MBTU/HR | -FUEL COST-<br>\$/MBTU | COST FACT | CHAR NO. |   |
|--------|-----------|----------------------------------------|-----------------|---------------|-----------------|---------------|-----------------|----------------|------------------------|-----------|----------|---|
| 1      | ARTKILL2  | 8010.<br>1                             | 8200.<br>147    | 8350.<br>187  | 8510.<br>236    | 8690.<br>286  | 9000.<br>30000  | 0.<br>0        | 741.0                  | 3.642     | 1.00     | 1 |
| 2      | ARTKILL3  | 8010.<br>1                             | 8160.<br>168    | 8240.<br>249  | 8520.<br>333    | 8830.<br>427  | 8910.<br>30000  | 0.<br>0        | 1341.0                 | 3.712     | 1.00     | 1 |
| 3      | ASTORIA1  | 8360.<br>1                             | 8400.<br>41     | 8430.<br>69   | 8600.<br>96     | 8640.<br>124  | 9180.<br>30000  | 0.<br>0        | 392.0                  | 4.168     | 1.00     | 1 |
| 4      | ASTORIA2  | 8360.<br>1                             | 8400.<br>41     | 8430.<br>69   | 8600.<br>96     | 8640.<br>124  | 9180.<br>30000  | 0.<br>0        | 392.0                  | 4.026     | 1.00     | 1 |
| 5      | ASTORIA3  | 8050.<br>1                             | 8300.<br>172    | 8450.<br>217  | 8610.<br>266    | 8920.<br>339  | 9120.<br>30000  | 0.<br>0        | 1040.0                 | 3.815     | 1.00     | 1 |
| 6      | ASTORIA4  | 7120.<br>1                             | 7900.<br>115    | 8240.<br>164  | 8380.<br>220    | 8740.<br>283  | 9190.<br>30000  | 0.<br>0        | 1053.0                 | 3.850     | 1.00     | 1 |
| 7      | ASTORIA5  | 7120.<br>1                             | 7900.<br>115    | 8240.<br>164  | 8380.<br>220    | 8740.<br>283  | 9190.<br>30000  | 0.<br>0        | 1053.0                 | 4.097     | 1.00     | 1 |
| 8      | ASTORIA6  | 8000.<br>1                             | 8900.<br>30000  | 0.<br>0       | 0.<br>0         | 0.<br>0       | 0.<br>0         | 0.<br>0        | 1053.0                 | 4.097     | 1.00     | 1 |
| 9      | ASTGTTOT  | 13360.<br>1                            | 13370.<br>483   | 17890.<br>504 | 17900.<br>30000 | 0.<br>0       | 0.<br>0         | 0.<br>0        | 10.0                   | 5.037     | 1.00     | 1 |
| 10     | 74ST3911  | 8700.<br>20                            | 9630.<br>38     | 9680.<br>40   | 9690.<br>47     | 9920.<br>65   | 10350.<br>30000 | 0.<br>0        | 928.0                  | 2.960     | 1.00     | 1 |
| 11     | ERIVER56  | 8940.<br>1                             | 9040.<br>84     | 9200.<br>183  | 9240.<br>200    | 10140.<br>242 | 10430.<br>30000 | 0.<br>0        | 1227.0                 | 3.792     | 1.00     | 1 |
| 12     | ERIVER 7  | 7910.<br>1                             | 8310.<br>75     | 8560.<br>122  | 8640.<br>135    | 8780.<br>157  | 9250.<br>30000  | 0.<br>0        | 709.0                  | 3.932     | 1.00     | 1 |
| 13     | GOW13TOT  | 19020.<br>1                            | 19040.<br>30000 | 0.<br>0       | 0.<br>0         | 0.<br>0       | 0.<br>0         | 0.<br>0        | 10.0                   | 4.600     | 1.00     | 1 |
| 14     | GOW24TOT  | 19020.<br>1                            | 19030.<br>30000 | 0.<br>0       | 0.<br>0         | 0.<br>0       | 0.<br>0         | 0.<br>0        | 10.0                   | 4.670     | 1.00     | 1 |
| 15     | IDIANPT1  | 11030.<br>1                            | 11360.<br>30000 | 0.<br>0       | 0.<br>0         | 0.<br>0       | 0.<br>0         | 0.<br>0        | 390.0                  | 0.510     | 1.00     | 1 |

Table D-20

## DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - UNIT THERMAL CHARACTERISTICS

| IU NO. | UNIT NAME | INCREMENTAL HEAT RATE<br>BTU/KWH VS MW |                 |              |                |                 |                 | MIN<br>MBTU/HR | -FUEL COST-<br>\$/MBTU | CHAR<br>FACT | CHAR<br>NO. |
|--------|-----------|----------------------------------------|-----------------|--------------|----------------|-----------------|-----------------|----------------|------------------------|--------------|-------------|
| 16     | IDIANPT2  | 9520.<br>90                            | 9600.<br>400    | 9800.<br>600 | 9880.<br>30000 | 0.<br>0         | 0.<br>0         | 0.<br>0        | 2240.0                 | 1.187        | 1.00 1      |
| 17     | IDIANPT3  | 10000.<br>1                            | 10080.<br>30000 | 0.<br>0      | 0.<br>0        | 0.<br>0         | 0.<br>0         | 0.<br>0        | 2500.0                 | 0.510        | 1.00 1      |
| 18     | RAVWOOD1  | 8170.<br>1                             | 8250.<br>119    | 8370.<br>213 | 8530.<br>262   | 8950.<br>316    | 9440.<br>30000  | 0.<br>0        | 1319.0                 | 3.701        | 1.00 1      |
| 19     | RAVWOOD2  | 8170.<br>1                             | 8250.<br>119    | 8370.<br>213 | 8530.<br>262   | 8950.<br>316    | 9440.<br>30000  | 0.<br>0        | 1319.0                 | 3.736        | 1.00 1      |
| 20     | RAVWOOD3  | 7940.<br>1                             | 8050.<br>149    | 8180.<br>334 | 8250.<br>430   | 8380.<br>633    | 8520.<br>30000  | 0.<br>0        | 3680.0                 | 3.770        | 1.00 1      |
| 21     | RAVGTTOT  | 13360.<br>1                            | 13370.<br>63    | 15180.<br>84 | 15190.<br>364  | 16450.<br>404   | 16460.<br>30000 | 0.<br>0        | 10.0                   | 4.936        | 1.00 1      |
| 22     | NARGTTOT  | 14290.<br>1                            | 14300.<br>30000 | 0.<br>0      | 0.<br>0        | 0.<br>0         | 0.<br>0         | 0.<br>0        | 10.0                   | 4.571        | 1.00 1      |
| 23     | 59 ST 15  | 13060.<br>10                           | 13300.<br>30000 | 0.<br>0      | 0.<br>0        | 0.<br>0         | 0.<br>0         | 0.<br>0        | 137.0                  | 4.441        | 1.00 1      |
| 24     | HUDSNA23  | 15650.<br>10                           | 16700.<br>30000 | 0.<br>0      | 0.<br>0        | 0.<br>0         | 0.<br>0         | 0.<br>0        | 10.0                   | 3.859        | 1.00 1      |
| 25     | GEMISCGT  | 19000.<br>1                            | 19020.<br>30000 | 0.<br>0      | 0.<br>0        | 0.<br>0         | 0.<br>0         | 0.<br>0        | 10.0                   | 4.571        | 1.00 1      |
| 26     | HUDA5810  | 11100.<br>1                            | 11110.<br>32    | 11730.<br>58 | 12860.<br>90   | 13260.<br>107   | 14360.<br>30000 | 0.<br>0        | 350.0                  | 3.859        | 1.00 1      |
| 27     | WSIDE415  | 4860.<br>111                           | 9450.<br>142    | 9980.<br>204 | 10520.<br>232  | 10970.<br>278   | 12360.<br>30000 | 0.<br>0        | 2883.0                 | 3.816        | 1.00 1      |
| 28     | 59ST7814  | 10710.<br>22                           | 11570.<br>30000 | 0.<br>0      | 0.<br>0        | 0.<br>0         | 0.<br>0         | 0.<br>0        | 148.0                  | 4.441        | 1.00 1      |
| 29     | 59 ST 13  | 9050.<br>13                            | 9270.<br>28     | 9670.<br>38  | 10270.<br>48   | 10720.<br>30000 | 0.<br>0         | 0.<br>0        | 250.0                  | 4.441        | 1.00 1      |
| 30     | BARRETT1  | 8040.<br>21                            | 8490.<br>74     | 8800.<br>103 | 9060.<br>132   | 9220.<br>161    | 9230.<br>30000  | 0.<br>0        | 307.0                  | 3.282        | 1.00 1      |

Table D-20

## DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - UNIT THERMAL CHARACTERISTICS

| IU NO. | --UNIT--<br>NAME | INCREMENTAL HEAT RATE<br>BTU/KWH VS MW |              |              |               |               |                 | MIN<br>MBTU/HR | -FUEL COST-<br>\$/MBTU | CHAR<br>FACT | CHAR<br>NO. |
|--------|------------------|----------------------------------------|--------------|--------------|---------------|---------------|-----------------|----------------|------------------------|--------------|-------------|
| 31     | BARRETT2         | 8040.<br>21                            | 8490.<br>74  | 8800.<br>103 | 9060.<br>132  | 9220.<br>161  | 9230.<br>30000  | 0.<br>0        | 307.0                  | 3.282        | 1.00 1      |
| 32     | FARKWAY4         | 8340.<br>5                             | 8980.<br>52  | 9150.<br>66  | 9380.<br>81   | 9700.<br>96   | 10580.<br>30000 | 0.<br>0        | 120.0                  | 3.419        | 1.00 1      |
| 33     | NRTHPRT1         | 8560.<br>70                            | 8720.<br>177 | 8860.<br>232 | 9070.<br>286  | 9370.<br>340  | 9710.<br>30000  | 0.<br>0        | 754.0                  | 2.240        | 1.00 1      |
| 34     | NRTHPRT2         | 8560.<br>70                            | 8720.<br>177 | 8850.<br>232 | 9070.<br>286  | 9370.<br>340  | 9710.<br>30000  | 0.<br>0        | 754.0                  | 2.240        | 1.00 1      |
| 35     | NRTHPRT3         | 8560.<br>70                            | 8720.<br>177 | 8840.<br>232 | 9070.<br>286  | 9370.<br>340  | 9710.<br>30000  | 0.<br>0        | 754.0                  | 2.240        | 1.00 1      |
| 36     | NRTHPRT4         | 8640.<br>70                            | 8758.<br>177 | 8960.<br>232 | 9220.<br>286  | 9540.<br>340  | 9591.<br>30000  | 0.<br>0        | 754.0                  | 3.064        | 1.00 1      |
| 37     | GLNWOOD2         | 11170.<br>18                           | 12510.<br>45 | 13150.<br>56 | 13760.<br>63  | 14330.<br>68  | 15700.<br>30000 | 0.<br>0        | 690.0                  | 3.282        | 1.00 1      |
| 38     | GLNWOOD3         | 11170.<br>18                           | 12520.<br>45 | 13160.<br>56 | 13770.<br>63  | 14340.<br>68  | 15710.<br>30000 | 0.<br>0        | 690.0                  | 3.282        | 1.00 1      |
| 39     | GLNWOOD4         | 8330.<br>10                            | 8970.<br>50  | 9220.<br>72  | 9470.<br>86   | 9700.<br>96   | 10200.<br>30000 | 0.<br>0        | 163.0                  | 3.282        | 1.00 1      |
| 40     | GLNWOOD5         | 8330.<br>10                            | 8970.<br>50  | 9220.<br>72  | 9470.<br>86   | 9700.<br>96   | 10190.<br>30000 | 0.<br>0        | 163.0                  | 3.282        | 1.00 1      |
| 41     | PRTJEFF1         | 7140.<br>5                             | 8540.<br>12  | 9610.<br>23  | 10290.<br>36  | 11210.<br>45  | 12130.<br>30000 | 0.<br>0        | 113.0                  | 3.021        | 1.00 1      |
| 42     | PRTJEFF2         | 7140.<br>5                             | 8540.<br>12  | 9610.<br>23  | 10290.<br>36  | 11210.<br>45  | 12130.<br>30000 | 0.<br>0        | 113.0                  | 3.021        | 1.00 1      |
| 43     | PRTJEFF3         | 8040.<br>21                            | 8340.<br>59  | 8600.<br>84  | 8860.<br>109  | 9170.<br>149  | 9200.<br>30000  | 0.<br>0        | 307.0                  | 2.278        | 1.00 1      |
| 44     | PRTJEFF4         | 8040.<br>21                            | 8340.<br>59  | 8600.<br>84  | 8860.<br>109  | 9170.<br>149  | 9200.<br>30000  | 0.<br>0        | 307.0                  | 2.278        | 1.00 1      |
| 45     | GROUP3GT         | 13870.<br>1                            | 13880.<br>40 | 13890.<br>80 | 13900.<br>120 | 13910.<br>160 | 13920.<br>30000 | 0.<br>0        | 10.0                   | 3.865        | 1.00 1      |

Table D-20

DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - UNIT THERMAL CHARACTERISTICS

| IU NO. | UNIT NAME | INCREMENTAL HEAT RATE<br>BTU/KWH VS MW |               |               |               |               |                  | MIN<br>MBTU/HR | FUEL COST<br>\$/MBTU | COST FACT  | CHAR NO. |
|--------|-----------|----------------------------------------|---------------|---------------|---------------|---------------|------------------|----------------|----------------------|------------|----------|
| 46     | GROUP4GT  | 15550.<br>1                            | 15560.<br>30  | 15570.<br>60  | 15580.<br>90  | 15590.<br>120 | 15600.<br>300000 | 0.<br>0        | 10.0                 | 3.865 1.00 | 1        |
| 47     | GROUP2GT  | 13630.<br>1                            | 13640.<br>135 | 13650.<br>270 | 13660.<br>405 | 13670.<br>540 | 13680.<br>300000 | 0.<br>0        | 10.0                 | 3.608 1.00 | 1        |
| 48     | GROUP5GT  | 15110.<br>1                            | 15120.<br>30  | 15130.<br>60  | 15140.<br>90  | 15150.<br>120 | 15160.<br>300000 | 0.<br>0        | 10.0                 | 3.825 1.00 | 1        |
| 49     | GROUP1GT  | 13910.<br>1                            | 13920.<br>50  | 13930.<br>100 | 13940.<br>150 | 13950.<br>200 | 13960.<br>300000 | 0.<br>0        | 1.0                  | 3.449 1.00 | 1        |
| 50     | GROUP6GT  | 17800.<br>1                            | 17810.<br>15  | 17820.<br>30  | 17830.<br>40  | 17840.<br>50  | 17850.<br>300000 | 0.<br>0        | 1.0                  | 3.537 1.00 | 1        |
| 51     | ALBANY 1  | 7840.<br>1                             | 8050.<br>15   | 8580.<br>53   | 9000.<br>73   | 9600.<br>88   | 10430.<br>300000 | 0.<br>0        | 166.0                | 2.431 1.00 | 1        |
| 52     | ALBANY 2  | 7840.<br>1                             | 8050.<br>15   | 8580.<br>53   | 9000.<br>73   | 9600.<br>88   | 10430.<br>300000 | 0.<br>0        | 166.0                | 2.431 1.00 | 1        |
| 53     | ALBANY 3  | 7840.<br>1                             | 8050.<br>15   | 8580.<br>53   | 9000.<br>73   | 9600.<br>88   | 10430.<br>300000 | 0.<br>0        | 166.0                | 2.431 1.00 | 1        |
| 54     | ALBANY 4  | 7840.<br>1                             | 8050.<br>15   | 8580.<br>53   | 9000.<br>73   | 9600.<br>88   | 10430.<br>300000 | 0.<br>0        | 166.0                | 2.431 1.00 | 1        |
| 55     | DUNKIRK1  | 7700.<br>1                             | 7880.<br>15   | 8250.<br>46   | 8710.<br>67   | 9270.<br>83   | 10270.<br>300000 | 0.<br>0        | 184.0                | 1.306 1.00 | 1        |
| 56     | DUNKIRK2  | 7700.<br>1                             | 7880.<br>15   | 8250.<br>43   | 8710.<br>67   | 9270.<br>83   | 10270.<br>300000 | 0.<br>0        | 184.0                | 1.306 1.00 | 1        |
| 57     | DUNKIRK3  | 7320.<br>1                             | 7480.<br>30   | 7790.<br>88   | 8710.<br>154  | 10000.<br>200 | 10800.<br>300000 | 0.<br>0        | 253.0                | 1.306 1.00 | 1        |
| 58     | DUNKIRK4  | 7320.<br>1                             | 7480.<br>30   | 7790.<br>88   | 8710.<br>154  | 10000.<br>200 | 10800.<br>300000 | 0.<br>0        | 253.0                | 1.306 1.00 | 1        |
| 59     | HUNTLY63  | 9300.<br>1                             | 9640.<br>15   | 10310.<br>45  | 11000.<br>64  | 11860.<br>79  | 12790.<br>300000 | 0.<br>0        | 177.0                | 1.764 1.00 | 1        |
| 60     | HUNTLY64  | 8370.<br>1                             | 8710.<br>15   | 9500.<br>50   | 10470.<br>72  | 11450.<br>86  | 12980.<br>300000 | 0.<br>0        | 181.0                | 1.764 1.00 | 1        |

Table D-20

## DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - UNIT THERMAL CHARACTERISTICS

| IU NO. | UNIT NAME | INCREMENTAL HEAT RATE |                 |                 |               |                 |                 | MIN     | -FUEL COST- |       | CHAR |   |
|--------|-----------|-----------------------|-----------------|-----------------|---------------|-----------------|-----------------|---------|-------------|-------|------|---|
|        |           | BTU/KWH VS MW         |                 |                 |               |                 |                 | MBTU/HR | \$/MBTU     | FACT  | NO.  |   |
| 61     | HUNTLY65  | 7780.<br>1            | 7880.<br>15     | 8250.<br>46     | 8710.<br>67   | 9270.<br>83     | 10270.<br>30000 | 0.<br>0 | 184.0       | 1.764 | 1.00 | 1 |
| 62     | HUNTLY66  | 8120.<br>1            | 8320.<br>15     | 8720.<br>45     | 9260.<br>68   | 9850.<br>85     | 10630.<br>30000 | 0.<br>0 | 175.0       | 1.854 | 1.00 | 1 |
| 63     | HUNTLY67  | 7320.<br>1            | 7480.<br>30     | 7790.<br>88     | 8710.<br>154  | 10000.<br>200   | 10800.<br>30000 | 0.<br>0 | 253.0       | 1.521 | 1.00 | 1 |
| 64     | HUNTLY68  | 7320.<br>1            | 7480.<br>30     | 7790.<br>88     | 8710.<br>154  | 10000.<br>200   | 10800.<br>30000 | 0.<br>0 | 253.0       | 1.521 | 1.00 | 1 |
| 65     | ALBANYGT  | 13250.<br>1           | 13260.<br>45    | 13270.<br>89    | 13280.<br>134 | 13290.<br>178   | 13310.<br>30000 | 0.<br>0 | 10.0        | 4.009 | 1.00 | 1 |
| 66     | NINEMIL1  | 8560.<br>1            | 10300.<br>30000 | 0.<br>0         | 0.<br>0       | 0.<br>0         | 0.<br>0         | 0.<br>0 | 1520.0      | 0.398 | 1.00 | 1 |
| 67     | OSWEGO 1  | 8950.<br>1            | 9280.<br>15     | 9650.<br>32     | 10400.<br>56  | 11900.<br>76    | 14300.<br>30000 | 0.<br>0 | 173.0       | 2.444 | 1.00 | 1 |
| 68     | OSWEGO 2  | 8950.<br>1            | 9280.<br>15     | 9650.<br>32     | 10400.<br>56  | 11900.<br>76    | 14300.<br>30000 | 0.<br>0 | 173.0       | 2.444 | 1.00 | 1 |
| 69     | OSWEGO 3  | 8610.<br>1            | 8850.<br>15     | 9260.<br>40     | 10090.<br>63  | 11090.<br>82    | 12140.<br>30000 | 0.<br>0 | 176.0       | 2.444 | 1.00 | 1 |
| 70     | OSWEGO 4  | 7850.<br>1            | 8050.<br>15     | 8650.<br>60     | 9050.<br>73   | 9700.<br>84     | 11230.<br>30000 | 0.<br>0 | 182.0       | 2.444 | 1.00 | 1 |
| 71     | RTTRDMGT  | 14610.<br>1           | 14620.<br>42    | 14630.<br>84    | 14640.<br>126 | 14650.<br>30000 | 0.<br>0         | 0.<br>0 | 10.0        | 4.609 | 1.00 | 1 |
| 72     | OSWEGO 5  | 7450.<br>1            | 8200.<br>350    | 8440.<br>500    | 8660.<br>650  | 8940.<br>30000  | 0.<br>0         | 0.<br>0 | 2400.0      | 2.444 | 1.00 | 1 |
| 73     | GOUDY 7   | 10280.<br>17          | 10750.<br>26    | 12130.<br>30000 | 0.<br>0       | 0.<br>0         | 0.<br>0         | 0.<br>0 | 211.0       | 1.360 | 1.00 | 1 |
| 74     | GOUDY 8   | 8900.<br>1            | 9410.<br>52     | 11060.<br>30000 | 0.<br>0       | 0.<br>0         | 0.<br>0         | 0.<br>0 | 175.0       | 1.360 | 1.00 | 1 |
| 75     | GRNIDGE3  | 10380.<br>24          | 12060.<br>30000 | 0.<br>0         | 0.<br>0       | 0.<br>0         | 0.<br>0         | 0.<br>0 | 278.0       | 1.381 | 1.00 | 1 |

Table D-20

DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - UNIT THERMAL CHARACTERISTICS

| IU NO. | UNIT NAME | INCREMENTAL HEAT RATE<br>BTU/KWH VS MW |                 |                 |                 |              |                 | MIN<br>MBTU/HR | -FUEL COST-<br>\$/MBTU | COST FACT | CHAR NO. |   |
|--------|-----------|----------------------------------------|-----------------|-----------------|-----------------|--------------|-----------------|----------------|------------------------|-----------|----------|---|
| 76     | GRNIDGE4  | 8480.<br>1                             | 9290.<br>60     | 9670.<br>90     | 11250.<br>30000 | 0.<br>0      | 0.<br>0         | 0.<br>0        | 148.0                  | 1.381     | 1.00     | 1 |
| 77     | HMECITY   | 7660.<br>200                           | 8300.<br>400    | 8500.<br>30000  | 0.<br>0         | 0.<br>0      | 0.<br>0         | 0.<br>0        | 1480.0                 | 1.381     | 1.00     | 1 |
| 78     | MLLIKEN1  | 7110.<br>1                             | 8580.<br>79     | 9680.<br>30000  | 0.<br>0         | 0.<br>0      | 0.<br>0         | 0.<br>0        | 236.0                  | 1.384     | 1.00     | 1 |
| 79     | MLLIKEN2  | 7110.<br>1                             | 8580.<br>79     | 9760.<br>30000  | 0.<br>0         | 0.<br>0      | 0.<br>0         | 0.<br>0        | 236.0                  | 1.384     | 1.00     | 1 |
| 80     | NYSMISC   | 10400.<br>30000                        | 0.<br>0         | 0.<br>0         | 0.<br>0         | 0.<br>0      | 0.<br>0         | 0.<br>0        | 10.0                   | 3.252     | 1.00     | 1 |
| 81     | GRNIDGE1  | 11080.<br>13                           | 12430.<br>30000 | 0.<br>0         | 0.<br>0         | 0.<br>0      | 0.<br>0         | 0.<br>0        | 62.0                   | 1.381     | 1.00     | 1 |
| 82     | GRNIDGE2  | 9480.<br>1                             | 11680.<br>30000 | 0.<br>0         | 0.<br>0         | 0.<br>0      | 0.<br>0         | 0.<br>0        | 69.0                   | 1.381     | 1.00     | 1 |
| 83     | HCKLING1  | 10920.<br>1                            | 11780.<br>18    | 14340.<br>30000 | 0.<br>0         | 0.<br>0      | 0.<br>0         | 0.<br>0        | 68.0                   | 1.084     | 1.00     | 1 |
| 84     | HCKLING2  | 10600.<br>7                            | 12220.<br>30000 | 0.<br>0         | 0.<br>0         | 0.<br>0      | 0.<br>0         | 0.<br>0        | 67.0                   | 1.084     | 1.00     | 1 |
| 85     | JNNISON1  | 11550.<br>11                           | 12420.<br>23    | 12610.<br>25    | 13850.<br>30000 | 0.<br>0      | 0.<br>0         | 0.<br>0        | 153.0                  | 1.174     | 1.00     | 1 |
| 86     | JNNISON2  | 10710.<br>5                            | 12110.<br>30000 | 0.<br>0         | 0.<br>0         | 0.<br>0      | 0.<br>0         | 0.<br>0        | 136.0                  | 1.174     | 1.00     | 1 |
| 87     | CXSACKGT  | 12900.<br>1                            | 13150.<br>9     | 13350.<br>15    | 13500.<br>19    | 13760.<br>21 | 13770.<br>30000 | 0.<br>0        | 10.0                   | 4.045     | 1.00     | 1 |
| 88     | DNSKMMR1  | 9400.<br>15                            | 9480.<br>30     | 9540.<br>40     | 9760.<br>45     | 10160.<br>50 | 16000.<br>30000 | 0.<br>0        | 221.0                  | 2.889     | 1.00     | 1 |
| 89     | DNSKMMR2  | 9170.<br>15                            | 9240.<br>30     | 9350.<br>40     | 9460.<br>45     | 9860.<br>50  | 15800.<br>30000 | 0.<br>0        | 227.0                  | 1.790     | 1.00     | 1 |
| 90     | DNSKMMR3  | 8080.<br>40                            | 8370.<br>60     | 8520.<br>70     | 8690.<br>80     | 9050.<br>100 | 9640.<br>30000  | 0.<br>0        | 521.0                  | 2.889     | 1.00     | 1 |

Table D-20

## DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - UNIT THERMAL CHARACTERISTICS

| IU NO. | UNIT NAME | INCREMENTAL HEAT RATE<br>BTU/KWH VS MW |              |              |                |                 |                 | MIN<br>MBTU/HR | FUEL COST<br>\$/MBTU | CHAR<br>FACT | CHAR<br>NO. |
|--------|-----------|----------------------------------------|--------------|--------------|----------------|-----------------|-----------------|----------------|----------------------|--------------|-------------|
| 91     | DN SKMMR4 | 8560.<br>60                            | 8570.<br>120 | 8670.<br>140 | 8850.<br>160   | 9120.<br>180    | 10410.<br>30000 | 0.<br>0        | 1682.0               | 2.889 1.00   | 1           |
| 92     | ROSETON1  | 7450.<br>1                             | 7920.<br>150 | 9230.<br>570 | 9270.<br>580   | 9310.<br>595    | 9330.<br>30000  | 0.<br>0        | 1010.0               | 2.399 1.00   | 1           |
| 93     | ROSETON2  | 7470.<br>1                             | 7920.<br>150 | 9180.<br>570 | 9210.<br>580   | 9260.<br>595    | 9280.<br>30000  | 0.<br>0        | 1010.0               | 2.399 1.00   | 1           |
| 94     | SCAIROGT  | 12900.<br>1                            | 13150.<br>9  | 13350.<br>15 | 13500.<br>19   | 13760.<br>21    | 13770.<br>30000 | 0.<br>0        | 10.0                 | 4.045 1.00   | 1           |
| 95     | DANSKDSL  | 11400.<br>30000                        | 0.<br>0      | 0.<br>0      | 0.<br>0        | 0.<br>0         | 0.<br>0         | 0.<br>0        | 20.0                 | 4.045 1.00   | 1           |
| 96     | BLINEPT1  | 7630.<br>1                             | 8035.<br>200 | 8410.<br>300 | 8925.<br>400   | 9610.<br>500    | 9816.<br>30000  | 0.<br>0        | 1216.0               | 3.190 1.00   | 1           |
| 97     | BLINEPT2  | 7845.<br>1                             | 8070.<br>200 | 8405.<br>300 | 8940.<br>400   | 9725.<br>500    | 9838.<br>30000  | 0.<br>0        | 1221.0               | 3.190 1.00   | 1           |
| 98     | HLLBRNGT  | 10025.<br>1                            | 10180.<br>10 | 11020.<br>20 | 12380.<br>30   | 13945.<br>35    | 14031.<br>30000 | 0.<br>0        | 10.0                 | 4.160 1.00   | 1           |
| 99     | LOVETT 4  | 8450.<br>30                            | 8905.<br>50  | 9455.<br>80  | 10005.<br>110  | 10765.<br>140   | 12085.<br>30000 | 0.<br>0        | 782.0                | 3.340 1.00   | 1           |
| 100    | LOVETT 5  | 8378.<br>50                            | 8880.<br>80  | 9376.<br>110 | 9874.<br>140   | 10418.<br>170   | 10954.<br>30000 | 0.<br>0        | 769.0                | 3.340 1.00   | 1           |
| 101    | SHOEMKGT  | 10070.<br>1                            | 10265.<br>10 | 11105.<br>20 | 12475.<br>30   | 14010.<br>35    | 14053.<br>30000 | 0.<br>0        | 10.0                 | 4.160 1.00   | 1           |
| 102    | LOVETT 1  | 10045.<br>2                            | 10476.<br>6  | 10946.<br>11 | 11410.<br>16   | 11841.<br>30000 | 0.<br>0         | 0.<br>0        | 113.0                | 3.340 1.00   | 1           |
| 103    | LOVETT 2  | 9934.<br>2                             | 10341.<br>6  | 10792.<br>11 | 11250.<br>16   | 11658.<br>30000 | 0.<br>0         | 0.<br>0        | 80.0                 | 3.340 1.00   | 1           |
| 104    | LOVETT 3  | 9596.<br>20                            | 9676.<br>30  | 9759.<br>40  | 9847.<br>50    | 9941.<br>60     | 9965.<br>30000  | 0.<br>0        | 339.0                | 3.340 1.00   | 1           |
| 105    | FTZPTRK1  | 8900.<br>1                             | 9000.<br>150 | 9040.<br>650 | 9080.<br>30000 | 0.<br>0         | 0.<br>0         | 0.<br>0        | 1200.0               | 0.398 1.00   | 1           |

Table D-20

## DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - UNIT THERMAL CHARACTERISTICS

| IU NO. | UNIT NAME | INCREMENTAL HEAT RATE<br>BTU/KWH VS MW |              |              |               |                 |                 | MIN<br>MBTU/HR | -FUEL COST-<br>\$/MBTU | CHAR<br>FACT | CHAR<br>NO. |
|--------|-----------|----------------------------------------|--------------|--------------|---------------|-----------------|-----------------|----------------|------------------------|--------------|-------------|
| 106    | BBEE1-11  | 11140.<br>1                            | 14570.<br>53 | 16020.<br>75 | 16740.<br>86  | 17210.<br>93    | 18460.<br>30000 | 0.<br>0        | 29.0                   | 3.000        | 1.00 1      |
| 107    | BEEBEEGT  | 10280.<br>1                            | 11830.<br>14 | 11940.<br>15 | 12280.<br>18  | 12390.<br>30000 | 0.<br>0         | 0.<br>0        | 10.0                   | 3.400        | 1.00 1      |
| 108    | GINNA 1   | 8560.<br>105                           | 9100.<br>225 | 9660.<br>350 | 10200.<br>470 | 10290.<br>30000 | 0.<br>0         | 0.<br>0        | 1519.0                 | 0.500        | 1.00 1      |
| 109    | RSSLL1-4  | 7470.<br>37                            | 8720.<br>110 | 9460.<br>143 | 9800.<br>187  | 9900.<br>235    | 11180.<br>30000 | 0.<br>0        | 477.0                  | 1.967        | 1.00 1      |
| 110    | STA 9 GT  | 10410.<br>1                            | 12290.<br>14 | 12430.<br>15 | 12830.<br>18  | 12970.<br>30000 | 0.<br>0         | 0.<br>0        | 10.0                   | 1.967        | 1.00 1      |
| 111    | BEEBEE12  | 7420.<br>12                            | 7670.<br>20  | 8520.<br>47  | 9270.<br>71   | 9550.<br>30000  | 0.<br>0         | 0.<br>0        | 155.0                  | 1.453        | 1.00 1      |
| 112    | FICT-4U1  | 10000.<br>30000                        | 0.<br>0      | 0.<br>0      | 0.<br>0       | 0.<br>0         | 0.<br>0         | 0.<br>0        | 1000.0                 | 9.990        | 1.00 1      |
| 113    | FICT-5U1  | 10000.<br>30000                        | 0.<br>0      | 0.<br>0      | 0.<br>0       | 0.<br>0         | 0.<br>0         | 0.<br>0        | 1000.0                 | 9.990        | 1.00 1      |

Table D-20

## DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - OTHER UNIT CHARACTERISTICS

| IU<br>NO. | --UNIT--<br>NAME | TR.LOSS<br>LOW | PEN.FACT<br>HIGH | MINIMUM (HOURS)<br>UPTIME | (HOURS)<br>DOWNTIME | -HOURS-<br>UP/DOWN | UNIT<br>STATUS |
|-----------|------------------|----------------|------------------|---------------------------|---------------------|--------------------|----------------|
| 1         | ARTKILL2         | 1.0000         | 1.0000           | 6                         | 12                  | -50                | OFF-AV         |
| 2         | ARTKILL3         | 1.0000         | 1.0000           | 6                         | 12                  | -50                | OFF-AV         |
| 3         | ASTORIA1         | 1.0000         | 1.0000           | 6                         | 12                  | -50                | OFF-AV         |
| 4         | ASTORIA2         | 1.0000         | 1.0000           | 6                         | 12                  | -50                | OFF-AV         |
| 5         | ASTORIA3         | 1.0000         | 1.0000           | 6                         | 12                  | -50                | OFF-AV         |
| 6         | ASTORIA4         | 1.0000         | 1.0000           | 6                         | 12                  | -50                | OFF-AV         |
| 7         | ASTORIA5         | 1.0000         | 1.0000           | 6                         | 12                  | -50                | OFF-AV         |
| 8         | ASTORIA6         | 1.0000         | 1.0000           | 4                         | 12                  | -50                | OFF-AV         |
| 9         | ASTGTTOT         | 1.0000         | 1.0000           | 0                         | 0                   | -50                | OFF-AV         |
| 10        | 74ST3911         | 1.0000         | 1.0000           | 3                         | 12                  | -50                | OFF-AV         |
| 11        | ERIVER56         | 1.0000         | 1.0000           | 6                         | 12                  | -50                | OFF-AV         |
| 12        | ERIVER 7         | 1.0000         | 1.0000           | 6                         | 12                  | -50                | OFF-AV         |
| 13        | GOW13TOT         | 1.0000         | 1.0000           | 0                         | 0                   | -50                | OFF-AV         |
| 14        | GOW24TOT         | 1.0000         | 1.0000           | 0                         | 0                   | -50                | OFF-AV         |
| 15        | IDIANPT1         | 1.0000         | 1.0000           | 168                       | 168                 | -200               | OFF-AV         |
| 16        | IDIANPT2         | 1.0000         | 1.0000           | 168                       | 168                 | -200               | OFF-FO         |
| 17        | IDIANPT3         | 1.0000         | 1.0000           | 168                       | 168                 | 200                | ON-MUST        |
| 18        | RAVWOOD1         | 1.0000         | 1.0000           | 4                         | 12                  | -50                | OFF-AV         |
| 19        | RAVWOOD2         | 1.0000         | 1.0000           | 4                         | 12                  | -50                | OFF-AV         |
| 20        | RAVWOOD3         | 1.0000         | 1.0000           | 4                         | 12                  | 200                | ON-MUST        |

Table D-20

## DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - OTHER UNIT CHARACTERISTICS

| IU<br>NO. | --UNIT--<br>NAME | TR.LOSS<br>LOW | PEN.FACT<br>HIGH | MINIMUM (HOURS)<br>UPTIME | (HOURS)<br>DOWNTIME | -HOURS-<br>UP/DOWN | UNIT<br>STATUS |
|-----------|------------------|----------------|------------------|---------------------------|---------------------|--------------------|----------------|
| 21        | RAVGTTOT         | 1.0000         | 1.0000           | 0                         | 0                   | -50                | OFF-AV         |
| 22        | NARGTTOT         | 1.0000         | 1.0000           | 0                         | 0                   | -50                | OFF-AV         |
| 23        | 59 ST 15         | 1.0000         | 1.0000           | 3                         | 12                  | -50                | OFF-AV         |
| 24        | HUDSNA23         | 1.0000         | 1.0000           | 3                         | 8                   | -50                | OFF-AV         |
| 25        | GEMISCGT         | 1.0000         | 1.0000           | 0                         | 0                   | -50                | OFF-AV         |
| 26        | HUDA5810         | 1.0000         | 1.0000           | 3                         | 8                   | -50                | OFF-AV         |
| 27        | WSIDE415         | 1.0000         | 1.0000           | 3                         | 12                  | -50                | OFF-AV         |
| 28        | 59ST7814         | 1.0000         | 1.0000           | 3                         | 12                  | -50                | OFF-AV         |
| 29        | 59 ST 13         | 1.0000         | 1.0000           | 3                         | 12                  | -50                | OFF-AV         |
| 30        | BARRETT1         | 1.0000         | 1.0000           | 4                         | 8                   | -50                | OFF-AV         |
| 31        | BARRETT2         | 1.0000         | 1.0000           | 4                         | 8                   | -50                | OFF-AV         |
| 32        | FARKWAY4         | 1.0000         | 1.0000           | 3                         | 24                  | -50                | OFF-AV         |
| 33        | NRTHPRT1         | 1.0000         | 1.0000           | 4                         | 48                  | -50                | OFF-FO         |
| 34        | NRTHPRT2         | 1.0000         | 1.0000           | 4                         | 48                  | -50                | OFF-AV         |
| 35        | NRTHPRT3         | 1.0000         | 1.0000           | 4                         | 48                  | -50                | OFF-AV         |
| 36        | NRTHPRT4         | 1.0000         | 1.0000           | 4                         | 48                  | -50                | OFF-AV         |
| 37        | GLNWOOD2         | 1.0000         | 1.0000           | 2                         | 8                   | -50                | OFF-AV         |
| 38        | GLNWOOD3         | 1.0000         | 1.0000           | 2                         | 8                   | -50                | OFF-AV         |
| 39        | GLNWOOD4         | 1.0000         | 1.0000           | 4                         | 8                   | -50                | OFF-AV         |
| 40        | GLNWOOD5         | 1.0000         | 1.0000           | 4                         | 8                   | -50                | OFF-AV         |

Table D-20

## DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - OTHER UNIT CHARACTERISTICS

| IU<br>NO. | --UNIT--<br>NAME | TR.LOSS<br>LOW | PEN.FACT<br>HIGH | MINIMUM (HOURS) |          | -HOURS- | UNIT   |
|-----------|------------------|----------------|------------------|-----------------|----------|---------|--------|
|           |                  |                |                  | UPTIME          | DOWNTIME | UP/DOWN | STATUS |
| 41        | PRTJEFF1         | 1.0000         | 1.0000           | 2               | 8        | -50     | OFF-AV |
| 42        | PRTJEFF2         | 1.0000         | 1.0000           | 2               | 8        | -50     | OFF-AV |
| 43        | PRTJEFF3         | 1.0000         | 1.0000           | 4               | 8        | -50     | OFF-AV |
| 44        | PRTJEFF4         | 1.0000         | 1.0000           | 4               | 8        | -50     | OFF-AV |
| 45        | GROUP3GT         | 1.0000         | 1.0000           | 0               | 0        | -50     | OFF-AV |
| 46        | GROUP4GT         | 1.0000         | 1.0000           | 0               | 0        | -50     | OFF-AV |
| 47        | GROUP2GT         | 1.0000         | 1.0000           | 0               | 0        | -50     | OFF-AV |
| 48        | GROUP5GT         | 1.0000         | 1.0000           | 0               | 0        | -50     | OFF-AV |
| 49        | GROUP1GT         | 1.0000         | 1.0000           | 0               | 0        | -50     | OFF-AV |
| 50        | GROUP6GT         | 1.0000         | 1.0000           | 0               | 0        | -50     | OFF-AV |
| 51        | ALBANY 1         | 1.0000         | 1.0000           | 4               | 60       | -80     | OFF-AV |
| 52        | ALBANY 2         | 1.0000         | 1.0000           | 4               | 60       | -80     | OFF-AV |
| 53        | ALBANY 3         | 1.0000         | 1.0000           | 4               | 60       | -80     | OFF-AV |
| 54        | ALBANY 4         | 1.0000         | 1.0000           | 4               | 60       | -80     | OFF-AV |
| 55        | DUNKIRK1         | 1.0000         | 1.0000           | 4               | 60       | -80     | OFF-AV |
| 56        | DUNKIRK2         | 1.0000         | 1.0000           | 4               | 60       | -80     | OFF-AV |
| 57        | DUNKIRK3         | 1.0000         | 1.0000           | 4               | 12       | -50     | OFF-AV |
| 58        | DUNKIRK4         | 1.0000         | 1.0000           | 4               | 12       | -50     | OFF-AV |
| 59        | HUNTLY63         | 1.0000         | 1.0000           | 4               | 12       | -50     | OFF-AV |
| 60        | HUNTLY64         | 1.0000         | 1.0000           | 4               | 12       | -50     | OFF-AV |

Table D-20

DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - OTHER UNIT CHARACTERISTICS

| IU<br>NO. | --UNIT--<br>NAME | TR.LOSS<br>LOW | PEN.FACT<br>HIGH | MINIMUM (HOURS)<br>UPTIME | (HOURS)<br>DOWNTIME | -HOURS-<br>UP/DOWN | UNIT<br>STATUS |
|-----------|------------------|----------------|------------------|---------------------------|---------------------|--------------------|----------------|
| 61        | HUNTLY65         | 1.000          | 1.000            | 4                         | 12                  | -50                | OFF-AV         |
| 62        | HUNTLY66         | 1.000          | 1.000            | 4                         | 12                  | -50                | OFF-AV         |
| 63        | HUNTLY67         | 1.000          | 1.000            | 4                         | 12                  | -50                | OFF-AV         |
| 64        | HUNTLY68         | 1.000          | 1.000            | 4                         | 12                  | -50                | OFF-AV         |
| 65        | ALBANYGT         | 1.000          | 1.000            | 0                         | 0                   | -50                | OFF-AV         |
| 66        | NINEMIL1         | 1.000          | 1.000            | 168                       | 168                 | 200                | ON-MUST        |
| 67        | OSWEGO 1         | 1.000          | 1.000            | 4                         | 12                  | -50                | OFF-AV         |
| 68        | OSWEGO 2         | 1.000          | 1.000            | 4                         | 8                   | -50                | OFF-AV         |
| 69        | OSWEGO 3         | 1.000          | 1.000            | 4                         | 12                  | -50                | OFF-AV         |
| 70        | OSWEGO 4         | 1.000          | 1.000            | 4                         | 12                  | -50                | OFF-AV         |
| 71        | RTTRDMGT         | 1.000          | 1.000            | 0                         | 0                   | -50                | OFF-AV         |
| 72        | OSWEGO 5         | 1.000          | 1.000            | 4                         | 12                  | 200                | ON-MUST        |
| 73        | GOUDY 7          | 1.000          | 1.000            | 2                         | 8                   | -50                | OFF-AV         |
| 74        | GOUDY 8          | 1.000          | 1.000            | 2                         | 8                   | -50                | OFF-AV         |
| 75        | GRNIDGE3         | 1.000          | 1.000            | 2                         | 8                   | -50                | OFF-AV         |
| 76        | GRNIDGE4         | 1.000          | 1.000            | 2                         | 8                   | -50                | OFF-AV         |
| 77        | HMECITY          | 1.000          | 1.000            | 4                         | 8                   | -50                | OFF-AV         |
| 78        | MLLIKEN1         | 1.000          | 1.000            | 4                         | 8                   | -50                | OFF-AV         |
| 79        | MLLIKEN2         | 1.000          | 1.000            | 4                         | 8                   | -50                | OFF-AV         |
| 80        | NYSMISCD         | 1.000          | 1.000            | 0                         | 0                   | -50                | OFF-AV         |

Table D-20

## DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - OTHER UNIT CHARACTERISTICS

| 1U<br>NO. | --UNIT--<br>NAME | TR.LOSS<br>LOW | PEN.FACT<br>HIGH | MINIMUM (HOURS)<br>UPTIME | DOWNTIME | -HOURS-<br>UP/DOWN | UNIT<br>STATUS |
|-----------|------------------|----------------|------------------|---------------------------|----------|--------------------|----------------|
| 81        | GRNIDGE1         | 1.0000         | 1.0000           | 2                         | 8        | -50                | OFF-AV         |
| 82        | GRNIDGE2         | 1.0000         | 1.0000           | 2                         | 8        | -50                | OFF-AV         |
| 83        | HCKLING1         | 1.0000         | 1.0000           | 2                         | 8        | -50                | OFF-AV         |
| 84        | HCKLING2         | 1.0000         | 1.0000           | 2                         | 8        | -50                | OFF-AV         |
| 85        | JNNISON1         | 1.0000         | 1.0000           | 2                         | 8        | -50                | OFF-AV         |
| 86        | JNNISON2         | 1.0000         | 1.0000           | 2                         | 8        | -50                | OFF-AV         |
| 87        | CXSACKGT         | 1.0000         | 1.0000           | 0                         | 0        | -50                | OFF-AV         |
| 88        | DNSKMMR1         | 1.0000         | 1.0000           | 6                         | 6        | -50                | OFF-AV         |
| 89        | DNSKMMR2         | 1.0000         | 1.0000           | 6                         | 6        | -50                | OFF-AV         |
| 90        | DNSKMMR3         | 1.0000         | 1.0000           | 6                         | 8        | -50                | OFF-AV         |
| 91        | DNSKMMR4         | 1.0000         | 1.0000           | 6                         | 48       | -50                | OFF-AV         |
| 92        | ROSETON1         | 1.0000         | 1.0000           | 4                         | 48       | -50                | OFF-AV         |
| 93        | ROSETON2         | 1.0000         | 1.0000           | 4                         | 48       | -50                | OFF-AV         |
| 94        | SCAIROGT         | 1.0000         | 1.0000           | 0                         | 0        | -50                | OFF-AV         |
| 95        | DANSKDSL         | 1.0000         | 1.0000           | 0                         | 0        | -50                | OFF-AV         |
| 96        | BLINEPT1         | 1.0000         | 1.0000           | 2                         | 4        | -50                | OFF-AV         |
| 97        | BLINEPT2         | 1.0000         | 1.0000           | 2                         | 4        | -50                | OFF-AV         |
| 98        | HLLBRNGT         | 1.0000         | 1.0000           | 0                         | 0        | -50                | OFF-AV         |
| 99        | LOVETT 4         | 1.0000         | 1.0000           | 2                         | 4        | -50                | OFF-AV         |
| 100       | LOVETT 5         | 1.0000         | 1.0000           | 2                         | 4        | -50                | OFF-AV         |

Table D-20

DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - OTHER UNIT CHARACTERISTICS

| IU<br>NO. | --UNIT--<br>NAME | TR.LOSS<br>LOW | PEN.FACT<br>HIGH | MINIMUM (HOURS) |          | -HOURS- | UNIT<br>STATUS |
|-----------|------------------|----------------|------------------|-----------------|----------|---------|----------------|
|           |                  |                |                  | UPTIME          | DOWNTIME | UP/DOWN |                |
| 101       | SHOEMKGT         | 1.0000         | 1.0000           | 0               | 0        | -50     | OFF-AV         |
| 102       | LOVETT 1         | 1.0000         | 1.0000           | 2               | 4        | -50     | OFF-AV         |
| 103       | LOVETT 2         | 1.0000         | 1.0000           | 2               | 4        | -50     | OFF-AV         |
| 104       | LOVETT 3         | 1.0000         | 1.0000           | 2               | 4        | -50     | OFF-AV         |
| 105       | FTZPTRK1         | 1.0000         | 1.0000           | 168             | 168      | -200    | OFF-FO         |
| 106       | BBEE1-11         | 1.0000         | 1.0000           | 6               | 9        | -50     | OFF-AV         |
| 107       | BEEBEEGT         | 1.0000         | 1.0000           | 0               | 0        | -50     | OFF-AV         |
| 108       | GINNA 1          | 1.0000         | 1.0000           | 200             | 200      | 200     | ON-MUST        |
| 109       | RSSLL1-4         | 1.0000         | 1.0000           | 4               | 48       | -50     | OFF-AV         |
| 110       | STA 9 GT         | 1.0000         | 1.0000           | 0               | 0        | -50     | OFF-AV         |
| 111       | BEEBEE12         | 1.0000         | 1.0000           | 4               | 12       | -50     | OFF-AV         |
| 112       | FICT-4U1         | 1.0000         | 1.0000           | 0               | 0        | -50     | OFF-AV         |
| 113       | FICT-5U1         | 1.0000         | 1.0000           | 0               | 0        | -50     | OFF-AV         |

Table D-20

DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - UNIT COST AND PRIORITY RANK

| IU NO. | --UNIT--<br>NAME | MAINT.<br>BASE | COST<br>VAR. | STARTUP<br>\$ VS | COST<br>DOWN | AVG. FULL<br>LOAD COST    | PRIOR<br>RANK |
|--------|------------------|----------------|--------------|------------------|--------------|---------------------------|---------------|
|        |                  |                |              | HOURS            |              |                           |               |
| 1      | ARTKILL2         | 0.00           | 2.69         | 139.<br>42       | 266.<br>84   | 382.<br>126 490.<br>30000 | 34.87 58      |
| 2      | ARTKILL3         | 0.00           | 2.69         | 157.<br>42       | 284.<br>84   | 390.<br>126 478.<br>30000 | 35.61 61      |
| 3      | ASTORIA1         | 0.00           | 2.69         | 39.<br>12        | 77.<br>24    | 112.<br>36 147.<br>30000  | 40.78 76      |
| 4      | ASTORIA2         | 0.00           | 2.69         | 39.<br>12        | 77.<br>24    | 112.<br>36 147.<br>30000  | 38.91 69      |
| 5      | ASTORIA3         | 0.00           | 2.69         | 96.<br>42        | 144.<br>84   | 173.<br>126 192.<br>30000 | 39.51 72      |
| 6      | ASTORIA4         | 0.00           | 2.69         | 139.<br>42       | 269.<br>84   | 389.<br>126 501.<br>30000 | 38.02 68      |
| 7      | ASTORIA5         | 0.00           | 2.69         | 139.<br>42       | 269.<br>84   | 389.<br>126 501.<br>30000 | 40.28 75      |
| 8      | ASTORIA6         | 0.00           | 2.69         | 139.<br>42       | 269.<br>84   | 389.<br>126 501.<br>30000 | 40.27 74      |
| 9      | ASTGTTOT         | 0.00           | 3.00         | 10.<br>30000     | 0.<br>0      | 0.<br>0 0.<br>0           | 71.78 104     |
| 10     | 74ST3911         | 0.00           | 7.22         | 170.<br>42       | 251.<br>84   | 299.<br>126 330.<br>30000 | 59.07 90      |
| 11     | ERIVER56         | 0.00           | 2.69         | 139.<br>42       | 252.<br>84   | 345.<br>126 422.<br>30000 | 45.75 81      |
| 12     | ERIVER 7         | 0.00           | 2.69         | 39.<br>12        | 76.<br>24    | 112.<br>36 146.<br>30000  | 37.10 65      |
| 13     | GOW13TOT         | 0.00           | 3.00         | 10.<br>30000     | 0.<br>0      | 0.<br>0 0.<br>0           | 91.09 110     |
| 14     | GOW24TOT         | 0.00           | 3.00         | 10.<br>30000     | 0.<br>0      | 0.<br>0 0.<br>0           | 92.14 111     |
| 15     | IDIANPT1         | 0.00           | 1.50         | 46.<br>50        | 86.<br>100   | 120.<br>150 150.<br>30000 | 7.42 4        |

Table D-20

DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - UNIT COST AND PRIORITY RANK

| IU  | --UNIT-- | MAINT. | COST | -----         | STARTUP     | COST        | -----          | AVG. FULL | PRIOR |
|-----|----------|--------|------|---------------|-------------|-------------|----------------|-----------|-------|
| NO. | NAME     | BASE   | VAR. |               | \$ VS DOWN  | HOURS       |                | LOAD COST | RANK  |
| 16  | IDIANPT2 | 0.00   | 2.11 | 46.<br>50     | 86.<br>100  | 120.<br>150 | 150.<br>300000 | 14.75     | 13    |
| 17  | IDIANPT3 | 0.00   | 1.50 | 244.<br>50    | 369.<br>100 | 444.<br>150 | 494.<br>300000 | 6.92      | 3     |
| 18  | RAVWOOD1 | 0.00   | 2.69 | 140.<br>42    | 270.<br>84  | 391.<br>126 | 505.<br>300000 | 35.38     | 60    |
| 19  | RAVWOOD2 | 0.00   | 2.69 | 140.<br>42    | 270.<br>84  | 391.<br>126 | 505.<br>300000 | 35.70     | 63    |
| 20  | RAVWOOD3 | 0.00   | 2.69 | 141.<br>42    | 274.<br>84  | 400.<br>126 | 519.<br>300000 | 38.92     | 70    |
| 21  | RAVGTTOT | 0.00   | 3.00 | 10.<br>300000 | 0.<br>0     | 0.<br>0     | 0.<br>0        | 74.88     | 106   |
| 22  | NARGTTOT | 0.00   | 3.00 | 10.<br>300000 | 0.<br>0     | 0.<br>0     | 0.<br>0        | 68.54     | 99    |
| 23  | 59 ST 15 | 0.00   | 7.22 | 170.<br>42    | 251.<br>84  | 299.<br>126 | 330.<br>300000 | 69.20     | 100   |
| 24  | HUDSNA23 | 0.00   | 7.22 | 12.<br>2      | 25.<br>4    | 36.<br>6    | 48.<br>300000  | 71.64     | 103   |
| 25  | GEMISCGT | 0.00   | 3.00 | 10.<br>300000 | 0.<br>0     | 0.<br>0     | 0.<br>0        | 90.20     | 109   |
| 26  | HUDA5810 | 0.00   | 7.22 | 12.<br>2      | 25.<br>4    | 36.<br>6    | 48.<br>300000  | 58.64     | 89    |
| 27  | WSIDE415 | 0.00   | 7.22 | 220.<br>42    | 379.<br>84  | 500.<br>126 | 594.<br>300000 | 69.37     | 101   |
| 28  | 59ST7814 | 0.00   | 7.22 | 170.<br>42    | 251.<br>84  | 299.<br>126 | 330.<br>300000 | 60.87     | 92    |
| 29  | 59 ST 13 | 0.00   | 7.22 | 170.<br>42    | 251.<br>84  | 299.<br>126 | 330.<br>300000 | 54.02     | 84    |
| 30  | BARRETT1 | 0.00   | 0.92 | 174.<br>12    | 320.<br>24  | 444.<br>36  | 552.<br>300000 | 29.41     | 54    |

Table D-20

## DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - UNIT COST AND PRIORITY RANK

| IU NO. | --UNIT--<br>NAME | MAINT.<br>BASE | COST<br>VAR. | -----<br>\$ VS | STARTUP<br>DOWN | COST<br>HOURS | -----<br>AVG. FULL<br>LOAD COST | PRIOR<br>RANK |
|--------|------------------|----------------|--------------|----------------|-----------------|---------------|---------------------------------|---------------|
| 31     | BARRETT2         | 0.00           | 0.92         | 31.<br>2       | 62.<br>4        | 91.<br>6      | 119.<br>30000                   | 28.40 51      |
| 32     | FARKWAY4         | 0.00           | 3.14         | 75.<br>6       | 142.<br>12      | 203.<br>18    | 257.<br>30000                   | 35.88 64      |
| 33     | NRTHPRT1         | 0.00           | 0.89         | 177.<br>12     | 331.<br>24      | 465.<br>36    | 584.<br>30000                   | 20.30 33      |
| 34     | NRTHPRT2         | 0.00           | 0.89         | 177.<br>12     | 331.<br>24      | 465.<br>36    | 584.<br>30000                   | 20.13 31      |
| 35     | NRTHPRT3         | 0.00           | 0.89         | 31.<br>2       | 62.<br>4        | 92.<br>6      | 121.<br>30000                   | 20.09 30      |
| 36     | NRTHPRT4         | 0.00           | 0.89         | 31.<br>2       | 62.<br>4        | 92.<br>6      | 121.<br>30000                   | 28.06 49      |
| 37     | GLNWOOD2         | 0.00           | 5.12         | 26.<br>2       | 50.<br>4        | 73.<br>6      | 95.<br>30000                    | 56.54 87      |
| 38     | GLNWOOD3         | 0.00           | 5.12         | 26.<br>2       | 50.<br>4        | 73.<br>6      | 95.<br>30000                    | 56.55 88      |
| 39     | GLNWOOD4         | 0.00           | 3.58         | 140.<br>12     | 248.<br>24      | 334.<br>36    | 405.<br>30000                   | 35.14 59      |
| 40     | GLNWOOD5         | 0.00           | 3.58         | 26.<br>2       | 51.<br>4        | 75.<br>6      | 97.<br>30000                    | 34.87 57      |
| 41     | PRTJEFF1         | 0.00           | 5.63         | 32.<br>2       | 62.<br>4        | 90.<br>6      | 115.<br>30000                   | 37.81 67      |
| 42     | PRTJEFF2         | 0.00           | 5.63         | 32.<br>2       | 62.<br>4        | 90.<br>6      | 115.<br>30000                   | 37.81 66      |
| 43     | PRTJEFF3         | 0.00           | 0.83         | 31.<br>2       | 61.<br>4        | 90.<br>6      | 117.<br>30000                   | 20.50 34      |
| 44     | PRTJEFF4         | 0.00           | 0.83         | 31.<br>2       | 61.<br>4        | 90.<br>6      | 117.<br>30000                   | 20.62 35      |
| 45     | GROUP3GT         | 0.00           | 12.67        | 10.<br>30000   | 0               | 0             | 0                               | 66.67 97      |

Table D-20

## DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - UNIT COST AND PRIORITY RANK

| IU  | --UNIT-- | MAINT. | COST  | -----         | STARTUP    | COST       | -----          | AVG. FULL | PRIOR |
|-----|----------|--------|-------|---------------|------------|------------|----------------|-----------|-------|
| NO. | NAME     | BASE   | VAR.  | -----         | \$ VS      | DOWN       | HOURS          | LOAD      | RANK  |
| 46  | GROUP4GT | 0.00   | 17.28 | 10.<br>300000 | 0.<br>0    | 0.<br>0    | 0.<br>0        | 77.86     | 107   |
| 47  | GROUP2GT | 0.00   | 11.60 | 10.<br>300000 | 0.<br>0    | 0.<br>0    | 0.<br>0        | 60.94     | 93    |
| 48  | GROUP5GT | 0.00   | 16.14 | 10.<br>300000 | 0.<br>0    | 0.<br>0    | 0.<br>0        | 74.46     | 105   |
| 49  | GROUP1GT | 0.00   | 17.70 | 10.<br>300000 | 0.<br>0    | 0.<br>0    | 0.<br>0        | 65.78     | 96    |
| 50  | GROUP6GT | 0.00   | 19.03 | 10.<br>300000 | 0.<br>0    | 0.<br>0    | 0.<br>0        | 82.14     | 108   |
| 51  | ALBANY 1 | 0.00   | 0.91  | 185.<br>15    | 322.<br>30 | 427.<br>45 | 511.<br>300000 | 23.79     | 44    |
| 52  | ALBANY 2 | 0.00   | 0.91  | 185.<br>15    | 322.<br>30 | 427.<br>45 | 511.<br>300000 | 23.51     | 41    |
| 53  | ALBANY 3 | 0.00   | 0.91  | 185.<br>15    | 322.<br>30 | 427.<br>45 | 511.<br>300000 | 23.60     | 42    |
| 54  | ALBANY 4 | 0.00   | 0.91  | 185.<br>15    | 322.<br>30 | 427.<br>45 | 511.<br>300000 | 23.79     | 43    |
| 55  | DUNKIRK1 | 0.00   | 1.55  | 185.<br>15    | 322.<br>30 | 427.<br>45 | 511.<br>300000 | 13.90     | 9     |
| 56  | DUNKIRK2 | 0.00   | 1.55  | 185.<br>15    | 322.<br>30 | 427.<br>45 | 511.<br>300000 | 13.86     | 8     |
| 57  | DUNKIRK3 | 0.00   | 1.55  | 201.<br>15    | 375.<br>30 | 526.<br>45 | 659.<br>300000 | 12.91     | 7     |
| 58  | DUNKIRK4 | 0.00   | 1.55  | 201.<br>15    | 375.<br>30 | 526.<br>45 | 659.<br>300000 | 12.91     | 6     |
| 59  | HUNTLY63 | 0.00   | 1.32  | 182.<br>15    | 314.<br>30 | 413.<br>45 | 491.<br>300000 | 20.63     | 36    |
| 60  | HUNTLY64 | 0.00   | 1.32  | 185.<br>15    | 322.<br>30 | 427.<br>45 | 511.<br>300000 | 20.24     | 32    |

Table D-20

## DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - UNIT COST AND PRIORITY RANK

| IU  | --UNIT-- | MAINT. | COST | -----        | STARTUP     | COST         | -----          | AVG. FULL | PRIOR |
|-----|----------|--------|------|--------------|-------------|--------------|----------------|-----------|-------|
| NO. | NAME     | BASE   | VAR. | \$ VS        | DOWN        | HOURS        |                | LOAD COST | RANK  |
| 61  | HUNTLY65 | 0.00   | 1.32 | 190.<br>15   | 331.<br>30  | 439.<br>45   | 525.<br>30000  | 18.00     | 23    |
| 62  | HUNTLY66 | 0.00   | 1.32 | 185.<br>15   | 321.<br>30  | 426.<br>45   | 509.<br>30000  | 19.42     | 29    |
| 63  | HUNTLY67 | 0.00   | 1.32 | 201.<br>15   | 375.<br>30  | 526.<br>45   | 659.<br>30000  | 14.55     | 12    |
| 64  | HUNTLY68 | 0.00   | 1.32 | 201.<br>15   | 375.<br>30  | 526.<br>45   | 659.<br>30000  | 14.55     | 11    |
| 65  | ALBANYGT | 0.00   | 6.00 | 10.<br>30000 | 0.<br>0     | 0.<br>0      | 0.<br>0        | 59.57     | 91    |
| 66  | NINEMIL1 | 0.00   | 0.87 | 46.<br>50    | 86.<br>100  | 120.<br>150  | 150.<br>30000  | 5.16      | 2     |
| 67  | OSWEGO 1 | 0.00   | 1.28 | 182.<br>15   | 313.<br>30  | 412.<br>45   | 489.<br>30000  | 27.37     | 48    |
| 68  | OSWEGO 2 | 0.00   | 1.28 | 28.<br>2     | 55.<br>4    | 81.<br>6     | 105.<br>30000  | 26.93     | 47    |
| 69  | OSWEGO 3 | 0.00   | 1.28 | 184.<br>15   | 318.<br>30  | 420.<br>45   | 500.<br>30000  | 26.78     | 46    |
| 70  | OSWEGO 4 | 0.00   | 1.28 | 185.<br>15   | 322.<br>30  | 427.<br>45   | 511.<br>30000  | 24.40     | 45    |
| 71  | RTTRDMGT | 0.00   | 3.00 | 10.<br>30000 | 0.<br>0     | 0.<br>0      | 0.<br>0        | 70.81     | 102   |
| 72  | OSWEGO 5 | 0.00   | 1.28 | 1050.<br>15  | 1391.<br>30 | 1560.<br>45  | 1661.<br>30000 | 23.05     | 40    |
| 73  | GOUDY 7  | 0.00   | 1.93 | 21.<br>2     | 41.<br>4    | 60.<br>6     | 79.<br>30000   | 18.83     | 26    |
| 74  | GOUDY 8  | 0.00   | 1.93 | 783.<br>50   | 973.<br>100 | 1059.<br>150 | 1108.<br>30000 | 16.11     | 19    |
| 75  | GRNIDGE3 | 0.00   | 1.93 | 59.<br>2     | 114.<br>4   | 165.<br>6    | 213.<br>30000  | 19.34     | 28    |

Table D-20

DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - UNIT COST AND PRIORITY RANK

| 1U --UNIT--<br>NO. NAME | MAINT.<br>BASE | COST<br>VAR. | -----<br>\$ VS | STARTUP<br>DOWN | COST<br>HOURS | -----<br>AVG. FULL<br>LOAD COST | PRIOR<br>RANK |
|-------------------------|----------------|--------------|----------------|-----------------|---------------|---------------------------------|---------------|
| 76 GRNIDGE4             | 0.00           | 1.93         | 846.<br>50     | 1073.<br>100    | 1179.<br>150  | 1240.<br>30000                  | 15.02 14      |
| 77 HMECITY              | 0.00           | 1.93         | 3333.<br>50    | 4000.<br>100    | 4286.<br>150  | 4444.<br>30000                  | 13.95 10      |
| 78 MLLIKEN1             | 0.00           | 1.93         | 1140.<br>50    | 1594.<br>100    | 1839.<br>150  | 1991.<br>30000                  | 15.10 15      |
| 79 MLLIKEN2             | 0.00           | 1.93         | 1141.<br>50    | 1596.<br>100    | 1841.<br>150  | 1993.<br>30000                  | 15.17 16      |
| 80 NYSMISCD             | 0.00           | 1.93         | 10.<br>30000   | 0.<br>0         | 0.<br>0       | 0.<br>0                         | 39.82 73      |
| 81 GRNIDGE1             | 0.00           | 1.93         | 74.<br>2       | 136.<br>4       | 190.<br>6     | 237.<br>30000                   | 18.15 24      |
| 82 GRNIDGE2             | 0.00           | 1.93         | 71.<br>2       | 127.<br>4       | 172.<br>6     | 210.<br>30000                   | 18.97 27      |
| 83 HCKLING1             | 0.00           | 1.93         | 64.<br>2       | 108.<br>4       | 139.<br>6     | 163.<br>30000                   | 16.14 20      |
| 84 HCKLING2             | 0.00           | 1.93         | 402.<br>50     | 447.<br>100     | 464.<br>150   | 473.<br>30000                   | 15.31 17      |
| 85 JNNISON1             | 0.00           | 1.35         | 275.<br>12     | 385.<br>24      | 445.<br>36    | 482.<br>30000                   | 17.37 22      |
| 86 JNNISON2             | 0.00           | 1.93         | 300.<br>12     | 437.<br>24      | 515.<br>36    | 565.<br>30000                   | 16.73 21      |
| 87 CXSACKGT             | 0.00           | 6.00         | 10.<br>30000   | 0.<br>0         | 0.<br>0       | 0.<br>0                         | 61.82 95      |
| 88 DNSKMMR1             | 0.00           | 0.95         | 114.<br>12     | 191.<br>24      | 248.<br>36    | 291.<br>30000                   | 33.25 56      |
| 89 DNSKMMR2             | 0.00           | 0.95         | 22.<br>2       | 43.<br>4        | 63.<br>6      | 81.<br>30000                    | 18.81 25      |
| 90 DNSKMMR3             | 0.00           | 0.95         | 29.<br>2       | 57.<br>4        | 84.<br>6      | 109.<br>30000                   | 31.04 55      |

Table D-20

DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - UNIT COST AND PRIORITY RANK

| IU  | --UNIT-- | MAINT. | COST | STARTUP COST   |             | AVG. FULL         | PRIOR          |       |    |
|-----|----------|--------|------|----------------|-------------|-------------------|----------------|-------|----|
| NO. | NAME     | BASE   | VAR. | \$ VS          | DOWN HOURS  | LOAD COST         | RANK           |       |    |
| 91  | DNSKMMR4 | 0.00   | 0.95 | 164.<br>12     | 292.<br>24  | 395.<br>36 30000  | 479.<br>30000  | 35.61 | 62 |
| 92  | ROSETON1 | 0.00   | 0.64 | 192.<br>12     | 370.<br>24  | 536.<br>36 30000  | 690.<br>30000  | 22.88 | 39 |
| 93  | ROSETON2 | 0.00   | 0.64 | 192.<br>12     | 370.<br>24  | 536.<br>36 30000  | 690.<br>30000  | 22.79 | 38 |
| 94  | SCAIROGT | 0.00   | 6.00 | 10.<br>30000   | 0.<br>0     | 0.<br>0           | 0.<br>0        | 61.81 | 94 |
| 95  | DANSKDSL | 0.00   | 6.00 | 10.<br>30000   | 0.<br>0     | 0.<br>0           | 0.<br>0        | 68.29 | 98 |
| 96  | BLINEPT1 | 0.00   | 0.85 | 4250.<br>30000 | 0.<br>0     | 0.<br>0           | 0.<br>0        | 29.00 | 52 |
| 97  | BLINEPT2 | 0.00   | 0.85 | 4250.<br>30000 | 0.<br>0     | 0.<br>0           | 0.<br>0        | 29.11 | 53 |
| 98  | HLLBRNGT | 0.00   | 6.00 | 10.<br>30000   | 0.<br>0     | 0.<br>0           | 0.<br>0        | 56.49 | 86 |
| 99  | LOVETT 4 | 0.00   | 1.31 | 2780.<br>30000 | 0.<br>0     | 0.<br>0           | 0.<br>0        | 41.62 | 77 |
| 100 | LOVETT 5 | 0.00   | 1.31 | 2780.<br>30000 | 0.<br>0     | 0.<br>0           | 0.<br>0        | 38.95 | 71 |
| 101 | SHOEMKGT | 0.00   | 6.00 | 40.<br>30000   | 0.<br>0     | 0.<br>0           | 0.<br>0        | 56.19 | 85 |
| 102 | LOVETT 1 | 0.00   | 3.32 | 540.<br>30000  | 0.<br>0     | 0.<br>0           | 0.<br>0        | 50.52 | 82 |
| 103 | LOVETT 2 | 0.00   | 3.32 | 540.<br>30000  | 0.<br>0     | 0.<br>0           | 0.<br>0        | 44.60 | 79 |
| 104 | LOVETT 3 | 0.00   | 3.32 | 1740.<br>30000 | 0.<br>0     | 0.<br>0           | 0.<br>0        | 43.67 | 78 |
| 105 | FTZPTRK1 | 0.00   | 0.87 | 1050.<br>15    | 1391.<br>30 | 1560.<br>45 30000 | 1661.<br>30000 | 4.60  | 1  |

Table D-20

DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - UNIT COST AND PRIORITY RANK

| IU  | --UNIT-- | MAINT. | COST | STARTUP COST     |             |             |               | AVG. FULL | PRIOR |
|-----|----------|--------|------|------------------|-------------|-------------|---------------|-----------|-------|
| NO. | NAME     | BASE   | VAR. | \$ VS DOWN HOURS |             |             |               | LOAD COST | RANK  |
| 106 | BBEE1-11 | 0.00   | 7.84 | 8.<br>2          | 15.<br>4    | 23.<br>6    | 33.<br>30000  | 52.61     | 83    |
| 107 | BEEBEEGT | 0.00   | 3.00 | 10.<br>30000     | 0.<br>0     | 0.<br>0     | 0.<br>0       | 45.27     | 80    |
| 108 | GINNA 1  | 0.00   | 2.79 | 244.<br>50       | 369.<br>100 | 444.<br>150 | 494.<br>30000 | 8.19      | 5     |
| 109 | RSSLL1-4 | 0.00   | 1.65 | 201.<br>15       | 375.<br>30  | 526.<br>45  | 659.<br>30000 | 21.26     | 37    |
| 110 | STA 9 GT | 0.00   | 3.00 | 10.<br>30000     | 0.<br>0     | 0.<br>0     | 0.<br>0       | 28.26     | 50    |
| 111 | BEEBEE12 | 0.00   | 1.65 | 169.<br>50       | 293.<br>100 | 388.<br>150 | 463.<br>30000 | 15.36     | 18    |
| 112 | FICT-4U1 | 0.00   | 0.00 | 10.<br>30000     | 0.<br>0     | 0.<br>0     | 0.<br>0       | 99.90     | 113   |
| 113 | FICT-5U1 | 0.00   | 0.00 | 10.<br>30000     | 0.<br>0     | 0.<br>0     | 0.<br>0       | 99.90     | 112   |

Table D-20

DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

-----  
 IGEN - TOTAL GENERATING CAPACITY BY AREA AND BY TYPE  
 -----

| TRANSMISSION<br>AREA |         |   | TOTAL<br>MW | GENERATING CAPACITY (MW) BY TYPE |      |      |      |      |      |      |      |
|----------------------|---------|---|-------------|----------------------------------|------|------|------|------|------|------|------|
| -----                |         |   | -----       | FFST                             | NUC  | GT   | CMHD | SUPP | ASSP | XXXX | FIRM |
|                      |         |   |             | ----                             | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| 1                    | LILCO   | 1 | 3695        | 2718                             | Ø    | 977  | Ø    | Ø    | Ø    | Ø    | Ø    |
| 2                    | CON ED  | 2 | 8577        | 5419                             | 177Ø | 1388 | Ø    | Ø    | Ø    | Ø    | Ø    |
| 3                    | CHORNME | 3 | 3972        | 3626                             | Ø    | 346  | Ø    | Ø    | Ø    | Ø    | Ø    |
| 4                    | NYSENM  | 4 | 6324        | 4817                             | 1499 | 8    | Ø    | Ø    | Ø    | Ø    | Ø    |
| 5                    | RGENMW  | 5 | 4668        | 4224                             | 415  | 29   | Ø    | Ø    | Ø    | Ø    | Ø    |
| SYSTEM TOTAL         |         |   | 27236       | 2Ø8Ø4                            | 3684 | 2748 | Ø    | Ø    | Ø    | Ø    | Ø    |

Table D-20

## DATA FOR THE THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## IGEN - TRANSMISSION AREA INFORMATION

| AREA<br>NO. | AREA NAME | RESERVE REQUIREMENT (MW) |             |           |
|-------------|-----------|--------------------------|-------------|-----------|
|             |           | SYNCHRONOUS              | NON. SYNCH. | OPERATING |
| 1           | LILCO 1   | 70                       | 70          | 70        |
| 2           | CON ED 2  | 150                      | 150         | 150       |
| 3           | CHORNME3  | 80                       | 80          | 80        |
| 4           | NYSENC4   | 100                      | 100         | 100       |
| 5           | RGENMW 5  | 100                      | 100         | 100       |

## IGEN - TRANSMISSION TIE CAPABILITIES

| NO. | FROM AREA | TO AREA  | LIMITS(MW) |
|-----|-----------|----------|------------|
| 1   | LILCO 1   | CON ED 2 | 2000       |
| 2   | CON ED 2  | CHORNME3 | 3000       |
| 3   | CHORNME3  | NYSENC4  | 2000       |
| 4   | NYSENC4   | RGENMW 5 | 2000       |

## Appendix E

### SAMPLE PROGRAM OUTPUTS FOR NEW YORK TEST CASE 4

This section contains sample program outputs which are part of the results from the New York Test Case 4 reported in Section 4.4 in Volume 1. Data for the New York test system have been presented in Appendix D and are also given in Section 2 in the form of data files.

#### E.1 HOURLY SYSTEM SUMMARY

System summaries for the first twelve hours are given and each page of the results shows the summary for one hour of the scheduling period: The loads, generation and reserve contributions for the areas and the total system.

The generation and the three categories of reserves are reported by three types: (1) Steam - includes both fossil fired and nuclear fueled units, (2) Gas - includes all gas turbines, diesel and all quick start units, and (3) Other - includes energy limited facilities such as hydro and pumped storage plants. Three categories of costs are reported: fuel, maintenance and startup costs. The limits and actual interchanges or power transfers between areas are also shown.

#### E.2 COMMITMENT SCHEDULE OF THERMAL UNITS

This set of outputs shows the startup and shutdown schedule of all thermal units which are committed by Module UCOM.

The total operating and various types of costs are presented for each calendar day of the scheduling period. Both the initial and final unit status are also given and the seven categories of unit status are:

- 1: Unit is off-line on forced outage.
- 2: Unit is off-line on maintenance.
- 3: Unit is off-line due to minimum down time constraint.
- 4: Unit is off-line but is available for startup.
- 5: Unit is on-line and must be running.
- 6: Unit is on-line due to minimum up time constraint.
- 7: Unit is on-line but can be shut down.

A blank in the output indicates that a unit is down or off-line for the hour while the following three symbols show the generation levels of the on-line units:

L: Unit is dispatched at the lower economic limit.

U: Unit is dispatched at the upper economic limit.

\*: Dispatched generation for the unit is between the lower and the upper economic limits.

### E.3 HOURLY DISPATCH FOR THERMAL UNITS

The next set of the outputs shows the thermal unit dispatch data for each hour:

- Unit status
- Lower economic limit
- Upper economic limit and any derating
- Operating capacity and any derating
- Unit dispatched generation or output
- Average full load cost in \$/MWH
- Average cost at dispatched output in \$/MWH
- Unit fuel characteristic or configuration code which is 1 for all the units.

Cost summaries for the hour are also shown in the outputs.

#### E.4 OUTPUTS FROM ENERGY LIMITED MODULES

The next four sets of outputs show the schedule results determined by each of the four energy limited modules for the respective generating facilities:

1. Hydro Module HYDR for Plant ST-LAW.
2. Pumped storage Module PSTO for Plant GILBOA.
3. Niagara Falls Module NFAL for Project Niagara Falls with Hydro Plant RMOSES and Pumped Storage Plant LWSTON.
4. Limited Fuel Module LMTF for Plant FLIMIT with two thermal units.

The first page of each output gives the result summary for the scheduling period while the pages following shows the hourly operating data.

Table E-1

## OUTPUT ON HOURLY SYSTEM SUMMARY

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

\*\*\*\*\*  
 \* SYSTEM SUMMARY FOR MONDAY HOUR 8 \*  
 \*\*\*\*\*

| AREA<br>NAME | AREA<br>LOAD | ---GENERATION OUTPUT--- | ---SYNCHRONOUS RESERVE--- | ---NONE SYNCHR. RESERVE--- | ---OPERATING RESERVE--- |
|--------------|--------------|-------------------------|---------------------------|----------------------------|-------------------------|
|              |              | STEAM GAS OTHER SURP    | REQ. STM GAS OTH SURP     | REQ. STM GAS OTH SURP      | REQ. STM GAS OTH SURP   |
| LILCO 1      | 1905         | 2077 0 0 172            | 70 76 0 0 6               | 70 0 977 0 913             | 70 40 0 0 883           |
| CON ED 2     | 5661         | 3451 0 0 -2210          | 150 290 0 0 140           | 150 0 1388 0 1378          | 150 122 0 0 1350        |
| CHORNME3     | 1990         | 3051 0 8 1069           | 80 72 0 142 134           | 80 0 346 1067 1467         | 80 0 0 0 1387           |
| NYSENMC4     | 2599         | 2916 0 635 952          | 100 0 0 200 100           | 100 0 8 167 175            | 100 0 0 0 75            |
| RGENMW 5     | 2595         | 1998 0 614 17           | 100 100 0 0 0             | 100 0 29 1542 1471         | 100 0 0 0 1371          |
| SYSTEM       | 14750        | 13493 0 1257 0          | 500 538 0 342 380         | 500 0 2748 2776 5404       | 500 162 0 0 5066        |

## SYSTEM OPERATING COST ( 1000 \$ )

|                  | THERMAL | OTHERS | SUM     |
|------------------|---------|--------|---------|
| FUEL COST        | 281.236 | 4.525  | 285.762 |
| MAINTANENCE COST | 20.953  | 0.000  | 20.953  |
| STARTUP COST     | 34.980  | 1.115  | 36.095  |
| --- TOTAL ---    | 337.170 | 5.640  | 342.810 |

## AREA INTERCHANGE:

| FROM AREA | TO AREA  | LIMIT | TRANSFER |
|-----------|----------|-------|----------|
| LILCO 1   | CON ED 2 | 2000  | 172      |
| CON ED 2  | CHORNME3 | 3000  | -2038    |
| CHORNME3  | NYSENMC4 | 2000  | -969     |
| NYSENMC4  | RGENMW 5 | 2000  | -17      |

Table E-1

## OUTPUT ON HOURLY SYSTEM SUMMARY (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

\*\*\*\*\*  
 \* SYSTEM SUMMARY FOR MONDAY HOUR 9 \*  
 \*\*\*\*\*

| AREA<br>NAME | AREA<br>LOAD | ---GENERATION OUTPUT--- |     |       |       | --SYNCHRONOUS RESERVE-- |     |     |     |      | --NONE SYNCHR. RESERVE-- |     |      |      |      | ---OPERATING RESERVE--- |     |     |     |      |
|--------------|--------------|-------------------------|-----|-------|-------|-------------------------|-----|-----|-----|------|--------------------------|-----|------|------|------|-------------------------|-----|-----|-----|------|
|              |              | STEAM                   | GAS | OTHER | SURP  | REQ.                    | STM | GAS | OTH | SURP | REQ.                     | STM | GAS  | OTH  | SURP | REQ.                    | STM | GAS | OTH | SURP |
| LILCO 1      | 2142         | 2162                    | 0   | 0     | 20    | 70                      | 24  | 440 | 0   | 394  | 70                       | 0   | 537  | 0    | 861  | 70                      | 7   | 0   | 0   | 798  |
| CON ED 2     | 6565         | 3713                    | 0   | 0     | -2852 | 150                     | 150 | 0   | 0   | 0    | 150                      | 0   | 1388 | 0    | 1238 | 150                     | 0   | 0   | 0   | 1088 |
| CHORNME3     | 2235         | 3051                    | 0   | 16    | 832   | 80                      | 72  | 182 | 152 | 326  | 80                       | 0   | 164  | 1061 | 1471 | 80                      | 0   | 0   | 0   | 1391 |
| NYSENMC4     | 2875         | 2897                    | 0   | 909   | 931   | 100                     | 19  | 8   | 146 | 73   | 100                      | 0   | 0    | 169  | 142  | 100                     | 0   | 0   | 0   | 42   |
| RGENMW 5     | 2915         | 2091                    | 1   | 1892  | 1069  | 100                     | 7   | 28  | 265 | 200  | 100                      | 0   | 0    | 100  | 0    | 100                     | 0   | 0   | 0   | 0    |
| SYSTEM       | 16732        | 13914                   | 1   | 2817  | 0     | 500                     | 272 | 658 | 563 | 993  | 500                      | 0   | 2089 | 1230 | 3812 | 500                     | 7   | 0   | 0   | 3319 |

## SYSTEM OPERATING COST ( 1000 \$ )

|                  | THERMAL | OTHERS | SUM     |
|------------------|---------|--------|---------|
| FUEL COST        | 294.587 | 8.727  | 303.314 |
| MAINTANENCE COST | 22.134  | 0.000  | 22.134  |
| STARTUP COST     | 0.100   | 1.092  | 1.192   |
| --- TOTAL ---    | 316.821 | 9.819  | 326.640 |

## AREA INTERCHANGE:

| FROM AREA | TO AREA  | LIMIT | TRANSFER |
|-----------|----------|-------|----------|
| LILCO 1   | CON ED 2 | 2000  | 20       |
| CON ED 2  | CHORNME3 | 3000  | -2832    |
| CHORNME3  | NYSENMC4 | 2000  | -2000    |
| NYSENMC4  | RGENMW 5 | 2000  | -1069    |

Table E-1

## OUTPUT ON HOURLY SYSTEM SUMMARY (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

\*\*\*\*\*  
 \* SYSTEM SUMMARY FOR MONDAY HOUR 10 \*  
 \*\*\*\*\*

| AREA<br>NAME | AREA<br>LOAD | ---GENERATION OUTPUT--- |     |       |       | --SYNCHRONOUS RESERVE-- |     |     |     |      | --NONE SYNCHR. RESERVE-- |     |      |     |      | ---OPERATING RESERVE--- |     |     |     |      |
|--------------|--------------|-------------------------|-----|-------|-------|-------------------------|-----|-----|-----|------|--------------------------|-----|------|-----|------|-------------------------|-----|-----|-----|------|
|              |              | STEAM                   | GAS | OTHER | SURP  | REQ.                    | STM | GAS | OTH | SURP | REQ.                     | STM | GAS  | OTH | SURP | REQ.                    | STM | GAS | OTH | SURP |
| LILCO 1      | 2470         | 2113                    | 0   | 0     | -357  | 70                      | 70  | 0   | 0   | 0    | 70                       | 0   | 977  | 0   | 907  | 70                      | 10  | 0   | 0   | 847  |
| CON ED 2     | 7075         | 4432                    | 0   | 0     | -2643 | 150                     | 150 | 0   | 0   | 0    | 150                      | 0   | 1388 | 0   | 1238 | 150                     | 40  | 0   | 0   | 1128 |
| CHORNME3     | 2339         | 3230                    | 0   | 316   | 1207  | 80                      | 95  | 0   | 351 | 366  | 80                       | 0   | 346  | 564 | 1196 | 80                      | 0   | 0   | 0   | 1116 |
| NYSENMC4     | 3009         | 2755                    | 0   | 1166  | 912   | 100                     | 81  | 0   | 95  | 76   | 100                      | 0   | 8    | 36  | 20   | 100                     | 80  | 0   | 0   | 0    |
| RGENMW 5     | 3040         | 2098                    | 0   | 1823  | 881   | 100                     | 0   | 0   | 334 | 234  | 100                      | 0   | 29   | 0   | 163  | 100                     | 0   | 0   | 0   | 63   |
| SYSTEM       | 17933        | 14628                   | 0   | 3305  | 0     | 500                     | 396 | 0   | 780 | 676  | 500                      | 0   | 2748 | 600 | 3524 | 500                     | 130 | 0   | 0   | 3154 |

## SYSTEM OPERATING COST ( 1000 \$ )

|                  | THERMAL | OTHERS | SUM     |
|------------------|---------|--------|---------|
| FUEL COST        | 323.049 | 10.379 | 333.428 |
| MAINTANANCE COST | 23.957  | 0.000  | 23.957  |
| STARTUP COST     | 3.340   | 0.364  | 3.704   |
| --- TOTAL ---    | 350.346 | 10.743 | 361.089 |

## AREA INTERCHANGE:

| FROM AREA | TO AREA  | LIMIT | TRANSFER |
|-----------|----------|-------|----------|
| LILCO 1   | CON ED 2 | 2000  | -357     |
| CON ED 2  | CHORNME3 | 3000  | -3000    |
| CHORNME3  | NYSENMC4 | 2000  | -1793    |
| NYSENMC4  | RGENMW 5 | 2000  | -881     |

Table E-1

## OUTPUT ON HOURLY SYSTEM SUMMARY (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

\*\*\*\*\*  
 \* SYSTEM SUMMARY FOR MONDAY HOUR 11 \*  
 \*\*\*\*\*

| AREA<br>NAME | AREA<br>LOAD | ---GENERATION OUTPUT--- |     |       |       | --SYNCHRONOUS RESERVE-- |     |     |      |      | --NONE SYNCHR. RESERVE-- |     |      |     |      | ---OPERATING RESERVE--- |     |     |     |      |
|--------------|--------------|-------------------------|-----|-------|-------|-------------------------|-----|-----|------|------|--------------------------|-----|------|-----|------|-------------------------|-----|-----|-----|------|
|              |              | STEAM                   | GAS | OTHER | SURP  | REQ.                    | STM | GAS | OTH  | SURP | REQ.                     | STM | GAS  | OTH | SURP | REQ.                    | STM | GAS | OTH | SURP |
| LILCO 1      | 2413         | 2113                    | 0   | 0     | -300  | 70                      | 70  | 0   | 0    | 0    | 70                       | 0   | 977  | 0   | 907  | 70                      | 10  | 0   | 0   | 847  |
| CON ED 2     | 7252         | 4552                    | 0   | 0     | -2700 | 150                     | 150 | 0   | 0    | 0    | 150                      | 0   | 1388 | 0   | 1238 | 150                     | 40  | 0   | 0   | 1128 |
| CHORNME3     | 2406         | 3128                    | 0   | 673   | 1395  | 80                      | 105 | 0   | 629  | 654  | 80                       | 0   | 346  | 0   | 920  | 80                      | 60  | 0   | 0   | 900  |
| NYSENC4      | 3113         | 2737                    | 0   | 1191  | 815   | 100                     | 99  | 0   | 113  | 112  | 100                      | 0   | 8    | 0   | 20   | 100                     | 80  | 0   | 0   | 0    |
| RGENMW 5     | 3153         | 2098                    | 0   | 1845  | 790   | 100                     | 0   | 0   | 312  | 212  | 100                      | 0   | 29   | 0   | 141  | 100                     | 0   | 0   | 0   | 41   |
| SYSTEM       | 18337        | 14628                   | 0   | 3709  | 0     | 500                     | 424 | 0   | 1054 | 978  | 500                      | 0   | 2748 | 0   | 3226 | 500                     | 190 | 0   | 0   | 2916 |

## SYSTEM OPERATING COST ( 1000 \$ )

|                  | THERMAL | OTHERS | SUM     |
|------------------|---------|--------|---------|
| FUEL COST        | 323.635 | 10.379 | 334.014 |
| MAINTANENCE COST | 24.125  | 0.000  | 24.125  |
| STARTUP COST     | 0.000   | 0.000  | 0.000   |
| --- TOTAL ---    | 347.760 | 10.379 | 358.139 |

## AREA INTERCHANGE:

| FROM AREA | TO AREA  | LIMIT | TRANSFER |
|-----------|----------|-------|----------|
| LILCO 1   | CON ED 2 | 2000  | -300     |
| CON ED 2  | CHORNME3 | 3000  | -3000    |
| CHORNME3  | NYSENC4  | 2000  | -1605    |
| NYSENC4   | RGENMW 5 | 2000  | -790     |

Table E-1

## OUTPUT ON HOURLY SYSTEM SUMMARY (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

\*\*\*\*\*  
 \* SYSTEM SUMMARY FOR MONDAY HOUR 12 \*  
 \*\*\*\*\*

| AREA<br>NAME | AREA<br>LOAD | ---GENERATION OUTPUT--- |     |       |       | --SYNCHRONOUS RESERVE-- |     |     |     |      | --NONE SYNCHR. RESERVE-- |     |      |     |      | ---OPERATING RESERVE--- |     |     |     |      |
|--------------|--------------|-------------------------|-----|-------|-------|-------------------------|-----|-----|-----|------|--------------------------|-----|------|-----|------|-------------------------|-----|-----|-----|------|
|              |              | STEAM                   | GAS | OTHER | SURP  | REQ.                    | STM | GAS | OTH | SURP | REQ.                     | STM | GAS  | OTH | SURP | REQ.                    | STM | GAS | OTH | SURP |
| LILCO 1      | 2457         | 2113                    | 0   | 0     | -344  | 70                      | 70  | 0   | 0   | 0    | 70                       | 0   | 977  | 0   | 907  | 70                      | 10  | 0   | 0   | 847  |
| CON ED 2     | 7210         | 4554                    | 0   | 0     | -2656 | 150                     | 150 | 0   | 0   | 0    | 150                      | 0   | 1388 | 0   | 1238 | 150                     | 40  | 0   | 0   | 1128 |
| CHORNME3     | 2432         | 3145                    | 0   | 691   | 1404  | 80                      | 102 | 0   | 354 | 376  | 80                       | 0   | 346  | 250 | 892  | 80                      | 60  | 0   | 0   | 872  |
| NYSENMC4     | 3150         | 2724                    | 0   | 1229  | 803   | 100                     | 112 | 0   | 100 | 112  | 100                      | 0   | 8    | 0   | 20   | 100                     | 80  | 0   | 0   | 0    |
| RGENMW 5     | 3192         | 2092                    | 0   | 1893  | 793   | 100                     | 6   | 0   | 265 | 171  | 100                      | 0   | 29   | 0   | 100  | 100                     | 0   | 0   | 0   | 0    |
| SYSTEM       | 18441        | 14628                   | 0   | 3813  | 0     | 500                     | 440 | 0   | 719 | 659  | 500                      | 0   | 2748 | 250 | 3157 | 500                     | 190 | 0   | 0   | 2847 |

## SYSTEM OPERATING COST ( 1000 \$ )

|                  | THERMAL | OTHERS | SUM     |
|------------------|---------|--------|---------|
| FUEL COST        | 323.819 | 10.379 | 334.198 |
| MAINTANENCE COST | 24.127  | 0.000  | 24.127  |
| STARTUP COST     | 0.000   | 0.000  | 0.000   |
| --- TOTAL ---    | 347.946 | 10.379 | 358.325 |

## AREA INTERCHANGE:

| FROM AREA | TO AREA  | LIMIT | TRANSFER |
|-----------|----------|-------|----------|
| LILCO 1   | CON ED 2 | 2000  | -344     |
| CON ED 2  | CHORNME3 | 3000  | -3000    |
| CHORNME3  | NYSENMC4 | 2000  | -1596    |
| NYSENMC4  | RGENMW 5 | 2000  | -793     |

Table E-1

## OUTPUT ON HOURLY SYSTEM SUMMARY (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

\*\*\*\*\*  
 \* SYSTEM SUMMARY FOR MONDAY HOUR 13 \*  
 \*\*\*\*\*

| AREA<br>NAME | AREA<br>LOAD | ---GENERATION OUTPUT--- |     |       |       | --SYNCHRONOUS RESERVE-- |     |     |     |      | --NONE SYNCHR. RESERVE-- |     |      |     |      | ---OPERATING RESERVE--- |     |     |     |      |
|--------------|--------------|-------------------------|-----|-------|-------|-------------------------|-----|-----|-----|------|--------------------------|-----|------|-----|------|-------------------------|-----|-----|-----|------|
|              |              | STEAM                   | GAS | OTHER | SURP  | REQ.                    | STM | GAS | OTH | SURP | REQ.                     | STM | GAS  | OTH | SURP | REQ.                    | STM | GAS | OTH | SURP |
| LILCO 1      | 2451         | 2113                    | 0   | 0     | -338  | 70                      | 70  | 0   | 0   | 0    | 70                       | 0   | 977  | 0   | 907  | 70                      | 10  | 0   | 0   | 847  |
| CON ED 2     | 7073         | 4418                    | 0   | 0     | -2655 | 150                     | 150 | 0   | 0   | 0    | 150                      | 0   | 1388 | 0   | 1238 | 150                     | 40  | 0   | 0   | 1128 |
| CHORNME3     | 2407         | 3246                    | 0   | 577   | 1416  | 80                      | 79  | 0   | 459 | 458  | 80                       | 0   | 346  | 250 | 974  | 80                      | 0   | 0   | 0   | 894  |
| NYSENM4      | 3130         | 2767                    | 0   | 1151  | 788   | 100                     | 69  | 0   | 111 | 80   | 100                      | 0   | 8    | 32  | 20   | 100                     | 80  | 0   | 0   | 0    |
| RGENMW 5     | 3194         | 2084                    | 0   | 1899  | 789   | 100                     | 14  | 0   | 257 | 171  | 100                      | 0   | 29   | 0   | 100  | 100                     | 0   | 0   | 0   | 0    |
| SYSTEM       | 18255        | 14628                   | 0   | 3627  | 0     | 500                     | 382 | 0   | 827 | 709  | 500                      | 0   | 2748 | 282 | 3239 | 500                     | 130 | 0   | 0   | 2869 |

## SYSTEM OPERATING COST ( 1000 \$ )

|                  | THERMAL | OTHERS | SUM     |
|------------------|---------|--------|---------|
| FUEL COST        | 323.074 | 10.379 | 333.453 |
| MAINTANENCE COST | 23.935  | 0.000  | 23.935  |
| STARTUP COST     | 0.000   | 0.000  | 0.000   |
| --- TOTAL ---    | 347.009 | 10.379 | 357.388 |

## AREA INTERCHANGE:

| FROM AREA | TO AREA  | LIMIT | TRANSFER |
|-----------|----------|-------|----------|
| LILCO 1   | CON ED 2 | 2000  | -338     |
| CON ED 2  | CHORNME3 | 3000  | -2993    |
| CHORNME3  | NYSENM4  | 2000  | -1577    |
| NYSENM4   | RGENMW 5 | 2000  | -789     |

Table E-1

## OUTPUT ON HOURLY SYSTEM SUMMARY (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

\*\*\*\*\*  
 \* SYSTEM SUMMARY FOR MONDAY HOUR 14 \*  
 \*\*\*\*\*

| AREA<br>NAME | AREA<br>LOAD | ---GENERATION OUTPUT--- |     |       |       | --SYNCHRONOUS RESERVE-- |     |     |      |      | --NONE SYNCHR. RESERVE-- |     |      |     |      | ---OPERATING RESERVE--- |     |     |     |      |
|--------------|--------------|-------------------------|-----|-------|-------|-------------------------|-----|-----|------|------|--------------------------|-----|------|-----|------|-------------------------|-----|-----|-----|------|
|              |              | STEAM                   | GAS | OTHER | SURP  | REQ.                    | STM | GAS | OTH  | SURP | REQ.                     | STM | GAS  | OTH | SURP | REQ.                    | STM | GAS | OTH | SURP |
| LILCO 1      | 2452         | 2113                    | 0   | 0     | -339  | 70                      | 70  | 0   | 0    | 0    | 70                       | 0   | 977  | 0   | 907  | 70                      | 10  | 0   | 0   | 847  |
| CON ED 2     | 7071         | 4410                    | 0   | 0     | -2661 | 150                     | 150 | 0   | 0    | 0    | 150                      | 0   | 1388 | 0   | 1238 | 150                     | 40  | 0   | 0   | 1128 |
| CHORNME3     | 2429         | 3244                    | 0   | 681   | 1496  | 80                      | 81  | 0   | 601  | 602  | 80                       | 0   | 346  | 0   | 868  | 80                      | 0   | 0   | 0   | 788  |
| NYSENM4      | 3152         | 2763                    | 0   | 1170  | 781   | 100                     | 73  | 0   | 109  | 82   | 100                      | 0   | 8    | 30  | 20   | 100                     | 80  | 0   | 0   | 0    |
| RGENMW 5     | 3218         | 2098                    | 0   | 1843  | 723   | 100                     | 0   | 0   | 312  | 212  | 100                      | 0   | 29   | 0   | 141  | 100                     | 0   | 0   | 0   | 41   |
| SYSTEM       | 18322        | 14628                   | 0   | 3694  | 0     | 500                     | 374 | 0   | 1022 | 896  | 500                      | 0   | 2748 | 30  | 3174 | 500                     | 130 | 0   | 0   | 2804 |

## SYSTEM OPERATING COST ( 1000 \$ )

|                  | THERMAL | OTHERS | SUM     |
|------------------|---------|--------|---------|
| FUEL COST        | 322.935 | 10.379 | 333.315 |
| MAINTANENCE COST | 23.927  | 0.000  | 23.927  |
| STARTUP COST     | 0.000   | 0.000  | 0.000   |
| --- TOTAL ---    | 346.862 | 10.379 | 357.241 |

## AREA INTERCHANGE:

| FROM AREA | TO AREA  | LIMIT | TRANSFER |
|-----------|----------|-------|----------|
| LILCO 1   | CON ED 2 | 2000  | -339     |
| CON ED 2  | CHORNME3 | 3000  | -3000    |
| CHORNME3  | NYSENM4  | 2000  | -1504    |
| NYSENM4   | RGENMW 5 | 2000  | -723     |

Table E-1

## OUTPUT ON HOURLY SYSTEM SUMMARY (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

\*\*\*\*\*  
 \* SYSTEM SUMMARY FOR MONDAY HOUR 15 \*  
 \*\*\*\*\*

| AREA<br>NAME | AREA<br>LOAD | ---GENERATION OUTPUT--- |     |       |       | --SYNCHRONOUS RESERVE-- |     |     |      |      | --NONE SYNCHR. RESERVE-- |     |      |     |      | ---OPERATING RESERVE--- |     |     |     |      |
|--------------|--------------|-------------------------|-----|-------|-------|-------------------------|-----|-----|------|------|--------------------------|-----|------|-----|------|-------------------------|-----|-----|-----|------|
|              |              | STEAM                   | GAS | OTHER | SURP  | REQ.                    | STM | GAS | OTH  | SURP | REQ.                     | STM | GAS  | OTH | SURP | REQ.                    | STM | GAS | OTH | SURP |
| LILCO 1      | 2462         | 2113                    | 0   | 0     | -349  | 70                      | 70  | 0   | 0    | 0    | 70                       | 0   | 977  | 0   | 907  | 70                      | 10  | 0   | 0   | 847  |
| CON ED 2     | 7070         | 4419                    | 0   | 0     | -2651 | 150                     | 150 | 0   | 0    | 0    | 150                      | 0   | 1388 | 0   | 1238 | 150                     | 40  | 0   | 0   | 1128 |
| CHORNME3     | 2419         | 3234                    | 0   | 677   | 1492  | 80                      | 91  | 0   | 601  | 612  | 80                       | 0   | 346  | 0   | 878  | 80                      | 0   | 0   | 0   | 798  |
| NYSENM4      | 3125         | 2764                    | 0   | 1162  | 801   | 100                     | 72  | 0   | 110  | 82   | 100                      | 0   | 8    | 30  | 20   | 100                     | 80  | 0   | 0   | 0    |
| RGENMW 5     | 3228         | 2098                    | 0   | 1837  | 707   | 100                     | 0   | 0   | 321  | 221  | 100                      | 0   | 29   | 0   | 150  | 100                     | 0   | 0   | 0   | 50   |
| SYSTEM       | 18304        | 14628                   | 0   | 3676  | 0     | 500                     | 383 | 0   | 1032 | 915  | 500                      | 0   | 2748 | 30  | 3193 | 500                     | 130 | 0   | 0   | 2823 |

## SYSTEM OPERATING COST ( 1000 \$ )

|                  | THERMAL | OTHERS | SUM     |
|------------------|---------|--------|---------|
| FUEL COST        | 322.920 | 10.379 | 333.299 |
| MAINTANENCE COST | 23.939  | 0.000  | 23.939  |
| STARTUP COST     | 0.000   | 0.000  | 0.000   |
| --- TOTAL ---    | 346.859 | 10.379 | 357.238 |

## AREA INTERCHANGE:

| FROM AREA | TO AREA  | LIMIT | TRANSFER |
|-----------|----------|-------|----------|
| LILCO 1   | CON ED 2 | 2000  | -349     |
| CON ED 2  | CHORNME3 | 3000  | -3000    |
| CHORNME3  | NYSENM4  | 2000  | -1508    |
| NYSENM4   | RGENMW 5 | 2000  | -707     |

Table E-1

OUTPUT ON HOURLY SYSTEM SUMMARY (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

\*\*\*\*\*  
 \* SYSTEM SUMMARY FOR MONDAY HOUR 16 \*  
 \*\*\*\*\*

| AREA<br>NAME | AREA<br>LOAD | ---GENERATION OUTPUT--- |     |       |       | --SYNCHRONOUS RESERVE-- |     |     |      |      | --NONE SYNCHR. RESERVE-- |     |      |     |      | ---OPERATING RESERVE--- |     |     |     |      |
|--------------|--------------|-------------------------|-----|-------|-------|-------------------------|-----|-----|------|------|--------------------------|-----|------|-----|------|-------------------------|-----|-----|-----|------|
|              |              | STEAM                   | GAS | OTHER | SURP  | REQ.                    | STM | GAS | OTH  | SURP | REQ.                     | STM | GAS  | OTH | SURP | REQ.                    | STM | GAS | OTH | SURP |
| LILCO 1      | 2469         | 2113                    | 0   | 0     | -356  | 70                      | 70  | 0   | 0    | 0    | 70                       | 0   | 977  | 0   | 907  | 70                      | 10  | 0   | 0   | 847  |
| CON ED 2     | 7184         | 4540                    | 0   | 0     | -2644 | 150                     | 150 | 0   | 0    | 0    | 150                      | 0   | 1388 | 0   | 1238 | 150                     | 40  | 0   | 0   | 1128 |
| CHORNME3     | 2398         | 3059                    | 0   | 678   | 1339  | 80                      | 124 | 0   | 590  | 634  | 80                       | 0   | 346  | 0   | 900  | 80                      | 110 | 0   | 0   | 930  |
| NYSENM4      | 3084         | 2828                    | 0   | 1088  | 832   | 100                     | 53  | 0   | 174  | 127  | 100                      | 0   | 8    | 30  | 65   | 100                     | 35  | 0   | 0   | 0    |
| RGENMW 5     | 3154         | 2088                    | 0   | 1895  | 829   | 100                     | 10  | 0   | 261  | 171  | 100                      | 0   | 29   | 0   | 100  | 100                     | 0   | 0   | 0   | 0    |
| SYSTEM       | 18289        | 14628                   | 0   | 3661  | 0     | 500                     | 407 | 0   | 1025 | 932  | 500                      | 0   | 2748 | 30  | 3210 | 500                     | 195 | 0   | 0   | 2905 |

## SYSTEM OPERATING COST ( 1000 \$ )

|                  | THERMAL | OTHERS | SUM     |
|------------------|---------|--------|---------|
| FUEL COST        | 322.889 | 10.379 | 333.268 |
| MAINTANENCE COST | 24.137  | 0.000  | 24.137  |
| STARTUP COST     | 0.000   | 0.000  | 0.000   |
| --- TOTAL ---    | 347.026 | 10.379 | 357.405 |

## AREA INTERCHANGE:

| FROM AREA | TO AREA  | LIMIT | TRANSFER |
|-----------|----------|-------|----------|
| LILCO 1   | CON ED 2 | 2000  | -356     |
| CON ED 2  | CHORNME3 | 3000  | -3000    |
| CHORNME3  | NYSENM4  | 2000  | -1661    |
| NYSENM4   | RGENMW 5 | 2000  | -829     |

Table E-1

## OUTPUT ON HOURLY SYSTEM SUMMARY (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

\*\*\*\*\*  
 \* SYSTEM SUMMARY FOR MONDAY HOUR 17 \*  
 \*\*\*\*\*

| AREA<br>NAME | AREA<br>LOAD | ---GENERATION OUTPUT--- |     |       |       | --SYNCHRONOUS RESERVE-- |     |     |     |      | --NONE SYNCHR. RESERVE-- |     |      |     |      | ---OPERATING RESERVE--- |     |     |     |      |
|--------------|--------------|-------------------------|-----|-------|-------|-------------------------|-----|-----|-----|------|--------------------------|-----|------|-----|------|-------------------------|-----|-----|-----|------|
|              |              | STEAM                   | GAS | OTHER | SURP  | REQ.                    | STM | GAS | OTH | SURP | REQ.                     | STM | GAS  | OTH | SURP | REQ.                    | STM | GAS | OTH | SURP |
| LILCO 1      | 2480         | 2113                    | 0   | 0     | -367  | 70                      | 70  | 0   | 0   | 0    | 70                       | 0   | 977  | 0   | 907  | 70                      | 10  | 0   | 0   | 847  |
| CON ED 2     | 7044         | 4411                    | 0   | 0     | -2633 | 150                     | 150 | 0   | 0   | 0    | 150                      | 0   | 1388 | 0   | 1238 | 150                     | 40  | 0   | 0   | 1128 |
| CHORNME3     | 2383         | 3212                    | 0   | 477   | 1306  | 80                      | 102 | 0   | 464 | 486  | 80                       | 0   | 346  | 253 | 1005 | 80                      | 11  | 0   | 0   | 936  |
| NYSENC4      | 3070         | 2804                    | 0   | 1112  | 846   | 100                     | 67  | 0   | 150 | 117  | 100                      | 0   | 8    | 30  | 55   | 100                     | 45  | 0   | 0   | 0    |
| RGENMW 5     | 3135         | 2088                    | 0   | 1895  | 848   | 100                     | 10  | 0   | 261 | 171  | 100                      | 0   | 29   | 0   | 100  | 100                     | 0   | 0   | 0   | 0    |
| SYSTEM       | 18112        | 14628                   | 0   | 3484  | 0     | 500                     | 399 | 0   | 875 | 774  | 500                      | 0   | 2748 | 283 | 3305 | 500                     | 106 | 0   | 0   | 2911 |

## SYSTEM OPERATING COST ( 1000 \$ )

|                  | THERMAL | OTHERS | SUM     |
|------------------|---------|--------|---------|
| FUEL COST        | 322.534 | 10.379 | 332.913 |
| MAINTANENCE COST | 23.926  | 0.000  | 23.926  |
| STARTUP COST     | 0.000   | 0.000  | 0.000   |
| --- TOTAL ---    | 346.460 | 10.379 | 356.839 |

## AREA INTERCHANGE:

| FROM AREA | TO AREA  | LIMIT | TRANSFER |
|-----------|----------|-------|----------|
| LILCO 1   | CON ED 2 | 2000  | -367     |
| CON ED 2  | CHORNME3 | 3000  | -3000    |
| CHORNME3  | NYSENC4  | 2000  | -1694    |
| NYSENC4   | RGENMW 5 | 2000  | -848     |

Table E-1

## OUTPUT ON HOURLY SYSTEM SUMMARY (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

\*\*\*\*\*  
 \* SYSTEM SUMMARY FOR MONDAY HOUR 18 \*  
 \*\*\*\*\*

| AREA<br>NAME | AREA<br>LOAD | ---GENERATION OUTPUT--- |     |       |       | --SYNCHRONOUS RESERVE-- |     |     |     |      | --NONE SYNCH. RESERVE-- |     |      |      |      | ---OPERATING RESERVE--- |     |     |     |      |
|--------------|--------------|-------------------------|-----|-------|-------|-------------------------|-----|-----|-----|------|-------------------------|-----|------|------|------|-------------------------|-----|-----|-----|------|
|              |              | STEAM                   | GAS | OTHER | SURP  | REQ.                    | STM | GAS | OTH | SURP | REQ.                    | STM | GAS  | OTH  | SURP | REQ.                    | STM | GAS | OTH | SURP |
| LILCO 1      | 2501         | 2156                    | 0   | 0     | -345  | 70                      | 27  | 440 | 0   | 397  | 70                      | 0   | 537  | 0    | 864  | 70                      | 10  | 0   | 0   | 804  |
| CON ED 2     | 6564         | 4253                    | 0   | 0     | -2311 | 150                     | 150 | 0   | 0   | 0    | 150                     | 0   | 1388 | 0    | 1238 | 150                     | 0   | 0   | 0   | 1088 |
| CHORNME3     | 2361         | 3246                    | 0   | 8     | 893   | 80                      | 79  | 182 | 143 | 324  | 80                      | 0   | 164  | 1033 | 1441 | 80                      | 0   | 0   | 0   | 1361 |
| NYSENMC4     | 3030         | 2916                    | 8   | 979   | 873   | 100                     | 0   | 0   | 244 | 144  | 100                     | 0   | 0    | 61   | 105  | 100                     | 0   | 0   | 0   | 5    |
| RGENMW 5     | 3094         | 1972                    | 0   | 2012  | 890   | 100                     | 121 | 29  | 145 | 195  | 100                     | 0   | 0    | 0    | 95   | 100                     | 5   | 0   | 0   | 0    |
| SYSTEM       | 17550        | 14543                   | 8   | 2999  | 0     | 500                     | 377 | 651 | 532 | 1060 | 500                     | 0   | 2089 | 1094 | 3743 | 500                     | 15  | 0   | 0   | 3258 |

## SYSTEM OPERATING COST ( 1000 \$ )

|                  | THERMAL | OTHERS | SUM     |
|------------------|---------|--------|---------|
| FUEL COST        | 319.898 | 10.379 | 330.277 |
| MAINTENANCE COST | 23.671  | 0.000  | 23.671  |
| STARTUP COST     | 0.100   | 0.000  | 0.100   |
| --- TOTAL ---    | 343.670 | 10.379 | 354.049 |

## AREA INTERCHANGE:

| FROM AREA | TO AREA  | LIMIT | TRANSFER |
|-----------|----------|-------|----------|
| LILCO 1   | CON ED 2 | 2000  | -345     |
| CON ED 2  | CHORNME3 | 3000  | -2656    |
| CHORNME3  | NYSENMC4 | 2000  | -1763    |
| NYSENMC4  | RGENMW 5 | 2000  | -890     |

Table E-1

## OUTPUT ON HOURLY SYSTEM SUMMARY (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

\*\*\*\*\*  
 \* SYSTEM SUMMARY FOR MONDAY HOUR 19 \*  
 \*\*\*\*\*

| AREA<br>NAME | AREA<br>LOAD | ---GENERATION OUTPUT--- |     |       |       | --SYNCHRONOUS RESERVE-- |     |     |      |      | --NONE SYNCHR. RESERVE-- |     |      |     |      | ---OPERATING RESERVE--- |     |     |     |      |
|--------------|--------------|-------------------------|-----|-------|-------|-------------------------|-----|-----|------|------|--------------------------|-----|------|-----|------|-------------------------|-----|-----|-----|------|
|              |              | STEAM                   | GAS | OTHER | SURP  | REQ.                    | STM | GAS | OTH  | SURP | REQ.                     | STM | GAS  | OTH | SURP | REQ.                    | STM | GAS | OTH | SURP |
| LILCO 1      | 2463         | 2113                    | 0   | 0     | -350  | 70                      | 70  | 0   | 0    | 0    | 70                       | 0   | 977  | 0   | 907  | 70                      | 10  | 0   | 0   | 847  |
| CON ED 2     | 6080         | 4180                    | 0   | 0     | -1900 | 150                     | 214 | 0   | 0    | 64   | 150                      | 0   | 1388 | 0   | 1302 | 150                     | 9   | 0   | 0   | 1161 |
| CHORNME3     | 2305         | 3221                    | 0   | 561   | 1477  | 80                      | 102 | 182 | 618  | 822  | 80                       | 0   | 164  | 32  | 938  | 80                      | 2   | 0   | 0   | 860  |
| NYSENM4      | 2954         | 2916                    | 8   | 867   | 837   | 100                     | 0   | 0   | 200  | 100  | 100                      | 0   | 0    | 160 | 160  | 100                     | 0   | 0   | 0   | 60   |
| RGENMW 5     | 2992         | 2098                    | 15  | 815   | -64   | 100                     | 0   | 14  | 1341 | 1255 | 100                      | 0   | 0    | 0   | 1155 | 100                     | 0   | 0   | 0   | 1055 |
| SYSTEM       | 16794        | 14528                   | 23  | 2243  | 0     | 500                     | 386 | 196 | 2159 | 2241 | 500                      | 0   | 2529 | 192 | 4462 | 500                     | 21  | 0   | 0   | 3983 |

## SYSTEM OPERATING COST ( 1000 \$ )

|                  | THERMAL | OTHERS | SUM     |
|------------------|---------|--------|---------|
| FUEL COST        | 317.807 | 10.128 | 327.935 |
| MAINTANENCE COST | 23.533  | 0.000  | 23.533  |
| STARTUP COST     | 0.000   | 0.000  | 0.000   |
| --- TOTAL ---    | 341.340 | 10.128 | 351.468 |

## AREA INTERCHANGE:

| FROM AREA | TO AREA  | LIMIT | TRANSFER |
|-----------|----------|-------|----------|
| LILCO 1   | CON ED 2 | 2000  | -350     |
| CON ED 2  | CHORNME3 | 3000  | -2250    |
| CHORNME3  | NYSENM4  | 2000  | -773     |
| NYSENM4   | RGENMW 5 | 2000  | 64       |

Table E-2

### OUTPUT ON COMMITMENT SCHEDULE OF THERMAL UNITS

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

### UNIT STARTUP AND SHUTDOWN SCHEDULE

|                    |           |             | MONDAY   |     |     |     |     |     |     |     |     |     | TUESDAY  |     |     |     |     |     |     |     |     |     | WEDNESDAY |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 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 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   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COST(1000\$) |           |             | 5572.462 |     |     |     |     |     |     |     |     |     | 6913.496 |     |     |     |     |     |     |     |     |     | 6756.499  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   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| FUEL COST          |           |             | 5151.699 |     |     |     |     |     |     |     |     |     | 6427.106 |     |     |     |     |     |     |     |     |     | 6280.148  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 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  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |
| MAINT COST         |           |             | 382.243  |     |     |     |     |     |     |     |     |     | 482.968  |     |     |     |     |     |     |     |     |     | 472.827   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |
| START COST         |           |             | 38.520   |     |     |     |     |     |     |     |     |     | 3.422    |     |     |     |     |     |     |     |     |     | 3.521     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |
| UNIT NO.           | UNIT NAME | STAT. IN FN | 111      | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111      | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111       | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 1 |

Table E-2

OUTPUT ON COMMITMENT SCHEDULE OF THERMAL UNITS (continued)  
UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

UNIT STARTUP AND SHUTDOWN SCHEDULE  
-----

|                    |           |             | MONDAY       |                |                |                |                | TUESDAY        |                |                |                |                | WEDNESDAY      |                |                |                |                |
|--------------------|-----------|-------------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| OPER. COST(1000\$) |           |             | 5572.462     |                |                |                |                | 6913.496       |                |                |                |                | 6756.499       |                |                |                |                |
| FUEL COST          |           |             | 5151.699     |                |                |                |                | 6427.106       |                |                |                |                | 6280.148       |                |                |                |                |
| MAINT COST         |           |             | 382.243      |                |                |                |                | 482.968        |                |                |                |                | 472.827        |                |                |                |                |
| START COST         |           |             | 38.520       |                |                |                |                | 3.422          |                |                |                |                | 3.521          |                |                |                |                |
| UNIT NO.           | UNIT NAME | STAT. IN FN | 111          | 111111122222   | 111            | 111111122222   | 111            | 111111122222   | 111            | 111111122222   | 111            | 111111122222   | 111            | 111111122222   | 111            | 111111122222   | 111            |
|                    |           |             | 123456789012 | 345678901234   | 123456789012   | 345678901234   | 123456789012   | 345678901234   | 123456789012   | 345678901234   | 123456789012   | 345678901234   | 123456789012   | 345678901234   | 123456789012   | 345678901234   | 123456789012   |
| 158                | NRTHPRT2  | 6 7         | UUUUU        | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU |
| 212                | HUNTLY64  | 6 7         | **UU*        | *UU***U***U    | UUUUUUUU*UU*   | *U*UU*****U    | UUUUUU*UU**    | *UUUUU*****U   | UUUUUU*UU**    | *UUUUU*****U   | UUUUUU*UU**    | *UUUUU*****U   | UUUUUU*UU**    | *UUUUU*****U   | UUUUUU*UU**    | *UUUUU*****U   | UUUUUU*UU**    |
| 157                | NRTHPRT1  | 1 1         |              |                |                |                |                |                |                |                |                |                |                |                |                |                |                |
| 169                | PRTJEFF3  | 6 7         | UUUUU        | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU |
| 170                | PRTJEFF4  | 6 7         | UUUUU        | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU |
| 211                | HUNTLY63  | 6 7         | *UUUU        | UUUUU*U***U    | UUUUUUUU*UU*   | *U*UU*****U    | UUUUUU*UU**    | *UUUUU*****U   | UUUUUU*UU**    | *UUUUU*****U   | UUUUUU*UU**    | *UUUUU*****U   | UUUUUU*UU**    | *UUUUU*****U   | UUUUUU*UU**    | *UUUUU*****U   | UUUUUU*UU**    |
| 461                | RSSL1-4   | 6 7         | *UUUU        | *UU***U***U    | UUUUUUUU*UU*   | *U*UU*****U    | UUUUUU*UU**    | *UUUUU*****U   | UUUUUU*UU**    | *UUUUU*****U   | UUUUUU*UU**    | *UUUUU*****U   | UUUUUU*UU**    | *UUUUU*****U   | UUUUUU*UU**    | *UUUUU*****U   | UUUUUU*UU**    |
| 360                | ROSETON2  | 6 7         | UUUUU        | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU |
| 359                | ROSETON1  | 6 7         | UUUUU        | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU |
| 233                | OSWEGO 5  | 5 5         | UU***        | UUUUUUUUUUUUUU | UUUUUUUUUUUUUU | UU*UUUUUUUUU   | UUUUUU*UU**    | UUUUUUUUUUUUUU | UUUUUU*UU**    | UUUUUUUUUUUUUU | UUUUUU*UU**    | UUUUUUUUUUUUUU | UUUUUU*UU**    | UUUUUUUUUUUUUU | UUUUUU*UU**    | UUUUUUUUUUUUUU | UUUUUU*UU**    |
| 202                | ALBANY 2  | 6 7         | UUUUU        | UUUUUUUUUUUUUU | U**U*UUUUUUU   | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    |
| 203                | ALBANY 3  | 6 7         | UUUUU        | UUUUUUUUUUUUUU | U**U*UUUUUUU   | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    |
| 204                | ALBANY 4  | 6 7         | UUUUU        | UUUUUUUUUUUUUU | U**U*UUUUUUU   | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    |
| 201                | ALBANY 1  | 6 7         | UUUUU        | UUUUUUUUUUUUUU | U**U*UUUUUUU   | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    | UUUUUUUUUUUUUU | U*****UUUUU    |
| 222                | OSWEGO 4  | 6 7         | UU***        | ***U*UUUUUUU   | U*UUUUUUUUU*   | U***UUUUUUUU   | UU*U*UUUUUU    | UU***UUUUUUUU  | UU*U*UUUUUU    | UU***UUUUUUUU  | UU*U*UUUUUU    | UU***UUUUUUUU  | UU*U*UUUUUU    | UU***UUUUUUUU  | UU*U*UUUUUU    | UU***UUUUUUUU  | UU*U*UUUUUU    |
| 221                | OSWEGO 3  | 6 7         | U****        | *****UUUUUUU   | *****UUUUU*    | *****UUUUUUU   | *****LUUUU*    | *****UUUUUUU   | *****LUUUU*    | *****UUUUUUU   | *****LUUUU*    | *****UUUUUUU   | *****LUUUU*    | *****UUUUUUU   | *****LUUUU*    | *****UUUUUUU   | *****LUUUU*    |
| 220                | OSWEGO 2  | 6 7         | UULLL        | LLL*UUUUUUUU   | UL*****UUUUU   | U*LLL*UUUUUUU  | U*LL*LUUUUU*   | UU*LL*LUUUUU*  | U*LL*LUUUUU*   | UU*LL*LUUUUU*  | U*LL*LUUUUU*   | UU*LL*LUUUUU*  | U*LL*LUUUUU*   | UU*LL*LUUUUU*  | U*LL*LUUUUU*   | UU*LL*LUUUUU*  | U*LL*LUUUUU*   |
| 219                | OSWEGO 1  | 6 7         | U*LLL        | LLL*UUUUUUUU   | *L*****UUUUU*  | *LL*LUUUUUUU*  | *LL*LUUUUUUU*  | *LL*LUUUUUUU*  | *LL*LUUUUUUU*  | *LL*LUUUUUUU*  | *LL*LUUUUUUU*  | *LL*LUUUUUUU*  | *LL*LUUUUUUU*  | *LL*LUUUUUUU*  | *LL*LUUUUUUU*  | *LL*LUUUUUUU*  | *LL*LUUUUUUU*  |
| 160                | NRTHPRT4  | 6 7         | UUUUU        | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   |
| 462                | STA 9 GT  | 4 4         | *            | LU             | LUUL           | LU             | U              | UUUUUU         |                |                |                |                |                |                |                |                |                |
| 152                | BARRETT2  | 6 7         | UUUUU        | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   |
| 386                | BLINEPT1  | 6 7         | UUUUU        | UU*UUUUUUUUU   | *LLLL*UUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   |
| 387                | BLINEPT2  | 6 7         | UU*U         | UU*UUUUUUUUU   | *LLLL*UUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   |
| 151                | BARRETT1  | 6 3         | UUUUU        | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   | UUUUUUUUUUUUUU | *LLLLLLUUUUU   |
| 354                | DNSKMMR3  | 6 3         | UUUUU        | UUUUUUUUUUUUUU | UL*****UUUUU   | UUUUUUUUUUUUUU | U*LL*LUUUUU    | UUUUUUUUUUUUUU | U*LL*LUUUUU    | UUUUUUUUUUUUUU | U*LL*LUUUUU    | UUUUUUUUUUUUUU | U*LL*LUUUUU    | UUUUUUUUUUUUUU | U*LL*LUUUUU    | UUUUUUUUUUUUUU | U*LL*LUUUUU    |
| 352                | DNSKMMR1  | 6 4         | *****        | *****UUUUUUU   | *LLLLLL*UUU*   | *U*****UUUUU   | *LLLLLL*UUU*   | *****UUUUUUU   | *LLLLLL*UUU*   | *****UUUUUUU   | *LLLLLL*UUU*   | *****UUUUUUU   | *LLLLLL*UUU*   | *****UUUUUUU   | *LLLLLL*UUU*   | *****UUUUUUU   | *LLLLLL*UUU*   |
| 166                | GLNWOOD5  | 6 4         | *U***        | *****UUUUUUU   | UU*****UUUUU   | UU*****UUUUU   | UU*****UUUUU   | UU*****UUUUU   | UU*****UUUUU   | UU*****UUUUU   | UU*****UUUUU   | UU*****UUUUU   | UU*****UUUUU   | UU*****UUUUU   | UU*****UUUUU   | UU*****UUUUU   | UU*****UUUUU   |
| 1                  | ARTKILL2  | 6 4         | UUUUU        | UUUUUUUUUUUU** | LLLLLLL*UUUU   | UUUUUUUUUUUU** | LLLLLLL*UUUU   | UUUUUUUUUUUU** | LLLLLLL*UUUU   | UUUUUUUUUUUU** | LLLLLLL*UUUU   | UUUUUUUUUUUU** | LLLLLLL*UUUU   | UUUUUUUUUUUU** | LLLLLLL*UUUU   | UUUUUUUUUUUU** | LLLLLLL*UUUU   |
| 165                | GLNWOOD4  | 6 4         | *U***        | *****UUUUUUU   | LLLLLLL*UUUU   | UU*****UUUUU   | LLLLLLL*UUUU   | UU*****UUUUU   | LLLLLLL*UUUU   | UU*****UUUUU   | LLLLLLL*UUUU   | UU*****UUUUU   | LLLLLLL*UUUU   | UU*****UUUUU   | LLLLLLL*UUUU   | UU*****UUUUU   | LLLLLLL*UUUU   |
| 31                 | RAVWOOD1  | 6 4         | *UUUU        | UUUUUU*****L   | LLLLLLL*UUUU   | UUUUUU*****L   | LLLLLLL*UUUU   | UUUUUU*****L   | LLLLLLL*UUUU   | UUUUUU*****L   | LLLLLLL*UUUU   | UUUUUU*****L   | LLLLLLL*UUUU   | UUUUUU*****L   | LLLLLLL*UUUU   | UUUUUU*****L   | LLLLLLL*UUUU   |

Table E-2

UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

### UNIT STARTUP AND SHUTDOWN SCHEDULE

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Table E-2

## OUTPUT ON COMMITMENT SCHEDULE OF THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## UNIT STARTUP AND SHUTDOWN SCHEDULE

|                    |           |             | MONDAY       |              |              |              | TUESDAY      |              |              |              | WEDNESDAY    |              |              |              |
|--------------------|-----------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| OPER. COST(1000\$) |           |             | 5572.462     |              |              |              | 6913.496     |              |              |              | 6756.499     |              |              |              |
| FUEL COST          |           |             | 5151.699     |              |              |              | 6427.106     |              |              |              | 6280.148     |              |              |              |
| MAINT COST         |           |             | 382.243      |              |              |              | 482.968      |              |              |              | 472.827      |              |              |              |
| START COST         |           |             | 38.520       |              |              |              | 3.422        |              |              |              | 3.521        |              |              |              |
| UNIT NO.           | UNIT NAME | STAT. IN FN | 111          | 111          | 111          | 111          | 111          | 111          | 111          | 111          | 111          | 111          | 111          | 111          |
|                    |           |             | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 |
| 217                | ALBANYGT  | 4 4         | L            |              | LL           |              | LLL          | LL           |              |              |              |              |              |              |
| 132                | 59ST7814  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |
| 173                | GROUP2GT  | 4 4         | L            |              | L            |              | LLL          | LL           |              |              |              |              |              |              |
| 361                | SCAIROGT  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |
| 351                | CXSACKGT  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |
| 175                | GROUP1GT  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |
| 171                | GROUP3GT  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |
| 366                | DANSKDSL  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |
| 35                 | NARGTTOT  | 4 7         |              |              |              |              |              |              |              |              | LLL          | LLLLLLL      |              |              |
| 40                 | 59 ST 15  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |
| 129                | WSIDE415  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |
| 223                | RTTRDMGT  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |
| 41                 | HUDSNA23  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |
| 9                  | ASTGTTOT  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |
| 174                | GROUP5GT  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |
| 34                 | RAVGTTOT  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |
| 172                | GROUP4GT  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |
| 176                | GROUP6GT  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |
| 96                 | GEMISCGT  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |
| 14                 | GOW13TOT  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |
| 17                 | GOW24TOT  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |
| 951                | FICT-5U1  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |
| 941                | FICT-4U1  | 4 4         |              |              |              |              |              |              |              |              |              |              |              |              |

Table E-2

## OUTPUT ON COMMITMENT SCHEDULE OF THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## UNIT STARTUP AND SHUTDOWN SCHEDULE

|                    |           |             | THURSDAY       |               |              |              |              |              |              |              |              |              | FRIDAY       |              |              |              |              |              |  |  |  |  | SATURDAY |  |  |  |  |  |  |  |  |  |
|--------------------|-----------|-------------|----------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--|--|--|--|----------|--|--|--|--|--|--|--|--|--|
| OPER. COST(1000\$) |           |             | 7196.383       |               |              |              |              |              |              |              |              |              | 6844.576     |              |              |              |              |              |  |  |  |  | 5132.737 |  |  |  |  |  |  |  |  |  |
| FUEL COST          |           |             | 6690.518       |               |              |              |              |              |              |              |              |              | 6361.931     |              |              |              |              |              |  |  |  |  | 4772.860 |  |  |  |  |  |  |  |  |  |
| MAINT COST         |           |             | 502.710        |               |              |              |              |              |              |              |              |              | 479.286      |              |              |              |              |              |  |  |  |  | 359.597  |  |  |  |  |  |  |  |  |  |
| START COST         |           |             | 3.154          |               |              |              |              |              |              |              |              |              | 3.359        |              |              |              |              |              |  |  |  |  | 0.280    |  |  |  |  |  |  |  |  |  |
| UNIT NO.           | UNIT NAME | STAT. IN FN | 111            | 111111122222  | 111          | 111111122222 | 111          | 111111122222 | 111          | 111111122222 | 111          | 111111122222 | 111          | 111111122222 | 111          | 111111122222 | 111          | 111111122222 |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 421                | FTZPTRK1  | 1 1         |                |               |              |              |              |              |              |              |              |              |              |              |              |              |              |              |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 218                | NINEMIL1  | 5 5         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 29                 | IDIANPT3  | 5 5         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 27                 | IDIANPT1  | 6 6         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 459                | GINNA 1   | 5 5         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 210                | DUNKIRK4  | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 209                | DUNKIRK3  | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 208                | DUNKIRK2  | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 207                | DUNKIRK1  | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 307                | HMERCITY  | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 216                | HUNTLY68  | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 215                | HUNTLY67  | 6 7         | UUUUUUUUUUUU   | *UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 28                 | IDIANPT2  | 1 1         |                |               |              |              |              |              |              |              |              |              |              |              |              |              |              |              |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 305                | GRNIDGE4  | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 309                | MLLIKEN1  | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 310                | MLLIKEN2  | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 317                | HCKLING2  | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 463                | BEEBEE12  | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 302                | GOUDY 8   | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 316                | HCKLING1  | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 319                | JNNISON2  | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 318                | JNNISON1  | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 213                | HUNTLY65  | 6 7         | UUUUUUUUUUUU   | *UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 314                | GRNIDGE1  | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 353                | DNSKMMR2  | 6 7         | U*****UUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | U*****UUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | U*****UUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | U*****UUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 301                | GOUDY 7   | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 315                | GRNIDGE2  | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 304                | GRNIDGE3  | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 214                | HUNTLY66  | 6 7         | UUUUUUUUUUUU** | *****UUUUUU   | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |
| 159                | NRTHPRT3  | 6 7         | UUUUUUUUUUUU   | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU | UUUUUUUUUUUU |  |  |  |  |          |  |  |  |  |  |  |  |  |  |

Table E-2

OUTPUT ON COMMITMENT SCHEDULE OF THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

### UNIT STARTUP AND SHUTDOWN SCHEDULE

[illegible]

Table E-2

OUTPUT ON COMMITMENT SCHEDULE OF THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## UNIT STARTUP AND SHUTDOWN SCHEDULE

|                    |           | THURSDAY    |                  | FRIDAY                      |                  | SATURDAY                  |                               |
|--------------------|-----------|-------------|------------------|-----------------------------|------------------|---------------------------|-------------------------------|
| OPER. COST(1000\$) |           | 7196.383    |                  | 6844.576                    |                  | 5132.737                  |                               |
| FUEL COST          |           | 6690.518    |                  | 6361.931                    |                  | 4772.860                  |                               |
| MAINT COST         |           | 502.710     |                  | 479.286                     |                  | 359.597                   |                               |
| START COST         |           | 3.154       |                  | 3.359                       |                  | 0.280                     |                               |
| UNIT NO.           | UNIT NAME | STAT. IN FN | 111 123456789012 | 111111122222 345678901234   | 111 123456789012 | 111111122222 345678901234 | 111 123456789012 345678901234 |
| 2                  | ARTKILL3  | 6 4         | LLLLLLLL*UUUU    | UUUUUUUUUUU* LLLLLLL*UUUU   | UUUUUUUUUUU*     |                           |                               |
| 355                | DNKMMR4   | 6 4         | ****L**UUUUU     | UUUUUUUUUUUU U**L***UUUUU   | UUUUUUUUUUU      |                           |                               |
| 32                 | RAVWOOD2  | 6 4         | LLLLLLLL*****    | ***** LLLLLLL*UUU*          | *****UUU**       |                           |                               |
| 154                | FARKWAY4  | 6 4         | LLLLLLLL**UU*    | ***** LLLLLLL*UUU*          | *****            |                           |                               |
| 13                 | ERIVER 7  | 6 4         | LLLLLLLLLUUUU    | UUUUUUUUUUUL LLLLLLLLLUUUU  | UUUUUUUL**       |                           |                               |
| 168                | PRTJEFF2  | 6 4         | LLLLLLLL**UU*    | ***** *UUU*                 | *****            |                           |                               |
| 167                | PRTJEFF1  | 6 4         | LLLLLLLL**UU*    | ***** *LLLLLL*UUU*          | *****            |                           |                               |
| 6                  | ASTORIA4  | 6 4         | LLLLLLLL*****    | ***** *                     | ****UU**         |                           |                               |
| 4                  | ASTORIA2  | 4 4         | **               | ***** *                     | *****U*          |                           |                               |
| 33                 | RAVWOOD3  | 5 5         | LLLLLLLLUUUUU    | UUUUUUUUUUUU LLLLLLLLLUUUUU | UUUUUUUUUUU*     | LLLLLLLLLL** U*****LL     |                               |
| 391                | LOVETT 5  | 4 4         | UU               | UUUUUUUUUU *                | ***UUUU          |                           |                               |
| 5                  | ASTORIA3  | 4 4         | UU               | UUUUUUUUUU U                | UUUUUU           |                           |                               |
| 311                | NYSMISCD  | 4 4         | UUU              |                             | UUL              | U                         |                               |
| 8                  | ASTORIA6  | 4 4         | *                | *****LLLL                   |                  |                           |                               |
| 7                  | ASTORIA5  | 4 4         |                  |                             |                  |                           |                               |
| 3                  | ASTORIA1  | 4 4         |                  |                             |                  |                           |                               |
| 390                | LOVETT 4  | 4 4         |                  |                             |                  |                           |                               |
| 396                | LOVETT 3  | 4 4         |                  |                             |                  |                           |                               |
| 395                | LOVETT 2  | 4 4         |                  |                             |                  |                           |                               |
| 457                | BEEBEEGT  | 4 4         | LLL              |                             | UUL              | L                         |                               |
| 12                 | ERIVER56  | 4 4         |                  |                             |                  |                           |                               |
| 394                | LOVETT 1  | 4 4         |                  |                             |                  |                           |                               |
| 456                | BEE1-11   | 4 4         |                  |                             |                  |                           |                               |
| 133                | 59 ST 13  | 4 4         |                  |                             |                  |                           |                               |
| 393                | SHOEMKGT  | 4 4         | L**              |                             | ***              | L                         |                               |
| 389                | HLLBRNGT  | 4 4         | L**              |                             | ***              |                           |                               |
| 163                | GLNWOOD2  | 4 4         |                  |                             |                  |                           |                               |
| 164                | GLNWOOD3  | 4 4         |                  |                             |                  |                           |                               |
| 105                | HUDA5810  | 4 4         |                  |                             |                  |                           |                               |
| 11                 | 74ST3911  | 4 4         |                  |                             |                  |                           |                               |

Table E-2

## OUTPUT ON COMMITMENT SCHEDULE OF THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## UNIT STARTUP AND SHUTDOWN SCHEDULE

|                    |           |             | THURSDAY         |              |              |              |              |              |              |              |              |              |              |              | FRIDAY           |              |              |              |              |              |              |              |              |              |              |              | SATURDAY         |              |              |              |              |              |              |              |              |              |              |              |
|--------------------|-----------|-------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| OPER. COST(1000\$) |           |             | 7196.383         |              |              |              |              |              |              |              |              |              |              |              | 6844.576         |              |              |              |              |              |              |              |              |              |              |              | 5132.737         |              |              |              |              |              |              |              |              |              |              |              |
| FUEL COST          |           |             | 6690.518         |              |              |              |              |              |              |              |              |              |              |              | 6361.931         |              |              |              |              |              |              |              |              |              |              |              | 4772.860         |              |              |              |              |              |              |              |              |              |              |              |
| MAINT COST         |           |             | 502.710          |              |              |              |              |              |              |              |              |              |              |              | 479.286          |              |              |              |              |              |              |              |              |              |              |              | 359.597          |              |              |              |              |              |              |              |              |              |              |              |
| START COST         |           |             | 3.154            |              |              |              |              |              |              |              |              |              |              |              | 3.359            |              |              |              |              |              |              |              |              |              |              |              | 0.280            |              |              |              |              |              |              |              |              |              |              |              |
| UNIT NO.           | UNIT NAME | STAT. IN FN | 111 111111122222 |              |              |              |              |              |              |              |              |              |              |              | 111 111111122222 |              |              |              |              |              |              |              |              |              |              |              | 111 111111122222 |              |              |              |              |              |              |              |              |              |              |              |
|                    |           |             | 123456789012     | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012     | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012     | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 |
| 217                | ALBANYGT  | 4 4         | L*L              |              |              |              |              |              |              |              |              |              |              |              | **U              |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 132                | 59ST7814  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 173                | GROUP2GT  | 4 4         | LLL              |              |              |              |              |              |              |              |              |              |              |              | LL*              |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 361                | SCAIROGT  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 351                | CXSACKGT  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 175                | GROUP1GT  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 171                | GROUP3GT  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 366                | DANSKDSL  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 35                 | NARGTTOT  | 4 7         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 40                 | 59 ST 15  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 129                | WSIDE415  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 223                | RTTRDMGT  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 41                 | HUDSNA23  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 9                  | ASTGTTOT  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 174                | GROUP5GT  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 34                 | RAVGTTOT  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 172                | GROUP4GT  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 176                | GROUP6GT  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 96                 | GEMISCGT  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 14                 | GOW13TOT  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 17                 | GOW24TOT  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 951                | FICT-5U1  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |
| 941                | FICT-4U1  | 4 4         |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |                  |              |              |              |              |              |              |              |              |              |              |              |

E-24

## UNIT COMMITMENT PROGRAM

### UNIT STARTUP AND SHUTDOWN SCHEDULE

|                    |           | SUNDAY      | MONDAY                                        | TUESDAY                                       |
|--------------------|-----------|-------------|-----------------------------------------------|-----------------------------------------------|
| OPER. COST(1000\$) |           | 4596.465    | 1191.136                                      | 0.000                                         |
| FUEL COST          |           | 4278.258    | 1188.438                                      | 0.000                                         |
| MAINT COST         |           | 325.984     | 98.697                                        | 0.000                                         |
| START COST         |           | 8.223       | 8.000                                         | 0.000                                         |
| UNIT NO.           | UNIT NAME | STAT. IN FN | 111 111111122222<br>123456789012 345678901234 | 111 111111122222<br>123456789012 345678901234 |
| 421                | FTZPTRK1  | 1 1         |                                               |                                               |
| 218                | NINEMIL1  | 5 5         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 29                 | IDIANPT3  | 5 5         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 27                 | IDIANPT1  | 6 6         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 459                | GNNNA 1   | 5 5         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 218                | DUNKIRK4  | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 209                | DUNKIRK3  | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 208                | DUNKIRK2  | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 207                | DUNKIRK1  | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 307                | HMECITY   | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 216                | HUNTLY68  | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 215                | HUNTLY67  | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 28                 | IDIANPT2  | 1 1         |                                               |                                               |
| 305                | GRNIDG4   | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 309                | MLLIKEN1  | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 310                | MLLIKEN2  | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 317                | HCKLING2  | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 463                | BEEBEE12  | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 302                | GOUDY 8   | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 316                | HCKLING1  | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 319                | JNNISON2  | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 318                | JNNISON1  | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 213                | HUNTLY65  | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 314                | GRNIDGE1  | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 353                | DNSKMMR2  | 6 7         | U*****UUUU UUUUUUUUUUUU *****U                |                                               |
| 301                | GOUDY 7   | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 315                | GRNIDGE2  | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 304                | GRNIDGE3  | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |
| 214                | HUNTLY66  | 6 7         | UUUUUUUUUUUU *UUUUUUUU**UU UUUUUUUU           |                                               |
| 159                | NRTHPRT3  | 6 7         | UUUUUUUUUUUU UUUUUUUUUUUU UUUUUUUU            |                                               |

Table E-2

## OUTPUT ON COMMITMENT SCHEDULE OF THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## UNIT STARTUP AND SHUTDOWN SCHEDULE

|                    |           |             | SUNDAY        |              |              |              |              | MONDAY       |              |              |              |              | TUESDAY      |              |              |              |              |
|--------------------|-----------|-------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| OPER. COST(1000\$) |           |             | 4596.465      |              |              |              |              | 1191.136     |              |              |              |              | 0.000        |              |              |              |              |
| FUEL COST          |           |             | 4270.258      |              |              |              |              | 1100.438     |              |              |              |              | 0.000        |              |              |              |              |
| MAINT COST         |           |             | 325.984       |              |              |              |              | 90.697       |              |              |              |              | 0.000        |              |              |              |              |
| START COST         |           |             | 0.223         |              |              |              |              | 0.000        |              |              |              |              | 0.000        |              |              |              |              |
| UNIT NO.           | UNIT NAME | STAT. IN FN | 111           | 111          | 111          | 111          | 222          | 222          | 222          | 111          | 111          | 111          | 111          | 222          | 222          | 222          | 222          |
|                    |           |             | 123456789012  | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012 |
| 158                | NRTHPRT2  | 6 7         | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUU     |              |              |              |              |              |              |              |              |              |              |              |              |
| 212                | HUNTLY64  | 6 7         | UUU**U**UUU*  | ***U***U***U | UUUUUUUU     |              |              |              |              |              |              |              |              |              |              |              |              |
| 157                | NRTHPRT1  | 1 1         |               |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
| 169                | PRTJEFF3  | 6 7         | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUU     |              |              |              |              |              |              |              |              |              |              |              |              |
| 170                | PRTJEFF4  | 6 7         | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUU     |              |              |              |              |              |              |              |              |              |              |              |              |
| 211                | HUNTLY63  | 6 7         | UUUUUUUUUUUU* | ***U***U***U | UUUUUUUU     |              |              |              |              |              |              |              |              |              |              |              |              |
| 461                | RSSLL1-4  | 6 7         | UUU**U**UUU*  | ***U***U***U | UUUUUUUU     |              |              |              |              |              |              |              |              |              |              |              |              |
| 360                | ROSETON2  | 6 7         | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUU     |              |              |              |              |              |              |              |              |              |              |              |              |
| 359                | ROSETON1  | 6 7         | UUUUUUUUUUUU  | UUUUUUUUUUUU | UUUUUUUU     |              |              |              |              |              |              |              |              |              |              |              |              |
| 233                | OSWEGO 5  | 5 5         | UUU**U**UUU*  | ***U***U***U | UUUUUUUU     |              |              |              |              |              |              |              |              |              |              |              |              |
| 202                | ALBANY 2  | 6 7         | UU*****UUUU   | UUUUUUUUUUUU | U*U***U      |              |              |              |              |              |              |              |              |              |              |              |              |
| 203                | ALBANY 3  | 6 7         | UU*****UUUU   | UUUUUUUUUUUU | U*U***U      |              |              |              |              |              |              |              |              |              |              |              |              |
| 204                | ALBANY 4  | 6 7         | UU*****UUUU   | UUUUUUUUUUUU | U*U***U      |              |              |              |              |              |              |              |              |              |              |              |              |
| 201                | ALBANY 1  | 6 7         | UU*****UUUU   | UUUUUUUUUUUU | U*U***U      |              |              |              |              |              |              |              |              |              |              |              |              |
| 222                | OSWEGO 4  | 6 7         | UU*****UUUU   | UUUUUUUUUUUU | U*UU*UU      |              |              |              |              |              |              |              |              |              |              |              |              |
| 221                | OSWEGO 3  | 6 7         | ***LL*LL*UU   | UUUUUUUUUUUU | *****        |              |              |              |              |              |              |              |              |              |              |              |              |
| 220                | OSWEGO 2  | 6 7         | UU*LLLLLUUUU  | UUUUUUUUUUUU | UL**L*U      |              |              |              |              |              |              |              |              |              |              |              |              |
| 219                | OSWEGO 1  | 6 7         | ***LLLLL*UUU  | UUUUUUUUUUUU | *L*****      |              |              |              |              |              |              |              |              |              |              |              |              |
| 160                | NRTHPRT4  | 6 7         | *LLLLLLLLL**  | *****        | *LLLLL*      |              |              |              |              |              |              |              |              |              |              |              |              |
| 462                | STA 9 GT  | 4 4         |               |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
| 152                | BARRETT2  | 6 7         | *LLLLLLLLL*** | *****        | LLLLLLL*     |              |              |              |              |              |              |              |              |              |              |              |              |
| 386                | BLINEPT1  | 6 7         | **LLLLLLL***  | *****        | *L*LLL*      |              |              |              |              |              |              |              |              |              |              |              |              |
| 387                | BLINEPT2  | 6 7         | **LLLLLLL***  | *****        | *L*LLL*      |              |              |              |              |              |              |              |              |              |              |              |              |
| 151                | BARRETT1  | 6 3         | *LLLLLLLLL*** | *****        | LLL          |              |              |              |              |              |              |              |              |              |              |              |              |
| 354                | DNSKMMR3  | 6 3         | U             | UU           | UUUUUUUUUUUU |              |              |              |              |              |              |              |              |              |              |              |              |
| 352                | DNSKMMR1  | 6 4         |               | **           | *****        |              |              |              |              |              |              |              |              |              |              |              |              |
| 166                | GLNWOOD5  | 6 4         |               |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
| 1                  | ARTKILL2  | 6 4         |               |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
| 165                | GLNWOOD4  | 6 4         |               |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
| 31                 | RAVWOOD1  | 6 4         |               |              |              |              |              |              |              |              |              |              |              |              |              |              |              |

E-26

## UNIT COMMITMENT PROGRAM

## UNIT STARTUP AND SHUTDOWN SCHEDULE

|                    |           | SUNDAY      |                  | MONDAY           |                  | TUESDAY          |                  |
|--------------------|-----------|-------------|------------------|------------------|------------------|------------------|------------------|
| OPER. COST(1000\$) |           | 4596.465    |                  | 1191.136         |                  | 0.000            |                  |
| FUEL COST          |           | 4270.258    |                  | 1100.438         |                  | 0.000            |                  |
| MAINT COST         |           | 325.984     |                  | 90.697           |                  | 0.000            |                  |
| START COST         |           | 0.223       |                  | 0.000            |                  | 0.000            |                  |
| UNIT NO.           | UNIT NAME | STAT. IN FN | 111 111111122222 | 111 111111122222 | 111 111111122222 | 111 111111122222 | 111 111111122222 |
| 2                  | ARTKILL3  | 6 4         |                  |                  |                  |                  |                  |
| 355                | DNSKMMR4  | 6 4         |                  |                  |                  |                  |                  |
| 32                 | RAVWOOD2  | 6 4         |                  |                  |                  |                  |                  |
| 154                | FARKWAY4  | 6 4         |                  |                  |                  |                  |                  |
| 13                 | ERIVER 7  | 6 4         |                  |                  |                  |                  |                  |
| 168                | PRTJEFF2  | 6 4         |                  |                  |                  |                  |                  |
| 167                | PRTJEFF1  | 6 4         |                  |                  |                  |                  |                  |
| 6                  | ASTORIA4  | 6 4         |                  |                  |                  |                  |                  |
| 4                  | ASTORIA2  | 4 4         |                  |                  |                  |                  |                  |
| 33                 | RAVWOOD3  | 5 5         | LLLLLLLLLLLLLL   | LLLLLLLLLLLLLL   | LLLLLLLL         |                  |                  |
| 391                | LOVETT 5  | 4 4         |                  |                  |                  |                  |                  |
| 5                  | ASTORIA3  | 4 4         |                  |                  |                  |                  |                  |
| 311                | NYSMISC   | 4 4         |                  |                  |                  |                  |                  |
| 8                  | ASTORIA6  | 4 4         |                  |                  |                  |                  |                  |
| 7                  | ASTORIA5  | 4 4         |                  |                  |                  |                  |                  |
| 3                  | ASTORIA1  | 4 4         |                  |                  |                  |                  |                  |
| 390                | LOVETT 4  | 4 4         |                  |                  |                  |                  |                  |
| 396                | LOVETT 3  | 4 4         |                  |                  |                  |                  |                  |
| 395                | LOVETT 2  | 4 4         |                  |                  |                  |                  |                  |
| 457                | BEEBEEGT  | 4 4         |                  |                  |                  |                  |                  |
| 12                 | ERIVER56  | 4 4         |                  |                  |                  |                  |                  |
| 394                | LOVETT 1  | 4 4         |                  |                  |                  |                  |                  |
| 456                | BEE1-11   | 4 4         |                  |                  |                  |                  |                  |
| 133                | 59 ST 13  | 4 4         |                  |                  |                  |                  |                  |
| 393                | SHOEMKGT  | 4 4         |                  |                  |                  |                  |                  |
| 389                | HLLBRNGT  | 4 4         |                  |                  |                  |                  |                  |
| 163                | GLNWOOD2  | 4 4         |                  |                  |                  |                  |                  |
| 164                | GLNWOOD3  | 4 4         |                  |                  |                  |                  |                  |
| 105                | HUDA5810  | 4 4         |                  |                  |                  |                  |                  |
| 11                 | 74ST3911  | 4 4         |                  |                  |                  |                  |                  |

Table E-2

## OUTPUT ON COMMITMENT SCHEDULE OF THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PT1 - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## UNIT STARTUP AND SHUTDOWN SCHEDULE

|                                                    |           |             |              | SUNDAY       |              | MONDAY       |                         | TUESDAY      |                |
|----------------------------------------------------|-----------|-------------|--------------|--------------|--------------|--------------|-------------------------|--------------|----------------|
| OPER. COST(1000\$)                                 |           |             |              | 4596.465     |              | 1191.136     |                         | 0.000        |                |
| FUEL COST                                          |           |             |              | 4270.258     |              | 1100.438     |                         | 0.000        |                |
| MAINT COST                                         |           |             |              | 325.984      |              | 90.697       |                         | 0.000        |                |
| START COST                                         |           |             |              | 0.223        |              | 0.000        |                         | 0.000        |                |
| UNIT NO.                                           | UNIT NAME | STAT. IN FN | 111          | 111          | 111          | 111          | 111                     | 111          | 111            |
|                                                    |           |             | 123456789012 | 345678901234 | 123456789012 | 345678901234 | 123456789012            | 345678901234 | 12345678901234 |
| 217                                                | ALBANYGT  | 4 4         |              |              |              |              |                         |              |                |
| 132                                                | 59ST7814  | 4 4         |              |              |              |              |                         |              |                |
| 173                                                | GROUP2GT  | 4 4         |              |              |              |              |                         |              |                |
| 361                                                | SCAIROGT  | 4 4         |              |              |              |              |                         |              |                |
| 351                                                | CXSACKGT  | 4 4         |              |              |              |              |                         |              |                |
| 175                                                | GROUP1GT  | 4 4         |              |              |              |              |                         |              |                |
| 171                                                | GROUP3GT  | 4 4         |              |              |              |              |                         |              |                |
| 366                                                | DANSKDSL  | 4 4         |              |              |              |              |                         |              |                |
| 35                                                 | NARGTTOT  | 4 7         | LLLLLLLLLLLL | LLLLLLLLLLLL | LLLLLLLL     |              |                         |              |                |
| 40                                                 | 59 ST 15  | 4 4         |              |              |              |              |                         |              |                |
| 129                                                | WSIDE415  | 4 4         |              |              |              |              |                         |              |                |
| 223                                                | RTTRDMGT  | 4 4         |              |              |              |              |                         |              |                |
| 41                                                 | HUDSNA23  | 4 4         |              |              |              |              |                         |              |                |
| 9                                                  | ASTGTTOT  | 4 4         |              |              |              |              |                         |              |                |
| 174                                                | GROUP5GT  | 4 4         |              |              |              |              |                         |              |                |
| 34                                                 | RAVGTTOT  | 4 4         |              |              |              |              |                         |              |                |
| 172                                                | GROUP4GT  | 4 4         |              |              |              |              |                         |              |                |
| 176                                                | GROUP6GT  | 4 4         |              |              |              |              |                         |              |                |
| 96                                                 | GEMISCGT  | 4 4         |              |              |              |              |                         |              |                |
| 14                                                 | GOW13TOT  | 4 4         |              |              |              |              |                         |              |                |
| 17                                                 | GOW24TOT  | 4 4         |              |              |              |              |                         |              |                |
| 951                                                | FICT-5U1  | 4 4         |              |              |              |              |                         |              |                |
| 941                                                | FICT-4U1  | 4 4         |              |              |              |              |                         |              |                |
| TOTAL OPERATION COST FOR THIS INTERVAL ( 1000 \$ ) |           |             | 44203.448    |              | UNIT STATUS: |              | 1 = OFF-FO 2 = OFF-MNT  |              |                |
| TOTAL FUEL COST                                    |           |             | 41054.680    |              | (INIT/FINAL) |              | 3 = OFF-TIME 4 = OFF-AV |              |                |
| TOTAL MAINTENANCE COST                             |           |             | 3096.288     |              |              |              | 5 = ON-MUST 6 = ON-TIME |              |                |
| TOTAL STARTUP COST                                 |           |             | 52.479       |              |              |              | 7 = ON-CBSD             |              |                |

Table E-3

## OUTPUT ON HOURLY DISPATCH FOR THERMAL UNITS

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## UNIT DISPATCH DATA FOR 8.00 HRS MONDAY

| -----             |             |          |                   |                     |               |                     |       |                |                                   |                              |                |
|-------------------|-------------|----------|-------------------|---------------------|---------------|---------------------|-------|----------------|-----------------------------------|------------------------------|----------------|
| FUEL COST 281.236 |             |          | MAIN. COST 20.953 |                     |               | STARTUP COST 34.980 |       |                | TOTAL OPER. COST (1000\$) 337.170 |                              |                |
| NO                | -UNIT NAME- | -STATUS- | LOWER ED<br>LIMIT | UPPER E.D.<br>LIMIT | E.D.<br>DERAT | DAILY OP.<br>CAP    | DERAT | UNIT<br>OUTPUT | AVERAGE FULL<br>LOAD COST         | AVERAGE COST<br>AT THIS LOAD | CONFIG<br>CODE |
| 1                 | ARTKILL2    | ON-TIME  | 75                | 345                 | 0             | 345                 | 0     | 345            | 34.87                             | 34.87                        | 1              |
| 2                 | ARTKILL3    | ON-TIME  | 140               | 505                 | 0             | 505                 | 0     | 505            | 35.61                             | 35.61                        | 1              |
| 3                 | ASTORIA1    | OFF-AV   | 40                | 70                  | 0             | 80                  | 0     | 0              | 40.78                             | 0.00                         | 1              |
| 4                 | ASTORIA2    | OFF-AV   | 40                | 150                 | 0             | 150                 | 0     | 0              | 38.91                             | 0.00                         | 1              |
| 5                 | ASTORIA3    | OFF-AV   | 75                | 390                 | 0             | 390                 | 0     | 0              | 39.51                             | 0.00                         | 1              |
| 6                 | ASTORIA4    | ON-TIME  | 100               | 392                 | 0             | 392                 | 0     | 220            | 38.02                             | 38.47                        | 1              |
| 7                 | ASTORIA5    | OFF-AV   | 100               | 370                 | 0             | 370                 | 0     | 0              | 40.28                             | 0.00                         | 1              |
| 8                 | ASTORIA6    | OFF-AV   | 100               | 600                 | 0             | 600                 | 0     | 0              | 40.27                             | 0.00                         | 1              |
| 9                 | ASTGTTOT    | OFF-AV   | 0                 | 513                 | 0             | 513                 | 0     | 0              | 71.78                             | 0.00                         | 1              |
| 11                | 74ST3911    | OFF-AV   | 40                | 70                  | 0             | 70                  | 0     | 0              | 59.07                             | 0.00                         | 1              |
| 12                | ERIVER56    | OFF-AV   | 80                | 252                 | 0             | 252                 | 0     | 0              | 45.75                             | 0.00                         | 1              |
| 13                | ERIVER 7    | ON-TIME  | 80                | 145                 | 0             | 145                 | 0     | 80             | 37.10                             | 37.54                        | 1              |
| 14                | GOW13TOT    | OFF-AV   | 0                 | 91                  | 0             | 91                  | 0     | 0              | 91.09                             | 0.00                         | 1              |
| 17                | GOW24TOT    | OFF-AV   | 0                 | 176                 | 0             | 176                 | 0     | 0              | 92.14                             | 0.00                         | 1              |
| 27                | IDIANPT1    | ON-TIME  | 30                | 200                 | 0             | 200                 | 0     | 200            | 7.42                              | 7.42                         | 1              |
| 28                | IDIANPT2    | OFF-FO   | 150               | 870                 | 0             | 870                 | 0     | 0              | 14.75                             | 0.00                         | 1              |
| 29                | IDIANPT3    | ON-MUST  | 200               | 900                 | 0             | 900                 | 0     | 900            | 6.92                              | 6.92                         | 1              |
| 31                | RAVWOOD1    | ON-TIME  | 150               | 387                 | 0             | 387                 | 0     | 316            | 35.38                             | 34.87                        | 1              |
| 32                | RAVWOOD2    | ON-TIME  | 150               | 389                 | 0             | 389                 | 0     | 285            | 35.70                             | 35.08                        | 1              |
| 33                | RAVWOOD3    | ON-MUST  | 350               | 600                 | 0             | 600                 | 0     | 600            | 38.92                             | 38.92                        | 1              |
| 34                | RAVGTTOT    | OFF-AV   | 0                 | 167                 | 0             | 167                 | 0     | 0              | 74.88                             | 0.00                         | 1              |
| 35                | NARGTTOT    | OFF-AV   | 0                 | 264                 | 0             | 264                 | 0     | 0              | 68.54                             | 0.00                         | 1              |
| 40                | 59 ST 15    | OFF-AV   | 9                 | 26                  | 0             | 26                  | 0     | 0              | 69.20                             | 0.00                         | 1              |
| 41                | HUDSNA23    | OFF-AV   | 0                 | 84                  | 0             | 84                  | 0     | 0              | 71.64                             | 0.00                         | 1              |
| 96                | GEM1SCGT    | OFF-AV   | 0                 | 177                 | 0             | 177                 | 0     | 0              | 90.20                             | 0.00                         | 1              |
| 105               | HUDA5810    | OFF-AV   | 20                | 95                  | 0             | 100                 | 0     | 0              | 58.64                             | 0.00                         | 1              |
| 129               | WSIDE415    | OFF-AV   | 136               | 246                 | 0             | 246                 | 0     | 0              | 69.37                             | 0.00                         | 1              |
| 132               | 59ST7814    | OFF-AV   | 10                | 43                  | 0             | 43                  | 0     | 0              | 60.87                             | 0.00                         | 1              |
| 133               | 59 ST 13    | OFF-AV   | 22                | 45                  | 0             | 45                  | 0     | 0              | 54.02                             | 0.00                         | 1              |
| 151               | BARRETT1    | ON-TIME  | 40                | 191                 | 0             | 191                 | 0     | 191            | 29.41                             | 29.41                        | 1              |
| 152               | BARRETT2    | ON-TIME  | 40                | 120                 | 0             | 120                 | 0     | 120            | 28.40                             | 28.40                        | 1              |
| 154               | FARKWAY4    | ON-TIME  | 10                | 104                 | 0             | 104                 | 0     | 81             | 35.88                             | 35.47                        | 1              |
| 157               | NRTHPRT1    | OFF-FO   | 100               | 375                 | 0             | 375                 | 0     | 0              | 20.30                             | 0.00                         | 1              |
| 158               | NRTHPRT2    | ON-TIME  | 100               | 350                 | 0             | 350                 | 0     | 350            | 20.13                             | 20.13                        | 1              |
| 159               | NRTHPRT3    | ON-TIME  | 100               | 345                 | 0             | 345                 | 0     | 345            | 20.09                             | 20.09                        | 1              |
| 160               | NRTHPRT4    | ON-TIME  | 94                | 374                 | 0             | 378                 | 0     | 374            | 28.06                             | 28.04                        | 1              |
| 163               | GLNWOOD2    | OFF-AV   | 40                | 75                  | 0             | 75                  | 0     | 0              | 56.54                             | 0.00                         | 1              |
| 164               | GLNWOOD3    | OFF-AV   | 40                | 75                  | 0             | 75                  | 0     | 0              | 56.55                             | 0.00                         | 1              |
| 165               | GLNWOOD4    | ON-TIME  | 15                | 120                 | 0             | 120                 | 0     | 96             | 35.14                             | 34.67                        | 1              |
| 166               | GLNWOOD5    | ON-TIME  | 15                | 105                 | 0             | 105                 | 0     | 96             | 34.87                             | 34.67                        | 1              |

Table E-3

## OUTPUT ON HOURLY DISPATCH FOR THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PT1 - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

UNIT DISPATCH DATA FOR 8.00 HRS MONDAY  
 -----

| FUEL COST |             | 281.236  | MAIN. COST        |                     | 20.953        | STARTUP COST     |              | 34.980         | TOTAL OPER. COST (1000\$) |                              | 337.170        |
|-----------|-------------|----------|-------------------|---------------------|---------------|------------------|--------------|----------------|---------------------------|------------------------------|----------------|
| NO        | -UNIT NAME- | -STATUS- | LOWER ED<br>LIMIT | UPPER E.D.<br>LIMIT | E.D.<br>DERAT | DAILY OP.<br>CAP | OP.<br>DERAT | UNIT<br>OUTPUT | AVERAGE FULL<br>LOAD COST | AVERAGE COST<br>AT THIS LOAD | CONFIG<br>CODE |
| 167       | PRTJEFF1    | ON-TIME  | 10                | 51                  | 0             | 51               | 0            | 23             | 37.81                     | 36.61                        | 1              |
| 168       | PRTJEFF2    | ON-TIME  | 10                | 51                  | 0             | 51               | 0            | 23             | 37.81                     | 36.61                        | 1              |
| 169       | PRTJEFF3    | ON-TIME  | 40                | 180                 | 0             | 180              | 0            | 180            | 20.50                     | 20.50                        | 1              |
| 170       | PRTJEFF4    | ON-TIME  | 40                | 198                 | 0             | 198              | 0            | 198            | 20.62                     | 20.62                        | 1              |
| 171       | GROUP3GT    | OFF-AV   | 0                 | 122                 | 0             | 122              | 0            | 0              | 66.67                     | 0.00                         | 1              |
| 172       | GROUP4GT    | OFF-AV   | 0                 | 98                  | 0             | 98               | 0            | 0              | 77.86                     | 0.00                         | 1              |
| 173       | GROUP2GT    | OFF-AV   | 0                 | 440                 | 0             | 440              | 0            | 0              | 60.94                     | 0.00                         | 1              |
| 174       | GROUP5GT    | OFF-AV   | 0                 | 85                  | 0             | 85               | 0            | 0              | 74.46                     | 0.00                         | 1              |
| 175       | GROUP1GT    | OFF-AV   | 0                 | 190                 | 0             | 190              | 0            | 0              | 65.78                     | 0.00                         | 1              |
| 176       | GROUP6GT    | OFF-AV   | 0                 | 42                  | 0             | 42               | 0            | 0              | 82.14                     | 0.00                         | 1              |
| 201       | ALBANY 1    | ON-TIME  | 15                | 100                 | 0             | 100              | 0            | 100            | 23.79                     | 23.79                        | 1              |
| 202       | ALBANY 2    | ON-TIME  | 15                | 90                  | 0             | 90               | 0            | 90             | 23.51                     | 23.51                        | 1              |
| 203       | ALBANY 3    | ON-TIME  | 15                | 93                  | 0             | 93               | 0            | 93             | 23.60                     | 23.60                        | 1              |
| 204       | ALBANY 4    | ON-TIME  | 15                | 100                 | 0             | 100              | 0            | 100            | 23.79                     | 23.79                        | 1              |
| 207       | DUNKIRK1    | ON-TIME  | 15                | 100                 | 0             | 100              | 0            | 100            | 13.90                     | 13.90                        | 1              |
| 208       | DUNKIRK2    | ON-TIME  | 15                | 95                  | 0             | 95               | 0            | 95             | 13.86                     | 13.86                        | 1              |
| 209       | DUNKIRK3    | ON-TIME  | 30                | 200                 | 0             | 200              | 0            | 200            | 12.91                     | 12.91                        | 1              |
| 210       | DUNKIRK4    | ON-TIME  | 30                | 200                 | 0             | 200              | 0            | 200            | 12.91                     | 12.91                        | 1              |
| 211       | HUNTLY63    | ON-TIME  | 15                | 70                  | 0             | 70               | 0            | 64             | 20.63                     | 20.48                        | 1              |
| 212       | HUNTLY64    | ON-TIME  | 15                | 94                  | 0             | 94               | 0            | 74             | 20.24                     | 19.60                        | 1              |
| 213       | HUNTLY65    | ON-TIME  | 15                | 100                 | 0             | 100              | 0            | 100            | 18.00                     | 18.00                        | 1              |
| 214       | HUNTLY66    | ON-TIME  | 15                | 100                 | 0             | 100              | 0            | 85             | 19.42                     | 19.14                        | 1              |
| 215       | HUNTLY67    | ON-TIME  | 30                | 200                 | 0             | 200              | 0            | 200            | 14.55                     | 14.55                        | 1              |
| 216       | HUNTLY68    | ON-TIME  | 30                | 200                 | 0             | 200              | 0            | 200            | 14.55                     | 14.55                        | 1              |
| 217       | ALBANYGT    | OFF-AV   | 0                 | 105                 | 0             | 105              | 0            | 0              | 59.57                     | 0.00                         | 1              |
| 218       | NINEMIL1    | ON-MUST  | 120               | 599                 | 0             | 599              | 0            | 599            | 5.16                      | 5.16                         | 1              |
| 219       | OSWEGO 1    | ON-TIME  | 15                | 65                  | 0             | 65               | 0            | 65             | 27.37                     | 27.37                        | 1              |
| 220       | OSWEGO 2    | ON-TIME  | 15                | 45                  | 0             | 45               | 0            | 45             | 26.93                     | 26.93                        | 1              |
| 221       | OSWEGO 3    | ON-TIME  | 15                | 85                  | 0             | 85               | 0            | 85             | 26.78                     | 26.78                        | 1              |
| 222       | OSWEGO 4    | ON-TIME  | 15                | 80                  | 0             | 80               | 0            | 80             | 24.40                     | 24.40                        | 1              |
| 223       | RTTRDMGT    | OFF-AV   | 0                 | 120                 | 0             | 120              | 0            | 0              | 70.81                     | 0.00                         | 1              |
| 233       | OSWEGO 5    | ON-MUST  | 250               | 750                 | 0             | 750              | 0            | 750            | 23.05                     | 23.05                        | 1              |
| 301       | GOUDY 7     | ON-TIME  | 15                | 44                  | 0             | 44               | 0            | 44             | 18.83                     | 18.93                        | 1              |
| 302       | GOUDY 8     | ON-TIME  | 15                | 82                  | 0             | 82               | 0            | 82             | 16.11                     | 16.11                        | 1              |
| 304       | GRNIDGE3    | ON-TIME  | 20                | 55                  | 0             | 55               | 0            | 55             | 19.34                     | 19.34                        | 1              |
| 305       | GRNIDGE4    | ON-TIME  | 15                | 75                  | 0             | 75               | 0            | 75             | 15.02                     | 15.02                        | 1              |
| 307       | HMERCTY     | ON-TIME  | 150               | 600                 | 0             | 600              | 0            | 600            | 13.95                     | 13.95                        | 1              |
| 309       | MLLIKEN1    | ON-TIME  | 20                | 140                 | 0             | 140              | 0            | 140            | 15.10                     | 15.10                        | 1              |
| 310       | MLLIKEN2    | ON-TIME  | 20                | 147                 | 0             | 147              | 0            | 147            | 15.17                     | 15.17                        | 1              |
| 311       | NYSMISCD    | OFF-AV   | 0                 | 8                   | 0             | 8                | 0            | 0              | 39.82                     | 0.00                         | 1              |

Table E-3

## OUTPUT ON HOURLY DISPATCH FOR THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## UNIT DISPATCH DATA FOR 8.00 HRS MONDAY

| FUEL COST |             | 281.236  | MAIN. COST        |                | 20.953        | STARTUP COST     |       | 34.980         | TOTAL OPER. COST (1000\$) |                              | 337.170        |
|-----------|-------------|----------|-------------------|----------------|---------------|------------------|-------|----------------|---------------------------|------------------------------|----------------|
| NO        | -UNIT NAME- | -STATUS- | LOWER ED<br>LIMIT | UPPER<br>LIMIT | E.D.<br>DERAT | DAILY OP.<br>CAP | DERAT | UNIT<br>OUTPUT | AVERAGE FULL<br>LOAD COST | AVERAGE COST<br>AT THIS LOAD | CONFIG<br>CODE |
| 314       | GRNIDGE1    | ON-TIME  | 5                 | 16             | 0             | 16               | 0     | 16             | 18.15                     | 18.15                        | 1              |
| 315       | GRNIDGE2    | ON-TIME  | 5                 | 16             | 0             | 16               | 0     | 16             | 18.97                     | 18.97                        | 1              |
| 316       | HCKLING1    | ON-TIME  | 5                 | 30             | 0             | 30               | 0     | 30             | 16.14                     | 16.14                        | 1              |
| 317       | HCKLING2    | ON-TIME  | 5                 | 22             | 0             | 22               | 0     | 22             | 15.31                     | 15.31                        | 1              |
| 318       | JNNISON1    | ON-TIME  | 10                | 35             | 0             | 35               | 0     | 35             | 17.37                     | 17.37                        | 1              |
| 319       | JNNISON2    | ON-TIME  | 10                | 30             | 0             | 30               | 0     | 30             | 16.73                     | 16.73                        | 1              |
| 351       | CXSACKGT    | OFF-AV   | 0                 | 19             | 0             | 19               | 0     | 0              | 61.82                     | 0.00                         | 1              |
| 352       | DNSKMMR1    | ON-TIME  | 20                | 60             | 0             | 60               | 0     | 50             | 33.25                     | 30.47                        | 1              |
| 353       | DNSKMMR2    | ON-TIME  | 30                | 64             | 0             | 64               | 0     | 64             | 18.81                     | 18.81                        | 1              |
| 354       | DNSKMMR3    | ON-TIME  | 40                | 100            | 0             | 100              | 0     | 100            | 31.04                     | 31.04                        | 1              |
| 355       | DNSKMMR4    | ON-TIME  | 120               | 215            | 0             | 215              | 0     | 215            | 35.61                     | 35.61                        | 1              |
| 359       | ROSETON1    | ON-TIME  | 100               | 550            | 0             | 550              | 0     | 550            | 22.88                     | 22.88                        | 1              |
| 360       | ROSETON2    | ON-TIME  | 100               | 550            | 0             | 550              | 0     | 550            | 22.79                     | 22.79                        | 1              |
| 361       | SCAIROGT    | OFF-AV   | 0                 | 20             | 0             | 20               | 0     | 0              | 61.81                     | 0.00                         | 1              |
| 366       | DANSKDSL    | OFF-AV   | 0                 | 5              | 0             | 5                | 0     | 0              | 68.29                     | 0.00                         | 1              |
| 386       | BLINEPT1    | ON-TIME  | 150               | 572            | 0             | 601              | 0     | 572            | 29.00                     | 28.84                        | 1              |
| 387       | BLINEPT2    | ON-TIME  | 150               | 567            | 0             | 600              | 0     | 567            | 29.11                     | 28.93                        | 1              |
| 389       | HLLBRNGT    | OFF-AV   | 0                 | 40             | 0             | 40               | 0     | 0              | 56.49                     | 0.00                         | 1              |
| 390       | LOVETT 4    | OFF-AV   | 50                | 140            | 0             | 198              | 0     | 0              | 41.62                     | 0.00                         | 1              |
| 391       | LOVETT 5    | OFF-AV   | 50                | 195            | 0             | 202              | 0     | 0              | 38.95                     | 0.00                         | 1              |
| 393       | SHOEMKGT    | OFF-AV   | 0                 | 37             | 0             | 37               | 0     | 0              | 56.19                     | 0.00                         | 1              |
| 394       | LOVETT 1    | OFF-AV   | 5                 | 20             | 0             | 20               | 0     | 0              | 50.52                     | 0.00                         | 1              |
| 395       | LOVETT 2    | OFF-AV   | 5                 | 20             | 0             | 20               | 0     | 0              | 44.60                     | 0.00                         | 1              |
| 396       | LOVETT 3    | OFF-AV   | 20                | 60             | 0             | 63               | 0     | 0              | 43.67                     | 0.00                         | 1              |
| 421       | FTZPTRK1    | OFF-FO   | 100               | 800            | 0             | 900              | 0     | 0              | 4.60                      | 0.00                         | 1              |
| 456       | BEE1-11     | OFF-AV   | 1                 | 41             | 0             | 41               | 0     | 0              | 52.61                     | 0.00                         | 1              |
| 457       | BEEBEEGT    | OFF-AV   | 0                 | 14             | 0             | 14               | 0     | 0              | 45.27                     | 0.00                         | 1              |
| 459       | GINNA 1     | ON-MUST  | 105               | 415            | 0             | 415              | 0     | 415            | 8.19                      | 8.19                         | 1              |
| 461       | RSSLL1-4    | ON-TIME  | 37                | 244            | 0             | 244              | 0     | 185            | 21.26                     | 21.19                        | 1              |
| 462       | STA 9 GT    | OFF-AV   | 0                 | 15             | 0             | 15               | 0     | 0              | 28.26                     | 0.00                         | 1              |
| 463       | BEEBEE12    | ON-TIME  | 12                | 80             | 0             | 80               | 0     | 80             | 15.36                     | 15.36                        | 1              |
| 941       | FICT-4U1    | OFF-AV   | 100               | 2500           | 0             | 2500             | 0     | 0              | 99.90                     | 0.00                         | 1              |
| 951       | FICT-5U1    | OFF-AV   | 100               | 2500           | 0             | 2500             | 0     | 0              | 99.90                     | 0.00                         | 1              |

Table E-3

## OUTPUT ON HOURLY DISPATCH FOR THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## UNIT DISPATCH DATA FOR 9.00 HRS MONDAY

| -----             |             |          |                   |                     |                    |                  |       |                                   |                           |                              |                |
|-------------------|-------------|----------|-------------------|---------------------|--------------------|------------------|-------|-----------------------------------|---------------------------|------------------------------|----------------|
| FUEL COST 294.587 |             |          | MAIN. COST 22.134 |                     | STARTUP COST 0.100 |                  |       | TOTAL OPER. COST (1000\$) 316.821 |                           |                              |                |
| NO                | -UNIT NAME- | -STATUS- | LOWER ED<br>LIMIT | UPPER E.D.<br>LIMIT | DERAT              | DAILY OP.<br>CAP | DERAT | UNIT<br>OUTPUT                    | AVERAGE FULL<br>LOAD COST | AVERAGE COST<br>AT THIS LOAD | CONFIG<br>CODE |
| 1                 | ARTKILL2    | ON-TIME  | 75                | 345                 | 0                  | 345              | 0     | 345                               | 34.87                     | 34.87                        | 1              |
| 2                 | ARTKILL3    | ON-TIME  | 140               | 505                 | 0                  | 505              | 0     | 505                               | 35.61                     | 35.61                        | 1              |
| 3                 | ASTORIA1    | OFF-AV   | 40                | 70                  | 0                  | 80               | 0     | 0                                 | 40.78                     | 0.00                         | 1              |
| 4                 | ASTORIA2    | OFF-AV   | 40                | 150                 | 0                  | 150              | 0     | 0                                 | 38.91                     | 0.00                         | 1              |
| 5                 | ASTORIA3    | OFF-AV   | 75                | 390                 | 0                  | 390              | 0     | 0                                 | 39.51                     | 0.00                         | 1              |
| 6                 | ASTORIA4    | ON-TIME  | 100               | 392                 | 0                  | 392              | 0     | 292                               | 38.02                     | 38.02                        | 1              |
| 7                 | ASTORIA5    | OFF-AV   | 100               | 370                 | 0                  | 370              | 0     | 0                                 | 40.28                     | 0.00                         | 1              |
| 8                 | ASTORIA6    | OFF-AV   | 100               | 600                 | 0                  | 600              | 0     | 0                                 | 40.27                     | 0.00                         | 1              |
| 9                 | ASTGTTOT    | OFF-AV   | 0                 | 513                 | 0                  | 513              | 0     | 0                                 | 71.78                     | 0.00                         | 1              |
| 11                | 74ST3911    | OFF-AV   | 40                | 70                  | 0                  | 70               | 0     | 0                                 | 59.07                     | 0.00                         | 1              |
| 12                | ERIVER56    | OFF-AV   | 80                | 252                 | 0                  | 252              | 0     | 0                                 | 45.75                     | 0.00                         | 1              |
| 13                | ERIVER 7    | ON-TIME  | 80                | 145                 | 0                  | 145              | 0     | 145                               | 37.10                     | 37.10                        | 1              |
| 14                | GOW13TOT    | OFF-AV   | 0                 | 91                  | 0                  | 91               | 0     | 0                                 | 91.09                     | 0.00                         | 1              |
| 17                | GOW24TOT    | OFF-AV   | 0                 | 176                 | 0                  | 176              | 0     | 0                                 | 92.14                     | 0.00                         | 1              |
| 27                | IDIANPT1    | ON-TIME  | 30                | 200                 | 0                  | 200              | 0     | 200                               | 7.42                      | 7.42                         | 1              |
| 28                | IDIANPT2    | OFF-FO   | 150               | 870                 | 0                  | 870              | 0     | 0                                 | 14.75                     | 0.00                         | 1              |
| 29                | IDIANPT3    | ON-MUST  | 200               | 900                 | 0                  | 900              | 0     | 900                               | 6.92                      | 6.92                         | 1              |
| 31                | RAVWOOD1    | ON-TIME  | 150               | 387                 | 0                  | 387              | 0     | 387                               | 35.38                     | 35.38                        | 1              |
| 32                | RAVWOOD2    | ON-TIME  | 150               | 389                 | 0                  | 389              | 0     | 339                               | 35.70                     | 35.37                        | 1              |
| 33                | RAVWOOD3    | ON-MUST  | 350               | 600                 | 0                  | 600              | 0     | 600                               | 38.92                     | 38.92                        | 1              |
| 34                | RAVGTTOT    | OFF-AV   | 0                 | 167                 | 0                  | 167              | 0     | 0                                 | 74.88                     | 0.00                         | 1              |
| 35                | NARGTTOT    | OFF-AV   | 0                 | 264                 | 0                  | 264              | 0     | 0                                 | 68.54                     | 0.00                         | 1              |
| 40                | 59 ST 15    | OFF-AV   | 9                 | 26                  | 0                  | 26               | 0     | 0                                 | 69.20                     | 0.00                         | 1              |
| 41                | HUDSNA23    | OFF-AV   | 0                 | 84                  | 0                  | 84               | 0     | 0                                 | 71.64                     | 0.00                         | 1              |
| 96                | GEMISCGT    | OFF-AV   | 0                 | 177                 | 0                  | 177              | 0     | 0                                 | 90.20                     | 0.00                         | 1              |
| 105               | HUDA5810    | OFF-AV   | 20                | 95                  | 0                  | 100              | 0     | 0                                 | 58.64                     | 0.00                         | 1              |
| 129               | WSIDE415    | OFF-AV   | 136               | 246                 | 0                  | 246              | 0     | 0                                 | 69.37                     | 0.00                         | 1              |
| 132               | 59ST7814    | OFF-AV   | 10                | 43                  | 0                  | 43               | 0     | 0                                 | 60.87                     | 0.00                         | 1              |
| 133               | 59 ST 13    | OFF-AV   | 22                | 45                  | 0                  | 45               | 0     | 0                                 | 54.02                     | 0.00                         | 1              |
| 151               | BARRETT1    | ON-TIME  | 40                | 191                 | 0                  | 191              | 0     | 191                               | 29.41                     | 29.41                        | 1              |
| 152               | BARRETT2    | ON-TIME  | 40                | 120                 | 0                  | 120              | 0     | 120                               | 28.40                     | 28.40                        | 1              |
| 154               | FARKWAY4    | ON-TIME  | 10                | 104                 | 0                  | 104              | 0     | 104                               | 35.88                     | 35.88                        | 1              |
| 157               | NRTHPRT1    | OFF-FO   | 100               | 375                 | 0                  | 375              | 0     | 0                                 | 20.30                     | 0.00                         | 1              |
| 158               | NRTHPRT2    | ON-TIME  | 100               | 350                 | 0                  | 350              | 0     | 350                               | 20.13                     | 20.13                        | 1              |
| 159               | NRTHPRT3    | ON-TIME  | 100               | 345                 | 0                  | 345              | 0     | 345                               | 20.09                     | 20.09                        | 1              |
| 160               | NRTHPRT4    | ON-TIME  | 94                | 374                 | 0                  | 378              | 0     | 374                               | 28.06                     | 28.04                        | 1              |
| 163               | GLNWOOD2    | OFF-AV   | 40                | 75                  | 0                  | 75               | 0     | 0                                 | 56.54                     | 0.00                         | 1              |
| 164               | GLNWOOD3    | OFF-AV   | 40                | 75                  | 0                  | 75               | 0     | 0                                 | 56.55                     | 0.00                         | 1              |
| 165               | GLNWOOD4    | ON-TIME  | 15                | 120                 | 0                  | 120              | 0     | 120                               | 35.14                     | 35.14                        | 1              |
| 166               | GLNWOOD5    | ON-TIME  | 15                | 105                 | 0                  | 105              | 0     | 105                               | 34.87                     | 34.87                        | 1              |

Table E-3

OUTPUT ON HOURLY DISPATCH FOR THERMAL UNITS (continued)  
UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

UNIT DISPATCH DATA FOR 9.00 HRS MONDAY  
-----

| FUEL COST | 294.587     | MAIN. COST | 22.134            | STARTUP COST        | 0.100         | TOTAL OPER. COST (1000\$) | 316.821       |                |                           |                              |                |
|-----------|-------------|------------|-------------------|---------------------|---------------|---------------------------|---------------|----------------|---------------------------|------------------------------|----------------|
| NO        | -UNIT NAME- | -STATUS-   | LOWER ED<br>LIMIT | UPPER E.D.<br>LIMIT | E.D.<br>DERAT | DAILY OP.<br>CAP          | UNIT<br>DERAT | UNIT<br>OUTPUT | AVERAGE FULL<br>LOAD COST | AVERAGE COST<br>AT THIS LOAD | CONFIG<br>CODE |
| 167       | PRTJEFF1    | ON-TIME    | 10                | 51                  | 0             | 51                        | 0             | 36             | 37.81                     | 36.65                        | 1              |
| 168       | PRTJEFF2    | ON-TIME    | 10                | 51                  | 0             | 51                        | 0             | 39             | 37.81                     | 36.87                        | 1              |
| 169       | PRTJEFF3    | ON-TIME    | 40                | 180                 | 0             | 180                       | 0             | 180            | 20.50                     | 20.50                        | 1              |
| 170       | PRTJEFF4    | ON-TIME    | 40                | 198                 | 0             | 198                       | 0             | 198            | 20.62                     | 20.62                        | 1              |
| 171       | GROUP3GT    | OFF-AV     | 0                 | 122                 | 0             | 122                       | 0             | 0              | 66.67                     | 0.00                         | 1              |
| 172       | GROUP4GT    | OFF-AV     | 0                 | 98                  | 0             | 98                        | 0             | 0              | 77.86                     | 0.00                         | 1              |
| 173       | GROUP2GT    | ON-CBSD    | 0                 | 440                 | 0             | 440                       | 0             | 0              | 60.94                     | 0.00                         | 1              |
| 174       | GROUP5GT    | OFF-AV     | 0                 | 85                  | 0             | 85                        | 0             | 0              | 74.46                     | 0.00                         | 1              |
| 175       | GROUP1GT    | OFF-AV     | 0                 | 190                 | 0             | 190                       | 0             | 0              | 65.78                     | 0.00                         | 1              |
| 176       | GROUP6GT    | OFF-AV     | 0                 | 42                  | 0             | 42                        | 0             | 0              | 82.14                     | 0.00                         | 1              |
| 201       | ALBANY 1    | ON-TIME    | 15                | 100                 | 0             | 100                       | 0             | 100            | 23.79                     | 23.79                        | 1              |
| 202       | ALBANY 2    | ON-TIME    | 15                | 90                  | 0             | 90                        | 0             | 90             | 23.51                     | 23.51                        | 1              |
| 203       | ALBANY 3    | ON-TIME    | 15                | 93                  | 0             | 93                        | 0             | 93             | 23.60                     | 23.60                        | 1              |
| 204       | ALBANY 4    | ON-TIME    | 15                | 100                 | 0             | 100                       | 0             | 100            | 23.79                     | 23.79                        | 1              |
| 207       | DUNKIRK1    | ON-TIME    | 15                | 100                 | 0             | 100                       | 0             | 100            | 13.90                     | 13.90                        | 1              |
| 208       | DUNKIRK2    | ON-TIME    | 15                | 95                  | 0             | 95                        | 0             | 95             | 13.86                     | 13.86                        | 1              |
| 209       | DUNKIRK3    | ON-TIME    | 30                | 200                 | 0             | 200                       | 0             | 200            | 12.91                     | 12.91                        | 1              |
| 210       | DUNKIRK4    | ON-TIME    | 30                | 200                 | 0             | 200                       | 0             | 200            | 12.91                     | 12.91                        | 1              |
| 211       | HUNTLY63    | ON-TIME    | 15                | 70                  | 0             | 70                        | 0             | 70             | 20.63                     | 20.63                        | 1              |
| 212       | HUNTLY64    | ON-TIME    | 15                | 94                  | 0             | 94                        | 0             | 87             | 20.24                     | 19.92                        | 1              |
| 213       | HUNTLY65    | ON-TIME    | 15                | 100                 | 0             | 100                       | 0             | 100            | 18.00                     | 18.00                        | 1              |
| 214       | HUNTLY66    | ON-TIME    | 15                | 100                 | 0             | 100                       | 0             | 100            | 19.42                     | 19.42                        | 1              |
| 215       | HUNTLY67    | ON-TIME    | 30                | 200                 | 0             | 200                       | 0             | 200            | 14.55                     | 14.55                        | 1              |
| 216       | HUNTLY68    | ON-TIME    | 30                | 200                 | 0             | 200                       | 0             | 200            | 14.55                     | 14.55                        | 1              |
| 217       | ALBANYGT    | ON-CBSD    | 0                 | 105                 | 0             | 105                       | 0             | 0              | 59.57                     | 0.00                         | 1              |
| 218       | NINEMIL1    | ON-MUST    | 120               | 599                 | 0             | 599                       | 0             | 599            | 5.16                      | 5.16                         | 1              |
| 219       | OSWEGO 1    | ON-TIME    | 15                | 65                  | 0             | 65                        | 0             | 56             | 27.37                     | 26.88                        | 1              |
| 220       | OSWEGO 2    | ON-TIME    | 15                | 45                  | 0             | 45                        | 0             | 45             | 26.93                     | 26.93                        | 1              |
| 221       | OSWEGO 3    | ON-TIME    | 15                | 85                  | 0             | 85                        | 0             | 75             | 26.78                     | 26.46                        | 1              |
| 222       | OSWEGO 4    | ON-TIME    | 15                | 80                  | 0             | 80                        | 0             | 80             | 24.40                     | 24.40                        | 1              |
| 223       | RTTRDMGT    | OFF-AV     | 0                 | 120                 | 0             | 120                       | 0             | 0              | 70.81                     | 0.00                         | 1              |
| 233       | OSWEGO 5    | ON-MUST    | 250               | 750                 | 0             | 750                       | 0             | 750            | 23.05                     | 23.05                        | 1              |
| 301       | GOUDY 7     | ON-TIME    | 15                | 44                  | 0             | 44                        | 0             | 44             | 18.83                     | 18.83                        | 1              |
| 302       | GOUDY 8     | ON-TIME    | 15                | 82                  | 0             | 82                        | 0             | 82             | 16.11                     | 16.11                        | 1              |
| 304       | GRNIDGE3    | ON-TIME    | 20                | 55                  | 0             | 55                        | 0             | 55             | 19.34                     | 19.34                        | 1              |
| 305       | GRNIDGE4    | ON-TIME    | 15                | 75                  | 0             | 75                        | 0             | 75             | 15.02                     | 15.02                        | 1              |
| 307       | HNERCITY    | ON-TIME    | 150               | 600                 | 0             | 600                       | 0             | 600            | 13.95                     | 13.95                        | 1              |
| 309       | MLLIKEN1    | ON-TIME    | 20                | 140                 | 0             | 140                       | 0             | 140            | 15.10                     | 15.10                        | 1              |
| 310       | MLLIKEN2    | ON-TIME    | 20                | 147                 | 0             | 147                       | 0             | 147            | 15.17                     | 15.17                        | 1              |
| 311       | NYSMISC0    | ON-CBSD    | 0                 | 8                   | 0             | 8                         | 0             | 0              | 39.82                     | 0.00                         | 1              |

Table E-3

## OUTPUT ON HOURLY DISPATCH FOR THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

UNIT DISPATCH DATA FOR 9.00 HRS MONDAY  
 -----

| FUEL COST | 294.587     | MAIN. COST | 22.134            | STARTUP COST        | 0.100 | TOTAL OPER. COST (1000\$) | 316.821 |                |                           |                              |                |
|-----------|-------------|------------|-------------------|---------------------|-------|---------------------------|---------|----------------|---------------------------|------------------------------|----------------|
| NO        | -UNIT NAME- | -STATUS-   | LOWER ED<br>LIMIT | UPPER E.D.<br>LIMIT | DERAT | DAILY OP.<br>CAP          | DERAT   | UNIT<br>OUTPUT | AVERAGE FULL<br>LOAD COST | AVERAGE COST<br>AT THIS LOAD | CONFIG<br>CODE |
| 314       | GRNIDGE1    | ON-TIME    | 5                 | 16                  | 0     | 16                        | 0       | 16             | 18.15                     | 18.15                        | 1              |
| 315       | GRNIDGE2    | ON-TIME    | 5                 | 16                  | 0     | 16                        | 0       | 16             | 18.97                     | 18.97                        | 1              |
| 316       | HCKLING1    | ON-TIME    | 5                 | 30                  | 0     | 30                        | 0       | 30             | 16.14                     | 16.14                        | 1              |
| 317       | HCKLING2    | ON-TIME    | 5                 | 22                  | 0     | 22                        | 0       | 22             | 15.31                     | 15.31                        | 1              |
| 318       | JNNISON1    | ON-TIME    | 10                | 35                  | 0     | 35                        | 0       | 35             | 17.37                     | 17.37                        | 1              |
| 319       | JNNISON2    | ON-TIME    | 10                | 30                  | 0     | 30                        | 0       | 30             | 16.73                     | 16.73                        | 1              |
| 351       | CXSACKGT    | OFF-AV     | 0                 | 19                  | 0     | 19                        | 0       | 0              | 61.82                     | 0.00                         | 1              |
| 352       | DNSKMMR1    | ON-TIME    | 20                | 60                  | 0     | 60                        | 0       | 50             | 33.25                     | 30.47                        | 1              |
| 353       | DNSKMMR2    | ON-TIME    | 30                | 64                  | 0     | 64                        | 0       | 64             | 18.81                     | 18.81                        | 1              |
| 354       | DNSKMMR3    | ON-TIME    | 40                | 100                 | 0     | 100                       | 0       | 100            | 31.04                     | 31.04                        | 1              |
| 355       | DNSKMMR4    | ON-TIME    | 120               | 215                 | 0     | 215                       | 0       | 215            | 35.61                     | 35.61                        | 1              |
| 359       | ROSETON1    | ON-TIME    | 100               | 550                 | 0     | 550                       | 0       | 550            | 22.88                     | 22.88                        | 1              |
| 360       | ROSETON2    | ON-TIME    | 100               | 550                 | 0     | 550                       | 0       | 550            | 22.79                     | 22.79                        | 1              |
| 361       | SCAIROGT    | OFF-AV     | 0                 | 20                  | 0     | 20                        | 0       | 0              | 61.81                     | 0.00                         | 1              |
| 366       | DANSKDSL    | OFF-AV     | 0                 | 5                   | 0     | 5                         | 0       | 0              | 68.29                     | 0.00                         | 1              |
| 386       | BLINEPT1    | ON-TIME    | 150               | 572                 | 0     | 601                       | 0       | 572            | 29.00                     | 28.84                        | 1              |
| 387       | BLINEPT2    | ON-TIME    | 150               | 567                 | 0     | 600                       | 0       | 567            | 29.11                     | 28.93                        | 1              |
| 389       | HLLBRNGT    | ON-CBSD    | 0                 | 40                  | 0     | 40                        | 0       | 0              | 56.49                     | 0.00                         | 1              |
| 390       | LOVETT 4    | OFF-AV     | 50                | 140                 | 0     | 198                       | 0       | 0              | 41.62                     | 0.00                         | 1              |
| 391       | LOVETT 5    | OFF-AV     | 50                | 195                 | 0     | 202                       | 0       | 0              | 38.95                     | 0.00                         | 1              |
| 393       | SHOEMKGT    | ON-CBSD    | 0                 | 37                  | 0     | 37                        | 0       | 0              | 56.19                     | 0.00                         | 1              |
| 394       | LOVETT 1    | OFF-AV     | 5                 | 20                  | 0     | 20                        | 0       | 0              | 50.52                     | 0.00                         | 1              |
| 395       | LOVETT 2    | OFF-AV     | 5                 | 20                  | 0     | 20                        | 0       | 0              | 44.60                     | 0.00                         | 1              |
| 396       | LOVETT 3    | OFF-AV     | 20                | 60                  | 0     | 63                        | 0       | 0              | 43.67                     | 0.00                         | 1              |
| 421       | FTZPTRK1    | OFF-FO     | 100               | 800                 | 0     | 900                       | 0       | 0              | 4.60                      | 0.00                         | 1              |
| 456       | BBEE1-11    | OFF-AV     | 1                 | 41                  | 0     | 41                        | 0       | 0              | 52.61                     | 0.00                         | 1              |
| 457       | BEEBEEGT    | ON-CBSD    | 0                 | 14                  | 0     | 14                        | 0       | 0              | 45.27                     | 0.00                         | 1              |
| 459       | GINNA 1     | ON-MUST    | 105               | 415                 | 0     | 415                       | 0       | 415            | 8.19                      | 8.19                         | 1              |
| 461       | RSSLL1-4    | ON-TIME    | 37                | 244                 | 0     | 244                       | 0       | 244            | 21.26                     | 21.26                        | 1              |
| 462       | STA 9 GT    | ON-CBSD    | 0                 | 15                  | 0     | 15                        | 0       | 1              | 28.26                     | 43.15                        | 1              |
| 463       | BEEBEE12    | ON-TIME    | 12                | 80                  | 0     | 80                        | 0       | 80             | 15.36                     | 15.36                        | 1              |
| 941       | FICT-4U1    | OFF-AV     | 100               | 2500                | 0     | 2500                      | 0       | 0              | 99.90                     | 0.00                         | 1              |
| 951       | FICT-5U1    | OFF-AV     | 100               | 2500                | 0     | 2500                      | 0       | 0              | 99.90                     | 0.00                         | 1              |

Table E-3

## OUTPUT ON HOURLY DISPATCH FOR THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PT1 - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## UNIT DISPATCH DATA FOR 10.00 HRS MONDAY

| FUEL COST | 323.049     | MAIN. COST | 23.957            | STARTUP COST        | 3.340 | TOTAL OPER. COST (1000\$) | 350.346 |                |                           |                              |                |
|-----------|-------------|------------|-------------------|---------------------|-------|---------------------------|---------|----------------|---------------------------|------------------------------|----------------|
| NO        | -UNIT NAME- | -STATUS-   | LOWER ED<br>LIMIT | UPPER E.D.<br>LIMIT | DERAT | DAILY OP.<br>CAP          | DERAT   | UNIT<br>OUTPUT | AVERAGE FULL<br>LOAD COST | AVERAGE COST<br>AT THIS LOAD | CONFIG<br>CODE |
| 1         | ARTKILL2    | ON-TIME    | 75                | 345                 | 0     | 345                       | 0       | 345            | 34.87                     | 34.87                        | 1              |
| 2         | ARTKILL3    | ON-TIME    | 140               | 505                 | 0     | 505                       | 0       | 505            | 35.61                     | 35.61                        | 1              |
| 3         | ASTORIA1    | OFF-AV     | 40                | 70                  | 0     | 0                         | 0       | 0              | 40.78                     | 0.00                         | 1              |
| 4         | ASTORIA2    | ON-TIME    | 40                | 150                 | 0     | 150                       | 0       | 124            | 38.91                     | 38.75                        | 1              |
| 5         | ASTORIA3    | ON-TIME    | 75                | 390                 | 0     | 390                       | 0       | 390            | 39.51                     | 39.51                        | 1              |
| 6         | ASTORIA4    | ON-TIME    | 100               | 392                 | 0     | 392                       | 0       | 292            | 38.02                     | 38.00                        | 1              |
| 7         | ASTORIA5    | OFF-AV     | 100               | 370                 | 0     | 370                       | 0       | 0              | 40.28                     | 0.00                         | 1              |
| 8         | ASTORIA6    | ON-TIME    | 100               | 600                 | 0     | 600                       | 0       | 159            | 40.27                     | 43.36                        | 1              |
| 9         | ASTGTTOT    | OFF-AV     | 0                 | 513                 | 0     | 513                       | 0       | 0              | 71.78                     | 0.00                         | 1              |
| 11        | 74ST3911    | OFF-AV     | 40                | 70                  | 0     | 70                        | 0       | 0              | 59.07                     | 0.00                         | 1              |
| 12        | ERIVER56    | OFF-AV     | 80                | 252                 | 0     | 252                       | 0       | 0              | 45.75                     | 0.00                         | 1              |
| 13        | ERIVER 7    | ON-TIME    | 80                | 145                 | 0     | 145                       | 0       | 145            | 37.10                     | 37.10                        | 1              |
| 14        | GOW13TOT    | OFF-AV     | 0                 | 91                  | 0     | 91                        | 0       | 0              | 91.09                     | 0.00                         | 1              |
| 17        | GOW24TOT    | OFF-AV     | 0                 | 176                 | 0     | 176                       | 0       | 0              | 92.14                     | 0.00                         | 1              |
| 27        | IDIANPT1    | ON-TIME    | 30                | 200                 | 0     | 200                       | 0       | 200            | 7.42                      | 7.42                         | 1              |
| 28        | IDIANPT2    | OFF-FO     | 150               | 870                 | 0     | 870                       | 0       | 0              | 14.75                     | 0.00                         | 1              |
| 29        | IDIANPT3    | ON-MUST    | 200               | 900                 | 0     | 900                       | 0       | 900            | 6.92                      | 6.92                         | 1              |
| 31        | RAVWOOD1    | ON-TIME    | 150               | 387                 | 0     | 387                       | 0       | 387            | 35.38                     | 35.38                        | 1              |
| 32        | RAVWOOD2    | ON-TIME    | 150               | 389                 | 0     | 389                       | 0       | 385            | 35.70                     | 35.68                        | 1              |
| 33        | RAVWOOD3    | ON-MUST    | 350               | 600                 | 0     | 600                       | 0       | 600            | 38.92                     | 38.92                        | 1              |
| 34        | RAVGTTOT    | OFF-AV     | 0                 | 167                 | 0     | 167                       | 0       | 0              | 74.88                     | 0.00                         | 1              |
| 35        | NARGTTOT    | OFF-AV     | 0                 | 264                 | 0     | 264                       | 0       | 0              | 68.54                     | 0.00                         | 1              |
| 40        | 59 ST 15    | OFF-AV     | 9                 | 26                  | 0     | 26                        | 0       | 0              | 69.20                     | 0.00                         | 1              |
| 41        | HUDSNA23    | OFF-AV     | 0                 | 84                  | 0     | 84                        | 0       | 0              | 71.64                     | 0.00                         | 1              |
| 96        | GEMISCGT    | OFF-AV     | 0                 | 177                 | 0     | 177                       | 0       | 0              | 90.20                     | 0.00                         | 1              |
| 105       | HUDA5810    | OFF-AV     | 20                | 95                  | 0     | 100                       | 0       | 0              | 58.54                     | 0.00                         | 1              |
| 129       | WSIDE415    | OFF-AV     | 136               | 246                 | 0     | 246                       | 0       | 0              | 69.37                     | 0.00                         | 1              |
| 132       | 59ST7814    | OFF-AV     | 10                | 43                  | 0     | 43                        | 0       | 0              | 60.87                     | 0.00                         | 1              |
| 133       | 59 ST 13    | OFF-AV     | 22                | 45                  | 0     | 45                        | 0       | 0              | 54.02                     | 0.00                         | 1              |
| 151       | BARRETT1    | ON-TIME    | 40                | 191                 | 0     | 191                       | 0       | 191            | 29.41                     | 29.41                        | 1              |
| 152       | BARRETT2    | ON-TIME    | 40                | 120                 | 0     | 120                       | 0       | 120            | 28.40                     | 28.40                        | 1              |
| 154       | FARKWAY4    | ON-TIME    | 10                | 104                 | 0     | 104                       | 0       | 87             | 35.88                     | 35.53                        | 1              |
| 157       | NRTHPRT1    | OFF-FO     | 100               | 375                 | 0     | 375                       | 0       | 0              | 20.30                     | 0.00                         | 1              |
| 158       | NRTHPRT2    | ON-TIME    | 100               | 350                 | 0     | 350                       | 0       | 350            | 20.13                     | 20.13                        | 1              |
| 159       | NRTHPRT3    | ON-TIME    | 100               | 345                 | 0     | 345                       | 0       | 345            | 20.09                     | 20.09                        | 1              |
| 160       | NRTHPRT4    | ON-TIME    | 94                | 374                 | 0     | 378                       | 0       | 374            | 28.06                     | 28.04                        | 1              |
| 163       | GLNWOOD2    | OFF-AV     | 40                | 75                  | 0     | 75                        | 0       | 0              | 56.54                     | 0.00                         | 1              |
| 164       | GLNWOOD3    | OFF-AV     | 40                | 75                  | 0     | 75                        | 0       | 0              | 56.55                     | 0.00                         | 1              |
| 165       | GLNWOOD4    | ON-TIME    | 15                | 120                 | 0     | 120                       | 0       | 100            | 35.14                     | 34.76                        | 1              |
| 166       | GLNWOOD5    | ON-TIME    | 15                | 105                 | 0     | 105                       | 0       | 96             | 34.87                     | 34.67                        | 1              |

Table E-3

## OUTPUT ON HOURLY DISPATCH FOR THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## UNIT DISPATCH DATA FOR 10.00 HRS MONDAY

| FUEL COST |             | 323.049  | MAIN. COST        |                     | 23.957        | STARTUP COST     |       | 3.340          | TOTAL OPER. COST (1000\$) |                              | 350.346        |
|-----------|-------------|----------|-------------------|---------------------|---------------|------------------|-------|----------------|---------------------------|------------------------------|----------------|
| NO        | -UNIT NAME- | -STATUS- | LOWER ED<br>LIMIT | UPPER E.D.<br>LIMIT | E.D.<br>DERAT | DAILY OP.<br>CAP | DERAT | UNIT<br>OUTPUT | AVERAGE FULL<br>LOAD COST | AVERAGE COST<br>AT THIS LOAD | CONFIG<br>CODE |
| 167       | PRTJEFF1    | ON-CBSD  | 10                | 51                  | 0             | 51               | 0     | 36             | 37.81                     | 36.65                        | 1              |
| 168       | PRTJEFF2    | ON-CBSD  | 10                | 51                  | 0             | 51               | 0     | 36             | 37.81                     | 36.65                        | 1              |
| 169       | PRTJEFF3    | ON-TIME  | 40                | 180                 | 0             | 180              | 0     | 180            | 20.50                     | 20.50                        | 1              |
| 170       | PRTJEFF4    | ON-TIME  | 40                | 198                 | 0             | 198              | 0     | 198            | 20.62                     | 20.62                        | 1              |
| 171       | GROUP3GT    | OFF-AV   | 0                 | 122                 | 0             | 122              | 0     | 0              | 66.67                     | 0.00                         | 1              |
| 172       | GROUP4GT    | OFF-AV   | 0                 | 98                  | 0             | 98               | 0     | 0              | 77.86                     | 0.00                         | 1              |
| 173       | GROUP2GT    | OFF-AV   | 0                 | 440                 | 0             | 440              | 0     | 0              | 60.94                     | 0.00                         | 1              |
| 174       | GROUP5GT    | OFF-AV   | 0                 | 85                  | 0             | 85               | 0     | 0              | 74.46                     | 0.00                         | 1              |
| 175       | GROUP1GT    | OFF-AV   | 0                 | 190                 | 0             | 190              | 0     | 0              | 65.78                     | 0.00                         | 1              |
| 176       | GROUP6GT    | OFF-AV   | 0                 | 42                  | 0             | 42               | 0     | 0              | 82.14                     | 0.00                         | 1              |
| 201       | ALBANY 1    | ON-TIME  | 15                | 100                 | 0             | 100              | 0     | 100            | 23.79                     | 23.79                        | 1              |
| 202       | ALBANY 2    | ON-TIME  | 15                | 90                  | 0             | 90               | 0     | 90             | 23.51                     | 23.51                        | 1              |
| 203       | ALBANY 3    | ON-TIME  | 15                | 93                  | 0             | 93               | 0     | 93             | 23.60                     | 23.60                        | 1              |
| 204       | ALBANY 4    | ON-TIME  | 15                | 100                 | 0             | 100              | 0     | 100            | 23.79                     | 23.79                        | 1              |
| 207       | DUNKIRK1    | ON-TIME  | 15                | 100                 | 0             | 100              | 0     | 100            | 13.90                     | 13.90                        | 1              |
| 208       | DUNKIRK2    | ON-TIME  | 15                | 95                  | 0             | 95               | 0     | 95             | 13.06                     | 13.06                        | 1              |
| 209       | DUNKIRK3    | ON-TIME  | 30                | 200                 | 0             | 200              | 0     | 200            | 12.91                     | 12.91                        | 1              |
| 210       | DUNKIRK4    | ON-TIME  | 30                | 200                 | 0             | 200              | 0     | 200            | 12.91                     | 12.91                        | 1              |
| 211       | HUNTLY63    | ON-TIME  | 15                | 70                  | 0             | 70               | 0     | 70             | 20.63                     | 20.63                        | 1              |
| 212       | HUNTLY64    | ON-TIME  | 15                | 94                  | 0             | 94               | 0     | 94             | 20.24                     | 20.24                        | 1              |
| 213       | HUNTLY65    | ON-TIME  | 15                | 100                 | 0             | 100              | 0     | 100            | 18.00                     | 18.00                        | 1              |
| 214       | HUNTLY66    | ON-TIME  | 15                | 100                 | 0             | 100              | 0     | 100            | 19.42                     | 19.42                        | 1              |
| 215       | HUNTLY67    | ON-TIME  | 30                | 200                 | 0             | 200              | 0     | 200            | 14.55                     | 14.55                        | 1              |
| 216       | HUNTLY68    | ON-TIME  | 30                | 200                 | 0             | 200              | 0     | 200            | 14.55                     | 14.55                        | 1              |
| 217       | ALBANYGT    | OFF-AV   | 0                 | 105                 | 0             | 105              | 0     | 0              | 59.57                     | 0.00                         | 1              |
| 218       | NINEMIL1    | ON-MUST  | 120               | 599                 | 0             | 599              | 0     | 599            | 5.16                      | 5.16                         | 1              |
| 219       | OSWEGO 1    | ON-TIME  | 15                | 65                  | 0             | 65               | 0     | 15             | 27.37                     | 29.47                        | 1              |
| 220       | OSWEGO 2    | ON-TIME  | 15                | 45                  | 0             | 45               | 0     | 15             | 26.93                     | 29.47                        | 1              |
| 221       | OSWEGO 3    | ON-TIME  | 15                | 85                  | 0             | 85               | 0     | 25             | 26.78                     | 27.54                        | 1              |
| 222       | OSWEGO 4    | ON-TIME  | 15                | 80                  | 0             | 80               | 0     | 60             | 24.40                     | 24.55                        | 1              |
| 223       | RTTRDNGT    | OFF-AV   | 0                 | 120                 | 0             | 120              | 0     | 0              | 70.81                     | 0.00                         | 1              |
| 233       | OSWEGO 5    | ON-MUST  | 250               | 750                 | 0             | 750              | 0     | 749            | 23.05                     | 23.05                        | 1              |
| 301       | GOUDY 7     | ON-CBSD  | 15                | 44                  | 0             | 44               | 0     | 44             | 18.83                     | 18.83                        | 1              |
| 302       | GOUDY 8     | ON-CBSD  | 15                | 82                  | 0             | 82               | 0     | 82             | 16.11                     | 16.11                        | 1              |
| 304       | GRNIDGE3    | ON-CBSD  | 20                | 55                  | 0             | 55               | 0     | 55             | 19.34                     | 19.34                        | 1              |
| 305       | GRNIDGE4    | ON-CBSD  | 15                | 75                  | 0             | 75               | 0     | 75             | 15.02                     | 15.02                        | 1              |
| 307       | HMERCTY     | ON-TIME  | 150               | 600                 | 0             | 600              | 0     | 600            | 13.95                     | 13.95                        | 1              |
| 309       | MLLIKEN1    | ON-TIME  | 20                | 140                 | 0             | 140              | 0     | 140            | 15.10                     | 15.10                        | 1              |
| 310       | MLLIKEN2    | ON-TIME  | 20                | 147                 | 0             | 147              | 0     | 147            | 15.17                     | 15.17                        | 1              |
| 311       | NYSMISCD    | OFF-AV   | 0                 | 8                   | 0             | 8                | 0     | 0              | 39.82                     | 0.00                         | 1              |

Table E-3

## OUTPUT ON HOURLY DISPATCH FOR THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

UNIT DISPATCH DATA FOR 10.00 HRS MONDAY  
 -----

| FUEL COST 323.049 |             |          | MAIN. COST 23.957 |                     | STARTUP COST 3.340 |                  | TOTAL OPER. COST (1000\$) 350.346 |                |                           |                              |                |
|-------------------|-------------|----------|-------------------|---------------------|--------------------|------------------|-----------------------------------|----------------|---------------------------|------------------------------|----------------|
| NO                | -UNIT NAME- | -STATUS- | LOWER ED<br>LIMIT | UPPER E.D.<br>LIMIT | DERAT              | DAILY OP.<br>CAP | DERAT                             | UNIT<br>OUTPUT | AVERAGE FULL<br>LOAD COST | AVERAGE COST<br>AT THIS LOAD | CONFIG<br>CODE |
| 314               | GRNIDGE1    | ON-CBSD  | 5                 | 16                  | 0                  | 16               | 0                                 | 16             | 18.15                     | 18.15                        | 1              |
| 315               | GRNIDGE2    | ON-CBSD  | 5                 | 16                  | 0                  | 16               | 0                                 | 16             | 18.97                     | 18.97                        | 1              |
| 316               | HCKLING1    | ON-CBSD  | 5                 | 30                  | 0                  | 30               | 0                                 | 30             | 16.14                     | 16.14                        | 1              |
| 317               | HCKLING2    | ON-CBSD  | 5                 | 22                  | 0                  | 22               | 0                                 | 22             | 15.31                     | 15.31                        | 1              |
| 318               | JNNISON1    | ON-CBSD  | 10                | 35                  | 0                  | 35               | 0                                 | 35             | 17.37                     | 17.37                        | 1              |
| 319               | JNNISON2    | ON-CBSD  | 10                | 30                  | 0                  | 30               | 0                                 | 30             | 16.73                     | 16.73                        | 1              |
| 351               | CXSACKGT    | OFF-AV   | 0                 | 19                  | 0                  | 19               | 0                                 | 0              | 61.82                     | 0.00                         | 1              |
| 352               | DNSKMMR1    | ON-TIME  | 20                | 60                  | 0                  | 60               | 0                                 | 50             | 33.25                     | 30.47                        | 1              |
| 353               | DNSKMMR2    | ON-TIME  | 30                | 64                  | 0                  | 64               | 0                                 | 64             | 18.81                     | 18.81                        | 1              |
| 354               | DNSKMMR3    | ON-TIME  | 40                | 100                 | 0                  | 100              | 0                                 | 100            | 31.04                     | 31.04                        | 1              |
| 355               | DNSKMMR4    | ON-TIME  | 120               | 215                 | 0                  | 215              | 0                                 | 215            | 35.61                     | 35.61                        | 1              |
| 359               | ROSETON1    | ON-TIME  | 100               | 550                 | 0                  | 550              | 0                                 | 550            | 22.88                     | 22.88                        | 1              |
| 360               | ROSETON2    | ON-TIME  | 100               | 550                 | 0                  | 550              | 0                                 | 550            | 22.79                     | 22.79                        | 1              |
| 361               | SCAIROGT    | OFF-AV   | 0                 | 20                  | 0                  | 20               | 0                                 | 0              | 61.81                     | 0.00                         | 1              |
| 366               | DANSKDSL    | OFF-AV   | 0                 | 5                   | 0                  | 5                | 0                                 | 0              | 68.29                     | 0.00                         | 1              |
| 386               | BLINEPT1    | ON-CBSD  | 150               | 572                 | 0                  | 601              | 0                                 | 572            | 29.00                     | 28.84                        | 1              |
| 387               | BLINEPT2    | ON-CBSD  | 150               | 567                 | 0                  | 600              | 0                                 | 567            | 29.11                     | 28.93                        | 1              |
| 389               | HLLBRNGT    | OFF-AV   | 0                 | 40                  | 0                  | 40               | 0                                 | 0              | 56.49                     | 0.00                         | 1              |
| 390               | LOVETT 4    | OFF-AV   | 50                | 140                 | 0                  | 198              | 0                                 | 0              | 41.62                     | 0.00                         | 1              |
| 391               | LOVETT 5    | ON-TIME  | 50                | 195                 | 0                  | 202              | 0                                 | 179            | 38.95                     | 39.08                        | 1              |
| 393               | SHOEMKGT    | OFF-AV   | 0                 | 37                  | 0                  | 37               | 0                                 | 0              | 56.19                     | 0.00                         | 1              |
| 394               | LOVETT 1    | OFF-AV   | 5                 | 20                  | 0                  | 20               | 0                                 | 0              | 50.52                     | 0.00                         | 1              |
| 395               | LOVETT 2    | OFF-AV   | 5                 | 20                  | 0                  | 20               | 0                                 | 0              | 44.60                     | 0.00                         | 1              |
| 396               | LOVETT 3    | OFF-AV   | 20                | 60                  | 0                  | 63               | 0                                 | 0              | 43.67                     | 0.00                         | 1              |
| 421               | FTZPTRK1    | OFF-FO   | 100               | 800                 | 0                  | 900              | 0                                 | 0              | 4.60                      | 0.00                         | 1              |
| 456               | BEBEE1-11   | OFF-AV   | 1                 | 41                  | 0                  | 41               | 0                                 | 0              | 52.61                     | 0.00                         | 1              |
| 457               | BEBEEGT     | OFF-AV   | 0                 | 14                  | 0                  | 14               | 0                                 | 0              | 45.27                     | 0.00                         | 1              |
| 459               | GINNA 1     | ON-MUST  | 105               | 415                 | 0                  | 415              | 0                                 | 415            | 8.19                      | 8.19                         | 1              |
| 461               | RSSL1-4     | ON-TIME  | 37                | 244                 | 0                  | 244              | 0                                 | 244            | 21.26                     | 21.26                        | 1              |
| 462               | STA 9 GT    | OFF-AV   | 0                 | 15                  | 0                  | 15               | 0                                 | 0              | 28.26                     | 0.00                         | 1              |
| 463               | BEBEE12     | ON-TIME  | 12                | 80                  | 0                  | 80               | 0                                 | 80             | 15.36                     | 15.36                        | 1              |
| 941               | FICT-4U1    | OFF-AV   | 100               | 2500                | 0                  | 2500             | 0                                 | 0              | 99.90                     | 0.00                         | 1              |
| 951               | FICT-5U1    | OFF-AV   | 100               | 2500                | 0                  | 2500             | 0                                 | 0              | 99.90                     | 0.00                         | 1              |

Table E-3

OUTPUT ON HOURLY DISPATCH FOR THERMAL UNITS (continued)  
UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

UNIT DISPATCH DATA FOR 11.00 HRS MONDAY  
-----

| FUEL COST |             | 323.635  | MAIN. COST        |                     | 24.125 | STARTUP COST     |       | 0.000          | TOTAL OPER. COST (1000\$) |                              | 347.760        |
|-----------|-------------|----------|-------------------|---------------------|--------|------------------|-------|----------------|---------------------------|------------------------------|----------------|
| NO        | -UNIT NAME- | -STATUS- | LOWER ED<br>LIMIT | UPPER E.D.<br>LIMIT | DERAT  | DAILY OP.<br>CAP | DERAT | UNIT<br>OUTPUT | AVERAGE FULL<br>LOAD COST | AVERAGE COST<br>AT THIS LOAD | CONFIG<br>CODE |
| 1         | ARTKILL2    | ON-TIME  | 75                | 345                 | 0      | 345              | 0     | 345            | 34.87                     | 34.87                        | 1              |
| 2         | ARTKILL3    | ON-TIME  | 140               | 505                 | 0      | 505              | 0     | 505            | 35.61                     | 35.61                        | 1              |
| 3         | ASTORIA1    | OFF-AV   | 40                | 70                  | 0      | 0                | 0     | 0              | 40.78                     | 0.00                         | 1              |
| 4         | ASTORIA2    | ON-TIME  | 40                | 150                 | 0      | 150              | 0     | 124            | 38.91                     | 38.75                        | 1              |
| 5         | ASTORIA3    | ON-TIME  | 75                | 390                 | 0      | 390              | 0     | 390            | 39.51                     | 39.51                        | 1              |
| 6         | ASTORIA4    | ON-TIME  | 100               | 392                 | 0      | 392              | 0     | 292            | 38.02                     | 38.00                        | 1              |
| 7         | ASTORIA5    | OFF-AV   | 100               | 370                 | 0      | 370              | 0     | 0              | 40.28                     | 0.00                         | 1              |
| 8         | ASTORIA6    | ON-TIME  | 100               | 600                 | 0      | 600              | 0     | 279            | 40.27                     | 41.55                        | 1              |
| 9         | ASTGTTOT    | OFF-AV   | 0                 | 513                 | 0      | 513              | 0     | 0              | 71.78                     | 0.00                         | 1              |
| 11        | 74ST3911    | OFF-AV   | 40                | 70                  | 0      | 70               | 0     | 0              | 59.07                     | 0.00                         | 1              |
| 12        | ERIVER56    | OFF-AV   | 80                | 252                 | 0      | 252              | 0     | 0              | 45.75                     | 0.00                         | 1              |
| 13        | ERIVER 7    | ON-TIME  | 80                | 145                 | 0      | 145              | 0     | 145            | 37.10                     | 37.10                        | 1              |
| 14        | GOW13TOT    | OFF-AV   | 0                 | 91                  | 0      | 91               | 0     | 0              | 91.09                     | 0.00                         | 1              |
| 17        | GOW24TOT    | OFF-AV   | 0                 | 176                 | 0      | 176              | 0     | 0              | 92.14                     | 0.00                         | 1              |
| 27        | IDIANPT1    | ON-TIME  | 30                | 200                 | 0      | 200              | 0     | 200            | 7.42                      | 7.42                         | 1              |
| 28        | IDIANPT2    | OFF-FO   | 150               | 870                 | 0      | 870              | 0     | 0              | 14.75                     | 0.00                         | 1              |
| 29        | IDIANPT3    | ON-MUST  | 200               | 900                 | 0      | 900              | 0     | 900            | 6.92                      | 6.92                         | 1              |
| 31        | RAVWOOD1    | ON-TIME  | 150               | 387                 | 0      | 387              | 0     | 387            | 35.38                     | 35.38                        | 1              |
| 32        | RAVWOOD2    | ON-TIME  | 150               | 389                 | 0      | 389              | 0     | 385            | 35.70                     | 35.68                        | 1              |
| 33        | RAVWOOD3    | ON-MUST  | 350               | 600                 | 0      | 600              | 0     | 600            | 38.92                     | 38.92                        | 1              |
| 34        | RAVGTTOT    | OFF-AV   | 0                 | 167                 | 0      | 167              | 0     | 0              | 74.88                     | 0.00                         | 1              |
| 35        | NARGTTOT    | OFF-AV   | 0                 | 264                 | 0      | 264              | 0     | 0              | 68.54                     | 0.00                         | 1              |
| 40        | S9 ST 15    | OFF-AV   | 9                 | 26                  | 0      | 26               | 0     | 0              | 69.20                     | 0.00                         | 1              |
| 41        | HUDSNA23    | OFF-AV   | 0                 | 84                  | 0      | 84               | 0     | 0              | 71.64                     | 0.00                         | 1              |
| 96        | GEMISCGT    | OFF-AV   | 0                 | 177                 | 0      | 177              | 0     | 0              | 90.20                     | 0.00                         | 1              |
| 105       | HUDA5910    | OFF-AV   | 20                | 95                  | 0      | 100              | 0     | 0              | 58.64                     | 0.00                         | 1              |
| 129       | WSIDE415    | OFF-AV   | 136               | 246                 | 0      | 246              | 0     | 0              | 69.37                     | 0.00                         | 1              |
| 132       | S9ST7814    | OFF-AV   | 10                | 43                  | 0      | 43               | 0     | 0              | 60.87                     | 0.00                         | 1              |
| 133       | S9 ST 13    | OFF-AV   | 22                | 45                  | 0      | 45               | 0     | 0              | 54.02                     | 0.00                         | 1              |
| 151       | BARRETT1    | ON-TIME  | 40                | 191                 | 0      | 191              | 0     | 191            | 29.41                     | 29.41                        | 1              |
| 152       | BARRETT2    | ON-TIME  | 40                | 120                 | 0      | 120              | 0     | 120            | 28.40                     | 28.40                        | 1              |
| 154       | FARKWAY4    | ON-CBSD  | 10                | 104                 | 0      | 104              | 0     | 87             | 35.88                     | 35.53                        | 1              |
| 157       | NRTHPRT1    | OFF-FO   | 100               | 375                 | 0      | 375              | 0     | 0              | 20.30                     | 0.00                         | 1              |
| 158       | NRTHPRT2    | ON-TIME  | 100               | 350                 | 0      | 350              | 0     | 350            | 20.13                     | 20.13                        | 1              |
| 159       | NRTHPRT3    | ON-TIME  | 100               | 345                 | 0      | 345              | 0     | 345            | 20.09                     | 20.09                        | 1              |
| 160       | NRTHPRT4    | ON-TIME  | 94                | 374                 | 0      | 378              | 0     | 374            | 28.06                     | 28.04                        | 1              |
| 163       | GLNWOOD2    | OFF-AV   | 40                | 75                  | 0      | 75               | 0     | 0              | 56.54                     | 0.00                         | 1              |
| 164       | GLNWOOD3    | OFF-AV   | 40                | 75                  | 0      | 75               | 0     | 0              | 56.55                     | 0.00                         | 1              |
| 165       | GLNWOOD4    | ON-TIME  | 15                | 120                 | 0      | 120              | 0     | 100            | 35.14                     | 34.76                        | 1              |
| 166       | GLNWOOD5    | ON-TIME  | 15                | 105                 | 0      | 105              | 0     | 96             | 34.87                     | 34.67                        | 1              |

Table E-3

## OUTPUT ON HOURLY DISPATCH FOR THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## UNIT DISPATCH DATA FOR 11.00 HRS MONDAY

| FUEL COST |             | 323.635  | MAIN. COST        |                     | 24.125 | STARTUP COST     |       | 0.000          | TOTAL OPER. COST (1000\$) |                              | 347.760        |
|-----------|-------------|----------|-------------------|---------------------|--------|------------------|-------|----------------|---------------------------|------------------------------|----------------|
| NO        | -UNIT NAME- | -STATUS- | LOWER ED<br>LIMIT | UPPER E.D.<br>LIMIT | DERAT  | DAILY OP.<br>CAP | DERAT | UNIT<br>OUTPUT | AVERAGE FULL<br>LOAD COST | AVERAGE COST<br>AT THIS LOAD | CONFIG<br>CODE |
| 167       | PRTJEFF1    | ON-CBSD  | 10                | 51                  | 0      | 51               | 0     | 36             | 37.81                     | 36.65                        | 1              |
| 168       | PRTJEFF2    | ON-CBSD  | 10                | 51                  | 0      | 51               | 0     | 36             | 37.81                     | 36.65                        | 1              |
| 169       | PRTJEFF3    | ON-TIME  | 40                | 180                 | 0      | 180              | 0     | 180            | 20.50                     | 20.50                        | 1              |
| 170       | PRTJEFF4    | ON-TIME  | 40                | 198                 | 0      | 198              | 0     | 198            | 20.62                     | 20.62                        | 1              |
| 171       | GROUP3GT    | OFF-AV   | 0                 | 122                 | 0      | 122              | 0     | 0              | 66.67                     | 0.00                         | 1              |
| 172       | GROUP4GT    | OFF-AV   | 0                 | 98                  | 0      | 98               | 0     | 0              | 77.86                     | 0.00                         | 1              |
| 173       | GROUP2GT    | OFF-AV   | 0                 | 440                 | 0      | 440              | 0     | 0              | 60.94                     | 0.00                         | 1              |
| 174       | GROUP5GT    | OFF-AV   | 0                 | 05                  | 0      | 05               | 0     | 0              | 74.46                     | 0.00                         | 1              |
| 175       | GROUP1GT    | OFF-AV   | 0                 | 190                 | 0      | 190              | 0     | 0              | 65.78                     | 0.00                         | 1              |
| 176       | GROUP6GT    | OFF-AV   | 0                 | 42                  | 0      | 42               | 0     | 0              | 82.14                     | 0.00                         | 1              |
| 201       | ALBANY 1    | ON-TIME  | 15                | 100                 | 0      | 100              | 0     | 100            | 23.79                     | 23.79                        | 1              |
| 202       | ALBANY 2    | ON-TIME  | 15                | 90                  | 0      | 90               | 0     | 90             | 23.51                     | 23.51                        | 1              |
| 203       | ALBANY 3    | ON-TIME  | 15                | 93                  | 0      | 93               | 0     | 93             | 23.60                     | 23.60                        | 1              |
| 204       | ALBANY 4    | ON-TIME  | 15                | 100                 | 0      | 100              | 0     | 100            | 23.79                     | 23.79                        | 1              |
| 207       | DUNKIRK1    | ON-TIME  | 15                | 100                 | 0      | 100              | 0     | 100            | 13.90                     | 13.90                        | 1              |
| 208       | DUNKIRK2    | ON-TIME  | 15                | 95                  | 0      | 95               | 0     | 95             | 13.86                     | 13.86                        | 1              |
| 209       | DUNKIRK3    | ON-TIME  | 30                | 200                 | 0      | 200              | 0     | 200            | 12.91                     | 12.91                        | 1              |
| 210       | DUNKIRK4    | ON-TIME  | 30                | 200                 | 0      | 200              | 0     | 200            | 12.91                     | 12.91                        | 1              |
| 211       | HUNTLY63    | ON-TIME  | 15                | 70                  | 0      | 70               | 0     | 70             | 20.63                     | 20.63                        | 1              |
| 212       | HUNTLY64    | ON-TIME  | 15                | 94                  | 0      | 94               | 0     | 94             | 20.24                     | 20.24                        | 1              |
| 213       | HUNTLY65    | ON-TIME  | 15                | 100                 | 0      | 100              | 0     | 100            | 18.00                     | 18.00                        | 1              |
| 214       | HUNTLY66    | ON-TIME  | 15                | 100                 | 0      | 100              | 0     | 100            | 19.42                     | 19.42                        | 1              |
| 215       | HUNTLY67    | ON-TIME  | 30                | 200                 | 0      | 200              | 0     | 200            | 14.55                     | 14.55                        | 1              |
| 216       | HUNTLY68    | ON-TIME  | 30                | 200                 | 0      | 200              | 0     | 200            | 14.55                     | 14.55                        | 1              |
| 217       | ALBANYGT    | OFF-AV   | 0                 | 105                 | 0      | 105              | 0     | 0              | 59.57                     | 0.00                         | 1              |
| 218       | NINEMIL1    | ON-MUST  | 120               | 599                 | 0      | 599              | 0     | 599            | 5.16                      | 5.16                         | 1              |
| 219       | OSWEGO 1    | ON-TIME  | 15                | 65                  | 0      | 65               | 0     | 15             | 27.37                     | 29.47                        | 1              |
| 220       | OSWEGO 2    | ON-TIME  | 15                | 45                  | 0      | 45               | 0     | 15             | 26.93                     | 29.47                        | 1              |
| 221       | OSWEGO 3    | ON-TIME  | 15                | 85                  | 0      | 85               | 0     | 25             | 26.78                     | 27.54                        | 1              |
| 222       | OSWEGO 4    | ON-TIME  | 15                | 80                  | 0      | 80               | 0     | 60             | 24.40                     | 24.55                        | 1              |
| 223       | RTTRDMGT    | OFF-AV   | 0                 | 120                 | 0      | 120              | 0     | 0              | 70.81                     | 0.00                         | 1              |
| 233       | OSWEGO 5    | ON-MUST  | 250               | 750                 | 0      | 750              | 0     | 731            | 23.05                     | 23.04                        | 1              |
| 301       | GOUDY 7     | ON-CBSD  | 15                | 44                  | 0      | 44               | 0     | 44             | 18.83                     | 18.83                        | 1              |
| 302       | GOUDY 8     | ON-CBSD  | 15                | 82                  | 0      | 82               | 0     | 82             | 16.11                     | 16.11                        | 1              |
| 304       | GRNIDGE3    | ON-CBSD  | 20                | 55                  | 0      | 55               | 0     | 55             | 19.34                     | 19.34                        | 1              |
| 305       | GRNIDGE4    | ON-CBSD  | 15                | 75                  | 0      | 75               | 0     | 75             | 15.02                     | 15.02                        | 1              |
| 307       | HMECITY     | ON-TIME  | 150               | 600                 | 0      | 600              | 0     | 600            | 13.95                     | 13.95                        | 1              |
| 309       | MLLIKEN1    | ON-TIME  | 20                | 140                 | 0      | 140              | 0     | 140            | 15.10                     | 15.10                        | 1              |
| 310       | MLLIKEN2    | ON-TIME  | 20                | 147                 | 0      | 147              | 0     | 147            | 15.17                     | 15.17                        | 1              |
| 311       | NYSMISCD    | OFF-AV   | 0                 | 8                   | 0      | 8                | 0     | 0              | 39.82                     | 0.00                         | 1              |

Table E-3

OUTPUT ON HOURLY DISPATCH FOR THERMAL UNITS (continued)

## UNIT COMMITMENT PROGRAM

PTI - EPRI 1048-5 : NYPP SYSTEM DATA FOR FUEL DISPATCHING  
 NYPP TEST CASE #NYPP1, UC ONLY WITH FIXED RESERVE REQUIREMENTS  
 NYPP HOURLY LOAD BY TRANSMISSION AREA : 7/17 TO 7/31/78

## UNIT DISPATCH DATA FOR 11.00 HRS MONDAY

| FUEL COST 323.635 |             |          | MAIN. COST 24.125 |                     | STARTUP COST 0.000 |                  | TOTAL OPER. COST (1000\$) 347.760 |                |                           |                              |                |
|-------------------|-------------|----------|-------------------|---------------------|--------------------|------------------|-----------------------------------|----------------|---------------------------|------------------------------|----------------|
| NO                | -UNIT NAME- | -STATUS- | LOWER ED<br>LIMIT | UPPER E.D.<br>LIMIT | DERAT              | DAILY OP.<br>CAP | DERAT                             | UNIT<br>OUTPUT | AVERAGE FULL<br>LOAD COST | AVERAGE COST<br>AT THIS LOAD | CONFIG<br>CODE |
| 314               | GRNIDGE1    | ON-CBSD  | 5                 | 16                  | 0                  | 16               | 0                                 | 16             | 18.15                     | 18.15                        | 1              |
| 315               | GRNIDGE2    | ON-CBSD  | 5                 | 16                  | 0                  | 16               | 0                                 | 16             | 18.97                     | 18.97                        | 1              |
| 316               | HCKLING1    | ON-CBSD  | 5                 | 30                  | 0                  | 30               | 0                                 | 30             | 16.14                     | 16.14                        | 1              |
| 317               | HCKLING2    | ON-CBSD  | 5                 | 22                  | 0                  | 22               | 0                                 | 22             | 15.31                     | 15.31                        | 1              |
| 318               | JNNISON1    | ON-CBSD  | 10                | 35                  | 0                  | 35               | 0                                 | 35             | 17.37                     | 17.37                        | 1              |
| 319               | JNNISON2    | ON-CBSD  | 10                | 30                  | 0                  | 30               | 0                                 | 30             | 16.73                     | 16.73                        | 1              |
| 351               | CXSACKGT    | OFF-AV   | 0                 | 19                  | 0                  | 19               | 0                                 | 0              | 61.82                     | 0.00                         | 1              |
| 352               | DNKMMR1     | ON-TIME  | 20                | 60                  | 0                  | 60               | 0                                 | 50             | 33.25                     | 30.47                        | 1              |
| 353               | DNKMMR2     | ON-TIME  | 30                | 64                  | 0                  | 64               | 0                                 | 64             | 18.81                     | 18.81                        | 1              |
| 354               | DNKMMR3     | ON-TIME  | 40                | 100                 | 0                  | 100              | 0                                 | 100            | 31.04                     | 31.04                        | 1              |
| 355               | DNKMMR4     | ON-TIME  | 120               | 215                 | 0                  | 215              | 0                                 | 215            | 35.61                     | 35.61                        | 1              |
| 359               | ROSETON1    | ON-TIME  | 100               | 550                 | 0                  | 550              | 0                                 | 550            | 22.88                     | 22.88                        | 1              |
| 360               | ROSETON2    | ON-TIME  | 100               | 550                 | 0                  | 550              | 0                                 | 550            | 22.79                     | 22.79                        | 1              |
| 361               | SCAIROGT    | OFF-AV   | 0                 | 20                  | 0                  | 20               | 0                                 | 0              | 61.81                     | 0.00                         | 1              |
| 366               | DANSKDSL    | OFF-AV   | 0                 | 5                   | 0                  | 5                | 0                                 | 0              | 68.29                     | 0.00                         | 1              |
| 386               | BLINEPT1    | ON-CBSD  | 150               | 572                 | 0                  | 601              | 0                                 | 572            | 29.00                     | 28.84                        | 1              |
| 387               | BLINEPT2    | ON-CBSD  | 150               | 567                 | 0                  | 600              | 0                                 | 564            | 29.11                     | 28.91                        | 1              |
| 389               | HLLBRNGT    | OFF-AV   | 0                 | 40                  | 0                  | 40               | 0                                 | 0              | 56.49                     | 0.00                         | 1              |
| 390               | LOVETT 4    | OFF-AV   | 50                | 140                 | 0                  | 198              | 0                                 | 0              | 41.62                     | 0.00                         | 1              |
| 391               | LOVETT 5    | ON-TIME  | 50                | 195                 | 0                  | 202              | 0                                 | 80             | 38.95                     | 44.54                        | 1              |
| 393               | SHOEMKGT    | OFF-AV   | 0                 | 37                  | 0                  | 37               | 0                                 | 0              | 56.19                     | 0.00                         | 1              |
| 394               | LOVETT 1    | OFF-AV   | 5                 | 20                  | 0                  | 20               | 0                                 | 0              | 50.52                     | 0.00                         | 1              |
| 395               | LOVETT 2    | OFF-AV   | 5                 | 20                  | 0                  | 20               | 0                                 | 0              | 44.60                     | 0.00                         | 1              |
| 396               | LOVETT 3    | OFF-AV   | 20                | 60                  | 0                  | 63               | 0                                 | 0              | 43.67                     | 0.00                         | 1              |
| 421               | FTZPTRK1    | OFF-FO   | 100               | 800                 | 0                  | 900              | 0                                 | 0              | 4.60                      | 0.00                         | 1              |
| 456               | BEE1-11     | OFF-AV   | 1                 | 41                  | 0                  | 41               | 0                                 | 0              | 52.61                     | 0.00                         | 1              |
| 457               | BEEBEEGT    | OFF-AV   | 0                 | 14                  | 0                  | 14               | 0                                 | 0              | 45.27                     | 0.00                         | 1              |
| 459               | GINNA 1     | ON-MUST  | 105               | 415                 | 0                  | 415              | 0                                 | 415            | 8.19                      | 8.19                         | 1              |
| 461               | RSSL1-4     | ON-TIME  | 37                | 244                 | 0                  | 244              | 0                                 | 244            | 21.26                     | 21.26                        | 1              |
| 462               | STA 9 GT    | OFF-AV   | 0                 | 15                  | 0                  | 15               | 0                                 | 0              | 28.26                     | 0.00                         | 1              |
| 463               | BEEBEE12    | ON-TIME  | 12                | 80                  | 0                  | 80               | 0                                 | 80             | 15.36                     | 15.36                        | 1              |
| 941               | FICT-4U1    | OFF-AV   | 100               | 2500                | 0                  | 2500             | 0                                 | 0              | 99.90                     | 0.00                         | 1              |
| 951               | FICT-5U1    | OFF-AV   | 100               | 2500                | 0                  | 2500             | 0                                 | 0              | 99.90                     | 0.00                         | 1              |

Table E-4  
OUTPUT FROM HYDRO MODULE HYDR

\*\*\* DAILY FUEL DISPATCH - STORAGE HYDRO SCHEDULE RESULTS \*\*\*

----- RESULT SUMMARY -----

TIME PERIOD: HOUR 1 TO HOUR 168

|                                    |            |
|------------------------------------|------------|
| PLANT NO.                          | 1          |
| PLANT IDENTIFICATION               | ST.LAW     |
| STARTING RES. STORAGE MWH          | 5000.00    |
| REQD FINAL RES. STORAGE MWH        | 5000.00    |
| ACTUAL FINAL RES. STORAGE MWH      | 5000.47    |
| TOTAL INFLOW MWH                   | 95540.63   |
| TOTAL SPILLAGE MWH                 | 0.00       |
| TOTAL AVAILABLE ENERGY MWH         | 95540.63   |
| TOTAL GENERATION ENERGY MWH        | 95541.00   |
| TOTAL DISPLACED GENERATION COST \$ | 3792206.50 |

Table E-4  
OUTPUT FROM HYDRO MODULE HYDR (continued)

| **** DETAILED RESULTS FOR PLANT 1 ST.LAW **** |       |       |         |       |          |       |       |        |         |        |             |   |   |   |
|-----------------------------------------------|-------|-------|---------|-------|----------|-------|-------|--------|---------|--------|-------------|---|---|---|
| HR                                            | ORIGL | FINAL | POND    | PLANT | RESERVES |       | SPILL | INFLOW | GEN     | DECR   | UNIT STATUS |   |   |   |
|                                               | LOAD  | LOAD  | STORAGE | GEN   | RSVON    | RSVOF |       |        | WORTH   | GEN    | 1           | 2 | 3 | 4 |
|                                               | MW    | MW    | MWH     | MW    | MW       | MW    | MW    | MW     | \$      | \$/MWH |             |   |   |   |
| 1                                             | 13973 | 13493 | 5088.7  | 480   | 60       | 0     | 0.0   | 568.7  | 16928.6 | 33.07  | 2           |   |   |   |
| 2                                             | 14515 | 13915 | 5057.4  | 600   | 60       | 0     | 0.0   | 568.7  | 51757.5 | 34.94  | 2           |   |   |   |
| 3                                             | 15359 | 14699 | 4966.1  | 660   | 60       | 0     | 0.0   | 568.7  | 23862.7 | 35.27  | 2           |   |   |   |
| 4                                             | 15359 | 14699 | 4874.8  | 660   | 60       | 0     | 0.0   | 568.7  | 23862.7 | 35.27  | 2           |   |   |   |
| 5                                             | 15359 | 14699 | 4783.5  | 660   | 60       | 0     | 0.0   | 568.7  | 23862.7 | 35.27  | 2           |   |   |   |
| 6                                             | 15359 | 14699 | 4692.2  | 660   | 60       | 0     | 0.0   | 568.7  | 23862.7 | 35.27  | 2           |   |   |   |
| 7                                             | 15359 | 14699 | 4600.9  | 660   | 60       | 0     | 0.0   | 568.7  | 23862.7 | 35.27  | 2           |   |   |   |
| 8                                             | 15352 | 14692 | 4509.6  | 660   | 60       | 0     | 0.0   | 568.7  | 23859.6 | 34.94  | 2           |   |   |   |
| 9                                             | 15288 | 14628 | 4418.3  | 660   | 60       | 0     | 0.0   | 568.7  | 23831.2 | 34.94  | 2           |   |   |   |
| 10                                            | 15310 | 14650 | 4327.0  | 660   | 60       | 0     | 0.0   | 568.7  | 23841.0 | 34.94  | 2           |   |   |   |
| 11                                            | 15336 | 14676 | 4235.7  | 660   | 60       | 0     | 0.0   | 568.7  | 26754.9 | 35.27  | 2           |   |   |   |
| 12                                            | 15151 | 14551 | 4204.4  | 600   | 60       | 0     | 0.0   | 568.7  | 24535.8 | 34.79  | 2           |   |   |   |
| 13                                            | 13967 | 13487 | 4293.1  | 480   | 60       | 0     | 0.0   | 568.7  | 16928.6 | 33.07  | 2           |   |   |   |
| 14                                            | 13911 | 13431 | 4381.8  | 480   | 60       | 0     | 0.0   | 568.7  | 16770.0 | 32.78  | 2           |   |   |   |
| 15                                            | 14086 | 13542 | 4406.5  | 544   | 60       | 0     | 0.0   | 568.7  | 19103.6 | 33.07  | 2           |   |   |   |
| 16                                            | 13590 | 13110 | 4495.2  | 480   | 60       | 0     | 0.0   | 568.7  | 15903.7 | 31.72  | 2           |   |   |   |
| 17                                            | 12765 | 12285 | 4583.9  | 480   | 60       | 0     | 0.0   | 568.7  | 15167.1 | 31.00  | 2           |   |   |   |
| 18                                            | 11603 | 11123 | 4672.6  | 480   | 60       | 0     | 0.0   | 568.7  | 13561.2 | 28.25  | 2           |   |   |   |
| 19                                            | 10750 | 10270 | 4761.3  | 480   | 60       | 0     | 0.0   | 568.7  | 12875.6 | 23.34  | 2           |   |   |   |
| 20                                            | 10911 | 10431 | 4850.0  | 480   | 60       | 0     | 0.0   | 568.7  | 12875.6 | 25.36  | 2           |   |   |   |
| 21                                            | 10931 | 10451 | 4938.7  | 480   | 60       | 0     | 0.0   | 568.7  | 12875.6 | 25.36  | 2           |   |   |   |
| 22                                            | 10838 | 10358 | 5027.4  | 480   | 60       | 0     | 0.0   | 568.7  | 12875.6 | 24.18  | 2           |   |   |   |
| 23                                            | 10974 | 10494 | 5116.1  | 480   | 60       | 0     | 0.0   | 568.7  | 13177.6 | 25.42  | 2           |   |   |   |
| 24                                            | 11045 | 10565 | 5204.8  | 480   | 60       | 0     | 0.0   | 568.7  | 13374.8 | 25.63  | 2           |   |   |   |
| 25                                            | 13263 | 12783 | 5293.5  | 480   | 60       | 0     | 0.0   | 568.7  | 15486.2 | 31.60  | 2           |   |   |   |
| 26                                            | 14467 | 13867 | 5262.2  | 600   | 60       | 0     | 0.0   | 568.7  | 51756.1 | 34.94  | 2           |   |   |   |
| 27                                            | 14525 | 13865 | 5170.9  | 660   | 60       | 0     | 0.0   | 568.7  | 26023.8 | 34.52  | 2           |   |   |   |
| 28                                            | 15336 | 14676 | 5079.6  | 660   | 60       | 0     | 0.0   | 568.7  | 26754.9 | 35.27  | 2           |   |   |   |
| 29                                            | 15336 | 14676 | 4988.3  | 660   | 60       | 0     | 0.0   | 568.7  | 26754.9 | 35.27  | 2           |   |   |   |
| 30                                            | 15211 | 14551 | 4897.0  | 660   | 60       | 0     | 0.0   | 568.7  | 26655.8 | 34.94  | 2           |   |   |   |
| 31                                            | 15340 | 14680 | 4805.7  | 660   | 60       | 0     | 0.0   | 568.7  | 23854.3 | 34.94  | 2           |   |   |   |
| 32                                            | 15288 | 14628 | 4714.4  | 660   | 60       | 0     | 0.0   | 568.7  | 23831.2 | 34.94  | 2           |   |   |   |
| 33                                            | 15340 | 14680 | 4623.1  | 660   | 60       | 0     | 0.0   | 568.7  | 23854.3 | 34.94  | 2           |   |   |   |
| 34                                            | 15339 | 14679 | 4531.8  | 660   | 60       | 0     | 0.0   | 568.7  | 23853.9 | 34.94  | 2           |   |   |   |
| 35                                            | 15210 | 14550 | 4440.5  | 660   | 60       | 0     | 0.0   | 568.7  | 23917.3 | 34.79  | 2           |   |   |   |
| 36                                            | 15036 | 14376 | 4349.2  | 660   | 60       | 0     | 0.0   | 568.7  | 23823.3 | 34.03  | 2           |   |   |   |
| 37                                            | 14751 | 14091 | 4257.9  | 660   | 60       | 0     | 0.0   | 568.7  | 23028.1 | 33.45  | 2           |   |   |   |
| 38                                            | 14637 | 14037 | 4226.6  | 600   | 60       | 0     | 0.0   | 568.7  | 21754.9 | 33.95  | 2           |   |   |   |
| 39                                            | 13661 | 13181 | 4315.3  | 480   | 60       | 0     | 0.0   | 568.7  | 16928.6 | 32.78  | 2           |   |   |   |
| 40                                            | 13385 | 12905 | 4404.0  | 480   | 60       | 0     | 0.0   | 568.7  | 16770.0 | 31.86  | 2           |   |   |   |
| 41                                            | 12512 | 12032 | 4492.7  | 480   | 60       | 0     | 0.0   | 568.7  | 15167.1 | 31.00  | 2           |   |   |   |
| 42                                            | 11436 | 10956 | 4581.4  | 480   | 60       | 0     | 0.0   | 568.7  | 13563.2 | 28.26  | 2           |   |   |   |
| 43                                            | 10715 | 10235 | 4670.1  | 480   | 60       | 0     | 0.0   | 568.7  | 12875.6 | 25.11  | 2           |   |   |   |
| 44                                            | 10851 | 10371 | 4758.8  | 480   | 60       | 0     | 0.0   | 568.7  | 13374.8 | 25.63  | 2           |   |   |   |
| 45                                            | 10646 | 10166 | 4847.5  | 480   | 60       | 0     | 0.0   | 568.7  | 12875.6 | 24.18  | 2           |   |   |   |
| 46                                            | 10837 | 10357 | 4936.2  | 480   | 60       | 0     | 0.0   | 568.7  | 13229.3 | 25.63  | 2           |   |   |   |
| 47                                            | 10724 | 10244 | 5024.9  | 480   | 60       | 0     | 0.0   | 568.7  | 12875.6 | 25.36  | 2           |   |   |   |
| 48                                            | 10766 | 10286 | 5113.6  | 480   | 60       | 0     | 0.0   | 568.7  | 13009.9 | 25.42  | 2           |   |   |   |

Table E-4

## OUTPUT FROM HYDRO MODULE HYDR (continued)

\*\*\*\* DETAILED RESULTS FOR PLANT 1 ST.LAW \*\*\*\*

| HR | ORIGL<br>LOAD<br>MW | FINAL<br>LOAD<br>MW | POND<br>STORAGE<br>MWH | PLANT<br>GEN<br>MW | RESERVES<br>RSVON<br>MW | RSVOF<br>MW | SPIII<br>MW | INFLOW<br>MW | GEN<br>WORTH<br>\$ | DECR<br>GEN<br>\$/MWH | UNIT<br>1 2 3 4 | STATUS  |
|----|---------------------|---------------------|------------------------|--------------------|-------------------------|-------------|-------------|--------------|--------------------|-----------------------|-----------------|---------|
| 49 | 12170               | 11690               | 5202.3                 | 480                | 60                      | 0           | 0.0         | 568.7        | 14881.2            | 30.27                 | 2               | - - - - |
| 50 | 13502               | 13022               | 5291.0                 | 480                | 60                      | 0           | 0.0         | 568.7        | 22187.5            | 32.78                 | 2               | - - - - |
| 51 | 13083               | 12603               | 5379.7                 | 480                | 60                      | 0           | 0.0         | 568.7        | 15733.1            | 31.60                 | 2               | - - - - |
| 52 | 15199               | 14599               | 5348.4                 | 600                | 60                      | 0           | 0.0         | 568.7        | 51757.5            | 34.94                 | 2               | - - - - |
| 53 | 15260               | 14600               | 5257.1                 | 660                | 60                      | 0           | 0.0         | 568.7        | 53880.5            | 35.27                 | 2               | - - - - |
| 54 | 15226               | 14566               | 5165.8                 | 660                | 60                      | 0           | 0.0         | 568.7        | 53865.7            | 34.94                 | 2               | - - - - |
| 55 | 15293               | 14633               | 5074.5                 | 660                | 60                      | 0           | 0.0         | 568.7        | 53919.5            | 35.27                 | 2               | - - - - |
| 56 | 15294               | 14634               | 4983.2                 | 660                | 60                      | 0           | 0.0         | 568.7        | 53920.8            | 35.27                 | 2               | - - - - |
| 57 | 15226               | 14566               | 4891.9                 | 660                | 60                      | 0           | 0.0         | 568.7        | 53865.7            | 34.94                 | 2               | - - - - |
| 58 | 15263               | 14603               | 4800.6                 | 660                | 60                      | 0           | 0.0         | 568.7        | 53802.4            | 35.27                 | 2               | - - - - |
| 59 | 15294               | 14634               | 4709.3                 | 660                | 60                      | 0           | 0.0         | 568.7        | 53920.8            | 35.27                 | 2               | - - - - |
| 60 | 14645               | 13985               | 4618.0                 | 660                | 60                      | 0           | 0.0         | 568.7        | 24065.0            | 34.78                 | 2               | - - - - |
| 61 | 14210               | 13595               | 4571.7                 | 615                | 60                      | 0           | 0.0         | 568.7        | 21476.1            | 33.07                 | 2               | - - - - |
| 62 | 14359               | 13699               | 4480.4                 | 660                | 60                      | 0           | 0.0         | 568.7        | 23790.7            | 33.45                 | 2               | - - - - |
| 63 | 14344               | 13744               | 4449.1                 | 600                | 60                      | 0           | 0.0         | 568.7        | 21777.8            | 33.45                 | 2               | - - - - |
| 64 | 13673               | 13193               | 4537.8                 | 480                | 60                      | 0           | 0.0         | 568.7        | 16055.4            | 31.86                 | 2               | - - - - |
| 65 | 13014               | 12534               | 4626.4                 | 480                | 60                      | 0           | 0.0         | 568.7        | 15167.1            | 31.09                 | 2               | - - - - |
| 66 | 11946               | 11466               | 4715.1                 | 480                | 60                      | 0           | 0.0         | 568.7        | 14131.0            | 29.03                 | 2               | - - - - |
| 67 | 11186               | 10706               | 4803.8                 | 480                | 60                      | 0           | 0.0         | 568.7        | 13563.2            | 26.82                 | 2               | - - - - |
| 68 | 10699               | 10219               | 4892.5                 | 480                | 60                      | 0           | 0.0         | 568.7        | 12050.6            | 22.14                 | 2               | - - - - |
| 69 | 10431               | 9951                | 4981.2                 | 480                | 60                      | 0           | 0.0         | 568.7        | 12050.6            | 22.14                 | 2               | - - - - |
| 70 | 10246               | 9766                | 5069.9                 | 480                | 60                      | 0           | 0.0         | 568.7        | 10863.1            | 22.02                 | 2               | - - - - |
| 71 | 10430               | 9950                | 5158.6                 | 480                | 60                      | 0           | 0.0         | 568.7        | 12022.9            | 22.14                 | 2               | - - - - |
| 72 | 11358               | 10878               | 5247.3                 | 480                | 60                      | 0           | 0.0         | 568.7        | 13677.4            | 26.82                 | 2               | - - - - |
| 73 | 13449               | 12969               | 5336.0                 | 480                | 60                      | 0           | 0.0         | 568.7        | 15733.1            | 31.60                 | 2               | - - - - |
| 74 | 14502               | 13902               | 5304.7                 | 600                | 60                      | 0           | 0.0         | 568.7        | 21214.8            | 34.94                 | 2               | - - - - |
| 75 | 14574               | 13914               | 5213.4                 | 660                | 60                      | 0           | 0.0         | 568.7        | 23343.0            | 34.94                 | 2               | - - - - |
| 76 | 15211               | 14551               | 5122.1                 | 660                | 60                      | 0           | 0.0         | 568.7        | 26436.2            | 34.94                 | 2               | - - - - |
| 77 | 15413               | 14753               | 5030.8                 | 660                | 60                      | 0           | 0.0         | 568.7        | 23981.9            | 35.27                 | 2               | - - - - |
| 78 | 15288               | 14628               | 4939.5                 | 660                | 60                      | 0           | 0.0         | 568.7        | 23831.2            | 34.94                 | 2               | - - - - |
| 79 | 15359               | 14699               | 4848.2                 | 660                | 60                      | 0           | 0.0         | 568.7        | 23862.7            | 35.27                 | 2               | - - - - |
| 80 | 15359               | 14699               | 4756.9                 | 660                | 60                      | 0           | 0.0         | 568.7        | 23862.7            | 35.27                 | 2               | - - - - |
| 81 | 15359               | 14699               | 4665.6                 | 660                | 60                      | 0           | 0.0         | 568.7        | 23862.7            | 35.27                 | 2               | - - - - |
| 82 | 15359               | 14699               | 4574.3                 | 660                | 60                      | 0           | 0.0         | 568.7        | 23862.7            | 35.27                 | 2               | - - - - |
| 83 | 15304               | 14644               | 4483.0                 | 660                | 60                      | 0           | 0.0         | 568.7        | 23838.3            | 34.94                 | 2               | - - - - |
| 84 | 15359               | 14699               | 4391.7                 | 660                | 60                      | 0           | 0.0         | 568.7        | 23862.7            | 35.27                 | 2               | - - - - |
| 85 | 15281               | 14621               | 4300.4                 | 660                | 60                      | 0           | 0.0         | 568.7        | 23827.1            | 34.79                 | 2               | - - - - |
| 86 | 15281               | 14621               | 4209.1                 | 660                | 60                      | 0           | 0.0         | 568.7        | 23827.1            | 34.79                 | 2               | - - - - |
| 87 | 15270               | 14610               | 4117.8                 | 660                | 60                      | 0           | 0.0         | 568.7        | 23820.6            | 34.79                 | 2               | - - - - |
| 88 | 14424               | 13824               | 4086.5                 | 600                | 60                      | 0           | 0.0         | 568.7        | 21457.0            | 33.65                 | 2               | - - - - |
| 89 | 13629               | 13149               | 4175.2                 | 480                | 60                      | 0           | 0.0         | 568.7        | 16055.4            | 31.72                 | 2               | - - - - |
| 90 | 12344               | 11864               | 4263.9                 | 480                | 60                      | 0           | 0.0         | 568.7        | 14681.7            | 30.27                 | 2               | - - - - |
| 91 | 11555               | 11075               | 4352.6                 | 480                | 60                      | 0           | 0.0         | 568.7        | 14103.5            | 27.86                 | 2               | - - - - |
| 92 | 10990               | 10510               | 4441.3                 | 480                | 60                      | 0           | 0.0         | 568.7        | 13177.6            | 25.57                 | 2               | - - - - |
| 93 | 11010               | 10530               | 4530.0                 | 480                | 60                      | 0           | 0.0         | 568.7        | 13177.6            | 25.63                 | 2               | - - - - |
| 94 | 10906               | 10426               | 4618.7                 | 480                | 60                      | 0           | 0.0         | 568.7        | 12075.6            | 25.05                 | 2               | - - - - |
| 95 | 10799               | 10319               | 4707.4                 | 480                | 60                      | 0           | 0.0         | 568.7        | 12075.6            | 23.58                 | 2               | - - - - |
| 96 | 11666               | 11186               | 4796.1                 | 480                | 60                      | 0           | 0.0         | 568.7        | 13561.2            | 28.25                 | 2               | - - - - |

Table E-4

OUTPUT FROM HYDRO MODULE HYDR (continued)

| **** DETAILED RESULTS FOR PLANT 1 ST.LAW **** |                     |                     |                        |                    |                         |             |             |              |                    |                       |             |   |   |   |
|-----------------------------------------------|---------------------|---------------------|------------------------|--------------------|-------------------------|-------------|-------------|--------------|--------------------|-----------------------|-------------|---|---|---|
| HR                                            | ORIGL<br>LOAD<br>MW | FINAL<br>LOAD<br>MW | POND<br>STORAGE<br>MWH | PLANT<br>GEN<br>MW | RESERVES<br>RSVON<br>MW | RSVOF<br>MW | SPILL<br>MW | INFLOW<br>MW | GEN<br>WORTH<br>\$ | DECR<br>GEN<br>\$/MWH | UNIT STATUS |   |   |   |
|                                               |                     |                     |                        |                    |                         |             |             |              |                    |                       | 1           | 2 | 3 | 4 |
| 97                                            | 13591               | 13111               | 4884.8                 | 480                | 60                      | 0           | 0.0         | 568.7        | 15903.7            | 31.65                 | 2           |   |   |   |
| 98                                            | 14515               | 13915               | 4853.5                 | 600                | 60                      | 0           | 0.0         | 568.7        | 21600.5            | 34.94                 | 2           |   |   |   |
| 99                                            | 14590               | 13930               | 4762.2                 | 660                | 60                      | 0           | 0.0         | 568.7        | 23735.4            | 35.27                 | 2           |   |   |   |
| 100                                           | 14590               | 13930               | 4670.9                 | 660                | 60                      | 0           | 0.0         | 568.7        | 23735.4            | 35.27                 | 2           |   |   |   |
| 101                                           | 15274               | 14614               | 4579.6                 | 660                | 60                      | 0           | 0.0         | 568.7        | 26464.1            | 34.94                 | 2           |   |   |   |
| 102                                           | 15274               | 14614               | 4488.3                 | 660                | 60                      | 0           | 0.0         | 568.7        | 26464.1            | 34.94                 | 2           |   |   |   |
| 103                                           | 15258               | 14598               | 4397.0                 | 660                | 60                      | 0           | 0.0         | 568.7        | 26457.0            | 34.94                 | 2           |   |   |   |
| 104                                           | 15258               | 14598               | 4305.7                 | 660                | 60                      | 0           | 0.0         | 568.7        | 26457.0            | 34.94                 | 2           |   |   |   |
| 105                                           | 15274               | 14614               | 4214.4                 | 660                | 60                      | 0           | 0.0         | 568.7        | 26464.1            | 34.94                 | 2           |   |   |   |
| 106                                           | 15274               | 14614               | 4123.1                 | 660                | 60                      | 0           | 0.0         | 568.7        | 26464.1            | 34.94                 | 2           |   |   |   |
| 107                                           | 15274               | 14614               | 4031.8                 | 660                | 60                      | 0           | 0.0         | 568.7        | 26464.1            | 34.94                 | 2           |   |   |   |
| 108                                           | 14588               | 13988               | 4000.5                 | 600                | 60                      | 0           | 0.0         | 568.7        | 21459.5            | 33.65                 | 2           |   |   |   |
| 109                                           | 13908               | 13339               | 4000.2                 | 569                | 60                      | 0           | 0.0         | 568.7        | 19687.1            | 32.78                 | 2           |   |   |   |
| 110                                           | 13813               | 13245               | 4000.9                 | 568                | 60                      | 0           | 0.0         | 568.7        | 19834.9            | 32.78                 | 2           |   |   |   |
| 111                                           | 13719               | 13150               | 4000.6                 | 569                | 60                      | 0           | 0.0         | 568.7        | 19845.7            | 32.78                 | 2           |   |   |   |
| 112                                           | 12832               | 12263               | 4000.3                 | 569                | 60                      | 0           | 0.0         | 568.7        | 34189.5            | 31.60                 | 2           |   |   |   |
| 113                                           | 11663               | 11183               | 4009.0                 | 480                | 60                      | 0           | 0.0         | 568.7        | 15164.4            | 31.01                 | 2           |   |   |   |
| 114                                           | 11427               | 10947               | 4177.7                 | 480                | 60                      | 0           | 0.0         | 568.7        | 14714.8            | 30.41                 | 2           |   |   |   |
| 115                                           | 10600               | 10120               | 4266.4                 | 480                | 60                      | 0           | 0.0         | 568.7        | 13960.1            | 27.10                 | 2           |   |   |   |
| 116                                           | 10044               | 9564                | 4355.1                 | 480                | 60                      | 0           | 0.0         | 568.7        | 12875.6            | 23.58                 | 2           |   |   |   |
| 117                                           | 10017               | 9537                | 4443.8                 | 480                | 60                      | 0           | 0.0         | 568.7        | 12875.6            | 23.58                 | 2           |   |   |   |
| 118                                           | 10108               | 9628                | 4532.5                 | 480                | 60                      | 0           | 0.0         | 568.7        | 13009.9            | 25.11                 | 2           |   |   |   |
| 119                                           | 10010               | 9530                | 4621.2                 | 480                | 60                      | 0           | 0.0         | 568.7        | 12875.6            | 23.34                 | 2           |   |   |   |
| 120                                           | 10059               | 9579                | 4709.9                 | 480                | 60                      | 0           | 0.0         | 568.7        | 12875.6            | 24.18                 | 2           |   |   |   |
| 121                                           | 10299               | 9819                | 4798.6                 | 480                | 60                      | 0           | 0.0         | 568.7        | 13177.6            | 26.15                 | 2           |   |   |   |
| 122                                           | 11425               | 10945               | 4887.3                 | 480                | 60                      | 0           | 0.0         | 568.7        | 15063.9            | 30.41                 | 2           |   |   |   |
| 123                                           | 11707               | 11169               | 4918.0                 | 538                | 60                      | 0           | 0.0         | 568.7        | 17532.2            | 31.01                 | 2           |   |   |   |
| 124                                           | 12146               | 11546               | 4886.7                 | 600                | 60                      | 0           | 0.0         | 568.7        | 35166.3            | 31.38                 | 2           |   |   |   |
| 125                                           | 12563               | 11903               | 4795.4                 | 660                | 60                      | 0           | 0.0         | 568.7        | 37110.7            | 31.59                 | 2           |   |   |   |
| 126                                           | 12561               | 11901               | 4704.1                 | 660                | 60                      | 0           | 0.0         | 568.7        | 37108.3            | 31.59                 | 2           |   |   |   |
| 127                                           | 12427               | 11767               | 4612.8                 | 660                | 60                      | 0           | 0.0         | 568.7        | 37061.0            | 31.59                 | 2           |   |   |   |
| 128                                           | 12286               | 11626               | 4521.5                 | 660                | 60                      | 0           | 0.0         | 568.7        | 37029.2            | 31.31                 | 2           |   |   |   |
| 129                                           | 12264               | 11604               | 4430.2                 | 660                | 60                      | 0           | 0.0         | 568.7        | 22414.4            | 31.10                 | 2           |   |   |   |
| 130                                           | 12301               | 11641               | 4338.9                 | 660                | 60                      | 0           | 0.0         | 568.7        | 37033.3            | 31.31                 | 2           |   |   |   |
| 131                                           | 12299               | 11639               | 4247.6                 | 660                | 60                      | 0           | 0.0         | 568.7        | 37032.7            | 31.31                 | 2           |   |   |   |
| 132                                           | 12225               | 11565               | 4156.3                 | 660                | 60                      | 0           | 0.0         | 568.7        | 22398.1            | 31.10                 | 2           |   |   |   |
| 133                                           | 12114               | 11512               | 4123.0                 | 602                | 60                      | 0           | 0.0         | 568.7        | 19696.3            | 31.00                 | 2           |   |   |   |
| 134                                           | 12284               | 11624               | 4031.7                 | 660                | 60                      | 0           | 0.0         | 568.7        | 37028.6            | 31.31                 | 2           |   |   |   |
| 135                                           | 12221               | 11621               | 4000.4                 | 600                | 60                      | 0           | 0.0         | 568.7        | 20531.0            | 31.31                 | 2           |   |   |   |
| 136                                           | 11679               | 11110               | 4000.1                 | 569                | 60                      | 0           | 0.0         | 568.7        | 17951.7            | 31.01                 | 2           |   |   |   |
| 137                                           | 11274               | 10783               | 4077.8                 | 491                | 60                      | 0           | 0.0         | 568.7        | 15501.7            | 30.66                 | 2           |   |   |   |
| 138                                           | 10978               | 10498               | 4166.5                 | 480                | 60                      | 0           | 0.0         | 568.7        | 15030.3            | 29.23                 | 2           |   |   |   |
| 139                                           | 10385               | 9905                | 4255.2                 | 480                | 60                      | 0           | 0.0         | 568.7        | 14030.7            | 27.10                 | 2           |   |   |   |
| 140                                           | 9906                | 9426                | 4343.9                 | 480                | 60                      | 0           | 0.0         | 568.7        | 13177.6            | 25.36                 | 2           |   |   |   |
| 141                                           | 9602                | 9122                | 4432.6                 | 480                | 60                      | 0           | 0.0         | 568.7        | 13177.6            | 22.63                 | 2           |   |   |   |
| 142                                           | 9663                | 9183                | 4521.3                 | 480                | 60                      | 0           | 0.0         | 568.7        | 13374.8            | 23.34                 | 2           |   |   |   |
| 143                                           | 9522                | 9042                | 4610.0                 | 480                | 60                      | 0           | 0.0         | 568.7        | 12878.8            | 22.14                 | 2           |   |   |   |
| 144                                           | 9654                | 9174                | 4698.7                 | 480                | 60                      | 0           | 0.0         | 568.7        | 13374.8            | 23.34                 | 2           |   |   |   |

Table E-4

OUTPUT FROM HYDRO MODULE HYDR (continued)

## \*\*\*\* DETAILED RESULTS FOR PLANT 1 ST.LAW \*\*\*\*

| HR  | ORIGL<br>LOAD<br>MW | FINAL<br>LOAD<br>MW | POND<br>STORAGE<br>MWH | PLANT<br>GEN<br>MW | RESERVES<br>RSVON<br>MW | RSVOF<br>MW | SPILL<br>MW | INFLOW<br>MW | GEN<br>WORTH<br>\$ | DECR<br>GEN<br>\$/MWH | UNIT<br>1 | STATUS<br>2 | 3 | 4 |
|-----|---------------------|---------------------|------------------------|--------------------|-------------------------|-------------|-------------|--------------|--------------------|-----------------------|-----------|-------------|---|---|
| 145 | 9468                | 8988                | 4787.4                 | 480                | 60                      | 0           | 0.0         | 568.7        | 12878.8            | 22.14                 | 2         | -           | - | - |
| 146 | 10198               | 9718                | 4876.1                 | 480                | 60                      | 0           | 0.0         | 568.7        | 13863.2            | 28.26                 | 2         | -           | - | - |
| 147 | 10936               | 10456               | 4964.8                 | 480                | 60                      | 0           | 0.0         | 568.7        | 15164.4            | 30.66                 | 2         | -           | - | - |
| 148 | 11292               | 10719               | 4960.5                 | 573                | 60                      | 0           | 0.0         | 568.7        | 18015.4            | 30.28                 | 2         | -           | - | - |
| 149 | 11368               | 10768               | 4929.2                 | 600                | 60                      | 0           | 0.0         | 568.7        | 35079.3            | 30.66                 | 2         | -           | - | - |
| 150 | 11423               | 10763               | 4837.9                 | 660                | 60                      | 0           | 0.0         | 568.7        | 36940.7            | 30.66                 | 2         | -           | - | - |
| 151 | 11433               | 10773               | 4746.6                 | 660                | 60                      | 0           | 0.0         | 568.7        | 36945.2            | 30.66                 | 2         | -           | - | - |
| 152 | 11438               | 10778               | 4655.3                 | 660                | 60                      | 0           | 0.0         | 568.7        | 36947.4            | 30.66                 | 2         | -           | - | - |
| 153 | 11437               | 10777               | 4564.0                 | 660                | 60                      | 0           | 0.0         | 568.7        | 36946.9            | 30.66                 | 2         | -           | - | - |
| 154 | 11373               | 10719               | 4478.7                 | 654                | 60                      | 0           | 0.0         | 568.7        | 36736.5            | 30.28                 | 2         | -           | - | - |
| 155 | 11381               | 10781               | 4447.4                 | 600                | 60                      | 0           | 0.0         | 568.7        | 35084.0            | 30.66                 | 2         | -           | - | - |
| 156 | 11261               | 10781               | 4536.1                 | 480                | 60                      | 0           | 0.0         | 568.7        | 15164.4            | 30.66                 | 2         | -           | - | - |
| 157 | 11381               | 10781               | 4504.8                 | 600                | 60                      | 0           | 0.0         | 568.7        | 35084.0            | 30.66                 | 2         | -           | - | - |
| 158 | 11441               | 10781               | 4413.5                 | 660                | 60                      | 0           | 0.0         | 568.7        | 36948.7            | 30.66                 | 2         | -           | - | - |
| 159 | 11447               | 10787               | 4322.2                 | 660                | 60                      | 0           | 0.0         | 568.7        | 36951.4            | 30.66                 | 2         | -           | - | - |
| 160 | 11340               | 10740               | 4290.9                 | 600                | 60                      | 0           | 0.0         | 568.7        | 35069.0            | 30.66                 | 2         | -           | - | - |
| 161 | 11156               | 10676               | 4379.6                 | 480                | 60                      | 0           | 0.0         | 568.7        | 15164.4            | 30.28                 | 2         | -           | - | - |
| 162 | 10363               | 9883                | 4468.3                 | 480                | 60                      | 0           | 0.0         | 568.7        | 13677.4            | 26.82                 | 2         | -           | - | - |
| 163 | 9809                | 9329                | 4557.0                 | 480                | 60                      | 0           | 0.0         | 568.7        | 12875.6            | 23.34                 | 2         | -           | - | - |
| 164 | 10020               | 9540                | 4645.7                 | 480                | 60                      | 0           | 0.0         | 568.7        | 13374.8            | 25.63                 | 2         | -           | - | - |
| 165 | 9877                | 9397                | 4734.4                 | 480                | 60                      | 0           | 0.0         | 568.7        | 13177.6            | 24.66                 | 2         | -           | - | - |
| 166 | 9828                | 9348                | 4823.1                 | 480                | 60                      | 0           | 0.0         | 568.7        | 12875.6            | 23.58                 | 2         | -           | - | - |
| 167 | 9875                | 9395                | 4911.8                 | 480                | 60                      | 0           | 0.0         | 568.7        | 13009.9            | 24.66                 | 2         | -           | - | - |
| 168 | 10520               | 10040               | 5000.5                 | 480                | 60                      | 0           | 0.0         | 568.7        | 14030.7            | 28.49                 | 2         | -           | - | - |

Table E-5

## OUTPUT FROM PUMPED STORAGE MODULE PSTO

## \*\*\* DAILY FUEL DISPATCH - PUMPED STORAGE SCHEDULE RESULTS \*\*\*

## ----- RESULT SUMMARY -----

TIME PERIOD: HOUR 1 TO HOUR 168

|                                     |           |
|-------------------------------------|-----------|
| PLANT                               | 1         |
| PLANT IDENTIFICATION                | GILBOA    |
| TOTAL PUMPING ENERGY MWH            | 13340.00  |
| TOTAL GENERATION ENERGY MWH         | 9338.00   |
| EXCESS PUMPING ENERGY MWH           | 0.00      |
| EXCESS GENERATION ENERGY MWH        | 0.00      |
| STARTING UPPER RES. STORAGE MWH     | 11400.00  |
| REQD FINAL UPPER RES. STORAGE MWH   | 11400.00  |
| ACTUAL FINAL UPPER RES. STORAGE MWH | 11399.91  |
| TOTAL PUMPING COST \$               | 309397.00 |
| TOTAL DISPLACED GENERATION COST \$  | 333026.88 |
| EXCESS PUMPING/DISPL.GEN. COST \$   | 0.00      |
| SAVING OVER THE CYCLE \$            | 23629.88  |
| SPECIFIED PLANT CYCLE EFFICIENCY    | 0.7000    |
| OVERALL CYCLE RATIO - GEN./PUMP     | 0.7000    |

Table E-5

## OUTPUT FROM PUMPED STORAGE MODULE PSTO (continued)

| **** DETAILED RESULTS FOR PLANT 1 GILBOA **** |       |       |            |         |       |             |               |       |         |           |        |      |        |     |   |   |
|-----------------------------------------------|-------|-------|------------|---------|-------|-------------|---------------|-------|---------|-----------|--------|------|--------|-----|---|---|
| HR                                            | ORIGL | FINAL | UPPER POND |         | GEN + | RESERVE(MW) |               |       | GEN     | INCR/DECR | COST   | UNIT | STATUS |     |   |   |
|                                               | LOAD  | LOAD  | STORAGE    | MWH     |       | PUMP -      | CONTRIBUTIONS |       |         |           |        |      | PUMP   | GEN | 1 | 2 |
|                                               | MW    | MW    | FT         |         | MW    | RSVON       | RVOF1         | RVOF2 | \$      | \$/MWH    | \$/MWH |      |        |     |   |   |
| 1                                             | 13493 | 13493 | 1140.0     | 11400.0 | 0     | 0           | 1000          | 0     | 0.0     | 33.37     | 32.85  | 0    | 0      | 0   | 0 |   |
| 2                                             | 13915 | 13915 | 1140.0     | 11400.0 | 0     | 0           | 1000          | 0     | 0.0     | 52.91     | 34.52  | 0    | 0      | 0   | 0 |   |
| 3                                             | 14929 | 14628 | 1138.1     | 11099.0 | 301   | 199         | 500           | 0     | 10659.6 | 36.46     | 34.79  | 2    | 2      | 0   | 0 |   |
| 4                                             | 15147 | 14628 | 1134.8     | 10580.0 | 519   | 481         | 0             | 0     | 18608.6 | 36.50     | 34.79  | 2    | 2      | 2   | 2 |   |
| 5                                             | 15101 | 14628 | 1131.9     | 10107.0 | 473   | 277         | 250           | 0     | 16931.3 | 36.46     | 34.79  | 2    | 2      | 2   | 0 |   |
| 6                                             | 15096 | 14628 | 1128.9     | 9639.0  | 468   | 282         | 250           | 0     | 16749.0 | 36.46     | 34.79  | 2    | 2      | 2   | 0 |   |
| 7                                             | 15147 | 14628 | 1125.7     | 9120.0  | 519   | 481         | 0             | 0     | 18608.6 | 36.50     | 34.79  | 2    | 2      | 2   | 2 |   |
| 8                                             | 15158 | 14628 | 1122.3     | 8590.0  | 530   | 470         | 0             | 0     | 19009.7 | 36.52     | 34.79  | 2    | 2      | 2   | 2 |   |
| 9                                             | 15168 | 14628 | 1118.9     | 8050.0  | 540   | 460         | 0             | 0     | 19374.3 | 36.73     | 34.79  | 2    | 2      | 2   | 2 |   |
| 10                                            | 15083 | 14628 | 1116.1     | 7595.0  | 455   | 295         | 250           | 0     | 16274.9 | 36.46     | 34.79  | 2    | 2      | 2   | 0 |   |
| 11                                            | 14551 | 14551 | 1116.1     | 7595.0  | 0     | 0           | 1000          | 0     | 0.0     | 35.38     | 34.77  | 0    | 0      | 0   | 0 |   |
| 12                                            | 15076 | 14551 | 1112.9     | 7070.0  | 525   | 475         | 0             | 0     | 19907.7 | 41.89     | 34.79  | 2    | 2      | 2   | 2 |   |
| 13                                            | 13487 | 13487 | 1112.9     | 7070.0  | 0     | 0           | 1000          | 0     | 0.0     | 33.36     | 32.83  | 0    | 0      | 0   | 0 |   |
| 14                                            | 13431 | 13431 | 1112.9     | 7070.0  | 0     | 0           | 1000          | 0     | 0.0     | 33.21     | 32.76  | 0    | 0      | 0   | 0 |   |
| 15                                            | 13542 | 13542 | 1112.9     | 7070.0  | 0     | 0           | 1000          | 0     | 0.0     | 33.49     | 32.96  | 0    | 0      | 0   | 0 |   |
| 16                                            | 13110 | 13110 | 1112.9     | 7070.0  | 0     | 0           | 1000          | 0     | 0.0     | 32.33     | 31.64  | 0    | 0      | 0   | 0 |   |
| 17                                            | 12285 | 12285 | 1112.9     | 7070.0  | 0     | 0           | 1000          | 0     | 0.0     | 31.10     | 30.94  | 0    | 0      | 0   | 0 |   |
| 18                                            | 11123 | 11123 | 1112.9     | 7070.0  | 0     | 0           | 1000          | 0     | 0.0     | 28.25     | 27.80  | 0    | 0      | 0   | 0 |   |
| 19                                            | 10270 | 10270 | 1112.9     | 7070.0  | 0     | 0           | 1000          | 0     | 0.0     | 24.73     | 23.34  | 0    | 0      | 0   | 0 |   |
| 20                                            | 9851  | 10431 | 1115.4     | 7476.0  | -580  | 580         | 500           | 500   | 13660.7 | 25.93     | 23.34  | 1    | 1      | 0   | 0 |   |
| 21                                            | 9561  | 10451 | 1119.2     | 8085.0  | -870  | 870         | 250           | 750   | 20469.0 | 26.03     | 23.34  | 1    | 1      | 1   | 0 |   |
| 22                                            | 9488  | 10358 | 1123.0     | 8694.0  | -870  | 870         | 250           | 750   | 20323.9 | 25.43     | 23.34  | 1    | 1      | 1   | 0 |   |
| 23                                            | 9624  | 10494 | 1126.8     | 9303.0  | -870  | 870         | 250           | 750   | 20557.8 | 26.24     | 23.34  | 1    | 1      | 1   | 0 |   |
| 24                                            | 10565 | 10565 | 1126.8     | 9303.0  | 0     | 0           | 1000          | 0     | 0.0     | 26.54     | 25.51  | 0    | 0      | 0   | 0 |   |
| 25                                            | 12783 | 12783 | 1126.8     | 9303.0  | 0     | 0           | 1000          | 0     | 0.0     | 31.60     | 31.46  | 0    | 0      | 0   | 0 |   |
| 26                                            | 13870 | 13870 | 1126.8     | 9303.0  | 0     | 0           | 1000          | 0     | 0.0     | 54.20     | 34.50  | 0    | 0      | 0   | 0 |   |
| 27                                            | 13867 | 13867 | 1126.8     | 9303.0  | 0     | 0           | 1000          | 0     | 0.0     | 35.60     | 33.80  | 0    | 0      | 0   | 0 |   |
| 28                                            | 14550 | 14550 | 1126.8     | 9303.0  | 0     | 0           | 1000          | 0     | 0.0     | 35.38     | 34.77  | 0    | 0      | 0   | 0 |   |
| 29                                            | 14550 | 14550 | 1126.8     | 9303.0  | 0     | 0           | 1000          | 0     | 0.0     | 35.38     | 34.77  | 0    | 0      | 0   | 0 |   |
| 30                                            | 14676 | 14551 | 1126.0     | 9178.0  | 125   | 125         | 750           | 0     | 4384.7  | 37.59     | 34.79  | 2    | 0      | 0   | 0 |   |
| 31                                            | 14824 | 14628 | 1124.8     | 8982.0  | 196   | 54          | 750           | 0     | 6894.9  | 36.24     | 34.79  | 2    | 0      | 0   | 0 |   |
| 32                                            | 14698 | 14698 | 1124.8     | 8982.0  | 0     | 0           | 1000          | 0     | 0.0     | 35.74     | 34.87  | 0    | 0      | 0   | 0 |   |
| 33                                            | 14824 | 14628 | 1123.6     | 8786.0  | 196   | 54          | 750           | 0     | 6894.9  | 36.24     | 34.79  | 2    | 0      | 0   | 0 |   |
| 34                                            | 14805 | 14628 | 1122.4     | 8609.0  | 177   | 73          | 750           | 0     | 6222.7  | 36.17     | 34.79  | 2    | 0      | 0   | 0 |   |
| 35                                            | 14550 | 14550 | 1122.4     | 8609.0  | 0     | 0           | 1000          | 0     | 0.0     | 35.38     | 34.77  | 0    | 0      | 0   | 0 |   |
| 36                                            | 14376 | 14376 | 1122.4     | 8609.0  | 0     | 0           | 1000          | 0     | 0.0     | 34.80     | 33.93  | 0    | 0      | 0   | 0 |   |
| 37                                            | 14091 | 14091 | 1122.4     | 8609.0  | 0     | 0           | 1000          | 0     | 0.0     | 33.73     | 33.16  | 0    | 0      | 0   | 0 |   |
| 38                                            | 14037 | 14037 | 1122.4     | 8609.0  | 0     | 0           | 1000          | 0     | 0.0     | 35.00     | 33.77  | 0    | 0      | 0   | 0 |   |
| 39                                            | 13082 | 13082 | 1122.4     | 8609.0  | 0     | 0           | 1000          | 0     | 0.0     | 32.90     | 31.78  | 0    | 0      | 0   | 0 |   |
| 40                                            | 12908 | 12908 | 1122.4     | 8609.0  | 0     | 0           | 1000          | 0     | 0.0     | 32.80     | 31.73  | 0    | 0      | 0   | 0 |   |
| 41                                            | 12032 | 12032 | 1122.4     | 8609.0  | 0     | 0           | 1000          | 0     | 0.0     | 31.07     | 30.85  | 0    | 0      | 0   | 0 |   |
| 42                                            | 10956 | 10956 | 1122.4     | 8609.0  | 0     | 0           | 1000          | 0     | 0.0     | 28.26     | 27.96  | 0    | 0      | 0   | 0 |   |
| 43                                            | 10235 | 10235 | 1122.4     | 8609.0  | 0     | 0           | 1000          | 0     | 0.0     | 25.90     | 24.48  | 0    | 0      | 0   | 0 |   |
| 44                                            | 9786  | 10076 | 1123.7     | 8812.0  | -290  | 290         | 750           | 250   | 7012.5  | 24.89     | 24.18  | 1    | 0      | 0   | 0 |   |
| 45                                            | 9586  | 10166 | 1126.3     | 9210.0  | -580  | 580         | 500           | 500   | 14024.9 | 25.42     | 24.18  | 1    | 1      | 0   | 0 |   |
| 46                                            | 9487  | 10067 | 1128.8     | 9624.0  | -580  | 580         | 500           | 500   | 14024.9 | 24.85     | 24.18  | 1    | 1      | 0   | 0 |   |
| 47                                            | 9669  | 10249 | 1131.4     | 10030.0 | -580  | 580         | 500           | 500   | 14077.4 | 25.97     | 24.18  | 1    | 1      | 0   | 0 |   |
| 48                                            | 9996  | 9996  | 1131.4     | 10030.0 | 0     | 0           | 1000          | 0     | 0.0     | 24.52     | 24.18  | 0    | 0      | 0   | 0 |   |

Table E-5

## OUTPUT FROM PUMPED STORAGE MODULE PSTO (continued)

| **** DETAILED RESULTS FOR PLANT 1 GILBOA **** |            |            |               |         |                       |             |       |       |                   |                             |                       |             |   |   |   |
|-----------------------------------------------|------------|------------|---------------|---------|-----------------------|-------------|-------|-------|-------------------|-----------------------------|-----------------------|-------------|---|---|---|
| HR                                            | ORIGL      | FINAL      | UPPER POND    |         | GEN +<br>PUMP -<br>MW | RESERVE(MW) |       |       | GEN<br>PUMP<br>\$ | INCR/DECR<br>PUMP<br>\$/MWH | COST<br>GEN<br>\$/MWH | UNIT STATUS |   |   |   |
|                                               | LOAD<br>MW | LOAD<br>MW | STORAGE<br>FT | MWH     |                       | RSVON       | RVOF1 | RVOF2 |                   |                             |                       | 1           | 2 | 3 | 4 |
| 49                                            | 11690      | 11690      | 1131.4        | 10030.0 | 0                     | 0           | 1000  | 0     | 0.0               | 30.61                       | 30.26                 | 0           | 0 | 0 | 0 |
| 50                                            | 12997      | 12997      | 1131.4        | 10030.0 | 0                     | 0           | 1000  | 0     | 0.0               | 33.05                       | 32.31                 | 0           | 0 | 0 | 0 |
| 51                                            | 13397      | 13397      | 1131.4        | 10030.0 | 0                     | 0           | 1000  | 0     | 0.0               | 79.40                       | 34.29                 | 0           | 0 | 0 | 0 |
| 52                                            | 14583      | 14583      | 1131.4        | 10030.0 | 0                     | 0           | 1000  | 0     | 0.0               | 37.16                       | 34.86                 | 0           | 0 | 0 | 0 |
| 53                                            | 14710      | 14585      | 1130.6        | 9905.0  | 125                   | 125         | 750   | 0     | 4408.2            | 50.34                       | 34.94                 | 2           | 0 | 0 | 0 |
| 54                                            | 14790      | 14599      | 1129.4        | 9714.0  | 191                   | 59          | 750   | 0     | 6757.1            | 58.59                       | 34.94                 | 2           | 0 | 0 | 0 |
| 55                                            | 14790      | 14599      | 1128.2        | 9523.0  | 191                   | 59          | 750   | 0     | 6757.1            | 58.59                       | 34.94                 | 2           | 0 | 0 | 0 |
| 56                                            | 14849      | 14599      | 1126.6        | 9273.0  | 250                   | 250         | 500   | 0     | 8925.0            | 65.92                       | 34.94                 | 2           | 0 | 0 | 0 |
| 57                                            | 14800      | 14599      | 1125.4        | 9072.0  | 201                   | 49          | 750   | 0     | 7123.0            | 59.58                       | 34.94                 | 2           | 0 | 0 | 0 |
| 58                                            | 14821      | 14599      | 1124.0        | 8850.0  | 222                   | 28          | 750   | 0     | 7891.7            | 61.66                       | 34.94                 | 2           | 0 | 0 | 0 |
| 59                                            | 14849      | 14509      | 1122.3        | 8590.0  | 260                   | 240         | 500   | 0     | 9274.3            | 65.92                       | 34.94                 | 2           | 2 | 0 | 0 |
| 60                                            | 13991      | 13991      | 1122.3        | 8590.0  | 0                     | 0           | 1000  | 0     | 0.0               | 35.39                       | 34.31                 | 0           | 0 | 0 | 0 |
| 61                                            | 13595      | 13595      | 1122.3        | 8590.0  | 0                     | 0           | 1000  | 0     | 0.0               | 33.48                       | 32.96                 | 0           | 0 | 0 | 0 |
| 62                                            | 13699      | 13699      | 1122.3        | 8590.0  | 0                     | 0           | 1000  | 0     | 0.0               | 33.90                       | 33.21                 | 0           | 0 | 0 | 0 |
| 63                                            | 13744      | 13744      | 1122.3        | 8590.0  | 0                     | 0           | 1000  | 0     | 0.0               | 34.13                       | 33.33                 | 0           | 0 | 0 | 0 |
| 64                                            | 13156      | 13156      | 1122.3        | 8590.0  | 0                     | 0           | 1000  | 0     | 0.0               | 32.37                       | 31.65                 | 0           | 0 | 0 | 0 |
| 65                                            | 12534      | 12534      | 1122.3        | 8590.0  | 0                     | 0           | 1000  | 0     | 0.0               | 31.36                       | 31.09                 | 0           | 0 | 0 | 0 |
| 66                                            | 11466      | 11466      | 1122.3        | 8590.0  | 0                     | 0           | 1000  | 0     | 0.0               | 29.38                       | 28.75                 | 0           | 0 | 0 | 0 |
| 67                                            | 10706      | 10706      | 1122.3        | 8590.0  | 0                     | 0           | 1000  | 0     | 0.0               | 26.89                       | 26.20                 | 0           | 0 | 0 | 0 |
| 68                                            | 10219      | 10509      | 1123.6        | 8793.0  | -290                  | 290         | 750   | 250   | 6986.8            | 25.11                       | 22.14                 | 1           | 0 | 0 | 0 |
| 69                                            | 9951       | 10531      | 1126.2        | 9199.0  | -580                  | 580         | 500   | 500   | 13473.2           | 25.11                       | 22.14                 | 1           | 1 | 0 | 0 |
| 70                                            | 9766       | 10346      | 1128.7        | 9605.0  | -580                  | 580         | 500   | 500   | 12970.4           | 24.93                       | 22.02                 | 1           | 1 | 0 | 0 |
| 71                                            | 9950       | 10530      | 1131.3        | 10011.0 | -580                  | 580         | 500   | 500   | 13470.2           | 25.11                       | 22.14                 | 1           | 1 | 0 | 0 |
| 72                                            | 10078      | 10078      | 1131.3        | 10011.0 | 0                     | 0           | 1000  | 0     | 0.0               | 27.50                       | 26.82                 | 0           | 0 | 0 | 0 |
| 73                                            | 12969      | 12969      | 1131.3        | 10011.0 | 0                     | 0           | 1000  | 0     | 0.0               | 31.72                       | 31.60                 | 0           | 0 | 0 | 0 |
| 74                                            | 13915      | 13915      | 1131.3        | 10011.0 | 0                     | 0           | 1000  | 0     | 0.0               | 35.35                       | 34.52                 | 0           | 0 | 0 | 0 |
| 75                                            | 13914      | 13914      | 1131.3        | 10011.0 | 0                     | 0           | 1000  | 0     | 0.0               | 35.35                       | 34.51                 | 0           | 0 | 0 | 0 |
| 76                                            | 14551      | 14551      | 1131.3        | 10011.0 | 0                     | 0           | 1000  | 0     | 0.0               | 35.38                       | 34.77                 | 0           | 0 | 0 | 0 |
| 77                                            | 14698      | 14698      | 1131.3        | 10011.0 | 0                     | 0           | 1000  | 0     | 0.0               | 35.74                       | 34.87                 | 0           | 0 | 0 | 0 |
| 78                                            | 14753      | 14628      | 1130.5        | 9886.0  | 125                   | 125         | 750   | 0     | 4385.0            | 35.97                       | 34.79                 | 2           | 0 | 0 | 0 |
| 79                                            | 14930      | 14628      | 1128.6        | 9584.0  | 302                   | 198         | 500   | 0     | 10696.1           | 36.46                       | 34.79                 | 2           | 2 | 0 | 0 |
| 80                                            | 14925      | 14628      | 1126.7        | 9287.0  | 297                   | 203         | 500   | 0     | 10513.7           | 36.46                       | 34.79                 | 2           | 2 | 0 | 0 |
| 81                                            | 14878      | 14628      | 1125.1        | 9037.0  | 250                   | 250         | 500   | 0     | 8805.5            | 36.44                       | 34.79                 | 2           | 0 | 0 | 0 |
| 82                                            | 14923      | 14628      | 1123.3        | 8742.0  | 295                   | 205         | 500   | 0     | 10440.8           | 36.46                       | 34.79                 | 2           | 2 | 0 | 0 |
| 83                                            | 14628      | 14628      | 1123.3        | 8742.0  | 0                     | 0           | 1000  | 0     | 0.0               | 35.37                       | 34.77                 | 0           | 0 | 0 | 0 |
| 84                                            | 14699      | 14699      | 1123.3        | 8742.0  | 0                     | 0           | 1000  | 0     | 0.0               | 35.75                       | 34.87                 | 0           | 0 | 0 | 0 |
| 85                                            | 14629      | 14629      | 1123.3        | 8742.0  | 0                     | 0           | 1000  | 0     | 0.0               | 35.38                       | 34.77                 | 0           | 0 | 0 | 0 |
| 86                                            | 14626      | 14626      | 1123.3        | 8742.0  | 0                     | 0           | 1000  | 0     | 0.0               | 35.36                       | 34.77                 | 0           | 0 | 0 | 0 |
| 87                                            | 14612      | 14612      | 1123.3        | 8742.0  | 0                     | 0           | 1000  | 0     | 0.0               | 35.28                       | 34.74                 | 0           | 0 | 0 | 0 |
| 88                                            | 13824      | 13824      | 1123.3        | 8742.0  | 0                     | 0           | 1000  | 0     | 0.0               | 34.67                       | 33.59                 | 0           | 0 | 0 | 0 |
| 89                                            | 13149      | 13149      | 1123.3        | 8742.0  | 0                     | 0           | 1000  | 0     | 0.0               | 32.34                       | 31.65                 | 0           | 0 | 0 | 0 |
| 90                                            | 11864      | 11864      | 1123.3        | 8742.0  | 0                     | 0           | 1000  | 0     | 0.0               | 30.48                       | 30.14                 | 0           | 0 | 0 | 0 |
| 91                                            | 11075      | 11075      | 1123.3        | 8742.0  | 0                     | 0           | 1000  | 0     | 0.0               | 28.34                       | 27.55                 | 0           | 0 | 0 | 0 |
| 92                                            | 10510      | 10510      | 1123.3        | 8742.0  | 0                     | 0           | 1000  | 0     | 0.0               | 26.26                       | 25.17                 | 0           | 0 | 0 | 0 |
| 93                                            | 10240      | 10240      | 1123.3        | 8742.0  | 0                     | 0           | 1000  | 0     | 0.0               | 24.48                       | 23.58                 | 0           | 0 | 0 | 0 |
| 94                                            | 10136      | 10426      | 1124.6        | 8945.0  | -290                  | 290         | 750   | 250   | 6910.8            | 25.03                       | 23.58                 | 1           | 0 | 0 | 0 |
| 95                                            | 10319      | 10319      | 1124.6        | 8945.0  | 0                     | 0           | 1000  | 0     | 0.0               | 25.05                       | 23.58                 | 0           | 0 | 0 | 0 |
| 96                                            | 11186      | 11186      | 1124.6        | 8945.0  | 0                     | 0           | 1000  | 0     | 0.0               | 28.25                       | 28.08                 | 0           | 0 | 0 | 0 |

Table E-5

## OUTPUT FROM PUMPED STORAGE MODULE PSTO (continued)

| **** DETAILED RESULTS FOR PLANT 1 GILBOA **** |                     |                     |                             |        |                       |                                                   |                   |                             |                       |             |   |   |   |
|-----------------------------------------------|---------------------|---------------------|-----------------------------|--------|-----------------------|---------------------------------------------------|-------------------|-----------------------------|-----------------------|-------------|---|---|---|
| HR                                            | ORIGL<br>LOAD<br>MW | FINAL<br>LOAD<br>MW | UPPER POND<br>STORAGE<br>FT | MWH    | GEN +<br>PUMP -<br>MW | RESERVE(MW)<br>CONTRIBUTIONS<br>RSVON RVOF1 RVOF2 | GEN<br>PUMP<br>\$ | INCR/DECR<br>PUMP<br>\$/MWH | COST<br>GEN<br>\$/MWH | UNIT STATUS |   |   |   |
|                                               |                     |                     |                             |        |                       |                                                   |                   |                             |                       | 1           | 2 | 3 | 4 |
| 97                                            | 13201               | 13201               | 1124.6                      | 8945.0 | 0                     | 0 1000 0                                          | 0.0               | 32.55                       | 31.73                 | 0           | 0 | 0 | 0 |
| 98                                            | 13915               | 13915               | 1124.6                      | 8945.0 | 0                     | 0 1000 0                                          | 0.0               | 35.81                       | 34.52                 | 0           | 0 | 0 | 0 |
| 99                                            | 14117               | 13915               | 1123.3                      | 8743.0 | 202                   | 48 750 0                                          | 7160.3            | 36.64                       | 34.94                 | 2           | 0 | 0 | 0 |
| 100                                           | 14111               | 13915               | 1122.1                      | 8547.0 | 196                   | 54 750 0                                          | 6940.4            | 36.64                       | 34.94                 | 2           | 0 | 0 | 0 |
| 101                                           | 14736               | 14551               | 1120.9                      | 8362.0 | 185                   | 65 750 0                                          | 6505.3            | 38.90                       | 34.79                 | 2           | 0 | 0 | 0 |
| 102                                           | 14755               | 14551               | 1119.6                      | 8158.0 | 204                   | 46 750 0                                          | 7177.6            | 39.32                       | 34.79                 | 2           | 0 | 0 | 0 |
| 103                                           | 14676               | 14551               | 1118.8                      | 8033.0 | 125                   | 125 750 0                                         | 4384.7            | 37.59                       | 34.79                 | 2           | 0 | 0 | 0 |
| 104                                           | 14676               | 14551               | 1118.1                      | 7908.0 | 125                   | 125 750 0                                         | 4384.7            | 37.59                       | 34.79                 | 2           | 0 | 0 | 0 |
| 105                                           | 14726               | 14551               | 1116.9                      | 7723.0 | 185                   | 65 750 0                                          | 6505.3            | 38.90                       | 34.79                 | 2           | 0 | 0 | 0 |
| 106                                           | 14755               | 14551               | 1115.6                      | 7519.0 | 204                   | 46 750 0                                          | 7177.6            | 39.32                       | 34.79                 | 2           | 0 | 0 | 0 |
| 107                                           | 14730               | 14551               | 1114.5                      | 7340.0 | 179                   | 71 750 0                                          | 6293.0            | 38.77                       | 34.79                 | 2           | 0 | 0 | 0 |
| 108                                           | 13988               | 13988               | 1114.5                      | 7340.0 | 0                     | 0 1000 0                                          | 0.0               | 34.63                       | 33.60                 | 0           | 0 | 0 | 0 |
| 109                                           | 13339               | 13339               | 1114.5                      | 7340.0 | 0                     | 0 1000 0                                          | 0.0               | 32.98                       | 32.27                 | 0           | 0 | 0 | 0 |
| 110                                           | 13245               | 13245               | 1114.5                      | 7340.0 | 0                     | 0 1000 0                                          | 0.0               | 33.27                       | 32.78                 | 0           | 0 | 0 | 0 |
| 111                                           | 13150               | 13150               | 1114.5                      | 7340.0 | 0                     | 0 1000 0                                          | 0.0               | 33.02                       | 32.21                 | 0           | 0 | 0 | 0 |
| 112                                           | 12263               | 12263               | 1114.5                      | 7340.0 | 0                     | 0 1000 0                                          | 0.0               | 32.34                       | 31.60                 | 0           | 0 | 0 | 0 |
| 113                                           | 11180               | 11180               | 1114.5                      | 7340.0 | 0                     | 0 1000 0                                          | 0.0               | 31.11                       | 30.74                 | 0           | 0 | 0 | 0 |
| 114                                           | 10947               | 10947               | 1114.5                      | 7340.0 | 0                     | 0 1000 0                                          | 0.0               | 30.63                       | 30.17                 | 0           | 0 | 0 | 0 |
| 115                                           | 10120               | 10120               | 1114.5                      | 7340.0 | 0                     | 0 1000 0                                          | 0.0               | 27.99                       | 26.86                 | 0           | 0 | 0 | 0 |
| 116                                           | 9564                | 9564                | 1114.5                      | 7340.0 | 0                     | 0 1000 0                                          | 0.0               | 25.47                       | 23.24                 | 0           | 0 | 0 | 0 |
| 117                                           | 9247                | 9537                | 1115.8                      | 7543.0 | -290                  | 290 750 250                                       | 6519.8            | 25.17                       | 22.14                 | 1           | 0 | 0 | 0 |
| 118                                           | 9048                | 9628                | 1118.3                      | 7949.0 | -580                  | 580 500 500                                       | 13124.7           | 26.01                       | 22.04                 | 1           | 1 | 0 | 0 |
| 119                                           | 8950                | 9530                | 1120.8                      | 8354.9 | -580                  | 580 500 500                                       | 12922.2           | 25.10                       | 22.02                 | 1           | 1 | 0 | 0 |
| 120                                           | 8999                | 9579                | 1123.4                      | 8760.9 | -580                  | 580 500 500                                       | 13003.5           | 25.62                       | 22.02                 | 1           | 1 | 0 | 0 |
| 121                                           | 9819                | 9819                | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 26.82                       | 25.73                 | 0           | 0 | 0 | 0 |
| 122                                           | 10945               | 10945               | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 30.82                       | 30.16                 | 0           | 0 | 0 | 0 |
| 123                                           | 11172               | 11172               | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 31.20                       | 30.92                 | 0           | 0 | 0 | 0 |
| 124                                           | 11546               | 11546               | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 31.82                       | 31.35                 | 0           | 0 | 0 | 0 |
| 125                                           | 11901               | 11901               | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 32.34                       | 31.59                 | 0           | 0 | 0 | 0 |
| 126                                           | 11903               | 11903               | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 32.35                       | 31.59                 | 0           | 0 | 0 | 0 |
| 127                                           | 11767               | 11767               | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 31.65                       | 31.37                 | 0           | 0 | 0 | 0 |
| 128                                           | 11626               | 11626               | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 31.48                       | 31.10                 | 0           | 0 | 0 | 0 |
| 129                                           | 11604               | 11604               | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 31.45                       | 31.07                 | 0           | 0 | 0 | 0 |
| 130                                           | 11636               | 11636               | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 31.49                       | 31.12                 | 0           | 0 | 0 | 0 |
| 131                                           | 11633               | 11633               | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 31.48                       | 31.12                 | 0           | 0 | 0 | 0 |
| 132                                           | 11565               | 11565               | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 31.38                       | 31.04                 | 0           | 0 | 0 | 0 |
| 133                                           | 11512               | 11512               | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 31.29                       | 31.00                 | 0           | 0 | 0 | 0 |
| 134                                           | 11627               | 11627               | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 31.48                       | 31.10                 | 0           | 0 | 0 | 0 |
| 135                                           | 11629               | 11629               | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 31.48                       | 31.11                 | 0           | 0 | 0 | 0 |
| 136                                           | 11110               | 11110               | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 31.12                       | 30.75                 | 0           | 0 | 0 | 0 |
| 137                                           | 10780               | 10780               | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 31.07                       | 30.44                 | 0           | 0 | 0 | 0 |
| 138                                           | 10498               | 10498               | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 30.16                       | 28.86                 | 0           | 0 | 0 | 0 |
| 139                                           | 9905                | 9905                | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 28.05                       | 26.84                 | 0           | 0 | 0 | 0 |
| 140                                           | 9426                | 9426                | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 26.20                       | 24.01                 | 0           | 0 | 0 | 0 |
| 141                                           | 9123                | 9123                | 1123.4                      | 8760.9 | 0                     | 0 1000 0                                          | 0.0               | 24.83                       | 22.24                 | 0           | 0 | 0 | 0 |
| 142                                           | 8892                | 9102                | 1124.7                      | 8963.9 | -290                  | 290 750 250                                       | 6500.4            | 25.55                       | 22.14                 | 1           | 0 | 0 | 0 |
| 143                                           | 8752                | 9332                | 1127.2                      | 9369.9 | -580                  | 580 500 500                                       | 13302.5           | 26.78                       | 22.09                 | 1           | 1 | 0 | 0 |
| 144                                           | 8594                | 9174                | 1129.8                      | 9775.9 | -580                  | 580 500 500                                       | 12901.1           | 25.45                       | 22.02                 | 1           | 1 | 0 | 0 |

Table E-5

OUTPUT FROM PUMPED STORAGE MODULE PSTO (continued)

## \*\*\*\* DETAILED RESULTS FOR PLANT 1 GILBOA \*\*\*\*

| HR  | ORIGL<br>LOAD<br>MW | FINAL<br>LOAD<br>MW | UPPER POND<br>STORAGE |         | GEN +<br>PUMP -<br>MW | RESERVE(MW)<br>CONTRIBUTIONS |       |       | GEN<br>PUMP<br>\$ | INCR/DECR COST |               | UNIT STATUS |   |   |   |
|-----|---------------------|---------------------|-----------------------|---------|-----------------------|------------------------------|-------|-------|-------------------|----------------|---------------|-------------|---|---|---|
|     |                     |                     | FT                    | MWH     |                       | RSVON                        | RVOF1 | RVOF2 |                   | PUMP<br>\$/MWH | GEN<br>\$/MWH | 1           | 2 | 3 | 4 |
| 145 | 8988                | 9278                | 1131.1                | 9978.9  | -290                  | 290                          | 750   | 250   | 6703.0            | 26.41          | 22.14         | 1           | 0 | 0 | 0 |
| 146 | 9718                | 9718                | 1131.1                | 9978.9  | 0                     | 0                            | 1000  | 0     | 0.0               | 28.71          | 27.91         | 0           | 0 | 0 | 0 |
| 147 | 10456               | 10456               | 1131.1                | 9978.9  | 0                     | 0                            | 1000  | 0     | 0.0               | 31.11          | 30.23         | 0           | 0 | 0 | 0 |
| 148 | 10722               | 10722               | 1131.1                | 9978.9  | 0                     | 0                            | 1000  | 0     | 0.0               | 30.94          | 29.97         | 0           | 0 | 0 | 0 |
| 149 | 10768               | 10768               | 1131.1                | 9978.9  | 0                     | 0                            | 1000  | 0     | 0.0               | 31.04          | 30.35         | 0           | 0 | 0 | 0 |
| 150 | 10777               | 10777               | 1131.1                | 9978.9  | 0                     | 0                            | 1000  | 0     | 0.0               | 31.06          | 30.42         | 0           | 0 | 0 | 0 |
| 151 | 10780               | 10780               | 1131.1                | 9978.9  | 0                     | 0                            | 1000  | 0     | 0.0               | 31.07          | 30.44         | 0           | 0 | 0 | 0 |
| 152 | 10779               | 10779               | 1131.1                | 9978.9  | 0                     | 0                            | 1000  | 0     | 0.0               | 31.06          | 30.43         | 0           | 0 | 0 | 0 |
| 153 | 10772               | 10772               | 1131.1                | 9978.9  | 0                     | 0                            | 1000  | 0     | 0.0               | 31.05          | 30.38         | 0           | 0 | 0 | 0 |
| 154 | 10719               | 10719               | 1131.1                | 9978.9  | 0                     | 0                            | 1000  | 0     | 0.0               | 30.93          | 29.94         | 0           | 0 | 0 | 0 |
| 155 | 10781               | 10781               | 1131.1                | 9978.9  | 0                     | 0                            | 1000  | 0     | 0.0               | 31.07          | 30.45         | 0           | 0 | 0 | 0 |
| 156 | 10781               | 10781               | 1131.1                | 9978.9  | 0                     | 0                            | 1000  | 0     | 0.0               | 31.07          | 30.45         | 0           | 0 | 0 | 0 |
| 157 | 10776               | 10776               | 1131.1                | 9978.9  | 0                     | 0                            | 1000  | 0     | 0.0               | 31.06          | 30.41         | 0           | 0 | 0 | 0 |
| 158 | 10777               | 10777               | 1131.1                | 9978.9  | 0                     | 0                            | 1000  | 0     | 0.0               | 31.06          | 30.42         | 0           | 0 | 0 | 0 |
| 159 | 10779               | 10779               | 1131.1                | 9978.9  | 0                     | 0                            | 1000  | 0     | 0.0               | 31.06          | 30.43         | 0           | 0 | 0 | 0 |
| 160 | 10740               | 10740               | 1131.1                | 9978.9  | 0                     | 0                            | 1000  | 0     | 0.0               | 30.98          | 30.15         | 0           | 0 | 0 | 0 |
| 161 | 10676               | 10676               | 1131.1                | 9978.9  | 0                     | 0                            | 1000  | 0     | 0.0               | 30.80          | 29.61         | 0           | 0 | 0 | 0 |
| 162 | 9883                | 9883                | 1131.1                | 9978.9  | 0                     | 0                            | 1000  | 0     | 0.0               | 27.93          | 26.82         | 0           | 0 | 0 | 0 |
| 163 | 9329                | 9329                | 1131.1                | 9978.9  | 0                     | 0                            | 1000  | 0     | 0.0               | 24.84          | 22.36         | 0           | 0 | 0 | 0 |
| 164 | 8960                | 9540                | 1133.6                | 10384.9 | -580                  | 580                          | 500   | 500   | 13365.3           | 26.54          | 22.10         | 1           | 1 | 0 | 0 |
| 165 | 8817                | 9397                | 1136.2                | 10790.9 | -580                  | 580                          | 500   | 500   | 13241.1           | 26.04          | 22.63         | 1           | 1 | 0 | 0 |
| 166 | 8768                | 9348                | 1138.7                | 11196.9 | -580                  | 580                          | 500   | 500   | 13177.4           | 25.55          | 22.63         | 1           | 1 | 0 | 0 |
| 167 | 9105                | 9395                | 1140.0                | 11399.9 | -290                  | 290                          | 750   | 250   | 6673.9            | 26.02          | 22.63         | 1           | 0 | 0 | 0 |
| 168 | 10040               | 10040               | 1140.0                | 11399.9 | 0                     | 0                            | 1000  | 0     | 0.0               | 28.70          | 28.07         | 0           | 0 | 0 | 0 |

Table E-6

OUTPUT FROM NIAGARA FALLS MODULE NFAL

\*\*\* DAILY FUEL DISPATCH - NIAGARA FALLS SCHEDULE RESULTS \*\*\*

----- RESULT SUMMARY -----

TIME PERIOD: HOUR 1 TO HOUR 168

| PLANT IDENTIFICATION                | LWSTON RMOSES |
|-------------------------------------|---------------|
| TOTAL PUMPING ENERGY MWH            | 16890.00      |
| TOTAL P.S. PLANT GENERATION MWH     | 11823.00      |
| TOTAL HYDRO PLANT GENERATION MWH    | 103169.00     |
| TOTAL AVAILABLE GEN. FOR HYDRO PLT  | 103167.94     |
| TOTAL GENERATION ENERGY MWH         | 114992.00     |
| EXCESS PUMPING ENERGY MWH           | 0.00          |
| EXCESS GENERATION ENERGY MWH        | 0.00          |
| STARTING UPPER RES. STORAGE KCFSH   | 800.00        |
| REQD FINAL UPPER RES. STORAGE KCFSH | 800.00        |
| ACTL FINAL UPPER RES. STORAGE KCFSH | 800.00        |
| TOTAL DISPLACED GENERATION WORTH \$ | 5675799.00    |
| TOTAL INFLOW KCFSH                  | 4485.56       |
| NET FLOW THRO. P.S. PLANT KCFSH     | -0.01         |
| TOTAL FLOW THRO. HYDRO PLANT KCFSH  | 4485.54       |
| TOTAL SPILL KCFSH                   | 0.00          |
| SPECIFIED P.S. PLANT CYCLE EFFY.    | 0.7000        |
| OVERALL P.S. CYCLY RATIO - GEN/PUMP | 0.7000        |

Table E-6

## OUTPUT FROM NIAGARA FALLS MODULE NFAL (continued)

\*\*\*\* DETAILED RESULTS FOR PLANT : LWSTON RMOSES \*\*\*\*

| HR | ORIGL<br>LOAD<br>MW | FINAL<br>LOAD<br>MW | POND<br>STORE<br>KCFSH | P.S.<br>GN/PP<br>MW | HYDRO<br>GEN.<br>MW | RESERVE(MW)<br>CONTRIBUTIONS |        |        | PLANT<br>INFLOW<br>KCFSH | P.S.<br>FLOW<br>KCFSH | HYDRO<br>FLOW<br>KCFSH | SPILL<br>KCFSH | NET<br>WORTH<br>\$ | INCR/DECR<br>PUMP<br>\$/MWH | COST<br>GEN.<br>\$/MWH |
|----|---------------------|---------------------|------------------------|---------------------|---------------------|------------------------------|--------|--------|--------------------------|-----------------------|------------------------|----------------|--------------------|-----------------------------|------------------------|
| -- | ----                | ----                | ----                   | ----                | ----                | RSVON                        | RVOF1  | RVOF2  | ----                     | ----                  | ----                   | ----           | ----               | ----                        | ----                   |
| 1  | 14107.              | 13493.              | 800.00                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 21024.4            | 33.10                       | 33.07                  |
| 2  | 15807.              | 13915.              | 757.40                 | 298.0               | 1594.0              | 265.0                        | 0.0    | 0.0    | 26.7                     | 42.6                  | 69.3                   | 0.0            | 173941.8           | 99.00                       | 34.94                  |
| 3  | 16522.              | 14699.              | 717.11                 | 282.0               | 1541.0              | 334.0                        | 0.0    | 0.0    | 26.7                     | 40.3                  | 67.0                   | 0.0            | 132669.1           | 99.00                       | 34.94                  |
| 4  | 16544.              | 14699.              | 676.08                 | 207.0               | 1558.0              | 312.0                        | 0.0    | 0.0    | 26.7                     | 41.0                  | 67.7                   | 0.0            | 134847.1           | 99.00                       | 34.94                  |
| 5  | 16592.              | 14699.              | 633.45                 | 298.0               | 1595.0              | 265.0                        | 0.0    | 0.0    | 26.7                     | 42.6                  | 69.3                   | 0.0            | 139599.0           | 99.00                       | 34.94                  |
| 6  | 16598.              | 14699.              | 590.61                 | 300.0               | 1599.0              | 257.0                        | 0.0    | 0.0    | 26.7                     | 42.8                  | 69.5                   | 0.0            | 140193.1           | 99.00                       | 34.94                  |
| 7  | 16541.              | 14698.              | 549.68                 | 287.0               | 1556.0              | 312.0                        | 0.0    | 0.0    | 26.7                     | 40.9                  | 67.6                   | 0.0            | 134550.0           | 99.00                       | 34.94                  |
| 8  | 16536.              | 14699.              | 500.92                 | 285.0               | 1552.0              | 321.0                        | 0.0    | 0.0    | 26.7                     | 40.8                  | 67.5                   | 0.0            | 134055.1           | 99.00                       | 34.94                  |
| 9  | 16594.              | 14699.              | 466.22                 | 299.0               | 1596.0              | 261.0                        | 0.0    | 0.0    | 26.7                     | 42.7                  | 69.4                   | 0.0            | 139796.9           | 99.00                       | 34.94                  |
| 10 | 16594.              | 14699.              | 423.53                 | 299.0               | 1596.0              | 261.0                        | 0.0    | 0.0    | 26.7                     | 42.7                  | 69.4                   | 0.0            | 139797.1           | 99.00                       | 34.94                  |
| 11 | 16563.              | 14551.              | 376.93                 | 326.0               | 1606.0              | 145.0                        | 0.0    | 0.0    | 26.7                     | 46.6                  | 73.3                   | 0.0            | 82199.4            | 41.89                       | 34.79                  |
| 12 | 15366.              | 14551.              | 370.24                 | 47.0                | 768.0               | 1341.0                       | 0.0    | 0.0    | 26.7                     | 6.7                   | 33.4                   | 0.0            | 32056.1            | 35.92                       | 34.79                  |
| 13 | 14101.              | 13487.              | 370.24                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 21001.7            | 33.10                       | 33.07                  |
| 14 | 14045.              | 13431.              | 370.24                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 20862.7            | 32.97                       | 32.78                  |
| 15 | 14156.              | 13542.              | 370.24                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 21128.6            | 33.23                       | 33.07                  |
| 16 | 13427.              | 13110.              | 379.23                 | -90.0               | 407.0               | 90.0                         | 0.0    | 1542.0 | 26.7                     | -9.0                  | 17.7                   | 0.0            | 10264.6            | 31.03                       | 31.60                  |
| 17 | 12107.              | 12285.              | 403.23                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -5489.7            | 31.00                       | 29.86                  |
| 18 | 10945.              | 11123.              | 427.23                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4920.6            | 28.25                       | 23.58                  |
| 19 | 10092.              | 10270.              | 451.23                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4151.8            | 23.64                       | 23.34                  |
| 20 | 10253.              | 10431.              | 475.23                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4276.4            | 25.45                       | 23.34                  |
| 21 | 10273.              | 10451.              | 499.23                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4316.8            | 25.51                       | 23.34                  |
| 22 | 10180.              | 10358.              | 523.23                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4171.9            | 24.92                       | 23.34                  |
| 23 | 10316.              | 10494.              | 547.23                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4403.1            | 25.64                       | 23.34                  |
| 24 | 10387.              | 10565.              | 571.23                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4512.3            | 25.99                       | 23.34                  |
| 25 | 12605.              | 12783.              | 595.23                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -5588.2            | 31.60                       | 30.59                  |
| 26 | 14484.              | 13870.              | 595.23                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 47798.0            | 35.30                       | 34.94                  |
| 27 | 15734.              | 13867.              | 553.46                 | 292.0               | 1575.0              | 291.0                        | 0.0    | 0.0    | 26.7                     | 41.8                  | 68.5                   | 0.0            | 77108.2            | 42.35                       | 34.52                  |
| 28 | 16316.              | 14550.              | 515.10                 | 269.0               | 1497.0              | 390.0                        | 0.0    | 0.0    | 26.7                     | 38.4                  | 65.1                   | 0.0            | 71852.4            | 41.89                       | 34.79                  |
| 29 | 16505.              | 14550.              | 470.44                 | 313.0               | 1642.0              | 201.0                        | 0.0    | 0.0    | 26.7                     | 44.7                  | 71.4                   | 0.0            | 79769.6            | 41.89                       | 34.79                  |
| 30 | 16499.              | 14551.              | 425.98                 | 311.0               | 1637.0              | 210.0                        | 0.0    | 0.0    | 26.7                     | 44.5                  | 71.2                   | 0.0            | 79510.5            | 41.89                       | 34.79                  |
| 31 | 16557.              | 14699.              | 384.51                 | 290.0               | 1568.0              | 300.0                        | 0.0    | 0.0    | 26.7                     | 41.5                  | 68.2                   | 0.0            | 136133.9           | 99.00                       | 34.94                  |
| 32 | 16606.              | 14698.              | 341.42                 | 302.0               | 1606.0              | 248.0                        | 0.0    | 0.0    | 26.7                     | 43.1                  | 69.8                   | 0.0            | 140984.9           | 99.00                       | 34.94                  |
| 33 | 16551.              | 14699.              | 300.15                 | 289.0               | 1563.0              | 304.0                        | 0.0    | 0.0    | 26.7                     | 41.3                  | 68.0                   | 0.0            | 135540.1           | 99.00                       | 34.94                  |
| 34 | 16550.              | 14680.              | 258.29                 | 293.0               | 1577.0              | 287.0                        | 0.0    | 0.0    | 26.7                     | 41.9                  | 68.6                   | 0.0            | 136106.0           | 99.00                       | 34.94                  |
| 35 | 16488.              | 14550.              | 214.19                 | 309.0               | 1629.0              | 218.0                        | 0.0    | 0.0    | 26.7                     | 44.1                  | 70.8                   | 0.0            | 70614.1            | 36.64                       | 34.79                  |
| 36 | 14990.              | 14376.              | 214.19                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 21783.3            | 34.49                       | 34.03                  |
| 37 | 14705.              | 14091.              | 214.19                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 21082.3            | 33.51                       | 33.45                  |
| 38 | 14651.              | 14037.              | 214.19                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 21939.1            | 34.67                       | 33.95                  |
| 39 | 13696.              | 13082.              | 214.19                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 20630.5            | 32.71                       | 32.07                  |
| 40 | 13126.              | 12908.              | 226.19                 | -120.0              | 338.0               | 120.0                        | 0.0    | 1542.0 | 26.7                     | -12.0                 | 14.7                   | 0.0            | 7133.4             | 32.52                       | 31.60                  |
| 41 | 11854.              | 12032.              | 250.19                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -5478.1            | 31.00                       | 29.86                  |
| 42 | 10778.              | 10956.              | 274.19                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4947.0            | 28.26                       | 24.18                  |
| 43 | 10057.              | 10235.              | 298.19                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4339.0            | 25.42                       | 24.18                  |
| 44 | 10188.              | 10366.              | 322.19                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4503.5            | 25.91                       | 24.18                  |
| 45 | 9988.               | 10166.              | 346.19                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4301.8            | 24.90                       | 24.18                  |
| 46 | 10179.              | 10357.              | 370.19                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4494.6            | 25.85                       | 24.18                  |
| 47 | 10071.              | 10249.              | 394.19                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4354.1            | 25.48                       | 24.18                  |
| 48 | 10100.              | 10286.              | 418.19                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4398.5            | 25.58                       | 24.18                  |

Table E-6

OUTPUT FROM NIAGARA FALLS MODULE NFAL (continued)

\*\*\*\* DETAILED RESULTS FOR PLANT : LWSTON RMOSES \*\*\*\*

| HR | ORIGL<br>LOAD<br>MW | FINAL<br>LOAD<br>MW | POND<br>STORE<br>KCFSH | P.S.<br>GN/PP<br>MW | HYDRO<br>GEN.<br>MW | RESERVE(MW)<br>CONTRIBUTIONS |        |        | PLANT<br>INFLOW<br>KCFSH | P.S.<br>FLOW<br>KCFSH | HYDRO<br>FLOW<br>KCFSH | SPILL<br>KCFSH | NET<br>WORTH<br>\$ | INCR/DECR<br>PUMP<br>\$/MWH | COST<br>GEN.<br>\$/MWH |
|----|---------------------|---------------------|------------------------|---------------------|---------------------|------------------------------|--------|--------|--------------------------|-----------------------|------------------------|----------------|--------------------|-----------------------------|------------------------|
|    |                     |                     |                        |                     |                     | RSVON                        | RVOF1  | RVOF2  |                          |                       |                        |                |                    |                             |                        |
| 49 | 11512.              | 11690.              | 442.19                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -5368.5            | 30.47                       | 28.68                  |
| 50 | 13611.              | 12997.              | 442.19                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 28876.8            | 32.79                       | 32.78                  |
| 51 | 14590.              | 13397.              | 409.56                 | 228.0               | 1365.0              | 565.0                        | 0.0    | 0.0    | 26.7                     | 32.6                  | 59.3                   | 0.0            | 152023.7           | 99.00                       | 34.94                  |
| 52 | 15197.              | 14583.              | 409.56                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 34345.9            | 35.23                       | 34.94                  |
| 53 | 15199.              | 14585.              | 409.56                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 34474.0            | 35.23                       | 34.94                  |
| 54 | 15195.              | 14581.              | 409.56                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 34217.8            | 35.22                       | 34.94                  |
| 55 | 15747.              | 14598.              | 391.76                 | 125.0               | 1024.0              | 1007.0                       | 0.0    | 0.0    | 26.7                     | 17.8                  | 44.5                   | 0.0            | 88232.8            | 99.00                       | 34.94                  |
| 56 | 15908.              | 14599.              | 368.60                 | 162.0               | 1147.0              | 848.0                        | 0.0    | 0.0    | 26.7                     | 23.2                  | 49.9                   | 0.0            | 104171.7           | 99.00                       | 34.94                  |
| 57 | 15983.              | 14598.              | 342.93                 | 180.0               | 1205.0              | 771.0                        | 0.0    | 0.0    | 26.7                     | 25.7                  | 52.4                   | 0.0            | 111596.9           | 99.00                       | 34.94                  |
| 58 | 15925.              | 14599.              | 319.21                 | 166.0               | 1160.0              | 831.0                        | 0.0    | 0.0    | 26.7                     | 23.7                  | 50.4                   | 0.0            | 105854.9           | 99.00                       | 34.94                  |
| 59 | 15390.              | 14599.              | 313.31                 | 41.0                | 750.0               | 1367.0                       | 0.0    | 0.0    | 26.7                     | 5.9                   | 32.6                   | 0.0            | 52890.2            | 41.32                       | 34.94                  |
| 60 | 14763.              | 13991.              | 308.05                 | 37.0                | 735.0               | 1384.0                       | 0.0    | 0.0    | 26.7                     | 5.3                   | 32.0                   | 0.0            | 28081.0            | 35.40                       | 34.78                  |
| 61 | 14209.              | 13595.              | 308.05                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 21032.0            | 33.22                       | 33.07                  |
| 62 | 14313.              | 13699.              | 303.05                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 21352.8            | 33.54                       | 33.45                  |
| 63 | 14358.              | 13744.              | 308.05                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 21510.7            | 33.63                       | 33.45                  |
| 64 | 13572.              | 13156.              | 314.05                 | -60.0               | 476.0               | 60.0                         | 0.0    | 1542.0 | 26.7                     | -6.0                  | 20.7                   | 0.0            | 13553.7            | 31.87                       | 31.60                  |
| 65 | 12356.              | 12534.              | 338.05                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -5525.9            | 31.25                       | 29.86                  |
| 66 | 11288.              | 11466.              | 362.05                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -5101.2            | 29.26                       | 26.82                  |
| 67 | 10528.              | 10706.              | 386.05                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4636.7            | 26.82                       | 25.74                  |
| 68 | 10041.              | 10219.              | 410.04                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -3939.1            | 23.08                       | 22.02                  |
| 69 | 9773.               | 9951.               | 434.04                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -3934.6            | 22.14                       | 21.16                  |
| 70 | 9588.               | 9766.               | 458.04                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -3917.7            | 22.09                       | 20.97                  |
| 71 | 9772.               | 9950.               | 482.04                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -3934.5            | 22.14                       | 21.16                  |
| 72 | 10700.              | 10878.              | 506.04                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4772.0            | 26.89                       | 25.11                  |
| 73 | 12791.              | 12969.              | 530.04                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -5621.3            | 31.60                       | 31.29                  |
| 74 | 14542.              | 13915.              | 529.61                 | 3.0                 | 624.0               | 1530.0                       | 0.0    | 0.0    | 26.7                     | 0.4                   | 27.1                   | 0.0            | 22528.1            | 35.31                       | 34.94                  |
| 75 | 15985.              | 13914.              | 481.08                 | 340.0               | 1731.0              | 85.0                         | 0.0    | 0.0    | 26.7                     | 48.5                  | 75.2                   | 0.0            | 74725.4            | 36.17                       | 34.94                  |
| 76 | 16661.              | 14551.              | 431.22                 | 349.0               | 1761.0              | 47.0                         | 0.0    | 0.0    | 26.7                     | 49.9                  | 76.6                   | 0.0            | 86304.9            | 41.89                       | 34.79                  |
| 77 | 16782.              | 14698.              | 382.26                 | 343.0               | 1741.0              | 72.0                         | 0.0    | 0.0    | 26.7                     | 49.0                  | 75.7                   | 0.0            | 158408.8           | 99.00                       | 34.94                  |
| 78 | 16785.              | 14628.              | 330.83                 | 360.0               | 1797.0              | 0.0                          | 0.0    | 0.0    | 26.7                     | 51.4                  | 78.1                   | 0.0            | 161185.4           | 99.00                       | 34.94                  |
| 79 | 16729.              | 14699.              | 283.64                 | 330.0               | 1700.0              | 128.0                        | 0.0    | 0.0    | 26.7                     | 47.2                  | 73.9                   | 0.0            | 153161.9           | 99.00                       | 34.94                  |
| 80 | 16733.              | 14682.              | 235.74                 | 335.0               | 1716.0              | 107.0                        | 0.0    | 0.0    | 26.7                     | 47.9                  | 74.6                   | 0.0            | 154151.9           | 99.00                       | 34.94                  |
| 81 | 16783.              | 14699.              | 186.75                 | 343.0               | 1741.0              | 72.0                         | 0.0    | 0.0    | 26.7                     | 49.0                  | 75.7                   | 0.0            | 158507.9           | 99.00                       | 34.94                  |
| 82 | 16780.              | 14699.              | 137.85                 | 342.0               | 1739.0              | 77.0                         | 0.0    | 0.0    | 26.7                     | 48.9                  | 75.6                   | 0.0            | 158210.9           | 99.00                       | 34.94                  |
| 83 | 16725.              | 14628.              | 88.42                  | 346.0               | 1751.0              | 60.0                         | 0.0    | 0.0    | 26.7                     | 49.4                  | 76.1                   | 0.0            | 155246.6           | 99.00                       | 34.79                  |
| 84 | 15931.              | 14699.              | 67.83                  | 144.0               | 1088.0              | 508.0                        | 0.0    | 0.0    | 26.7                     | 20.6                  | 47.3                   | 0.0            | 74160.3            | 36.50                       | 34.94                  |
| 85 | 15243.              | 14629.              | 67.83                  | 0.0                 | 614.0               | 0.0                          | 508.0  | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 22077.6            | 35.03                       | 34.94                  |
| 86 | 15240.              | 14626.              | 67.83                  | 0.0                 | 614.0               | 0.0                          | 508.0  | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 22072.7            | 35.02                       | 34.79                  |
| 87 | 15226.              | 14612.              | 67.83                  | 0.0                 | 614.0               | 0.0                          | 508.0  | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 22049.3            | 34.95                       | 34.79                  |
| 88 | 14438.              | 13824.              | 67.83                  | 0.0                 | 614.0               | 0.0                          | 508.0  | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 21693.4            | 34.00                       | 33.65                  |
| 89 | 13070.              | 13149.              | 88.83                  | -210.0              | 131.0               | 210.0                        | 0.0    | 666.0  | 26.7                     | -21.0                 | 5.7                    | 0.0            | -2499.0            | 31.85                       | 31.09                  |
| 90 | 11686.              | 11864.              | 112.83                 | -240.0              | 62.0                | 240.0                        | 0.0    | 846.0  | 26.7                     | -24.0                 | 2.7                    | 0.0            | -5346.6            | 30.32                       | 27.86                  |
| 91 | 10897.              | 11075.              | 136.83                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1026.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4895.7            | 28.09                       | 27.45                  |
| 92 | 10332.              | 10510.              | 160.83                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1206.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4414.4            | 25.66                       | 23.58                  |
| 93 | 10352.              | 10530.              | 184.83                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1386.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4454.0            | 25.69                       | 23.58                  |
| 94 | 10248.              | 10426.              | 208.82                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4266.7            | 25.38                       | 23.58                  |
| 95 | 10141.              | 10319.              | 232.82                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4195.7            | 24.18                       | 23.58                  |
| 96 | 11008.              | 11186.              | 256.82                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4968.0            | 28.25                       | 24.65                  |

Table E-6

## OUTPUT FROM NIAGARA FALLS MODULE NFAL

\*\*\*\* DETAILED RESULTS FOR PLANT : LVSTON RMOSES \*\*\*\*

| HR  | ORIGL<br>LOAD<br>MW | FINAL<br>LOAD<br>MW | POND<br>STORE<br>KCFSH | P.S.<br>GN/PP<br>MW | HYDRO<br>GEN.<br>MW | RESERVE(MW)<br>CONTRIBUTIONS |        |        | PLANT<br>INFLOW<br>KCFSH | P.S.<br>FLOW<br>KCFSH | HYDRO<br>FLOW<br>KCFSH | SPILL<br>KCFSH | NET<br>WORTH<br>\$ | INCR/DECR<br>PUMP<br>\$/MWH | COST<br>GEN.<br>\$/MWH |
|-----|---------------------|---------------------|------------------------|---------------------|---------------------|------------------------------|--------|--------|--------------------------|-----------------------|------------------------|----------------|--------------------|-----------------------------|------------------------|
|     |                     |                     |                        |                     |                     | RSVON                        | RVOF1  | RVOF2  |                          |                       |                        |                |                    |                             |                        |
| 97  | 13023.              | 13201.              | 280.82                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -5637.8            | 32.07                       | 31.38                  |
| 98  | 14860.              | 13915.              | 269.79                 | 77.0                | 868.0               | 1212.0                       | 0.0    | 0.0    | 26.7                     | 11.0                  | 37.7                   | 0.0            | 34387.1            | 36.64                       | 34.94                  |
| 99  | 15509.              | 13914.              | 237.13                 | 229.0               | 1366.0              | 561.0                        | 0.0    | 0.0    | 26.7                     | 32.7                  | 59.4                   | 0.0            | 58169.4            | 36.64                       | 34.94                  |
| 100 | 15890.              | 13914.              | 191.77                 | 318.0               | 1658.0              | 180.0                        | 0.0    | 0.0    | 26.7                     | 45.4                  | 72.1                   | 0.0            | 72131.0            | 36.64                       | 34.94                  |
| 101 | 16102.              | 14550.              | 160.54                 | 219.0               | 1333.0              | 604.0                        | 0.0    | 0.0    | 26.7                     | 31.2                  | 57.9                   | 0.0            | 62887.6            | 41.89                       | 34.79                  |
| 102 | 16082.              | 14551.              | 129.98                 | 214.0               | 1317.0              | 625.0                        | 0.0    | 0.0    | 26.7                     | 30.6                  | 57.3                   | 0.0            | 62049.9            | 41.89                       | 34.79                  |
| 103 | 16153.              | 14551.              | 97.05                  | 230.0               | 1372.0              | 557.0                        | 0.0    | 0.0    | 26.7                     | 32.9                  | 59.6                   | 0.0            | 65024.1            | 41.89                       | 34.79                  |
| 104 | 16109.              | 14551.              | 65.59                  | 220.0               | 1338.0              | 491.0                        | 0.0    | 0.0    | 26.7                     | 31.5                  | 58.2                   | 0.0            | 63180.9            | 41.89                       | 34.79                  |
| 105 | 16031.              | 14551.              | 36.73                  | 202.0               | 1278.0              | 275.0                        | 0.0    | 0.0    | 26.7                     | 28.9                  | 55.6                   | 0.0            | 59913.4            | 41.89                       | 34.79                  |
| 106 | 15890.              | 14551.              | 12.56                  | 169.0               | 1170.0              | 94.0                         | 0.0    | 0.0    | 26.7                     | 24.2                  | 50.9                   | 0.0            | 54006.8            | 41.89                       | 34.79                  |
| 107 | 15542.              | 14551.              | 0.00                   | 88.0                | 903.0               | 0.0                          | 0.0    | 0.0    | 26.7                     | 12.6                  | 39.3                   | 0.0            | 39420.7            | 41.89                       | 34.79                  |
| 108 | 14602.              | 13988.              | 0.00                   | 0.0                 | 614.0               | 0.0                          | 0.0    | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 21654.7            | 34.02                       | 33.65                  |
| 109 | 13953.              | 13339.              | 0.00                   | 0.0                 | 614.0               | 0.0                          | 0.0    | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 20627.1            | 32.78                       | 32.78                  |
| 110 | 13859.              | 13245.              | 0.00                   | 0.0                 | 614.0               | 0.0                          | 0.0    | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 20993.6            | 33.04                       | 32.78                  |
| 111 | 13764.              | 13150.              | 0.00                   | 0.0                 | 614.0               | 0.0                          | 0.0    | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 20757.0            | 32.78                       | 32.78                  |
| 112 | 12877.              | 12263.              | 0.00                   | 0.0                 | 614.0               | 0.0                          | 0.0    | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 23510.0            | 31.63                       | 31.60                  |
| 113 | 11794.              | 11180.              | 0.00                   | 0.0                 | 614.0               | 0.0                          | 0.0    | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 19261.4            | 31.01                       | 31.01                  |
| 114 | 10769.              | 10947.              | 24.00                  | -240.0              | 62.0                | 240.0                        | 0.0    | 179.0  | 26.7                     | -24.0                 | 2.7                    | 0.0            | -5348.7            | 30.58                       | 27.45                  |
| 115 | 9942.               | 10120.              | 48.00                  | -240.0              | 62.0                | 240.0                        | 0.0    | 359.0  | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4775.9            | 27.52                       | 26.82                  |
| 116 | 9386.               | 9564.               | 72.00                  | -240.0              | 62.0                | 240.0                        | 0.0    | 539.0  | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4076.5            | 24.72                       | 22.02                  |
| 117 | 9359.               | 9537.               | 96.00                  | -240.0              | 62.0                | 240.0                        | 0.0    | 719.0  | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4037.1            | 24.24                       | 22.02                  |
| 118 | 9450.               | 9628.               | 120.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 899.0  | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4215.2            | 25.43                       | 22.02                  |
| 119 | 9352.               | 9530.               | 144.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1079.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4027.7            | 24.12                       | 22.02                  |
| 120 | 9401.               | 9579.               | 168.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1259.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4103.1            | 24.95                       | 22.02                  |
| 121 | 9641.               | 9819.               | 192.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1439.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4558.8            | 26.80                       | 22.14                  |
| 122 | 10767.              | 10945.              | 216.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -5347.3            | 30.57                       | 29.08                  |
| 123 | 11786.              | 11172.              | 216.00                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 19432.2            | 31.05                       | 31.01                  |
| 124 | 12160.              | 11546.              | 216.00                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 29141.9            | 31.59                       | 31.38                  |
| 125 | 12545.              | 11901.              | 215.00                 | 7.0                 | 637.0               | 1512.0                       | 0.0    | 0.0    | 26.7                     | 1.0                   | 27.7                   | 0.0            | 30077.1            | 31.62                       | 31.59                  |
| 126 | 12517.              | 11903.              | 215.00                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 28179.5            | 31.60                       | 31.59                  |
| 127 | 12381.              | 11767.              | 215.00                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 23585.7            | 31.59                       | 31.59                  |
| 128 | 12240.              | 11626.              | 215.00                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 19743.4            | 31.34                       | 31.31                  |
| 129 | 12218.              | 11604.              | 215.00                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 19660.2            | 31.29                       | 31.10                  |
| 130 | 12250.              | 11636.              | 215.00                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 19779.6            | 31.34                       | 31.31                  |
| 131 | 12247.              | 11633.              | 215.00                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 19768.8            | 31.34                       | 31.31                  |
| 132 | 12179.              | 11565.              | 215.00                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 19532.4            | 31.19                       | 31.10                  |
| 133 | 12126.              | 11512.              | 215.00                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 19418.8            | 31.10                       | 31.00                  |
| 134 | 12241.              | 11627.              | 215.00                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 19747.0            | 31.34                       | 31.31                  |
| 135 | 12243.              | 11629.              | 215.00                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 19754.3            | 31.34                       | 31.31                  |
| 136 | 11724.              | 11110.              | 215.00                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 19298.1            | 31.01                       | 31.01                  |
| 137 | 11097.              | 10780.              | 224.00                 | -90.0               | 407.0               | 90.0                         | 0.0    | 1542.0 | 26.7                     | -9.0                  | 17.7                   | 0.0            | 9859.6             | 30.88                       | 28.88                  |
| 138 | 10320.              | 10498.              | 248.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -5115.2            | 29.47                       | 26.15                  |
| 139 | 9727.               | 9905.               | 272.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4774.5            | 27.56                       | 23.34                  |
| 140 | 9248.               | 9426.               | 296.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4214.1            | 25.53                       | 22.02                  |
| 141 | 8945.               | 9123.               | 320.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -3951.2            | 23.38                       | 22.02                  |
| 142 | 9004.               | 9182.               | 344.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4018.2            | 24.28                       | 22.02                  |
| 143 | 8864.               | 9042.               | 368.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -3939.1            | 22.45                       | 21.86                  |
| 144 | 8996.               | 9174.               | 392.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4000.6            | 24.12                       | 22.02                  |

Table E-6

OUTPUT FROM NIAGARA FALLS MODULE NFAL (continued)

## \*\*\*\* DETAILED RESULTS FOR PLANT : LWSTON RMOSES \*\*\*\*

| HR  | ORIGL<br>LOAD<br>MW | FINAL<br>LOAD<br>MW | POND<br>STORE<br>KCFSH | P.S.<br>GN/PP<br>MW | HYDRO<br>GEN.<br>MW | RESERVE(MW)<br>CONTRIBUTIONS |        |        | PLANT<br>INFLOW<br>KCFSH | P.S.<br>FLOW<br>KCFSH | HYDRO<br>FLOW<br>KCFSH | SPILL<br>KCFSH | NET<br>WORTH<br>\$ | INCR/DECR<br>PUMP<br>\$/MWH | COST<br>GEN.<br>\$/MWH |
|-----|---------------------|---------------------|------------------------|---------------------|---------------------|------------------------------|--------|--------|--------------------------|-----------------------|------------------------|----------------|--------------------|-----------------------------|------------------------|
|     |                     |                     |                        |                     |                     | RSVON                        | RVOF1  | RVOF2  |                          |                       |                        |                |                    |                             |                        |
| 145 | 8810.               | 8988.               | 416.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -3939.1            | 22.14                       | 21.86                  |
| 146 | 9540.               | 9718.               | 440.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4924.6            | 28.44                       | 22.14                  |
| 147 | 10278.              | 10456.              | 464.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -5326.3            | 30.94                       | 27.86                  |
| 148 | 10742.              | 10722.              | 482.00                 | -180.0              | 200.0               | 180.0                        | 0.0    | 1542.0 | 26.7                     | -18.0                 | 8.7                    | 0.0            | 616.2              | 30.66                       | 28.20                  |
| 149 | 11085.              | 10768.              | 491.00                 | -90.0               | 407.0               | 90.0                         | 0.0    | 1542.0 | 26.7                     | -9.0                  | 17.7                   | 0.0            | 9850.9             | 30.83                       | 28.88                  |
| 150 | 11193.              | 10777.              | 497.00                 | -60.0               | 476.0               | 60.0                         | 0.0    | 1542.0 | 26.7                     | -6.0                  | 20.7                   | 0.0            | 12975.9            | 30.87                       | 29.38                  |
| 151 | 11097.              | 10780.              | 506.00                 | -90.0               | 407.0               | 90.0                         | 0.0    | 1542.0 | 26.7                     | -9.0                  | 17.7                   | 0.0            | 9859.6             | 30.88                       | 28.88                  |
| 152 | 10898.              | 10779.              | 521.00                 | -150.0              | 269.0               | 150.0                        | 0.0    | 1542.0 | 26.7                     | -15.0                 | 11.7                   | 0.0            | 3680.1             | 30.87                       | 28.49                  |
| 153 | 10792.              | 10772.              | 539.00                 | -180.0              | 200.0               | 180.0                        | 0.0    | 1542.0 | 26.7                     | -18.0                 | 8.7                    | 0.0            | 616.2              | 30.85                       | 28.20                  |
| 154 | 10838.              | 10719.              | 554.00                 | -150.0              | 269.0               | 150.0                        | 0.0    | 1542.0 | 26.7                     | -15.0                 | 11.7                   | 0.0            | 3658.0             | 30.66                       | 28.26                  |
| 155 | 10900.              | 10781.              | 569.00                 | -150.0              | 269.0               | 150.0                        | 0.0    | 1542.0 | 26.7                     | -15.0                 | 11.7                   | 0.0            | 3680.8             | 30.88                       | 28.49                  |
| 156 | 10900.              | 10781.              | 584.00                 | -150.0              | 269.0               | 150.0                        | 0.0    | 1542.0 | 26.7                     | -15.0                 | 11.7                   | 0.0            | 3680.8             | 30.88                       | 28.49                  |
| 157 | 10796.              | 10776.              | 602.00                 | -180.0              | 200.0               | 180.0                        | 0.0    | 1542.0 | 26.7                     | -18.0                 | 8.7                    | 0.0            | 616.2              | 30.86                       | 28.20                  |
| 158 | 11193.              | 10777.              | 608.00                 | -60.0               | 476.0               | 60.0                         | 0.0    | 1542.0 | 26.7                     | -6.0                  | 20.7                   | 0.0            | 12975.9            | 30.87                       | 29.38                  |
| 159 | 11393.              | 10779.              | 608.00                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 21912.3            | 30.87                       | 30.66                  |
| 160 | 11354.              | 10740.              | 608.00                 | 0.0                 | 614.0               | 0.0                          | 1542.0 | 0.0    | 26.7                     | 0.0                   | 26.7                   | 0.0            | 20558.7            | 30.73                       | 30.66                  |
| 161 | 10498.              | 10676.              | 632.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -5242.0            | 30.49                       | 28.20                  |
| 162 | 9705.               | 9883.               | 656.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4772.0            | 27.35                       | 22.14                  |
| 163 | 9151.               | 9329.               | 680.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -3966.8            | 23.53                       | 22.02                  |
| 164 | 9362.               | 9540.               | 704.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4394.3            | 26.00                       | 22.02                  |
| 165 | 9219.               | 9397.               | 728.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4140.7            | 25.39                       | 22.63                  |
| 166 | 9170.               | 9348.               | 752.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4077.2            | 24.60                       | 22.63                  |
| 167 | 9217.               | 9395.               | 776.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4136.7            | 25.37                       | 22.63                  |
| 168 | 9862.               | 10040.              | 800.00                 | -240.0              | 62.0                | 240.0                        | 0.0    | 1542.0 | 26.7                     | -24.0                 | 2.7                    | 0.0            | -4956.2            | 28.49                       | 22.63                  |

Table E-7  
 OUTPUT FROM LIMITED FUEL MODULE LIMIT

\*\*\*\*\*RESULT SUMMARY\*\*\*\*\*

|                        |           |
|------------------------|-----------|
| PLANT I.D.             | FLIMIT    |
| MINIMUM FUEL (MBTU)    | 50000.00  |
| MAXIMUM FUEL (MBTU)    | 120000.00 |
| TOTAL FUEL USED (MBTU) | 119991.06 |
| TOTAL FUEL COST (\$)   | 174716.47 |
| TOTAL DISPL COST (\$)  | 438146.88 |
| TOTAL SAVINGS (\$)     | 263430.38 |
| TOTAL GENERATION (MWH) | 12591.00  |

UNIT STARTUP COST AND FUEL

| UNIT | COST   | MBTU   |
|------|--------|--------|
| ---  | ---    | ---    |
| 1    | 1164.8 | 800.0  |
| 2    | 1778.4 | 1221.4 |

Table E-7

OUTPUT FROM LIMITED FUEL MODULE LMTF (continued)

| ***** DETAILED HOURLY RESULTS ***** |       |       |       |               |             |       |        |       |                 |       |       |       |
|-------------------------------------|-------|-------|-------|---------------|-------------|-------|--------|-------|-----------------|-------|-------|-------|
| HOUR                                | ORIGL | FINAL | TOTAL | TOTAL         | RESERVE(MW) |       | TOTAL  | INCR. | INDIVIDUAL UNIT |       |       |       |
|                                     | LOAD  | LOAD  | GEN.  | CONTRIBUTIONS |             |       | FUEL   | COST  | GENERATION(MW)  |       |       |       |
|                                     | MW    | MW    | MW    | RSVON         | RVOF1       | RVOF2 | MBTU   | RATIO | UNIT1           | UNIT2 | UNIT3 | UNIT4 |
| 1                                   | 13578 | 13493 | 85    | 15            | 0           | 0     | 777.0  | 2.03  | 85              | 0     | 0     | 0     |
| 2                                   | 14100 | 13915 | 185   | 15            | 0           | 0     | 1739.0 | 2.09  | 100             | 85    | 0     | 0     |
| 3                                   | 14813 | 14628 | 185   | 15            | 0           | 0     | 1739.0 | 2.08  | 100             | 85    | 0     | 0     |
| 4                                   | 14813 | 14628 | 185   | 15            | 0           | 0     | 1739.0 | 2.08  | 100             | 85    | 0     | 0     |
| 5                                   | 14813 | 14628 | 185   | 15            | 0           | 0     | 1739.0 | 2.08  | 100             | 85    | 0     | 0     |
| 6                                   | 14813 | 14628 | 185   | 15            | 0           | 0     | 1739.0 | 2.08  | 100             | 85    | 0     | 0     |
| 7                                   | 14813 | 14628 | 185   | 15            | 0           | 0     | 1739.0 | 2.08  | 100             | 85    | 0     | 0     |
| 8                                   | 14813 | 14628 | 185   | 15            | 0           | 0     | 1739.0 | 2.08  | 100             | 85    | 0     | 0     |
| 9                                   | 14813 | 14628 | 185   | 15            | 0           | 0     | 1739.0 | 2.08  | 100             | 85    | 0     | 0     |
| 10                                  | 14813 | 14628 | 185   | 15            | 0           | 0     | 1739.0 | 2.08  | 100             | 85    | 0     | 0     |
| 11                                  | 14736 | 14551 | 185   | 15            | 0           | 0     | 1739.0 | 2.08  | 100             | 85    | 0     | 0     |
| 12                                  | 14736 | 14551 | 185   | 15            | 0           | 0     | 1739.0 | 2.08  | 100             | 85    | 0     | 0     |
| 13                                  | 13572 | 13487 | 85    | 15            | 0           | 0     | 777.0  | 2.03  | 85              | 0     | 0     | 0     |
| 14                                  | 13516 | 13431 | 85    | 15            | 0           | 0     | 777.0  | 2.01  | 85              | 0     | 0     | 0     |
| 15                                  | 13627 | 13542 | 85    | 15            | 0           | 0     | 777.0  | 2.03  | 85              | 0     | 0     | 0     |
| 16                                  | 13195 | 13110 | 85    | 15            | 0           | 0     | 777.0  | 1.95  | 85              | 0     | 0     | 0     |
| 17                                  | 12370 | 12285 | 85    | 15            | 0           | 0     | 777.0  | 1.90  | 85              | 0     | 0     | 0     |
| 18                                  | 11123 | 11123 | 0     | 0             | 0           | 0     | 0.0    | 1.93  | 0               | 0     | 0     | 0     |
| 19                                  | 10270 | 10270 | 0     | 0             | 0           | 0     | 0.0    | 1.60  | 0               | 0     | 0     | 0     |
| 20                                  | 10431 | 10431 | 0     | 0             | 0           | 0     | 0.0    | 1.72  | 0               | 0     | 0     | 0     |
| 21                                  | 10451 | 10451 | 0     | 0             | 0           | 0     | 0.0    | 1.74  | 0               | 0     | 0     | 0     |
| 22                                  | 10358 | 10358 | 0     | 0             | 0           | 0     | 0.0    | 1.64  | 0               | 0     | 0     | 0     |
| 23                                  | 10494 | 10494 | 0     | 0             | 0           | 0     | 0.0    | 1.75  | 0               | 0     | 0     | 0     |
| 24                                  | 10565 | 10565 | 0     | 0             | 0           | 0     | 0.0    | 1.76  | 0               | 0     | 0     | 0     |
| 25                                  | 12868 | 12783 | 85    | 15            | 0           | 0     | 777.0  | 1.94  | 85              | 0     | 0     | 0     |
| 26                                  | 13955 | 13770 | 185   | 15            | 0           | 0     | 1739.0 | 2.02  | 100             | 85    | 0     | 0     |
| 27                                  | 14052 | 13867 | 185   | 15            | 0           | 0     | 1739.0 | 2.06  | 100             | 85    | 0     | 0     |
| 28                                  | 14735 | 14550 | 185   | 15            | 0           | 0     | 1739.0 | 2.08  | 100             | 85    | 0     | 0     |
| 29                                  | 14735 | 14550 | 185   | 15            | 0           | 0     | 1739.0 | 2.08  | 100             | 85    | 0     | 0     |
| 30                                  | 14736 | 14551 | 185   | 15            | 0           | 0     | 1739.0 | 2.08  | 100             | 85    | 0     | 0     |
| 31                                  | 14813 | 14628 | 185   | 15            | 0           | 0     | 1739.0 | 2.08  | 100             | 85    | 0     | 0     |
| 32                                  | 14883 | 14698 | 185   | 15            | 0           | 0     | 1739.0 | 2.09  | 100             | 85    | 0     | 0     |
| 33                                  | 14813 | 14628 | 185   | 15            | 0           | 0     | 1739.0 | 2.08  | 100             | 85    | 0     | 0     |
| 34                                  | 14813 | 14628 | 185   | 15            | 0           | 0     | 1739.0 | 2.08  | 100             | 85    | 0     | 0     |
| 35                                  | 14735 | 14550 | 185   | 15            | 0           | 0     | 1739.0 | 2.08  | 100             | 85    | 0     | 0     |
| 36                                  | 14461 | 14376 | 85    | 15            | 0           | 0     | 777.0  | 2.09  | 85              | 0     | 0     | 0     |
| 37                                  | 14176 | 14091 | 85    | 15            | 0           | 0     | 777.0  | 2.05  | 85              | 0     | 0     | 0     |
| 38                                  | 14122 | 14037 | 85    | 15            | 0           | 0     | 777.0  | 2.08  | 85              | 0     | 0     | 0     |
| 39                                  | 13167 | 13082 | 85    | 15            | 0           | 0     | 777.0  | 1.97  | 85              | 0     | 0     | 0     |
| 40                                  | 12993 | 12908 | 85    | 15            | 0           | 0     | 777.0  | 1.95  | 85              | 0     | 0     | 0     |
| 41                                  | 12117 | 12053 | 64    | 30            | 0           | 6     | 576.0  | 2.37  | 64              | 0     | 0     | 0     |
| 42                                  | 10956 | 10956 | 0     | 0             | 0           | 0     | 0.0    | 1.94  | 0               | 0     | 0     | 0     |
| 43                                  | 10235 | 10235 | 0     | 0             | 0           | 0     | 0.0    | 1.72  | 0               | 0     | 0     | 0     |
| 44                                  | 10076 | 10076 | 0     | 0             | 0           | 0     | 0.0    | 1.60  | 0               | 0     | 0     | 0     |
| 45                                  | 10166 | 10166 | 0     | 0             | 0           | 0     | 0.0    | 1.64  | 0               | 0     | 0     | 0     |
| 46                                  | 10067 | 10067 | 0     | 0             | 0           | 0     | 0.0    | 1.58  | 0               | 0     | 0     | 0     |
| 47                                  | 10249 | 10249 | 0     | 0             | 0           | 0     | 0.0    | 1.73  | 0               | 0     | 0     | 0     |
| 48                                  | 9996  | 9996  | 0     | 0             | 0           | 0     | 0.0    | 1.52  | 0               | 0     | 0     | 0     |

Table E-7

## OUTPUT FROM LIMITED FUEL MODULE LMIF

## \*\*\*\*\* DETAILED HOURLY RESULTS \*\*\*\*\*

| HOUR | ORIGL<br>LOAD<br>MW | FINAL<br>LOAD<br>MW | TOTAL<br>GEN.<br>MW | TOTAL RESERVE(MW)<br>CONTRIBUTIONS |       |       | TOTAL<br>FUEL<br>MBTU | INCR.<br>COST<br>RATIO | INDIVIDUAL UNIT<br>GENERATION(MW) |       |       |       |
|------|---------------------|---------------------|---------------------|------------------------------------|-------|-------|-----------------------|------------------------|-----------------------------------|-------|-------|-------|
|      |                     |                     |                     | RSVON                              | RVOF1 | RVOF2 |                       |                        | UNIT1                             | UNIT2 | UNIT3 | UNIT4 |
| 49   | 11775               | 11775               | 0                   | 0                                  | 0     | 0     | 0.0                   | 2.10                   | 0                                 | 0     |       |       |
| 50   | 13082               | 12997               | 85                  | 15                                 | 0     | 0     | 777.0                 | 2.01                   | 85                                | 0     |       |       |
| 51   | 13482               | 13297               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.00                   | 100                               | 85    |       |       |
| 52   | 14768               | 14583               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.09                   | 100                               | 85    |       |       |
| 53   | 14770               | 14585               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.09                   | 100                               | 85    |       |       |
| 54   | 14784               | 14599               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.09                   | 100                               | 85    |       |       |
| 55   | 14784               | 14599               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.09                   | 100                               | 85    |       |       |
| 56   | 14784               | 14599               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.09                   | 100                               | 85    |       |       |
| 57   | 14784               | 14599               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.09                   | 100                               | 85    |       |       |
| 58   | 14784               | 14599               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.09                   | 100                               | 85    |       |       |
| 59   | 14774               | 14509               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.09                   | 100                               | 85    |       |       |
| 60   | 14176               | 13991               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.08                   | 100                               | 85    |       |       |
| 61   | 13680               | 13595               | 85                  | 15                                 | 0     | 0     | 777.0                 | 2.03                   | 85                                | 0     |       |       |
| 62   | 13784               | 13699               | 85                  | 15                                 | 0     | 0     | 777.0                 | 2.05                   | 85                                | 0     |       |       |
| 63   | 13829               | 13744               | 85                  | 15                                 | 0     | 0     | 777.0                 | 2.05                   | 85                                | 0     |       |       |
| 64   | 13241               | 13156               | 85                  | 15                                 | 0     | 0     | 777.0                 | 1.95                   | 85                                | 0     |       |       |
| 65   | 12619               | 12534               | 85                  | 15                                 | 0     | 0     | 777.0                 | 1.91                   | 85                                | 0     |       |       |
| 66   | 11466               | 11466               | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.99                   | 0                                 | 0     |       |       |
| 67   | 10706               | 10706               | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.84                   | 0                                 | 0     |       |       |
| 68   | 10509               | 10509               | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.75                   | 0                                 | 0     |       |       |
| 69   | 10531               | 10531               | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.76                   | 0                                 | 0     |       |       |
| 70   | 10346               | 10346               | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.62                   | 0                                 | 0     |       |       |
| 71   | 10530               | 10530               | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.76                   | 0                                 | 0     |       |       |
| 72   | 10878               | 10878               | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.84                   | 0                                 | 0     |       |       |
| 73   | 13054               | 12969               | 85                  | 15                                 | 0     | 0     | 777.0                 | 1.94                   | 85                                | 0     |       |       |
| 74   | 14100               | 13915               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.09                   | 100                               | 85    |       |       |
| 75   | 14099               | 13914               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.09                   | 100                               | 85    |       |       |
| 76   | 14736               | 14551               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.08                   | 100                               | 85    |       |       |
| 77   | 14883               | 14698               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.09                   | 100                               | 85    |       |       |
| 78   | 14813               | 14628               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.08                   | 100                               | 85    |       |       |
| 79   | 14813               | 14628               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.08                   | 100                               | 85    |       |       |
| 80   | 14813               | 14628               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.08                   | 100                               | 85    |       |       |
| 81   | 14813               | 14628               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.08                   | 100                               | 85    |       |       |
| 82   | 14813               | 14628               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.08                   | 100                               | 85    |       |       |
| 83   | 14813               | 14628               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.08                   | 100                               | 85    |       |       |
| 84   | 14884               | 14699               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.09                   | 100                               | 85    |       |       |
| 85   | 14814               | 14629               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.09                   | 100                               | 85    |       |       |
| 86   | 14811               | 14626               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.08                   | 100                               | 85    |       |       |
| 87   | 14797               | 14612               | 185                 | 15                                 | 0     | 0     | 1739.0                | 2.08                   | 100                               | 85    |       |       |
| 88   | 13909               | 13824               | 85                  | 15                                 | 0     | 0     | 777.0                 | 2.06                   | 85                                | 0     |       |       |
| 89   | 13234               | 13149               | 85                  | 15                                 | 0     | 0     | 777.0                 | 1.95                   | 85                                | 0     |       |       |
| 90   | 11864               | 11864               | 0                   | 0                                  | 0     | 0     | 0.0                   | 2.03                   | 0                                 | 0     |       |       |
| 91   | 11075               | 11075               | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.91                   | 0                                 | 0     |       |       |
| 92   | 10510               | 10510               | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.74                   | 0                                 | 0     |       |       |
| 93   | 10240               | 10240               | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.55                   | 0                                 | 0     |       |       |
| 94   | 10426               | 10426               | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.71                   | 0                                 | 0     |       |       |
| 95   | 10319               | 10319               | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.60                   | 0                                 | 0     |       |       |
| 96   | 11186               | 11186               | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.94                   | 0                                 | 0     |       |       |

Table E-7

OUTPUT FROM LIMITED FUEL MODULE LMTF (continued)

## \*\*\*\*\* DETAILED HOURLY RESULTS \*\*\*\*\*

| HOURL | ORIGL<br>LOAD<br>MW | FINAL<br>LOAD<br>MW | TOTAL<br>GEN.<br>MW | TOTAL<br>CONTRIBUTIONS<br>RSVON RVOF1 RVOF2 | TOTAL<br>FUEL<br>MBTU | INCR.<br>COST<br>RATIO | INDIVIDUAL UNIT<br>GENERATION(MW) |       |       |       |
|-------|---------------------|---------------------|---------------------|---------------------------------------------|-----------------------|------------------------|-----------------------------------|-------|-------|-------|
|       |                     |                     |                     |                                             |                       |                        | UNIT1                             | UNIT2 | UNIT3 | UNIT4 |
| 97    | 13286               | 13281               | 85                  | 15 0 0                                      | 777.0                 | 1.95                   | 85                                | 0     |       |       |
| 98    | 14100               | 13915               | 185                 | 15 0 0                                      | 1739.0                | 2.09                   | 100                               | 85    |       |       |
| 99    | 14100               | 13915               | 185                 | 15 0 0                                      | 1739.0                | 2.09                   | 100                               | 85    |       |       |
| 100   | 14100               | 13915               | 185                 | 15 0 0                                      | 1739.0                | 2.09                   | 100                               | 85    |       |       |
| 101   | 14736               | 14551               | 185                 | 15 0 0                                      | 1739.0                | 2.08                   | 100                               | 85    |       |       |
| 102   | 14736               | 14551               | 185                 | 15 0 0                                      | 1739.0                | 2.08                   | 100                               | 85    |       |       |
| 103   | 14736               | 14551               | 185                 | 15 0 0                                      | 1739.0                | 2.08                   | 100                               | 85    |       |       |
| 104   | 14736               | 14551               | 185                 | 15 0 0                                      | 1739.0                | 2.08                   | 100                               | 85    |       |       |
| 105   | 14736               | 14551               | 185                 | 15 0 0                                      | 1739.0                | 2.08                   | 100                               | 85    |       |       |
| 106   | 14736               | 14551               | 185                 | 15 0 0                                      | 1739.0                | 2.08                   | 100                               | 85    |       |       |
| 107   | 14736               | 14551               | 185                 | 15 0 0                                      | 1739.0                | 2.08                   | 100                               | 85    |       |       |
| 108   | 14173               | 14088               | 85                  | 15 0 0                                      | 777.0                 | 2.12                   | 85                                | 0     |       |       |
| 109   | 13424               | 13339               | 85                  | 15 0 0                                      | 777.0                 | 2.01                   | 85                                | 0     |       |       |
| 110   | 13330               | 13245               | 85                  | 15 0 0                                      | 777.0                 | 2.01                   | 85                                | 0     |       |       |
| 111   | 13235               | 13150               | 85                  | 15 0 0                                      | 777.0                 | 2.01                   | 85                                | 0     |       |       |
| 112   | 12348               | 12263               | 85                  | 15 0 0                                      | 777.0                 | 1.94                   | 85                                | 0     |       |       |
| 113   | 11265               | 11180               | 85                  | 0 0 0                                       | 777.0                 | 1.90                   | 85                                | 0     |       |       |
| 114   | 10947               | 10947               | 0                   | 0 0 0                                       | 0.0                   | 2.08                   | 0                                 | 0     |       |       |
| 115   | 10120               | 10120               | 0                   | 0 0 0                                       | 0.0                   | 1.85                   | 0                                 | 0     |       |       |
| 116   | 9564                | 9564                | 0                   | 0 0 0                                       | 0.0                   | 1.62                   | 0                                 | 0     |       |       |
| 117   | 9537                | 9537                | 0                   | 0 0 0                                       | 0.0                   | 1.61                   | 0                                 | 0     |       |       |
| 118   | 9628                | 9628                | 0                   | 0 0 0                                       | 0.0                   | 1.70                   | 0                                 | 0     |       |       |
| 119   | 9530                | 9530                | 0                   | 0 0 0                                       | 0.0                   | 1.60                   | 0                                 | 0     |       |       |
| 120   | 9579                | 9579                | 0                   | 0 0 0                                       | 0.0                   | 1.63                   | 0                                 | 0     |       |       |
| 121   | 9819                | 9819                | 0                   | 0 0 0                                       | 0.0                   | 1.79                   | 0                                 | 0     |       |       |
| 122   | 10945               | 10945               | 0                   | 0 0 0                                       | 0.0                   | 2.08                   | 0                                 | 0     |       |       |
| 123   | 11172               | 11172               | 0                   | 0 0 0                                       | 0.0                   | 2.13                   | 0                                 | 0     |       |       |
| 124   | 11546               | 11546               | 0                   | 0 0 0                                       | -0.0                  | 2.16                   | 0                                 | 0     |       |       |
| 125   | 11901               | 11901               | 0                   | 0 0 0                                       | 0.0                   | 2.17                   | 0                                 | 0     |       |       |
| 126   | 11903               | 11903               | 0                   | 0 0 0                                       | 0.0                   | 2.17                   | 0                                 | 0     |       |       |
| 127   | 11767               | 11767               | 0                   | 0 0 0                                       | -0.0                  | 2.16                   | 0                                 | 0     |       |       |
| 128   | 11626               | 11626               | 0                   | 0 0 0                                       | 0.0                   | 2.14                   | 0                                 | 0     |       |       |
| 129   | 11604               | 11604               | 0                   | 0 0 0                                       | 0.0                   | 2.14                   | 0                                 | 0     |       |       |
| 130   | 11636               | 11636               | 0                   | 0 0 0                                       | 0.0                   | 2.15                   | 0                                 | 0     |       |       |
| 131   | 11633               | 11633               | 0                   | 0 0 0                                       | 0.0                   | 2.14                   | 0                                 | 0     |       |       |
| 132   | 11565               | 11565               | 0                   | 0 0 0                                       | 0.0                   | 2.14                   | 0                                 | 0     |       |       |
| 133   | 11512               | 11512               | 0                   | 0 0 0                                       | 0.0                   | 2.13                   | 0                                 | 0     |       |       |
| 134   | 11627               | 11627               | 0                   | 0 0 0                                       | 0.0                   | 2.14                   | 0                                 | 0     |       |       |
| 135   | 11629               | 11629               | 0                   | 0 0 0                                       | 0.0                   | 2.14                   | 0                                 | 0     |       |       |
| 136   | 11110               | 11110               | 0                   | 0 0 0                                       | 0.0                   | 2.13                   | 0                                 | 0     |       |       |
| 137   | 10780               | 10780               | 0                   | 0 0 0                                       | 0.0                   | 2.11                   | 0                                 | 0     |       |       |
| 138   | 10498               | 10498               | 0                   | 0 0 0                                       | 0.0                   | 2.01                   | 0                                 | 0     |       |       |
| 139   | 9905                | 9905                | 0                   | 0 0 0                                       | 0.0                   | 1.85                   | 0                                 | 0     |       |       |
| 140   | 9426                | 9426                | 0                   | 0 0 0                                       | 0.0                   | 1.73                   | 0                                 | 0     |       |       |
| 141   | 9123                | 9123                | 0                   | 0 0 0                                       | 0.0                   | 1.55                   | 0                                 | 0     |       |       |
| 142   | 9182                | 9182                | 0                   | 0 0 0                                       | 0.0                   | 1.60                   | 0                                 | 0     |       |       |
| 143   | 9332                | 9332                | 0                   | 0 0 0                                       | 0.0                   | 1.75                   | 0                                 | 0     |       |       |
| 144   | 9174                | 9174                | 0                   | 0 0 0                                       | 0.0                   | 1.60                   | 0                                 | 0     |       |       |

Table E-7

OUTPUT FROM LIMITED FUEL MODULE LMIF

## \*\*\*\*\* DETAILED HOURLY RESULTS \*\*\*\*\*

| HOUR | ORIGL<br>LOAD<br>MW | FINAL<br>LOAD<br>MW | TOTAL<br>GEN.<br>MW | TOTAL RESERVE(MW)<br>CONTRIBUTIONS |       |       | TOTAL<br>FUEL<br>MBTU | INCR.<br>COST<br>RATIO | INDIVIDUAL UNIT<br>GENERATION(MW) |       |       |       |
|------|---------------------|---------------------|---------------------|------------------------------------|-------|-------|-----------------------|------------------------|-----------------------------------|-------|-------|-------|
|      |                     |                     |                     | RSVON                              | RVOF1 | RVOF2 |                       |                        | UNIT1                             | UNIT2 | UNIT3 | UNIT4 |
| 145  | 9278                | 9278                | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.74                   | 0                                 | 0     |       |       |
| 146  | 9718                | 9718                | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.94                   | 0                                 | 0     |       |       |
| 147  | 10456               | 10456               | 0                   | 0                                  | 0     | 0     | 0.0                   | 2.11                   | 0                                 | 0     |       |       |
| 148  | 10722               | 10722               | 0                   | 0                                  | 0     | 0     | 0.0                   | 2.08                   | 0                                 | 0     |       |       |
| 149  | 10768               | 10768               | 0                   | 0                                  | 0     | 0     | 0.0                   | 2.11                   | 0                                 | 0     |       |       |
| 150  | 10777               | 10777               | 0                   | 0                                  | 0     | 0     | 0.0                   | 2.11                   | 0                                 | 0     |       |       |
| 151  | 10780               | 10780               | 0                   | 0                                  | 0     | 0     | 0.0                   | 2.11                   | 0                                 | 0     |       |       |
| 152  | 10779               | 10779               | 0                   | 0                                  | 0     | 0     | 0.0                   | 2.11                   | 0                                 | 0     |       |       |
| 153  | 10772               | 10772               | 0                   | 0                                  | 0     | 0     | 0.0                   | 2.11                   | 0                                 | 0     |       |       |
| 154  | 10719               | 10719               | 0                   | 0                                  | 0     | 0     | 0.0                   | 2.08                   | 0                                 | 0     |       |       |
| 155  | 10781               | 10781               | 0                   | 0                                  | 0     | 0     | 0.0                   | 2.11                   | 0                                 | 0     |       |       |
| 156  | 10781               | 10781               | 0                   | 0                                  | 0     | 0     | 0.0                   | 2.11                   | 0                                 | 0     |       |       |
| 157  | 10776               | 10776               | 0                   | 0                                  | 0     | 0     | 0.0                   | 2.11                   | 0                                 | 0     |       |       |
| 158  | 10777               | 10777               | 0                   | 0                                  | 0     | 0     | 0.0                   | 2.11                   | 0                                 | 0     |       |       |
| 159  | 10779               | 10779               | 0                   | 0                                  | 0     | 0     | 0.0                   | 2.11                   | 0                                 | 0     |       |       |
| 160  | 10740               | 10740               | 0                   | 0                                  | 0     | 0     | 0.0                   | 2.10                   | 0                                 | 0     |       |       |
| 161  | 10676               | 10676               | 0                   | 0                                  | 0     | 0     | 0.0                   | 2.07                   | 0                                 | 0     |       |       |
| 162  | 9883                | 9883                | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.84                   | 0                                 | 0     |       |       |
| 163  | 9329                | 9329                | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.58                   | 0                                 | 0     |       |       |
| 164  | 9540                | 9540                | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.76                   | 0                                 | 0     |       |       |
| 165  | 9397                | 9397                | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.67                   | 0                                 | 0     |       |       |
| 166  | 9348                | 9348                | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.61                   | 0                                 | 0     |       |       |
| 167  | 9395                | 9395                | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.66                   | 0                                 | 0     |       |       |
| 168  | 10040               | 10040               | 0                   | 0                                  | 0     | 0     | 0.0                   | 1.95                   | 0                                 | 0     |       |       |