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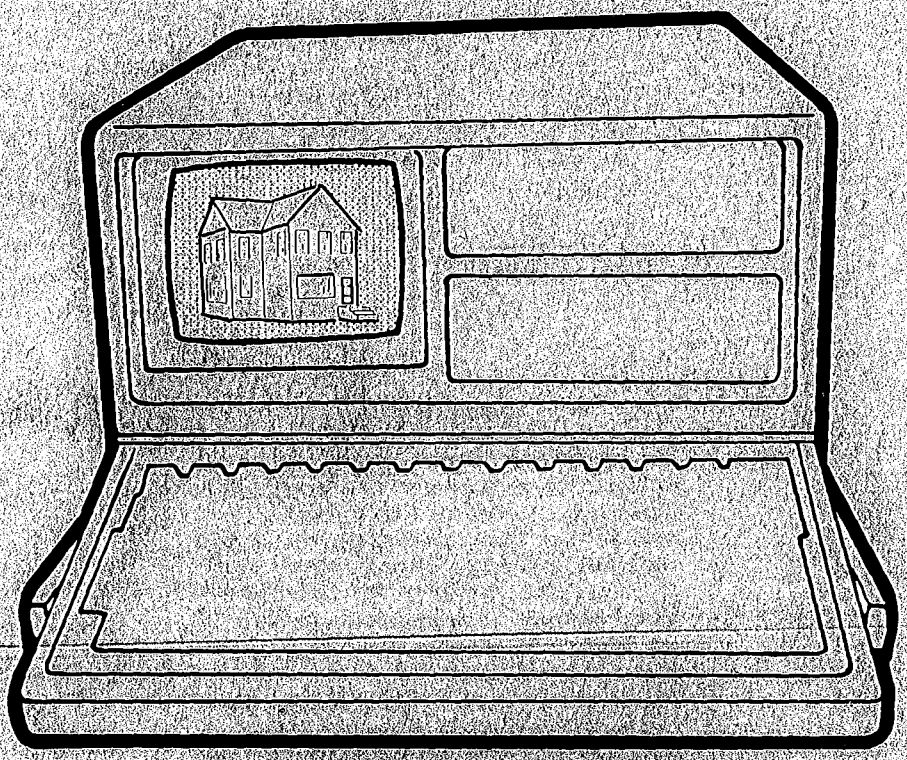
Lawrence Berkeley Laboratory
UNIVERSITY OF CALIFORNIA
BERKELEY, CALIFORNIA 94720

ENERGY & ENVIRONMENT DIVISION



COMPUTERIZED INSTRUMENTED RESIDENTIAL AUDIT

CIRA™

MARCH 1982

Prepared for the U.S. Department of Energy under Contract DE-AC03-76SF00098

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Revised

COMPUTERIZED INSTRUMENTED RESIDENTIAL AUDIT

C I R A™

R.C. Sonderegger, J.-Y. Garnier, and J.D. Dixon
Energy Performance of Buildings Group
Energy and Environment Division
Lawrence Berkeley Laboratory
University of California
Berkeley, CA 94720

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OVERVIEW

What do a government official, an architect, an energy auditor, an engineer and a contractor have in common? Sooner or later, they all need to know projected energy use in a given house and sometimes they may need to maximize energy savings in an existing house within the constraints of a given budget.

Several paper-and-pencil procedures exist to do both of these tasks. Unfortunately, they always boil down to lengthy sheets of calculations. You've heard of computer programs developed to ease this task: you like their speed -- it's the inputs you could do without. Describing a building to a computer may require strict adherence to a particular format or the knowledge of a special language. Furthermore, you may lack access to a computer system that runs your favorite building energy analysis program.

Two recent trends appear particularly promising as a way out of the burden of calculating energy use in buildings: the introduction of microcomputers and the development of user-friendly programs. Microcomputers are cheap enough to be affordable by the smallest business, and many different brands are capable of running the same wide selection of programs. User-friendly programs don't expect you to tell them about your building in some rigid format or language; they ask questions in plain English and suggest possible answers -- you just point to the answer you like best.

Computerized, Instrumented, Residential Audit (CIRA)* is a user-friendly program developed for microcomputers. More precisely, CIRA is a collection of programs related to building energy analysis and designed for a wide variety of microcomputers. It couples the state-of-the-art in interactive features with the latest developments in simplified computer models of building energy analysis. For the novice, CIRA will provide exhaustive explanations of everything it needs, while for the experienced user the questions and responses are more terse.

Below you will find descriptions of how CIRA takes the headaches out of describing the house characteristics needed for energy analysis. For those interested in the more technical aspects of CIRA -- how it figures out heating and cooling energy consumptions or how it determines optimal energy-saving strategies -- we have included a section "Energy Calculations."

* The CIRA program is available from Lawrence Berkeley Laboratory. There is an order form at the back of this pamphlet.

Data entry

In developing CIRA, much effort was devoted to facilitating the tedious process of entering the appropriate building data. Prominent among the features that distinguish CIRA from other computer programs are:

Friendliness:

The user does not have to learn a language and does not have to remember any commands. CIRA does the work by asking about wall areas and types, heating system specifications, passive solar features, etc.; the user simply answers the questions displayed on a screen.

Helpfulness:

If the CIRA novice does not understand some of the questions, such as

"Terrain Class.....?",

he or she can call for help with a simple keystroke, to which the computer responds with a more detailed explanation of the question, together with examples when appropriate.

Multiple choice:

If the user understands the question, such as "Window Glazing.....?", but does not remember the possible answers, another keystroke displays a list of options in multiple choice style, in this case

S=Single Pane
D=Double Pane
T=Triple Pane

In fact, this list will appear automatically whenever more than two wrong answers are given.

Dynamic defaults:

Frequently, the user may not know the answer to technical questions, such as the R-value of a wall or the solar-gain factor of a window. What is, for example, the R-value of a 2' x 6' frame wall whose 5.5 inch cavity is insulated with 4 inches of Vermiculite and one inch of exterior insulating sheathing? CIRA provides the answer, in this case R-16.8, at the touch of another special key. We call the values provided by this keystroke dynamic defaults. Defaults, because they provide the most likely answer when the user hasn't a clue, and dynamic, because they usually depend on the user's answers to one or more previous questions. Beyond the lay user, the professional can use dynamic defaults to avoid leafing through voluminous handbooks in search of the heat-loss factor for a basement, for example.

Goof-proofing:

Often, the user may want to alter previous input, or correct mistakes, or re-use a house entered earlier, changing only details such as floor area, the city where it is located, and the window size. As soon as another simple keystroke is hit, the computer enters an editing mode, and displays the desired questions and the answers previously given on the screen, along with a request for the new answers. The computer even keeps track of things you may have forgotten in the process: if you change the city from Denver to San Francisco, for example, it will remind you that, as you leave the mile-high city, you may also want to change the altitude.

The computer accepts entries on a wide variety of house components and related features:

- Walls, windows, doors
- Roof and subfloor
- Active and passive solar features
- Heating and cooling system
- Information on how the house is oriented and shielded
- Occupant behavior related to energy use
- Prices for the various fuels used.

Some of these entries may require the use of specialized instrumentation, such as 1) a tape measure to obtain the relevant dimensions of the house, 2) a solar siting meter to measure the degree of obstruction to solar radiation by trees and adjacent buildings, 3) a combustion efficiency meter to measure furnace efficiency, 4) a blower door to pressurize the house, and 5) a few smoke sticks to find where the air leaks are. Incidentally, most of these instruments can be found in the kit of a "house doctor," who searches a house for hard-to-spot energy leaks and fixes the most conspicuous of them during his or her visit. CIRA was designed with the house doctor-approach in mind. The measurements performed by the house doctor feed directly into CIRA which translates them into practical retrofit recommendations. Thanks to dynamic defaults, however, these measurements and the attendant instruments are not indispensable -- CIRA can function as a "stand-alone" diagnostic program. After all questions about the house have been properly answered, the computer will automatically figure monthly and yearly heating and cooling energy consumptions or, on request, recommend several combinations of energy-saving measures suitable for low, medium and high budgets. Every

combination (e.g., storm windows, elimination of air leaks, basement insulation) is chosen to produce the highest energy savings for a given budget. Of course, interest and inflation rates, maintenance costs of the installed measures, and projected period of occupancy are taken into account.

Energy calculations

To calculate the energy consumed for any given house, CIRA uses heating and cooling algorithms developed at Lawrence Berkeley Laboratory, Princeton University, National Bureau of Standards, Los Alamos National Laboratory and the University of Wisconsin. A brief summary follows below.

For each month, an energy balance is calculated separately for day and night. First, a heat-transmission coefficient is calculated, to determine how much heat the house loses per month and per degree of temperature difference between indoors and outdoors. To this coefficient is added the effect of infiltration, computed on a monthly basis using a method developed at Lawrence Berkeley Laboratory. This method uses information on the leakage area of the house, the type of terrain on which it is located, and the type of shielding surrounding the house, all of which is part of the information requested by CIRA. For terrain and shielding classes, CIRA will display descriptive tables on request. Leakage area is generally measured with a so-called "blower door", a fan-like device that creates an over- or under-pressure in the house and measures the amount of air flow through the fan necessary to reach several special levels of pressure. Alternatively, the leakage area can be estimated from information on the air tightness of windows, walls, doors, and all other building components. As usual, dynamic defaults are available to provide what the user may not know.

Of course, like most other aspects of heating and cooling energy requirements, air infiltration depends on the local temperatures and wind speeds. The user, however, never need be concerned with such tedious detail: the name of the nearest city in CIRA's files is all he or she ever will have to know about local weather patterns. And, naturally, the program will prompt for it and display the available options.

Solar gains are computed by taking into account weather-averaged solar radiation in the city chosen by the user, the shading effects of trees, nearby buildings and overhangs, and the optical characteristics of windows and walls. The shading effects of overhangs and the reflection of glazed surfaces are modeled by using correlation methods developed at Los Alamos National Laboratory. The solar gains, together with other internal gains and radiation losses to the sky, are used to compute an effective outdoor temperature, which is usually higher than the monthly average temperature. The monthly values of effective outdoor temperature, indoor thermostat setting, and heat-transmission coefficient are used to compute monthly heating and cooling loads for day and night. These loads are corrected if night and day thermostat settings are different. Seasonal heating and cooling efficiencies are figured for each month based on 1) heating and cooling loads, 2) specifications of the heating and cooling equipment, 3) part-load efficiencies, and 4) ambient-dependent output capacities. Finally, heating and cooling loads and efficiencies are

combined to arrive at monthly energy consumptions for heating and cooling.

The heating and cooling consumptions calculated by this load module were compared with those of the DOE-2.1 program for seven different cities and two thermostat schedules. In general, discrepancies between the two programs were found to be on the order of ±10%.

Viewing the results

After the minute or so that it takes to perform the heating and cooling calculations, CIRA displays monthly values and yearly totals (or means, where appropriate) of several quantities, such as:

- Daily and nightly heating and cooling energy consumption
- Daily and nightly heating and cooling loads
- Air infiltration
- Solar gains
- Dollar expenditures for heating and cooling
- Average and effective daily and nightly outdoor temperatures

These results can be displayed either in tabular form or graphically, depending on the user's wishes. By pressing the appropriate key from a menu displayed at the top of the screen, the user may also plot any arithmetic combinations of these figures (e.g., the sum of daily and nightly heating and cooling expenditures). For users with special needs, CIRA can be easily modified to display other types of output as, for example, infra-red radiation loss to the sky, or the percent change in energy consumption for every percent change in infiltration, in solar gains, or in similar parameters.

Energy-saving retrofits

For energy auditors and energy policy makers, the technical details about yearly energy consumption may be of less interest than determining the most cost-effective strategy to save energy. That is, for a given budget, what is the most energy-saving combination of retrofits or, what is the highest retrofit budget for which the dollar savings still exceed the expenditures (including maintenance costs)? CIRA is able to answer both of these questions in a mostly automated process consisting of two stages: the selection of retrofits, and their economic optimization.

Retrofit selection

The retrofit selection occurs as follows: First, CIRA scans an extensive list on a disk containing several hundred retrofit options and their respective costs per unit, as well as their figures of thermal merit (typically, added thermal resistance, decreased solar gain, decreased

leakage area, improved efficiency). CIRA will consider only those items appropriate to the structure in question; that is, cellulose insulation for cavity walls, not for solid masonry walls, and sliding storms for double-hung windows, not for casement windows. This reduced selection of retrofits is briefly shown on the screen for each house component (walls, windows, etc.).

Economic optimization

At the end of this retrofit selection process, the computer determines the best combination of retrofits for the whole house within the constraint of a budget. This process involves multiple yearly energy calculations, and takes about ten to fifteen minutes, depending on the size and complexity of the house, the climate and the number of retrofits involved. Dollar and energy savings in several different economic formats are shown for each retrofit based on the expected period of occupancy for the house under consideration.

Micro-computer Requirements to Run CIRA

Currently, CIRA can be run on any microcomputer with the following specifications:

- **Z80, 8080 or 8085 family of microprocessors.**
- **CP/M operating system (version 2.0 or greater).**
- **64 k of random access memory.**
- **Two 8" single density disk drives or equivalent (2x240k or 450k bytes total).**
- **80 column video terminal (cursor addressing is necessary).**
- **132 column printer for retrofit output.**

CP/M is a trademark of Digital Research Inc., P.O.Box 579, Pacific Grove, CA 93950.

Modifications may be performed by the user to accommodate most terminals. At the time of this writing (April 1982) a complete system with these specifications, including a terminal or a keyboard and monitor, can be purchased for around $4,000.

GUIDE TO CIRA INPUTS

CIRA does not use an artificial, buildings language. Information is input in response to questions, grouped by component. The components and the key letters used to identify them are:

G = General	E = Economic	W = Windows
D = Doors	O = Walls	R = Roof/Ceiling
S = Subfloor	P = Passive-Solar	N = Greenhouse
X = Active-Solar	H = HVAC-system	I = Infiltration
L = Landscape	A = Appliances	C = Continue

The user chooses a component by typing in one of the above keyletters when the computer asks:

"WHAT NEXT or Continue?"

The questions for the chosen component then appear on the screen; after one question is answered, the next question appears until the complete list, with answers, is on the screen. Take, for example, the questions for windows; the complete list is:

A) Name of the following windows.....?
B) Which window ORIENTATION.....?
C) Window TYPE.....?
D) GLAZING.....?
E) DRAPES & SHUTTERS.....?
F) Are window covers USED at DAYTIME.....?
G) U-value (Btu/sqft/F).....?
H) Average sash FIT.....?
I) Specific LEAKAGE AREA (sqcm/sqft).....?
J) Summer SOLAR GAIN factor (%).....?
K) Winter SOLAR GAIN factor (%).....?
L) Window AREA (sqft).....?

For every question there are a list of possible answers, a short explanation, and a default value (a value calculated on the base of previous answers, or a best estimate). Each of these can be called by a keystroke when the question appears. The list is called by <control-L> for List, the explanation by <control-H> for Help, and the default value by <control-D> for Default. A reverse polish notation (RPN) calculator can be used for any numerical question, as shown in the sample input to find window area. The operations that the calculator can do are listed on page 27 in the "Guide to CIRA Outputs" section.

If the user is not technically sophisticated, the computer can be set to automatically use either a default or a pre-set value, and not display the question. For example, the U-value could be automatically calculated using the answers for glazing, covers, and use. If desired, whole sections can be handled in this way; the data for the Economic section, for example, could be pre-set, and the questions on energy prices, discount rates etc. would never appear. Such questions are referred to as "ghost questions".

The answer to a question may be changed at any time. The first chance is immediately after the answer has been entered, when the computer asks for a yes/no confirmation. The second chance is in the middle of entering a component, when the user may interrupt the questions to edit the previous answers by typing <control-E> for Edit. Finally, once a complete component has been entered, and the computer asks "Which menu ITEM?", the user can choose the code letter next to a question and re-answer that question. This last method can be used at any point. The user is led through these steps by instructions which appear on the screen.

Once all the house components have been entered, the program can continue to the energy calculations. If the user attempts to continue with the inputs incomplete, a warning message appears giving the names of the missing components. The user decidess whether to proceed to the design energy calculations or the retrofit optimization calculations. As it calculates, it displays short messages to indicate the stage it has reached, e.g. "Entering ENERGY CALCULATION program", or it shows the savings from each retrofit it is considering. The complete flow diagram of the program set is shown in the "Program Organization and Glossary" section. The design energy calculation takes one or two minutes to complete; the retrofit optimization takes about ten. The exact times vary from house to house and from computer to computer.

Examples of all of these features of the CIRA input structure are shown in the sample input session which follows. In an actual input session, a video terminal would be used, and the input format has been designed for such a terminal. The format includes frequent redrawing of the screen to simplify the input. This is convenient and helpful on a screen, but appears rather clumsy when printed.

Note: The maximum permitted number of component entries is 30. If there are more than that, some will have to be consolidated. For example, if there are a lot of small windows the user will have to combine some of them into one large window.

A SAMPLE INPUT SESSION WITH CIRA

```
**********************************************************
****                                                  ****
**** COMPUTERIZED, INSTRUMENTED RESIDENTIAL AUDIT     ****
****                                                  ****
****           Version 1.0 - March 1982               ****
****                                                  ****
****                 (c) 1982 LBL                     ****
****                                                  ****
****        Energy Performance of  Buildings          ****
****          Lawrence Berkeley Laboratory            ****
****            University of California              ****
****          Berkeley,  California  94720            ****
****                                                  ****
**********************************************************
```

Note: In an actual input session a video terminal would be used, and the input format has been designed for such a terminal. The format includes frequent redrawing of the screen to simplify the input. This is convenient and helpful on a screen, but appears rather clumsy when printed.

"L"ong, "S"hort or "N"o INSTRUCTIONS....? L Long instructio--> OK? YES

The user decides to read the long instructions. He/she types L, and confirms with a carriage return.

WELCOME to the CIRA audit...

In this audit you will be asked a number of questions about your house. Many questions are multiple choice. For them, all you have to do is enter the appropriate code letter. For example, the question might be:

Window GLAZING.....?

If you type "D", the computer responds

Window GLAZING.....? D Double Pane --> OK?

and waits for you to confirm your answer with a "Y" or reject it with an "N". (A carriage return at this point also means "Yes"). Other times, you will be asked for a quantity, such as:

Insulation thickness (inches).....?

In this case, after entering the number of inches, you have to press the "RETURN" key, to indicate your entry is complete. (The computer will

HIT <ANY KEY> TO CONTINUE

The screen is full of instructions and the computer waits for the user to ask to continue.

answer and ask you to confirm or reject it.

Insulation thickness (inches).....? 3 3 inches --> OK?

HELP

If you don't UNDERSTAND a question, ask for HELP by holding down the CTRL while pressing the H key at the same time (just like SHIFT and H). A short explanation will appear.

LIST

If you understand the question, but don't REMEMBER the possible answers, press CTRL and L at the same time for a LIST of possible answers.

DEFAULT

If you do not KNOW the answer to a question, e.g. the U-value of a single pane window, press CTRL and D at the same time. The computer will give the most likely answer, based on the information you have already given. In other words, it will answer for you by DEFAULT, since you don't know the answer.

HIT <ANY KEY> TO CONTINUE

End of the second screen-ful of instructions.

There are two main levels of questions. First comes the "WHAT NEXT?" question, that you will be asked as soon as this is over. This wants to know which section of the house you are ready to enter, e.g. WALLS, DOORS, or INFILTRATION. Then come more specific questions about each item. If you get frustrated answering questions about, say, WALLS, and want to quit and answer questions about some other item, press CTRL and Q (Q for quit). This will land you up at the WHAT NEXT? level again.

MISTAKES

If you make a mistake, there are a number of ways to correct it. First, when the computer repeats back your wrong answer, press N (for NO!). The computer will ask you the question again. Second, if you change your mind in the middle of any section, you can go back and change any answer by pressing CTRL and E (E for edit). Third, at any time you can go back to a section and re-answer any question, by asking for that "Menu item" again.

Suppose you want to change the glazing of the Bedroom Windows. To start, you ask for the component, WINDOWS, [by typing

HIT <ANY KEY> TO CONTINUE

End of the third screen-ful of instructions

the code letter W for windows] then you ask for the NAME [by typing the menu number next to the Bedroom Windows] then you ask for the menu item you want to correct [by typing the number next to the question about glazing]. If you make any changes, remember to SAVE the new answers, which erase the old ones.

If you want to eliminate a component completely, do exactly the same thing as for Bedroom Windows, but when the second menu comes on the screen, choose the number next to the DELETE question.

Finally, if a question is asked that you have already answered, and your answer is the same as last time, try pressing the "RETURN" key. Most of the time, your previous answer will have been retained.

HIT <ANY KEY> TO CONTINUE

A SUMMARY OF WAYS TO GET HELP

<ctrl H>.....Gives HELPful information
<ctrl L>.....LISTs all possible answers.
<ctrl D>.....Gives DEFAULT value for the answer.
<ctrl Q>.....QUITS, and lands you at WHAT NEXT?
<ctrl E>.....Lets you EDIT your answers to any question.
<RETURN>.....(Carriage return key) Repeats your last answer.
?.....(Question mark) Reprints this summary table.

Only this table is printed if you ask for the short instructions

HIT <ANY KEY> TO CONTINUE

End of the long instructions

NO current DISK DATA for this house.

There is no pre-existing data on this house. The user asks for a list of components by pressing <ctrl-L>. The computer confirms this by printing List

WHAT NEXT or Continue.....? List:

G = General
E = Economic
W = Windows
D = Doors
O = Walls
R = Roof/Ceiling
S = Subfloor
P = Passive-Solar
N = Greenhouse
X = Active-Solar
H = HVAC-system
I = Infiltration
L = Landscape
A = Appliances
C = Continue

WHAT NEXT or Continue.....? W Windows --> OK? YES

The user decides to start by entering data on the house windows.

```
 NO previous WINDOWS data

NAME of the following windows.....? Front      Front          --> OK? YES
```

The user presses S for south

```
Which window ORIENTATION.....? S          South          --> OK? YES
```

The user asks for a list of possible window types.

```
Window TYPE.....? List:

        D = Double hung
        H = Horizontal Sliding
        C = Casement
        T = Tilting
        J = Jalousie
        F = Fixed
        G = Greenhouse
        S = Skylight
        O = Dome

Window TYPE.....? C          Casement       --> OK? YES
GLAZING.....? S              Single pane    --> OK? YES
DRAPES & SHUTTERS.....? N    None           --> OK? YES
U-value (Btuh/sqft/F).....? Default:  1.1 Btuh/sqft/--> OK? YES
```

By pressing <ctrl-D> the user gets the default value.

```
Average Sash FIT.....? Help:
```

The user presses <ctrl-H> to ask for help about leakage area.

The average SASH FIT is how tightly the window sash fits in its frame. Do not confuse this sash fit with the size of cracks, if any, between the window frame and the wall! The options are:

Loose	if the sash rattles in the frame and/or if you can see light through or around the sash;
Tight	if outdoor noise decreases substantially when you close the window, and if it "feels" snug;
Average	for cases in between.

```
Average Sash FIT.....? List:

        L = Loose
        A = Average
        T = Tight

Average sash FIT.....? A          Average        --> OK? YES
```

Specific LEAKAGE AREA (sqcm/sqft).....? Default: .19 sqcm/sqft --> OK? YES

The default is calculated for average sash fit.

Summer SOLAR GAIN factor (%).....? Help:

The SOLAR GAIN factor is the percentage of solar radiation which would get into the room if all the sunlight struck the glass at right angles. The default values are based on your previous answers about GLAZING, window COVERS and window cover USAGE. This factor will change from summer to winter if you use the window covers differently in the different seasons.

The default value you get by pressing <ctrl-D> is based on your answers to previous questions about GLAZING, COVERS, and USAGE.

Summer SOLAR GAIN factor (%).....? Default: 87 % --> OK? YES
Winter SOLAR GAIN factor (%).....? Default: 87 % --> OK? YES
Window AREA (sqft).....? 4*16 64 sqft --> OK? YES

The user enters the window dimensions using an "RPN" calculator: 4 "enter", 16 "times". The computer responds with the result, 64.

Overhang PROTRUSION (inches).....? Help:

An OVERHANG is any overhang above a window or solar wall, e.g. awnings, horizontal shades, balconies or the roof itself.

The OVERHANG HEIGHT is measured from the top of the sash to the height of the outer tip of the overhang.

The OVERHANG PROTRUSION is measured horizontally out from the plane of the window.

The OVERHANG PROTRUSION, the HEIGHT of the overhang above the window, and the AZIMUTH, all determine the shading effect of an overhang.

Overhang PROTRUSION (inches).....? 12 12 inches --> OK? YES
HEIGHT above top of window (inches).....? 12 12 inches --> OK? NO

The user slips, and enters 12 instead of 24, and corrects it immediately.

HEIGHT above top of window (inches).....? 24 24 inches --> OK? YES
Average window HEIGHT (feet).....? Edit...

The user notices that he/she should have entered 15 for the protrusion, and decides to edit the answer. The computer displays the present answers

```
 Current answers for WINDOWS named Front :

   A) NAME of the following windows.....? 'Front'
   B) Which window ORIENTATION..........? 'South'
   C) Window TYPE.......................? 'Casement'
   D) GLAZING...........................? 'Single pane'
   E) DRAPES & SHUTTERS.................? 'None'
   F) U-value (Btuh/sqft/F).............? ' 1.1' Btuh/sqft/F
   G) Average sash FIT..................? 'Average'
   H) Specific LEAKAGE AREA (sqcm/sqft).....? ' .19' sqcm/sqft
   I) Summer SOLAR GAIN factor (%)......? ' 87' %
   J) Winter SOLAR GAIN factor (%)......? ' 87' %
   K) Window AREA (sqft)................? '64' sqft
   L) Overhang PROTRUSION (inches)......? '12' inches
   M) HEIGHT above top of window (inches).....? '24' inches
   Y) < DELETE this Component >...
   Z) < RESUME questioning >...

Which menu ITEM(S).....................? L          L              --> OK? YES
```

The code letter for protrusion in the "menu" is L.

```
Overhang PROTRUSION (inches).....? 15        15 inches      --> OK? YES
```

This is the only answer the user wants to change.

```
 Current answers for WINDOWS named Front :

   A) NAME of the following windows.....? 'Front'
   C) Window TYPE.......................? 'Casement'
   D) GLAZING...........................? 'Single pane'
   E) DRAPES & SHUTTERS.................? 'None'
   F) U-value (Btuh/sqft/F).............? ' 1.1' Btuh/sqft/F
   G) Average sash FIT..................? 'Average'
   H) Specific LEAKAGE AREA (sqcm/sqft).....? ' .19' sqcm/sqft
   I) Summer SOLAR GAIN factor (%)......? ' 87' %
   J) Winter SOLAR GAIN factor (%)......? ' 87' %
   K) Window AREA (sqft)................? '64' sqft
   L) Overhang PROTRUSION (inches)......? '15' inches
   M) HEIGHT above top of window (inches).....? '24' inches
   Y) < DELETE this Component >...
   Z) < RESUME questioning >...

Which menu ITEM(S).....................? Z          Resume/Complete--> OK? YES
```

The user decides that all the other answers are OK, and resumes questioning.

```
Average window HEIGHT (feet).....? 4         4 feet         --> OK? YES
```

That is the last question.

```
 Current answers for WINDOWS named Front :

   A) NAME of the following windows.....? 'Front'
   B) Which window ORIENTATION..........? 'South'
   C) Window TYPE.......................? 'Casement'
   D) GLAZING...........................? 'Single pane'
   E) DRAPES & SHUTTERS.................? 'None'
   F) U-value (Btuh/sqft/F).............? ' 1.1' Btuh/sqft/F
   G) Average sash FIT..................? 'Average'
   H) Specific LEAKAGE AREA (sqcm/sqft).....? ' .19' sqcm/sqft
   I) Summer SOLAR GAIN factor (%)..........? ' 87' %
   J) Winter SOLAR GAIN factor (%)..........? ' 87' %
   K) Window AREA (sqft)....................? '64' sqft
   L) Overhang PROTRUSION (inches)..........? '15' inches
   M) HEIGHT above top of window (inches).....? '24' inches
   N) Average window HEIGHT (feet)..........? '4' feet
   Y) < DELETE this Component >...
   Z) < Changes COMPLETED >...

Which menu ITEM(S).....................? Z        Resume/Complete--> OK? YES
```

The answers are now complete and the user decides to save them. If not saved they are simply deleted.

```
SAVE this information..................? Y        Yes - save this--> OK? YES

  Current WINDOWS kinds are:

            1) 'Front'
            2) New WINDOWS...
       <ctrl Q> To quit WINDOWS...

Which menu ITEM (item no.).............? QUIT !
```

At this point, all the other house components should be entered.

****

All the other components are now being entered

in a similar fashion to "WINDOWS"

****

```
Current HOUSE data:

          GENERAL  ( 6435 Hazel )      ECONOMIC  ( MoneyStuff )
          WINDOWS  ( Kitchen)          WINDOWS  ( East side )
          WINDOWS  ( Back yard )       WINDOWS  ( West side )
            DOORS  ( Front )             DOORS  ( Back )
            WALLS  ( Front )             WALLS  ( Garage )
            WALLS  ( East side )         WALLS  ( Back )
            WALLS  ( West side )       ROOF/CEI  ( Above )
         SUBFLOOR  ( Below )           HVAC-SYS  ( Furnace )
         INFILTRA  ( Leaks )           LANDSCAP  ( Area )
         APPLIANC  ( Jim&Marilyn )     ACTIVE-S  ( Water )

WHAT NEXT or Continue.....................? O          Walls          --> OK? YES
```

The user decides he/she has made a mistake in WALLS and and asks to see them again, by typing the code letter o

```
  Current WALLS kinds are:

              1) 'Front'
              2) 'Garage'
              3) 'East side'
              4) 'Back'
              5) 'West side'
              6) New WALLS...
          <ctrl Q> To quit WALLS...

Which menu ITEM (item no.).............? 1          1 item no.      --> OK? YES
```

The mistake was thought to be in the front walls.

```
 Current answers for WALLS named Front :

   A) NAME for the following walls.............? 'Front'
   B) Which wall ORIENTATION...................? 'South walls'
   C) Wall TYPE................................? 'Two by Four Frame'
   D) Wall INSULATION..........................? 'None'
   E) INSULATABLE wall THICKNESS (inches)......? '3.5' inches
   F) Exterior INSULATING SHEATHING............? 'None'
   G) Wall R-VALUE (F-sqft/Btuh)...............? '4.64001' F-sqft/Btuh
   H) Wall AREA wo/ windows & doors (sqft).....? '103' sqft
   I) No. of WINDOWS (No.).....................? '2' No.
   J) No. of VENTS in wall (No.)...............? '0' No.
   K) No. of other PENETRATIONS (No.)..........? '2' No.
   L) Specific LEAKAGE AREA (sqcm/sqft).......? '.234466' sqcm/sqft
   Y) < DELETE this Component >...
   Z) < Changes COMPLETED >...

Which menu ITEM(S).....................? D          D               --> OK? YES
```

The user forgot the insulation in the walls, i.e. item D.

```
Wall INSULATION.....................? List:

        N = None
        F = Fiberglass batts
        L = Fiberglass loose
        B = Fiberglass boards
        C = Cellulose fill
        U = UF-foam
        P = Polyurethane boards
        S = Polystyrene boards
        V = Vermiculite fill

Wall INSULATION.....................? F          Fiberglass batt--> OK? YES

 Current answers for WALLS named Front :

   A) NAME for the following walls.....? 'Front'
   B) Which wall ORIENTATION...........? 'South walls'
   C) Wall TYPE........................? 'Two by Four Frame'
   D) Wall INSULATION..................? 'Fiberglass batts'
 * E) Insulation THICKNESS (inches)....? ' ' inches
 * F) INSULATABLE wall THICKNESS (inches).....? '3.5' inches
   G) Exterior INSULATING SHEATHING....? 'None'
 * H) Wall R-VALUE (F-sqft/Btuh).....? '4.64001' F-sqft/Btuh
   I) Wall AREA wo/ windows & doors (sqft)....? '103' sqft
   J) No. of WINDOWS (No.).............? '2' No.
   K) No. of VENTS in wall (No.).......? '0' No.
   L) No. of other PENETRATIONS (No.).....? '2' No.
   M) Specific LEAKAGE AREA (sqcm/sqft).....? '.234466' sqcm/sqft
   Y) < DELETE this Component >...
   Z) < Changes COMPLETED >...

 * Has DEFAULT value referenced to ITEM 'D' above.

Which menu ITEM(S).....................? EFH        EFH          --> OK? YES
```

The computer reminds the user that since there is now some insulation in the walls the defaults will have changed. The user reanswers those questions affected, EFH.

```
Insulation THICKNESS (inches).....? Default:    3.5 inches    --> OK? YES
INSULATABLE wall THICKNESS (inches).....? Default:    0 inches    --> OK? YES
Wall R-VALUE (F-sqft/Btuh).....? Default:    14.1242 F-sqft--> OK? YES
```

```
 Current answers for WALLS named Front :

   A) NAME for the following walls.....? 'Front'
   B) Which wall ORIENTATION.....? 'South walls'
   C) Wall TYPE.....? 'Two by Four Frame'
   D) Wall INSULATION.....? 'Fiberglass batts'
   E) Insulation THICKNESS (inches).....? ' 3.5' inches
   F) INSULATABLE wall THICKNESS (inches).....? ' 0' inches
   G) Exterior INSULATING SHEATHING.....? 'None'
   H) Wall R-VALUE (F-sqft/Btuh).....? ' 14.1242' F-sqft/Btuh
   I) Wall AREA wo/ windows & doors (sqft)....? '103' sqft
   J) No. of WINDOWS (No.).....? '2' No.
   K) No. of VENTS in wall (No.).....? '0' No.
   L) No. of other PENETRATIONS (No.).....? '2' No.
   M) Specific LEAKAGE AREA (sqcm/sqft).....? '.234466' sqcm/sqft
   Y) < DELETE this Component >...
   Z) < Changes COMPLETED >...

Which menu ITEM(S).....? Z          Resume/Complete--> OK? YES
```

Having entered those changes the user is finished.

```
SAVE this information.....? Y          Yes- save this---> OK? YES

  Current WALLS kinds are:

            1) 'Front'
            2) 'Garage'
            3) 'East side'
            4) 'Back'
            5) 'West side'
            6) New WALLS...
       <ctrl Q> To quit WALLS...

Which menu ITEM (item no.).....? QUIT !

 Current HOUSE data:

          GENERAL  ( 6435 Hazel )      ECONOMIC  ( MoneyStuff )
          WINDOWS  ( Front )            WINDOWS  ( East side )
          WINDOWS  ( Back yard )        WINDOWS  ( West side )
            DOORS  ( Front )              DOORS  ( Back )
            WALLS  ( Front )              WALLS  ( Garage )
            WALLS  ( East side )          WALLS  ( Back )
            WALLS  ( West side )       ROOF/CEI  ( Above )
         SUBFLOOR  ( Below )           HVAC-SYS  ( Furnace )
         INFILTRA  ( Leaks )           LANDSCAP  ( Area )
         APPLIANC  ( Jim&Marilyn )     ACTIVE-S  ( Water )

WHAT NEXT or Continue.....? C          Continue       --> OK? YES
```

The user decides to continue to the calculations.

Other house components missing:

PASSIVE-SOLAR
GREENHOUSE

The computer reminds the user that a couple of possible components are missing.

ENTER, CALCULATE, RETROFIT or QUIT.....? C Calculate energ--> OK? YES

The user decides to continue to the energy calculations. The computer shows what it is doing as it proceeds.

Loading DATA COMPRESSION program

CIRA data compression 1.0

--READING DATA--
--COMPRESSING--
--WRITING--

Entering ENERGY CALCULATION program

CIRA energy calculations 1.0

--CALCULATING--
--WRITING--

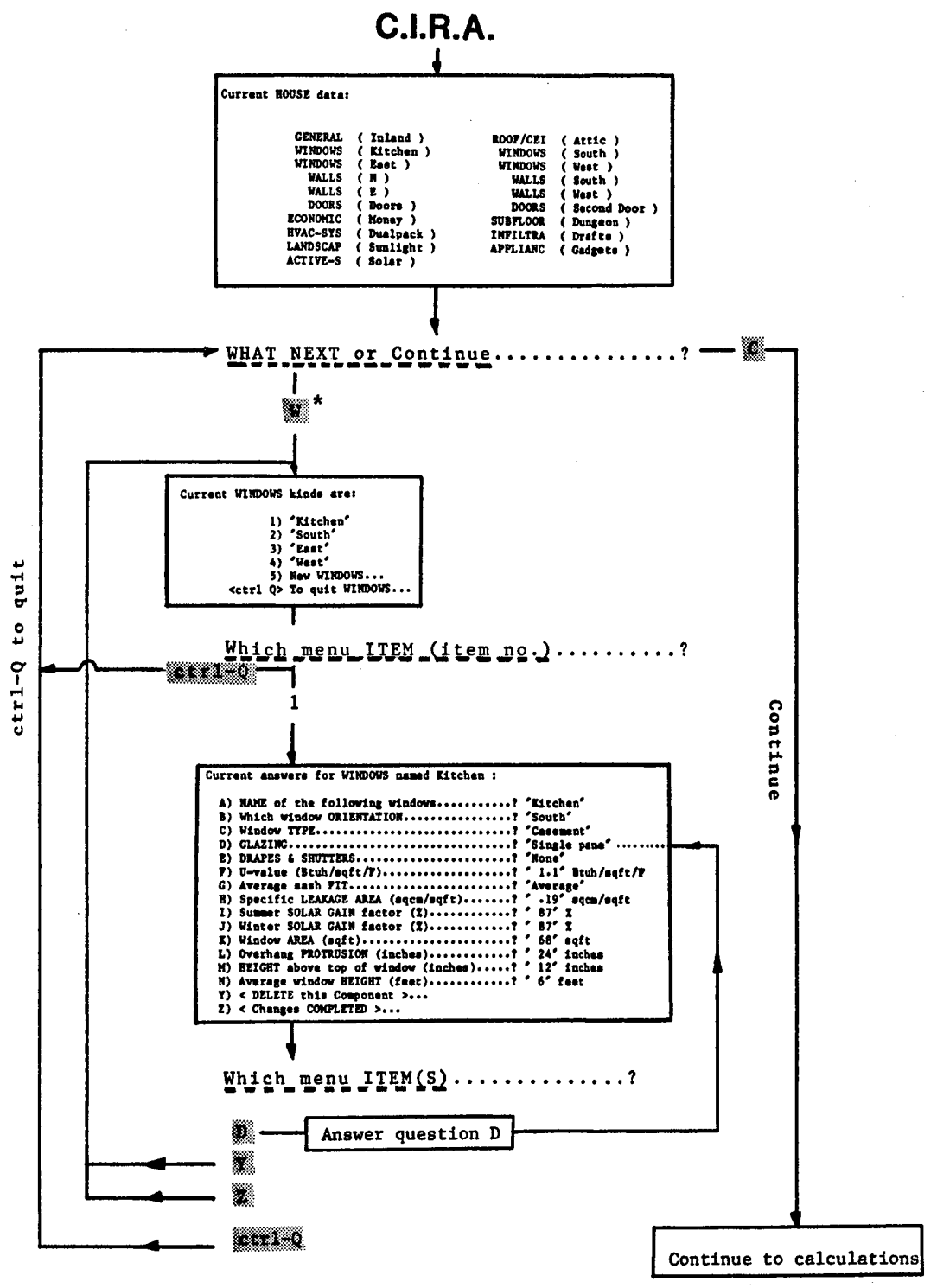
Entering PLOTTING program

CIRA plotting program 1.0

--READING DATA--

****AT THIS POINT THE COMPUTER PRINTS OUT THE RESULTS****

Details of the output are given in the "Output Guide" section.


C.I.R.A.
Current HOUSE data:
GENERAL (Inland)
WINDOWS (Kitchen)
WINDOWS (East)
WALLS (N)
WALLS (E)
DOORS (Doors)
ECONOMIC (Money)
HVAC-SYS (Dualpack)
LANDSCAP (Sunlight)
ACTIVE-S (Solar)
ROOF/CEI (Attic)
WINDOWS (South)
WINDOWS (West)
WALLS (South)
WALLS (West)
DOORS (Second Door)
SUBFLOOR (Dungeon)
INFILTRA (Drafts)
APPLIANC (Gadgets)
WHAT NEXT or Continue.....?
C
W *
Current WINDOWS kinds are:
1) 'Kitchen'
2) 'South'
3) 'East'
4) 'West'
5) New WINDOWS...
<ctrl Q> To quit WINDOWS...
Which menu ITEM (item no.).....?
ctrl-Q
1
ctrl-Q to quit
Continue
Current answers for WINDOWS named Kitchen :
A) NAME of the following windows.....? 'Kitchen'
B) Which window ORIENTATION.....? 'South'
C) Window TYPE.....? 'Casement'
D) GLAZING.....? 'Single pane' .....
E) DRAPES & SHUTTERS.....? 'None'
F) U-value (Btuh/sqft/F).....? ' 1.1' Btuh/sqft/F
G) Average sash FIT.....? 'Average'
H) Specific LEAKAGE AREA (sqcm/sqft).....? ' .19' sqcm/sqft
I) Summer SOLAR GAIN factor (%).....? ' 87' %
J) Winter SOLAR GAIN factor (%).....? ' 87' %
K) Window AREA (sqft).....? ' 68' sqft
L) Overhang PROTRUSION (inches).....? ' 24' inches
M) HEIGHT above top of window (inches).....? ' 12' inches
N) Average window HEIGHT (feet).....? ' 6' feet
Y) < DELETE this Component >...
Z) < Changes COMPLETED >...
Which menu ITEM(S).....?
D
Answer question D
Y
Z
ctrl-Q
Continue to calculations
User inputs
* Code letter. For a complete list, press ctrl-L

GUIDE TO CIRA OUTPUTS

CIRA produces two distinct types of output. The first is a design energy analysis of the building, i.e. data on month by month heating and cooling loads, energy use, infiltration rates and so on. This data is presented in both tabular and graphic forms. The second type of output is a retrofit package. This is the best set of retrofits for the building under consideration, given the investment limit, interest rate etc. that the user has chosen.

Design Energy Analysis

The output from the design energy analysis is tailored to the needs of the more technical user. A typical set of output data would be month by month values for the following parameters:

Daytime load (Mbtu)	Nighttime load (MBtu)
Daytime energy (MBtu)	Nighttime energy (MBtu)
Sky radiation loss (MBtu)	Free Heat (MBtu)
Infiltration (cfm)	Solar Savings Fraction (%)
Average temperature, day (F)	Average temperature, night (F)
Overall gas use (therms)	Overall gas use ($)
Overall electric use (kWh)	Overall electric use ($)
Solar gain (MBtu)	Space conditioning cost ($)

where M means "mega", that is 10^6, and k means "kilo" that is 10^3.

The output may either viewed in tabular form, or plots of either one or two parameters may be made. Printouts can be made of both plots and tables. A calculator adds flexibility; arithmetic calculations may be made on the data, and the results placed either in a table or displayed as a plot. For example, cooling loads, which are presented as negative heating loads, may be extracted from the heating loads and plotted on the same graph as infiltration rates. A separate file stores related data on the house, including the city in which it is located, its altitude and latitude, and its UA-value.

The sample output session below illustrates some of the capabilities of this interactive output program.

A SAMPLE OUTPUT SESSION WITH THE CIRA DESIGN ENERGY PROGRAM

```
      ENTER COMMAND
Command/Code choices are as follows:
 'R' - REVIEW/TRANSFER data              'C' - CALCULATE between columns
'D/T' - DISPLAY related data            'L/F' - LIST at printer/file
 'P' - PLOT 1 or 2 columns               'Q' - TERMINATE program
```

	a Dload	b Nload	c D egy	d N egy	e Infil	f Sgain	g Rloss	h Spce$	
Jan:	15.1	12.3	26.9	22.0	391	0.96	1.4	272.8	:Jan
Feb:	9.2	7.3	16.5	13.0	351	1.34	1.2	164.7	:Feb
Mar:	7.2	6.2	12.9	11.1	359	2.32	1.4	133.9	:Mar
Apr:	1.9	1.3	3.3	2.4	294	2.91	1.2	32.0	:Apr
May:	-1.9	-0.0	-1.2	-0.0	270	3.70	1.2	24.9	:May
Jun:	-4.9	-0.8	-3.1	-0.5	251	3.97	1.0	73.9	:Jun
Jul:	-6.0	-1.2	-3.9	-0.8	229	3.73	1.1	95.1	:Jul
Aug:	-4.0	-0.7	-2.6	-0.4	232	3.17	1.1	61.0	:Aug
Sep:	-1.8	-0.2	-1.1	-0.1	232	1.97	1.0	26.4	:Sep
Oct:	3.5	2.4	6.2	4.3	295	1.60	1.3	58.3	:Oct
Nov:	6.4	4.4	11.4	7.8	324	0.85	1.2	107.2	:Nov
Dec:	11.2	8.2	20.0	14.6	384	0.68	1.4	193.2	:Dec
yr(sum):	35.8	39.2	85.4	73.3	3612	27.20	14.5	1243.4	
yr(mean):	3.0	3.3	7.1	6.1	301	2.27	1.2	103.6	

The above is the table which is the first output of the program. The options available to the user are:

a) to review or transfer data, that is, to look at any of the other output parameters which are not displayed here;

b) to display related data, such as location, UA-value and solar apertures;

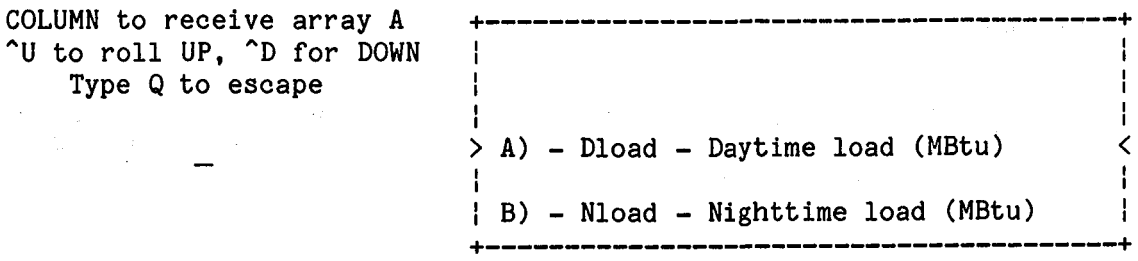
c) to plot either one or two columns (either from this data set or from any of the other parameters; once they have been transfered to the screen)

d) to calculate using this data set, e.g. extracting the cooling load from the total space heating loads;

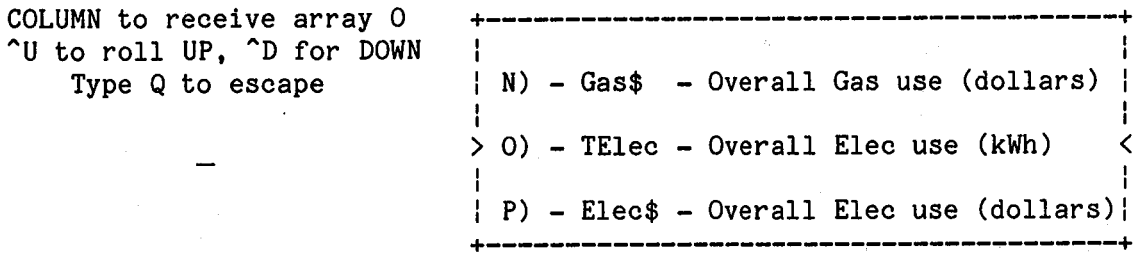
e) to send the information displayed on the screen either to a line printer (L) or to save it temporarily in a file (F) with other screenfuls of data and only print the whole file when it has been edited to suit the user's requirements;

or f) to terminate the program.

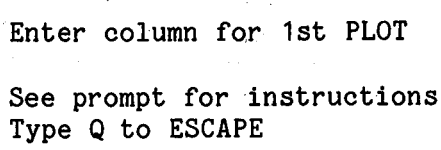
If the 'R' option is called, by pressing "R", the table remains on the screen but the command/code choices are replaced by the following:



The box on the right should be imagined as a roller which contains the names of all available parameters. Pressing <ctrl-U> moves the roller up (pressing <ctrl-D> moves it down), and the Nighttime load advances to the center position. The item which is in the central position can be transferred to any of the columns in the table by typing the letter that is above that column. For example, imagine the user wants to display and plot overall electricity use. By pressing <ctrl-U>, the roller is advanced to show:



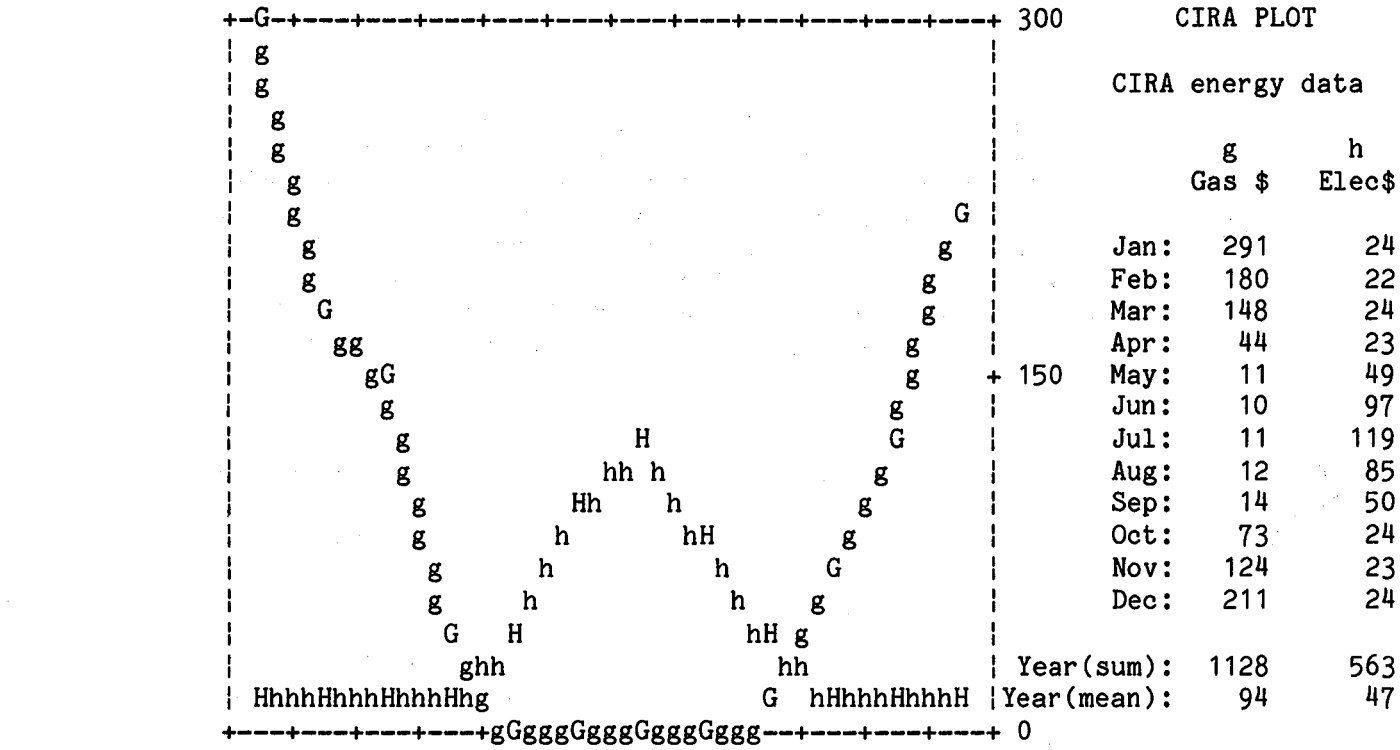
and by pressing, for example, "A", the monthly overall electric use data will be transferred to column "a". To plot data, the user must first escape from the review/transfer mode by pressing "Q". The original set of command/choices will be displayed at the top of the screen. The user can choose the plot mode by pressing "P". The set of command/choices will be replaced by the following:



If the user has already transferred $ cost data into columns "g" and "h", they can be plotted by first pressing "G". Then the prompt says:

```
2nd PLOT or <CR> for none                    g _
```

The "g" indicates that the figures in column "g" will be plotted, and the computer is awaiting instructions for the second plot. If the user types "H", the following plot appears:



The user may now make a printed copy of this plot by pressing "L" (for line printer), or by pressing "F" he/she may choose to store this plot in a file until it is convenient to print it. If the user presses "L", the computer will ask if the printer is ready; if the user presses "F" the computer will replace "<L>print <F>ile <ANY>" with "<Adding to HOUSE.PRN>". If any other key is pressed, the screen will return to the command/choice options.

The calculator is called by pressing "C". This replaces the command/choice options with the matrix of operators:

! enter	* multiply	/ divide	+ plus
- minus	¦ invert	@ change sign	^ y^x
> is x > y?	< is x < y?	= is x = y?	L $\log_e(x)$
) is x $\geq$ y?	(is x $\leq$ y?	# is x $\neq$ y?	X exp(x)
~ exchange x and y	' absolute value		

These are standard reverse polish notation (RPN) operators (similar to those used on Hewlett Packard calculators). The logic operators like ">" put +1 in the x register if the statement is true, 0 if it is false, and "roll down" the registers y, z, t into x, y, z, respectively. These operators may be used to carry out arithmetic manipulations of the data in one or more columns. As an example of the use of the logic operators, imagine the user wishes to extract the cooling load from the daytime space conditioning load. The total load is in column "a", so the operation to do this is a!!0>*. This asks if 0 is greater than "a"; if it is, the resulting +1 is multiplied by "a", otherwise the result is zero.

In this way, the data output may be manipulated to obtain the desired outputs from the standard ones, plots and tables made and the output formatted to suit.

Retrofit Package

If the retrofit option is chosen at the end of the inputs the computer will perform the retrofit optimization. When it is ready to print the output on the printer, the menu below appears on the screen. The output of the retrofit program consists of four pages of data; the user chooses which ones to print.

CIRA report generation -1.0-

--READING--

You have the following report options...

1. General HOUSE summary
2. Retrofitting PERCENTAGE CHANGE summary
3. 1st Retrofit ECONOMIC summary
4. 2nd Retrofit ECONOMIC summary

Your choice or 'Q' to quit []

The first page presents general data for the house: its location, floor area, infiltration rate etc. The name at the top of this page (and of the others) is the name given to the house in the "GENERAL" component of the input.

The second page presents the chosen package of retrofits, ordered by decreasing net savings-to-cost ratio. There is a brief description of each retrofit, followed by the effect it has on the energy used for heating, cooling, water heating, and for miscellaneous appliances (e.g. the refrigerator). The reductions are all given as percentages of original use, and so the reduction from the whole package is the sum of the individual reductions. This page also shows the energy use of both the house as it now is and of the house as it would be with all the retrofits installed. The units are millions of British thermal units per year (MBtu/yr). To get Therms per year, multiply by ten; to get Gigajoules per year, multiply by 1.055; to get kilowatt-hours per year, multiply by 292.9.

Pages three and four contain the bulk of the economic data. They give such parameters as initial and maintenance costs, first year and life-cycle savings, discounted payback, and internal rate of return. Again, the retrofits are listed in order of descending net savings-to-cost ratio. Several economic input variables are listed at the top of this page, such as the dollar limit on the cost of the retrofit package and the real increase (i.e. excluding general inflation) in the price of energy.

Once the chosen reports have been printed, the following menu appears on the screen:

CIRA report generation -1.0-
—READING—
At this point you can....

P: Run CIRA PLOT on the original house
R: RESTART with the original house
Q: Quit CIRA and return to CP/M

Your choice []

The following pages present a sample retrofit output from the CIRA program.

'6435 Hazel' house in WASH-DC at 14 feet.

Spent: $2366.00 Limit: $10000.00

Real DISCOUNT rate (%): 3.00 Real MAINT ESC rate (%): 4.00

	Heating	Cooling	Water	Electric
Type of EQUIPMENT	Unit Gas	Room AC	Gas	-na-
Fuel PRICES ($/MBtu)	4.71	17.52	4.71	17.52
Real ESCALATION rate (%)	2.80	1.50	2.80	1.50

	Retrofit DESCRIPTION	NAME & LOCATION	Initial COST	1st Year SAVINGS	Annualized MAINTENANCE	Net SAVGS to COST R
1	Lower Htg. THERMOSTAT by 3 F always	6435 Hazel GENERAL	$0.50	$51.11	$0.03	999.9
2	Set water htr. thermostat to 120 F	Jim&Marilyn APPLIANC	$0.50	$7.65	$0.10	294.9
3	Install R-6 water htr. blanket	Jim&Marilyn APPLIANC	$30.00	$19.22	$3.13	9.5
4	Install LOW FLOW SHOWERHEAD	Jim&Marilyn APPLIANC	$30.00	$17.39	$3.13	9.0
5	AUTO. 5 F Htg. & Clg. NIGHT SETBACK	6435 Hazel GENERAL	$120.00	$28.17	$6.57	3.4
6	Hang inside REFLECTIVE DRAPES	Back yard WINDOWS	$123.00	$16.28	$3.21	1.8
7	Hang inside REFLECTIVE DRAPES	East side WINDOWS	$123.00	$12.59	$3.21	1.4
8	Buy new EFFICIENT REFRIGERATOR	Jim&Marilyn APPLIANC	$700.00	$53.45	$0.00	1.3
9	Put 5.5" fiberglass batts und. floor	Below SUBFLOOR	$904.00	$71.28	$11.78	1.2
10	INSULATE with 3.5" blown-in cellulose	West side WALLS	$335.00	$18.54	$0.00	1.1

'6435 Hazel' house in WASH-DC at 14 feet.

Spent: $2366.00 Limit: $10000.00

Real DISCOUNT rate (%): 3.00 Real MAINT ESC rate (%): 4.00

	Heating	Cooling	Water	Electric
Type of EQUIPMENT	Unit Gas	Room AC	Gas	-na-
Fuel PRICES ($/MBtu)	4.71	17.52	4.71	17.52
Real ESCALATION rate (%)	2.80	1.50	2.80	1.50

	Retrofit DESCRIPTION	NAME & LOCATION	Discounted PAYBACK	Cost CONSV FUEL (/MBtu)	Int RATE of RETURN	Net LIFE SAVINGS
1	Lower Htg. THERMOSTAT by 3 F always	6435 Hazel GENERAL	0.0yr	$0.01	999.9%	$999.63
2	Set water htr. thermostat to 120 F	Jim&Marilyn APPLIANC	0.1yr	$0.08	999.9%	$146.94
3	Install R-6 water htr. blanket	Jim&Marilyn APPLIANC	1.9yr	$1.32	56.4%	$253.83
4	Install LOW FLOW SHOWERHEAD	Jim&Marilyn APPLIANC	2.1yr	$1.39	51.2%	$241.12
5	AUTO. 5 F Htg. & Clg. NIGHT SETBACK	6435 Hazel GENERAL	5.7yr	$2.45	20.0%	$284.84
6	Hang inside REFLECTIVE DRAPES	Back yard WINDOWS	10.1yr	$3.50	10.3%	$103.81
7	Hang inside REFLECTIVE DRAPES	East side WINDOWS	14.3yr	$4.42	6.3%	$43.28
8	Buy new EFFICIENT REFRIGERATOR	Jim&Marilyn APPLIANC	14.9yr	$4.64	5.8%	$202.33
9	Put 5.5" fiberglass batts und. floor	Below SUBFLOOR	15.9yr	$4.83	5.3%	$217.51
10	INSULATE with 3.5" blown-in cellulose	West side WALLS	18.7yr	$5.79	3.7%	$22.65

This report was done with support from the Department of Energy. Any conclusions or opinions expressed in this report represent solely those of the author(s) and not necessarily those of The Regents of the University of California, the Lawrence Berkeley Laboratory or the Department of Energy.

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TECHNICAL INFORMATION DEPARTMENT
LAWRENCE BERKELEY LABORATORY
UNIVERSITY OF CALIFORNIA
BERKELEY, CALIFORNIA 94720

TEST REFERENCE YEAR

CITIES

ALBUQUTR.CTY

```
  .187  .170  .147  .101  .062  .052  .049  .042  .057  .099  .156  .178
  .138  .186  .196  .196  .213  .184  .189  .133  .166  .159  .125  .119
  .15133E-01  1.96279 16.5
  .27699E-07  5.42948 30.0
  .12467E-02  2.73463 18.0
  .20107E-12  8.47870 35.0
  37.2  43.7  50.7  62.1  71.3  82.6  83.4  80.2  76.3  61.9  48.4  40.5
  30.4  35.2  40.4  50.7  59.3  70.5  71.0  69.5  64.5  51.5  38.8  34.4
  28.0  31.7  34.1  42.4  47.1  56.5  59.8  61.5  51.0  44.7  34.9  32.3
    721.4   -643.3    116.3      .2     18.9
    748.9   -519.4     39.4   -16.4     24.1
    999.5   -566.3    -48.1   -16.8     15.5
   1048.2   -290.1   -131.7   -10.9    -10.1
   1189.9   -115.0   -227.7   -62.0    -23.7
   1137.9    -48.5   -300.7   -48.2    -38.0
   1098.0    -87.3   -245.0   -62.3    -27.9
   1082.1   -270.6   -183.7   -16.3    -18.0
   1070.3   -512.0   -121.9   -21.9      3.4
    932.8   -637.5     15.9    -1.3     19.6
    794.6   -714.1    109.5    -6.3     26.1
    580.4   -497.0    105.3    -5.3     14.2
  944. 1098. 1700. 1837. 2251. 2534. 2404. 2122. 1994. 1441. 1080.  742.
  265.  370.  473.  893.  976.  624.  705.  762.  478.  412.  226.  274.
CIRA 1.0 LOC=TRY ALBUQUERQUE,NM, LAT=35.1, TWHT=48, YEAR=1959, ALT=5311
```

ATLANTTR.CTY

```
  .143  .142  .128  .085  .038  .032  .022  .029  .046  .071  .108  .156
  .207  .222  .237  .196  .131  .162  .155  .143  .168  .171  .174  .2
  .12416E-04  3.72485 31.0
  .21194       .97051 13.0
  .18421E-10  7.22536 35.0
  .38630E-14  9.38156 35.0
  49.7  50.2  53.0  64.1  74.6  78.9  78.5  80.8  72.9  66.7  57.3  45.7
  43.5  43.7  46.6  54.7  66.1  69.0  71.1  72.5  65.3  58.3  49.7  40.1
  42.3  42.9  44.2  51.8  64.3  67.4  70.6  72.4  64.7  57.8  48.3  38.1
    516.5   -386.6     62.9      1.4     11.0
    572.7   -336.4     28.1      4.5      8.4
    777.0   -311.4    -19.5     -1.9      4.2
    951.6   -258.2   -115.6      5.1    -12.2
   1003.6   -124.4   -139.8      7.7    -12.6
   1090.7    -39.8   -179.2    -16.3    -20.7
   1000.1    -93.5   -120.4      5.8    -13.3
    979.3   -192.9   -149.9    -10.6    -13.3
    826.7   -286.7    -62.0     -1.5     -1.5
    715.9   -428.3     11.2     -2.5     11.6
    576.6   -430.3     64.9     -2.4     15.6
    509.7   -409.4     81.2      3.4      7.9
  674.  818. 1188. 1620. 1688. 1874. 1637. 1704. 1331. 1084.  789.  659.
  306.  434.  730.  866. 1095. 1136. 1190.  904.  752.  443.  324.  282.
CIRA 1.0 LOC=TRY ATLANTA,GA, LAT=33.7, TWHT=20, YEAR=1975, ALT=1010
```

BIRMINTR.CTY

```
  .143  .145  .126  .062  .051  .034  .034  .036  .035  .084  .106  .146
  .177  .183  .193  .151  .115  .137  .108  .104  .159  .113  .092  .101
  .29829E-05  4.05313 33.0
  .20778E-06  4.68165 35.0
  .50849E-11  7.52007 35.0
  .42564E-02  2.63752 10.0
  48.9  49.7  53.4  70.3  79.7  79.7  81.4  82.0  77.6  66.3  59.8  51.2
  42.2  40.5  46.5  59.7  64.5  69.5  71.5  72.0  68.5  53.1  50.0  40.6
  41.4  40.5  45.7  59.0  64.0  68.5  71.8  71.9  68.3  54.3  50.1  41.2
    565.3   -438.8     72.9      -.4     13.0
    616.0   -374.4     27.3     -4.3     13.3
    724.4   -262.1    -10.3     -4.4      5.5
    923.3   -240.0   -115.2     13.1    -11.7
   1049.0   -130.4   -177.9       .3    -19.0
   1038.7    -48.9   -169.5     -9.0    -19.0
   1017.6    -72.5   -146.0    -14.8    -17.1
   1000.4   -185.8   -131.9    -12.4    -10.7
    863.2   -291.6    -65.3    -10.5       .7
    778.6   -514.3     25.1      2.7     12.2
    508.9   -349.3     52.1     10.2      3.4
    523.9   -418.3     81.8      5.9      5.6
  749.  901. 1099. 1562. 1858. 1814. 1726. 1675. 1374. 1214.  681.  674.
  304.  418.  761.  874. 1014. 1080. 1114. 1022.  791.  406.  350.  292.
CIRA 1.0 LOC=TRY BIRMINGHAM,AL, LAT=33.6, TWHT=20, YEAR=1965, ALT=620
```

BISMARTR.CTY

```
  .254  .229  .223  .170  .115  .062  .058  .067  .107  .155  .204  .240
  .213  .23  .198  .298  .25  .213  .207  .194  .2  .201  .206  .205
  .78902E-01  1.48932 16.0
  .18690E-01  1.85214 16.0
  .74207E-02  2.22022 17.5
  .26266E-07  5.23770 35.0
   7.1  19.6  23.7  43.2  59.0  74.5  78.6  78.4  64.3  48.3  29.6  14.5
   3.5  14.1  16.2  35.9  48.4  61.6  64.2  61.8  50.5  39.2  25.6   9.6
   4.4  15.3  18.3  34.7  47.2  59.9  61.9  59.2  49.6  38.0  26.2  11.1
    313.8   -239.7     59.7      4.9      -.6
    518.2   -398.3     66.2      3.3      8.1
    665.6   -401.4     14.9     10.8      4.3
    890.3   -298.3    -38.8    -22.5      5.5
   1061.6   -257.3    -91.2     23.5    -11.0
   1223.8   -237.7   -200.0     -4.2    -19.3
   1199.9   -272.3   -183.8     -4.8    -17.0
   1074.6   -414.3   -130.1     -6.9     -8.8
    789.6   -433.9    -14.6      1.9      5.3
    588.5   -423.3     52.5     -8.6     13.6
    327.6   -244.2     56.4      7.1     -1.4
    355.8   -329.3     89.9     -5.5      7.0
  341.  627.  935. 1328. 1609. 2183. 2130. 1878. 1174.  778.  369.  361.
  231.  300.  445.  876. 1152.  927.  912.  644.  509.  322.  241.  182.
CIRA 1.0 LOC=TRY BISMARC,ND, LAT=46.8, TWHT=20, YEAR=1970, ALT=1647
```

BOISE-TR.CTY

```
  .192  .190  .156  .132  .086  .075  .065  .064  .071  .134  .160  .195
  .178  .159  .212  .186  .201  .184  .166  .168  .152  .166  .172  .172
  .90748E-02  2.04930 19.5
  .79950E-04  3.35502 24.5
  .66494E-05  3.94852 30.0
  .14893E-05  4.26211 31.5
  34.3  35.6  47.4  55.5  68.8  71.3  80.9  79.4  72.6  54.5  45.0  32.4
  30.3  30.4  38.1  42.8  55.2  58.7  66.2  66.0  59.8  42.9  40.0  29.7
  29.5  29.9  35.7  39.5  47.8  51.4  55.4  55.0  53.1  40.5  37.8  29.3
    355.8   -257.8     61.1     -4.8      7.4
    472.3   -297.1     46.5      1.4      4.9
    767.3   -429.5     -6.9    -13.5     11.4
   1022.1   -373.7    -86.8    -15.0     -1.6
   1161.1   -267.6   -163.8     -7.1    -17.3
   1187.8   -212.0   -192.5      9.1    -19.3
   1212.8   -279.5   -277.7      2.9    -29.0
   1127.9   -363.1   -161.1    -19.8    -12.7
    942.6   -539.0    -34.2     10.5       .8
    703.2   -512.9     43.9     20.1       .9
    387.4   -283.9     61.2      9.3     -2.4
    320.5   -247.8     67.8     -1.6      2.2
  415.  588. 1157. 1662. 2031. 2163. 2502. 2005. 1526.  937.  461.  367.
  267.  376.  473.  807.  958.  976.  534.  733.  501.  359.  279.  232.
CIRA 1.0 LOC=TRY BOISE,ID, LAT=43.5, TWHT=20, YEAR=1966, ALT=2838
```

BOSTONTR.CTY

```
  .200  .200  .184  .131  .097  .051  .036  .032  .071  .113  .152  .189
  .274  .333  .329  .337  .321  .28  .283  .28  .278  .307  .304  .279
  .31231E-01  1.76814 13.5
  .51399E-06  4.72496 26.5
  .52726E-02  2.30213 15.5
  .95133E-03  2.89359 14.0
  30.9  30.7  37.3  53.2  60.9  72.1  73.1  77.9  66.4  57.0  46.6  34.5
  27.7  28.3  32.9  46.8  55.0  64.7  67.9  70.1  60.4  51.3  43.6  32.1
  25.7  26.9  31.4  44.1  50.7  61.4  63.9  65.9  58.3  48.8  41.9  30.2
    466.3   -413.2     92.5      8.5      2.3
    496.8   -346.5     54.5     -5.4     11.6
    705.1   -374.9     -4.7      1.9      8.2
    958.7   -366.4    -93.3      -.3     -8.7
   1059.5   -239.3   -154.4     12.6    -17.9
   1068.9   -159.9   -162.8     -7.6    -12.1
   1033.4   -169.0   -117.6       .1    -11.9
   1046.1   -331.6   -123.3     -2.8     -7.2
    792.1   -410.5    -21.6     -1.8      4.8
    639.1   -470.1     53.4      3.0     10.7
    411.7   -319.5     73.5      1.2      4.1
    375.9   -317.5     80.3    -10.9     12.6
  522.  631. 1036. 1612. 1806. 1906. 1684. 1810. 1258.  881.  490.  427.
  232.  329.  514.  700.  924.  980. 1117.  824.  523.  329.  271.  217.
CIRA 1.0 LOC=TRY BOSTON,MA, LAT=42.4, TWHT=22, YEAR=1969, ALT=15
```

BROWNSTR.CTY

```
  .063  .062  .048  .034  .052  .062  .065  .070  .053  .041  .055  .067
  .222  .258  .294  .281  .287  .248  .207  .179  .174  .174  .249  .199
  .18841E-05  4.03372 35.0
  .33325E-01  1.78378 13.5
  .46763E-10  6.87174 35.0
  .22564E-11  7.53528 35.0
 66.6  66.6  73.6  79.5  84.5  86.7  86.7  87.6  84.1  79.7  70.2  67.5
 59.3  60.0  65.7  71.4  76.4  77.3  78.6  78.7  77.5  68.9  64.8  59.0
 58.1  58.7  63.7  69.5  73.9  74.2  76.2  76.8  76.5  67.2  62.8  58.9
   566.7   -365.5     43.7     -3.1     14.1
   677.7   -320.5      8.5     12.0      4.0
   860.5   -336.4    -66.8     17.2     -5.1
   928.1   -180.9   -132.1     18.9    -16.6
  1010.5    -44.2   -201.5     17.9    -24.5
  1071.6     45.5   -212.3     12.8    -22.3
  1066.4     20.0   -185.5      1.0    -20.4
  1038.2   -104.5   -201.6     -6.5    -26.5
   901.6   -211.3    -84.7    -15.1     -4.5
   865.9   -453.3    -30.6     -4.9     13.4
   583.8   -307.9     26.0    -11.7     16.0
   610.4   -476.4     66.9     19.1      6.0
 836.  990. 1450. 1600. 1895. 2009. 1876. 1839. 1409. 1425.  847.  878.
 383.  628.  717.  955.  955. 1017. 1113.  980.  978.  551.  492.  307.
CIRA 1.0 LOC=TRY BROWNSVILLE,TX, LAT=25.9, TWHT=56, YEAR=1955, ALT=19
```

BUFFALTR.CTY

```
  .205  .216  .188  .142  .117  .058  .036  .034  .082  .133  .166  .194
  .288  .264  .291  .299  .247  .239  .242  .198  .223  .247  .247  .248
  .37589E-06  4.51093 35.0
  .11633E-08  6.07758 35.0
  .27674E-01  1.86982 11.0
  .83578E-03  2.80129 15.5
 28.3  24.4  35.1  49.6  57.0  69.7  74.9  74.2  63.1  52.3  41.4  32.9
 26.0  20.8  31.2  42.7  49.3  61.1  66.2  65.6  55.9  45.8  39.1  30.9
 25.2  20.5  30.1  41.2  47.7  58.1  62.4  62.9  53.6  43.0  37.4  30.5
   299.6   -185.2     44.9     -2.9      4.3
   411.2   -214.2     37.0     -4.7      7.1
   619.9   -295.1      5.5     10.6      -.4
   879.8   -266.4    -61.1    -11.2     -2.5
  1031.8   -192.5   -109.8     -6.5     -7.5
  1095.4   -154.8   -127.6     -1.3     -9.8
  1117.4   -185.6   -149.4      2.8    -16.0
   977.6   -225.9    -77.1    -24.3      -.1
   749.0   -290.9    -18.7     -7.1      4.7
   544.6   -330.9     31.3     13.0      2.3
   316.2   -182.7     40.6     -1.8      3.7
   286.2   -200.9     52.9      4.3     -2.5
 361.  532.  865. 1357. 1624. 1762. 1832. 1507. 1083.  714.  388.  334.
 277.  407.  563.  868. 1121. 1210. 1120. 1057.  726.  420.  305.  237.
CIRA 1.0 LOC=TRY BUFFALO,NY, LAT=42.8, TWHT=20, YEAR=1974, ALT=705
```

BURLINTR.CTY

```
  .231  .224  .195  .165  .121  .064  .050  .049  .103  .141  .164  .209
  .207  .187  .206  .198  .201  .166  .194  .177  .178  .22  .223  .208
  .20760E-06  4.69889 35.0
  .25886E-01  1.76838 15.0
  .83651E-05  4.11314 23.0
  .93821E-09  6.62007 28.0
  17.1  22.0  33.5  45.7  56.8  71.1  76.0  72.5  60.7  51.2  42.8  26.1
  14.9  16.0  28.3  36.7  46.5  59.7  63.9  62.5  51.6  43.9  38.6  23.5
  14.7  17.1  27.7  35.9  45.4  59.4  61.6  61.8  52.1  42.9  37.9  23.0
    328.6   -254.1     63.9      5.9     -2.4
    476.4   -335.7     53.5      8.4      2.3
    614.6   -313.7      8.2      8.3      2.8
    838.8   -246.8    -43.2     -7.3      -.6
   1001.4   -191.2   -102.1     -8.7     -8.1
   1062.2   -162.9   -136.9    -12.1     -9.3
   1058.1   -213.5   -137.5       .6    -11.2
    911.2   -254.4    -74.0    -15.5     -4.7
    707.0   -321.3    -26.2     -2.3      2.9
    538.4   -356.4     42.2     11.1      3.1
    338.4   -239.5     53.6      1.3      3.1
    267.5   -190.9     47.5      3.3      -.0
  376.  586.  854. 1241. 1552. 1786. 1826. 1448. 1068.  699.  394.  300.
  232.  325.  521.  903. 1080. 1057.  975.  878.  559.  374.  261.  216.
CIRA 1.0 LOC=TRY BURLINGTON,VT, LAT=44.5, TWHT=20, YEAR=1966, ALT=332
```

CHARLETR.CTY

```
  .141  .117  .083  .054  .040  .038  .041  .041  .020  .065  .107  .142
  .189  .212  .231  .211  .187  .197  .153  .171  .149  .165  .179  .177
  .26490E-05  3.97953 35.0
  .10009      1.29352 14.0
  .39749E-05  4.80163 17.0
  .56032E-08  5.92408 26.0
  51.0  57.0  65.5  72.0  78.9  80.3  83.4  83.4  77.3  69.4  60.6  50.6
  43.2  47.0  54.3  60.7  67.7  69.3  74.7  74.5  70.5  57.7  48.2  42.6
  42.5  47.2  53.4  59.6  66.5  67.6  74.7  74.1  71.1  58.5  49.4  42.1
    591.4   -453.9     76.1      1.4     13.3
    646.2   -368.1     22.4     -2.5     12.5
    867.6   -364.8    -40.5       .9      1.0
    969.6   -245.4   -120.5      3.6    -13.1
   1048.7   -114.0   -164.2    -13.3    -18.5
   1106.1    -25.9   -183.1    -24.4    -20.7
   1126.8    -54.8   -164.9    -23.6    -19.0
   1026.7   -165.9   -156.2    -24.5    -15.8
    805.2   -245.0    -33.1      6.8     -2.2
    818.4   -529.6     21.8      6.2     13.4
    668.9   -548.8     80.2     -4.2     20.4
    531.0   -405.8     72.9      7.7      7.7
  791.  912. 1388. 1658. 1848. 1930. 1866. 1752. 1196. 1283.  952.  680.
  331.  487.  721.  906. 1060. 1150. 1254.  994.  909.  449.  270.  323.
CIRA 1.0 LOC=TRY CHARLESTON,SC, LAT=32.9, TWHT=77, YEAR=1955, ALT=41
```

CHEYENTR.CTY

```
  .209  .192  .175  .153  .105  .075  .056  .068  .109  .137  .184  .205
  .258  .317  .284  .305  .257  .222  .19  .21  .196  .201  .24  .271
  .26789E-05  4.12783 32.5
  .64417E-01  1.52280 11.0
  .16191E-02  2.56395 19.5
  .16225E-18 12.46708 35.0
  27.7  36.6  41.7  49.4  62.6  71.3  77.4  72.4  62.3  54.2  39.1  31.4
  21.3  27.7  32.7  37.7  48.1  57.5  62.3  57.8  47.8  41.1  30.3  22.3
  19.2  24.3  29.3  34.1  42.5  49.9  54.2  50.8  42.1  38.4  27.8  21.0
    504.8   -432.1     98.4     -9.7     14.9
    672.5   -529.8     71.5      1.3     15.3
    778.0   -402.3      5.5     -3.7      8.5
   1009.5   -310.3   -100.8    -23.6     -4.2
   1132.7   -198.7   -162.9    -46.4    -11.1
   1126.5   -135.5   -206.4    -47.6    -19.1
   1142.6   -137.8   -177.8    -67.5    -15.9
   1050.4   -289.5   -134.4    -40.2     -5.0
    951.0   -507.7    -51.2    -17.5      9.9
    671.4   -471.3     43.8      -.4     11.2
    562.3   -482.4     95.9      8.3      4.3
    515.5   -493.1    118.5      6.3      3.1
  594.  872. 1151. 1644. 2016. 2222. 2101. 1887. 1573.  961.  682.  572.
  260.  319.  601.  867.  991.  828.  971.  797.  501.  352.  267.  207.
CIRA 1.0 LOC=TRY CHEYENNE,WY, LAT=41.2, TWHT=33, YEAR=1974, ALT=6126
```

CHICAGTR.CTY

```
  .209  .204  .172  .120  .100  .051  .040  .034  .080  .112  .164  .194
  .16  .22  .247  .266  .218  .237  .186  .17  .206  .209  .208  .197
  .46144E-01  1.56465 16.5
  .42829E-08  5.75200 35.0
  .12869E-01  2.13400 13.5
  .96384E-06  4.98415 19.5
  27.0  29.9  40.2  55.1  59.8  71.6  80.2  76.3  66.1  57.8  42.9  33.0
  23.7  25.2  36.6  48.1  53.7  62.6  70.9  67.4  56.7  49.5  39.0  30.4
  23.7  25.0  34.8  44.9  51.0  58.8  65.9  64.0  53.7  47.2  37.9  30.0
    400.4   -318.8     71.6      5.1      2.4
    521.3   -353.7     49.6      5.5      6.7
    658.8   -291.7      4.9     -6.5      5.8
    905.1   -291.0    -63.8    -17.3       .5
   1049.0   -161.8   -113.0    -25.6    -10.1
   1099.8   -154.3   -160.4     -8.9    -13.6
   1097.8   -177.9   -186.2    -26.8    -15.6
   1007.5   -254.1    -95.3    -16.9     -4.0
    856.2   -409.9    -36.7    -14.7      7.3
    598.0   -409.8     44.8     -5.9     11.2
    427.5   -322.7     67.8     -8.3     11.9
    307.1   -211.3     52.3     -4.6      6.4
  467.  676.  940. 1465. 1621. 1937. 2050. 1605. 1359.  847.  530.  363.
  254.  360.  615.  832. 1166. 1050.  872. 1001.  587.  342.  274.  253.
CIRA 1.0 LOC=TRY CHICAGO,IL, LAT=41.8, TWHT=20, YEAR=1974, ALT=607
```

CINCINTR.CTY

```
  .202  .173  .159  .102  .064  .036  .044  .043  .048  .115  .155  .171
  .172  .164  .198  .198  .179  .164  .138  .115  .156  .166  .186  .218
  .59500E-05  3.90179 32.0
  .15513E-02  2.52323 20.0
  .49190E-11  7.66569 35.0
  .29052E-02  2.65484 13.0
  29.5  40.4  46.1  59.9  69.1  76.9  81.4  79.6  71.0  56.7  46.2  40.5
  26.5  36.4  38.8  51.9  58.9  69.0  71.4  68.7  63.2  49.8  41.2  37.3
  25.8  35.2  36.8  49.9  56.7  66.1  67.6  65.0  60.4  46.8  39.1  35.3
    385.2   -267.1     56.5      3.7      2.7
    462.6   -248.8     30.9      5.5      2.1
    758.6   -354.4     -1.0    -12.7     10.8
    892.8   -234.9    -68.9    -12.1     -3.8
   1066.1   -168.9   -134.8    -13.5    -13.3
   1059.9   -101.8   -138.9    -15.7    -12.0
   1088.8   -124.8   -176.7    -28.7    -15.9
   1011.7   -288.0   -129.0      7.7    -11.9
    812.9   -300.2    -25.5      1.1      1.1
    590.6   -341.7     25.4     -5.4     11.7
    463.3   -349.6     66.9      2.5      6.6
    402.4   -317.6     80.3    -13.2     12.8
  467.  602. 1125. 1406. 1724. 1750. 1928. 1776. 1200.  853.  589.  496.
  298.  427.  641.  928. 1121. 1173. 1012.  848.  815.  434.  291.  256.
CIRA 1.0 LOC=TRY CINCINNATI,OH, LAT=39.1, TWHT=64, YEAR=1957, ALT=761
```

CLEVELTR.CTY

```
  .206  .203  .185  .129  .091  .068  .031  .042  .072  .120  .168  .204
  .266  .229  .244  .227  .188  .207  .163  .162  .179  .221  .215  .242
  .61404E-05  4.10076 27.0
  .63420E-01  1.47355 13.5
  .62678E-10  6.94951 35.0
  .54045E-03  3.12088 15.0
  27.1  29.4  36.5  53.2  64.3  68.9  76.4  78.1  67.1  55.2  41.3  28.6
  24.8  26.7  31.7  46.0  54.1  61.6  68.2  66.1  59.1  48.3  39.2  27.2
  23.2  25.1  29.1  43.4  51.7  59.3  65.7  64.2  57.8  46.8  36.9  25.1
    311.6   -194.1     45.7      2.7       .2
    485.8   -297.8     44.1     10.0      -.8
    693.2   -363.3      -.4      6.5      5.7
    876.4   -299.7    -78.2      9.6     -8.0
   1014.6   -202.7   -143.4    -14.0    -14.6
   1028.6   -140.4   -134.9      3.0    -12.8
   1044.5   -179.2   -137.8      8.0    -13.8
    993.3   -306.2   -139.2     -2.9     -9.0
    742.4   -300.5    -22.7      2.9      1.7
    526.2   -300.6     30.8      -.6      7.3
    337.1   -201.3     45.0     -3.1      5.2
    261.7   -144.9     36.3     -1.6      1.9
  378.  622. 1009. 1418. 1789. 1707. 1764. 1743. 1097.  720.  422.  318.
  285.  398.  534.  764.  889. 1095. 1057.  730.  693.  425.  313.  270.
CIRA 1.0 LOC=TRY CLEVELAND,OH, LAT=41.4, TWHT=20, YEAR=1969, ALT=777
```

DETROITR.CTY

```
  .218  .213  .173  .125  .107  .053  .042  .047  .056  .113  .164  .201
  .229  .26  .234  .241  .222  .19  .18  .183  .168  .199  .229  .248
  .12361      1.27722 13.5
  .13646E-01  2.01184 14.5
  .38496E-06  4.97992 24.5
  .66457E-03  3.00635 16.5
  22.9  26.4  41.1  56.1  60.1  72.9  77.3  77.4  70.5  58.2  44.2  30.4
  20.5  21.6  33.4  46.0  51.5  63.0  66.5  67.5  60.4  49.3  38.7  27.2
  20.1  20.9  32.7  44.1  49.6  61.0  64.1  65.8  59.9  48.4  37.5  26.5
    390.3   -304.6     73.8     -2.9      6.3
    595.4   -443.6     59.7     -6.0     15.1
    746.6   -375.3     -1.4    -14.6     12.1
    969.7   -340.0    -82.8     -5.9     -6.2
   1048.8   -178.4   -115.9    -23.4     -9.9
   1107.6   -152.1   -152.5    -11.0    -13.7
   1156.8   -175.5   -181.4    -26.9    -16.4
   1045.0   -301.0   -117.9      -.7    -10.1
    829.0   -366.1    -24.9     -9.5      4.4
    610.3   -401.3     38.4    -13.4     17.3
    398.6   -269.8     53.2      3.8      2.9
    291.9   -191.6     49.4     -2.7      3.2
  462.  771. 1094. 1571. 1662. 1887. 2039. 1704. 1271.  855.  484.  346.
  259.  319.  572.  809. 1121. 1104. 1013.  921.  674.  368.  312.  257.
CIRA 1.0 LOC=TRY DETROIT,MI, LAT=42.2, TWHT=20, YEAR=1968, ALT=619
```

DODGECTR.CTY

```
  .205  .193  .160  .113  .086  .059  .060  .047  .077  .098  .157  .188
  .256  .308  .32  .294  .294  .303  .255  .224  .284  .268  .271  .224
  .96044E-02  1.90322 24.5
  .14953E-03  3.17816 23.5
  .40688E-05  4.07902 30.0
  .51507E-02  2.36394 15.0
  29.3  34.4  46.9  59.1  67.5  83.7  83.4  81.4  73.2  62.6  46.6  36.3
  23.3  27.4  36.1  47.1  54.7  70.0  70.6  69.0  62.0  51.6  38.5  30.7
  23.3  27.5  34.4  44.9  52.4  64.4  64.3  64.4  56.0  48.8  37.1  30.8
    550.8   -411.2     78.0     -1.9     11.5
    633.4   -424.3     39.8      2.0     13.5
    873.2   -399.6    -24.1    -11.1      9.1
   1005.5   -322.3   -111.8      2.0     -9.3
   1118.2   -181.2   -198.7    -10.0    -22.1
   1138.9   -117.7   -224.6     -8.9    -23.8
   1104.7   -150.4   -197.0      6.7    -21.2
   1053.9   -248.9   -137.2    -14.9     -9.8
    907.9   -421.9    -68.6     -3.7       .8
    767.7   -554.0     33.4      5.4      9.5
    605.8   -499.5     84.3      3.8     11.6
    471.3   -387.4     86.8      1.5      6.1
  680.  865. 1320. 1701. 2024. 2231. 2034. 1839. 1561. 1175.  795.  571.
  354.  395.  699.  839.  942.  913.  974.  944.  567.  321.  281.  269.
CIRA 1.0 LOC=TRY DODGE CITY,KS, LAT=37.5, TWHT=20, YEAR=1971, ALT=2582
```

ELPASOTR.CTY

```
  .156  .133  .079  .058  .057  .059  .068  .047  .045  .070  .114  .164
  .157  .185  .196  .246  .21  .207  .19  .176  .146  .138  .155  .178
  .44246E-01  1.57558 16.5
  .35029E-07  5.19172 35.0
  .26820E-03  3.07560 20.5
  .13766E-01  2.27680 11.0
  49.3  54.7  67.5  73.0  78.9  85.5  87.9  83.0  78.3  71.6  58.8  44.9
  35.0  43.1  54.1  60.6  65.6  73.9  77.9  72.6  67.8  57.1  47.4  37.2
  30.9  36.1  43.7  46.1  49.4  59.3  65.3  62.7  59.6  48.7  41.5  34.8
    808.9   -721.4    116.6      -.6     22.4
    802.9   -554.1     41.7      -.5     18.0
    960.2   -424.2    -49.3    -31.8     15.3
   1069.4   -252.1   -175.7    -24.7    -14.7
   1103.2   -107.2   -238.7    -16.6    -28.9
   1072.0    -20.4   -257.9     -7.1    -30.3
   1064.5    -73.6   -188.8      -.0    -19.8
   1006.2   -190.4   -169.5    -28.8    -15.0
    975.0   -433.0   -116.5     -2.1     -1.5
    906.1   -602.3      4.0      -.5     17.4
    677.2   -492.2     61.3      6.9     11.4
    637.2   -551.0     98.9      5.2     12.6
 1118. 1216. 1629. 1960. 2179. 2205. 2012. 1947. 1813. 1499.  953.  847.
  254.  414.  681.  844.  865.  796. 1024.  820.  527.  388.  376.  263.
CIRA 1.0 LOC=TRY ELPASO,TX, LAT=31.8, TWHT=20, YEAR=1967, ALT=3918
```

FORTWOTR.CTY

```
  .137  .143  .112  .066  .035  .058  .067  .072  .056  .056  .094  .132
  .217  .255  .247  .222  .157  .2  .149  .167  .164  .199  .236  .207
  .31873E-05  3.99340 35.0
  .95574E-06  4.35224 33.0
  .46116E-02  2.36034 16.0
  .14153E-01  2.17736 11.0
  51.6  49.6  56.7  68.0  76.9  85.3  87.8  89.0  80.2  75.0  62.3  52.5
  45.0  43.1  50.5  60.8  68.2  75.2  78.1  79.0  70.0  64.0  52.7  44.5
  42.9  41.5  47.3  57.7  66.4  71.5  73.0  73.3  64.8  59.0  49.1  42.3
    608.1   -493.5     77.6     18.4      4.0
    689.2   -452.7     26.6     12.4      8.1
    846.2   -364.2    -30.2     17.4     -3.4
    932.1   -254.7    -95.8     25.2    -14.3
   1016.5   -111.8   -165.0      1.1    -16.3
   1092.3    -87.4   -195.0     34.4    -19.7
   1106.3    -52.7   -204.6    -25.7    -23.5
   1028.1   -202.0   -177.0    -10.4    -18.9
    955.0   -387.6    -97.1     -8.8       .3
    802.6   -532.2     -2.2     26.2       .7
    711.7   -602.7     86.1      8.7     14.9
    566.9   -458.8     84.4      9.5      7.1
  794. 1014. 1318. 1549. 1755. 2018. 1998. 1899. 1650. 1276. 1004.  732.
  300.  405.  740.  935. 1034. 1053. 1045.  853.  651.  372.  263.  302.
CIRA 1.0 LOC=TRY FORT WORTH,TX, LAT=32.9, TWHT=22, YEAR=1975, ALT=544
```

FRESNOTR.CTY

```
  .154  .136  .114  .087  .072  .066  .074  .069  .068  .083  .115  .156
  .112  .121  .13  .123  .167  .156  .143  .122  .111  .109  .1  .118
  .22988E-08  5.89443 35.0
  .24038E-04  4.01133 18.5
  .10416E-03  3.28385 24.5
  .87971E-09  6.17778 35.0
  48.1  54.4  60.8  67.9  76.5  83.3  88.6  87.1  83.6  71.0  60.3  48.2
  41.6  43.2  45.5  53.4  60.2  65.6  70.0  68.2  64.6  53.0  47.1  39.8
  43.1  45.5  47.1  53.2  56.7  60.3  63.2  63.0  62.0  52.6  48.7  41.7
    388.5   -222.9     41.6      4.4      2.2
    657.5   -451.8     41.8      -.6     15.3
    917.2   -465.5    -43.3    -11.6      9.6
   1014.9   -295.2   -110.8    -31.1     -1.6
   1097.4   -172.3   -240.7    -13.8    -26.0
   1130.3    -99.0   -296.6     -3.7    -35.1
   1097.1   -140.2   -298.2     -2.6    -35.0
   1095.0   -338.2   -250.3      6.9    -26.8
   1029.8   -557.1   -117.1     -2.7       .3
    885.1   -678.1     32.0      7.6     16.7
    677.1   -582.8     97.4      9.4      9.6
    462.4   -348.2     69.9      8.9      2.4
  482.  916. 1480. 1766. 2162. 2413. 2394. 2239. 1889. 1378.  898.  556.
  368.  379.  573.  853.  730.  616.  507.  470.  358.  279.  269.  311.
CIRA 1.0 LOC=TRY FRESNO,CA, LAT=36.8, TWHT=42, YEAR=1951, ALT=328
```

GREATFTR.CTY

```
  .218  .213  .185  .159  .116  .075  .063  .071  .093  .134  .175  .193
  .295  .436  .417  .269  .239  .317  .24  .249  .286  .352  .409  .464
  .24461E-01  1.71242 21.5
  .24349E-02  2.52008 18.0
  .42569E-02  2.31899 20.0
  .84535E-02  2.07078 17.5
  22.9  25.9  37.6  46.6  58.0  70.4  75.2  71.3  64.9  52.3  40.8  31.7
  19.5  20.8  29.5  36.8  47.7  57.8  62.7  59.5  52.5  44.7  34.7  27.9
  18.4  19.7  27.7  34.0  44.1  50.9  54.8  52.3  46.2  39.0  31.5  23.8
    407.5   -392.6    101.9      7.3     -2.0
    450.3   -341.4     71.3     -4.1      8.0
    626.2   -371.7     21.7      3.7      5.8
    902.3   -384.9    -48.1     -4.7       .7
   1028.6   -240.6    -91.2      6.2     -7.4
   1151.2   -213.1   -159.2    -33.3    -11.9
   1165.1   -281.8   -182.2     -7.6    -19.6
    971.1   -341.2    -99.1     -8.1     -7.9
    779.9   -448.7     -4.7      1.0      1.8
    544.2   -395.2     53.5      1.6      8.5
    439.2   -407.8    100.8     -2.5      6.2
    301.4   -271.0     77.4      -.8       .4
  411.  550.  866. 1439. 1598. 2050. 2100. 1616. 1194.  711.  471.  308.
  180.  287.  442.  688. 1083.  938.  808.  723.  462.  314.  198.  170.
CIRA 1.0 LOC=TRY GREAT FALLS,MT, LAT=47.5, TWHT=23, YEAR=1956, ALT=3664
```

HOUSTOTR.CTY

```
  .136  .120  .081  .035  .030  .042  .065  .054  .042  .055  .064  .111
  .246  .242  .251  .275  .224  .181  .157  .162  .159  .197  .196  .225
  .11615E-05  4.20592 35.0
  .10336E-01  2.09018 16.0
  .20455E-01  1.90747 11.5
  .11948E-02  2.56898 13.5
  50.8  55.9  65.2  73.5  78.5  83.7  87.4  85.0  83.3  73.6  68.1  56.9
  45.1  48.5  56.0  66.0  71.6  74.0  78.1  77.1  73.1  63.1  59.1  49.6
  44.5  48.0  54.5  64.4  69.8  72.1  76.0  75.2  71.1  62.0  58.7  49.2
    480.6   -284.4     40.3     -6.3     13.0
    664.0   -379.0     21.7      1.7     11.8
    842.6   -341.1    -39.2     29.4     -7.7
    879.3   -181.0    -79.9      4.8     -8.3
    944.5    -71.3   -120.0      5.9    -10.5
   1089.3     16.1   -207.9     -8.7    -24.6
   1084.9     -4.6   -176.0    -29.8    -21.4
    983.7   -113.9   -132.0    -20.8    -13.9
    903.0   -308.1    -93.5    -18.0       .2
    797.6   -444.6     -6.9      7.6      9.3
    595.3   -410.8     46.1      5.4     11.6
    499.1   -341.9     53.0     10.3      4.4
  655.  982. 1305. 1394. 1538. 1968. 1861. 1578. 1559. 1246.  845.  658.
  395.  493.  783. 1020. 1128. 1044. 1156. 1112.  719.  530.  363.  353.
CIRA 1.0 LOC=TRY HOUSTON,TX, LAT=29.7, TWHT=20, YEAR=1966, ALT=50
```

INDIANTR.CTY

```
  .205  .203  .165  .122  .067  .053  .041  .038  .044  .126  .168  .194
  .23  .236  .263  .239  .197  .192  .169  .158  .184  .173  .197  .224
  .12088E-04  3.54172 35.0
  .18538E-02  2.52330 19.0
  .61127E-04  3.53785 21.5
  .65939E-02  2.34056 13.5
  28.6  30.1  42.8  54.3  71.5  73.1  78.9  77.5  72.1  54.4  41.3  32.1
  24.0  25.3  36.6  47.2  59.8  62.7  69.8  68.1  64.8  47.8  38.7  30.3
  24.2  25.4  35.4  45.1  56.8  60.1  67.1  66.9  63.5  46.7  37.4  29.3
    476.6   -390.6     80.8      8.3      2.8
    522.6   -351.9     51.3     -1.2      9.9
    722.6   -326.3     -7.3      7.0      3.2
    931.5   -273.2    -76.0    -21.8       .2
   1087.5   -177.0   -160.4    -26.7    -14.2
   1137.8   -109.1   -147.5    -19.9    -11.9
   1092.3   -137.1   -141.4    -19.0    -12.1
    987.3   -251.4   -110.8    -15.4     -4.8
    782.2   -287.7    -25.8      6.1      -.1
    580.9   -330.0     22.2     -4.5      9.6
    369.1   -209.0     44.2     -4.7      6.1
    313.6   -196.5     47.9     -8.9      9.4
  566.  703. 1036. 1516. 1893. 1837. 1801. 1649. 1158.  819.  469.  384.
  270.  356.  656.  879. 1005. 1270. 1168.  917.  792.  436.  353.  282.
CIRA 1.0 LOC=TRY INDIANAPOLIS,IN, LAT=39.9, TWHT=20, YEAR=1972, ALT=792
```

JACKFLTR.CTY

```
  .104  .099  .080  .045  .046  .033  .044  .047  .039  .042  .066  .109
  .196  .208  .22  .213  .185  .182  .173  .161  .208  .19  .16  .16
  .33281E-06  4.54620 35.0
  .90849E-04  3.33641 23.0
  .96204E-05  4.61879 16.0
  .15330E-12  8.36108 35.0
 59.2  60.0  65.4  75.5  82.9  80.9  84.0  84.6  81.9  74.0  67.0  59.1
 51.0  53.5  57.7  65.4  70.3  73.1  75.5  76.4  76.1  65.4  58.6  50.1
 49.7  51.7  55.9  62.8  67.4  71.2  73.5  74.6  73.7  64.2  58.1  50.4
   634.7   -520.9     80.4      -.3     16.4
   606.5   -336.3     18.6       .9      9.7
   812.2   -317.1    -38.5     13.7     -1.2
   941.4   -239.3   -127.2     10.6    -12.8
  1090.8    -84.1   -243.1    -12.0    -28.7
  1039.3      4.8   -165.4    -21.9    -19.0
  1080.6    -21.6   -176.2    -25.0    -21.9
   992.1   -133.5   -141.0    -38.2    -11.7
   876.2   -253.9    -70.0     -3.7     -5.9
   759.1   -412.2      1.5     -3.6     13.0
   584.1   -409.3     50.0      6.3     10.9
   544.3   -412.1     72.4     -1.2     13.4
 901.  896. 1243. 1688. 2108. 1818. 1870. 1725. 1376. 1186.  825.  737.
 267.  466.  764.  851.  879. 1106. 1144. 1013.  891.  531.  355.  318.
CIRA 1.0 LOC=TRY JACKSONVILLE,FL, LAT=30.5, TWHT=21, YEAR=1965, ALT=24
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JACKMSTR.CTY

```
  .145  .153  .096  .046  .050  .055  .049  .050  .049  .075  .085  .128
  .197  .204  .242  .226  .166  .148  .149  .143  .168  .169  .155  .221
  .45346E-01  1.57878 16.5
  .38402E-04  3.48865 27.5
  .66350E-11  7.56395 35.0
  .14876E-06  5.19280 23.0
 49.2  49.0  61.6  72.6  81.3  84.8  85.2  85.3  83.1  68.8  64.9  52.6
 42.6  40.6  50.8  62.5  67.2  73.4  75.3  75.5  70.7  55.3  53.7  45.8
 41.0  39.9  50.4  61.0  65.3  71.3  73.9  74.1  68.8  56.0  54.0  45.7
   518.4   -360.0     61.4     -2.8     11.6
   654.0   -403.5     26.8    -12.9     19.6
   824.7   -347.5    -35.8       .0      3.2
   924.8   -219.4   -109.3     -3.3     -8.3
  1026.7   -108.7   -187.9     -9.3    -20.3
  1051.0    -11.3   -197.8    -27.2    -22.8
  1004.6    -55.6   -172.1    -19.0    -17.1
   992.0   -163.6   -133.1    -15.5    -13.1
   891.2   -327.9    -91.9    -10.7      -.5
   785.9   -510.1     10.9      9.2     11.5
   581.3   -434.7     58.5      9.8      7.6
   468.1   -332.0     59.8     11.1       .8
 698.  963. 1334. 1569. 1909. 1953. 1839. 1665. 1546. 1247.  816.  602.
 353.  417.  689.  909.  938.  984.  993. 1029.  669.  406.  313.  328.
CIRA 1.0 LOC=TRY JACKSON,MS, LAT=32.3, TWHT=20, YEAR=1964, ALT=310
```

KANSASTR.CTY

```
  .199  .191  .138  .095  .074  .051  .054  .052  .049  .087  .158  .195
  .2  .197  .251  .242  .201  .207  .192  .204  .178  .206  .194  .227
  .18604E-01  1.73708 21.0
  .16026E-05  4.06492 35.0
  .15380E-09  6.71953 35.0
  .32214E-02  2.50093 14.5
  30.4  34.7  50.9  61.7  67.3  81.7  83.9  81.0  74.2  63.8  45.2  32.9
  26.3  29.6  42.5  52.2  58.2  72.8  75.3  74.1  64.1  55.0  39.9  28.7
  26.6  27.5  39.9  48.3  54.3  68.0  69.9  70.1  61.2  52.4  38.7  28.1
    453.6   -353.9     71.1      8.1      3.3
    572.9   -402.9     60.2      7.7      3.8
    854.4   -464.2    -13.0      8.6      3.3
    982.0   -325.8   -101.1      2.4     -9.7
   1043.5   -162.9   -159.5    -28.3    -12.8
   1126.8   -133.3   -188.9     -2.4    -18.2
   1107.5   -163.5   -167.8      8.3    -15.8
    981.5   -263.7   -131.5      9.3    -14.0
    904.7   -428.2    -54.2     -6.9      4.9
    686.1   -466.8     36.3      1.9     12.0
    455.6   -325.1     61.9      7.6      1.7
    421.6   -332.7     74.6      -.8      6.9
  542.  772. 1296. 1642. 1815. 2044. 1936. 1664. 1495.  985.  576.  499.
  285.  366.  575.  816.  959. 1036. 1071.  851.  596.  380.  320.  266.
CIRA 1.0 LOC=TRY KANSAS,MO, LAT=39.1, TWHT=22, YEAR=1968, ALT=742
```

LAKECHTR.CTY

```
  .140  .121  .084  .038  .030  .045  .063  .049  .039  .059  .069  .111
  .212  .202  .195  .243  .195  .141  .118  .12  .127  .16  .165  .188
  .51608E-06  4.42972 35.0
  .83592E-07  4.93422 35.0
  .10260E-01  2.12887 12.5
  .13460E-01  1.98944 10.0
  49.5  55.7  64.1  73.0  78.5  84.1  86.9  84.4  82.1  72.6  67.1  56.5
  44.9  48.3  54.8  64.7  71.1  73.4  78.1  76.5  72.2  61.3  57.8  50.4
  44.6  48.0  53.9  63.8  69.8  72.0  76.5  75.0  72.0  61.5  58.1  50.5
    441.5   -255.0     41.1     -3.5      9.2
    655.3   -392.3     29.2      8.3      5.7
    817.8   -324.9    -46.2     14.8     -1.8
    939.1   -208.4   -101.7     10.2    -11.2
    970.8    -73.7   -136.8       .9    -13.2
   1075.6     -3.3   -208.3     -2.8    -22.3
   1077.2    -20.0   -177.4    -21.0    -19.5
    986.6   -120.7   -136.5    -30.6    -12.2
    901.3   -298.6    -91.0     -7.8     -2.3
    787.0   -444.8     -2.5      7.5     10.4
    616.2   -451.9     53.3      8.6     10.5
    451.0   -298.2     45.3     16.5     -1.1
  602.  973. 1272. 1522. 1623. 2013. 1871. 1641. 1496. 1240.  883.  582.
  385.  464.  736. 1017. 1100. 1010. 1139. 1067.  773.  519.  330.  345.
CIRA 1.0 LOC=TRY LAKE CHARLES,LA, LAT=30.1, TWHT=22, YEAR=1966, ALT=9
```

LOSANGTR.CTY

```
  .116  .097  .111  .091  .080  .054  .040  .032  .049  .066  .093  .102
  .155  .165  .2  .188  .163  .162  .16  .156  .15  .137  .146  .125
  .37345E-02  2.60941 10.5
  .37858E-21 13.85732 35.0
  .15493E-03  4.03836 10.0
  .35948E-02  2.04498 10.0
  57.5  60.8  58.5  62.8  64.2  69.0  70.0  70.9  69.4  67.8  61.9  60.8
  51.0  55.3  52.9  55.7  58.2  62.0  63.4  64.8  63.2  59.7  55.3  53.6
  47.6  53.3  50.7  52.7  57.0  60.7  62.5  63.4  61.1  57.9  53.1  50.2
    678.9   -558.4     93.1     -5.8     21.1
    664.6   -405.8     29.6     13.9      5.5
    914.2   -457.2    -48.3      -.3      5.6
   1001.7   -340.5   -149.7     31.8    -17.1
    947.9   -179.0   -150.5     43.8    -19.7
    968.0   -112.5   -165.7     41.7    -17.5
    912.3   -185.6   -173.6     90.1    -19.2
    922.0   -292.3   -144.7     55.8    -18.5
    874.7   -439.2    -59.7     81.0    -24.5
    847.7   -597.2     24.1     40.3     -2.7
    653.2   -520.6     75.7     14.7      7.5
    577.0   -438.9     77.1      7.5      8.2
  896.  936. 1508. 1824. 1722. 1844. 1789. 1807. 1445. 1303.  886.  718.
  310.  476.  583.  724.  903.  932.  781.  692.  633.  404.  316.  353.
CIRA 1.0 LOC=TRY LOS ANGELES,CA, LAT=33.9, TWHT=20, YEAR=1973, ALT=97
```

LUBBOCTR.CTY

```
  .170  .162  .124  .087  .064  .058  .048  .050  .048  .085  .139  .152
  .244  .293  .307  .306  .244  .256  .229  .187  .21  .229  .262  .277
  .11842E-02  2.53060 28.0
  .11834E-07  5.48351 35.0
  .13192E-03  3.20461 23.5
  .13927      1.08062 10.5
  43.6  47.1  57.3  70.3  75.2  81.6  83.9  84.3  78.0  67.3  53.3  50.1
  34.3  33.0  43.3  54.0  62.1  68.0  73.2  71.3  66.1  52.8  39.9  36.8
  34.3  32.4  39.1  47.2  57.8  62.1  67.2  65.9  63.6  51.3  37.4  35.1
    638.2   -520.2     87.5      2.5     12.4
    841.4   -625.4     52.2     11.2     15.2
    970.9   -475.1    -55.0     -3.9      5.2
   1083.7   -321.8   -160.6      1.6    -13.3
   1086.5   -104.1   -199.7    -32.4    -22.9
   1124.2    -41.7   -246.1    -24.3    -30.2
   1133.1    -75.1   -207.9    -20.2    -25.8
   1100.6   -243.6   -222.7    -13.0    -23.4
    959.7   -439.3   -115.1     11.2    -10.2
    908.4   -636.9     23.8      2.1     16.6
    804.5   -712.1    105.2     12.9     14.7
    658.4   -570.5    105.0       .9     16.8
  853. 1246. 1615. 1965. 2036. 2269. 2072. 2107. 1749. 1450. 1122.  838.
  300.  378.  622.  825.  950.  873. 1056.  753.  505.  376.  251.  282.
CIRA 1.0 LOC=TRY LUBBOCK,TX, LAT=33.7, TWHT=68, YEAR=1955, ALT=3243
```

MADISOTR.CTY

```
  .222  .222  .189  .132  .112  .066  .051  .052  .094  .123  .176  .206
  .186  .203  .226  .243  .217  .19  .179  .163  .182  .179  .186  .164
  .24621E-05  4.09151 33.0
  .12656E-01  2.05762 15.5
  .26436E-02  2.61919 15.5
  .96131E-04  3.47081 19.5
  21.3  23.3  36.0  53.5  58.9  70.7  79.5  73.1  63.9  56.0  40.1  28.8
  18.0  16.6  29.9  43.7  49.4  58.1  66.6  60.7  51.3  45.8  34.6  25.5
  18.2  18.5  30.8  42.8  49.2  57.5  64.6  61.3  51.4  45.2  34.7  26.1
    402.5   -335.3     80.4      4.5       .9
    547.8   -394.4     63.4      1.6      8.2
    619.3   -281.0     10.7     -6.1      6.9
    897.4   -286.4    -60.0     -1.5     -4.1
    994.0   -190.6    -86.0     -5.0     -7.2
   1095.4   -138.3   -153.8    -23.2    -12.6
   1081.7   -165.2   -153.3    -23.1     -8.6
    958.3   -245.3    -77.4    -12.4     -4.4
    828.8   -400.0    -37.5    -17.1      6.6
    558.7   -359.6     42.0     -4.3     10.5
    394.3   -301.3     63.3      -.8      6.2
    305.6   -234.3     57.8      6.0     -1.7
  459.  705.  870. 1390. 1535. 1841. 1839. 1479. 1295.  761.  472.  344.
  238.  347.  583.  876. 1131. 1086. 1023.  997.  555.  380.  255.  220.
CIRA 1.0 LOC=TRY MADISON,WI, LAT=43.1, TWHT=21, YEAR=1974, ALT=858
```

MEMPHITR.CTY

```
  .160  .167  .118  .057  .045  .060  .052  .047  .049  .087  .099  .152
  .195  .195  .238  .221  .161  .166  .123  .14  .137  .135  .14  .209
  .73137E-06  4.35121 35.0
  .16155E-06  4.75956 35.0
  .24581E-01  1.76352 14.0
  .44160E-06  5.05638 22.0
  45.4  44.5  56.6  68.3  77.3  84.2  84.7  82.9  78.6  65.2  59.8  45.8
  37.7  36.6  47.3  59.9  67.2  74.1  75.3  73.9  68.0  53.3  50.6  41.3
  37.3  36.8  46.0  57.8  64.6  70.7  74.0  72.5  66.2  53.0  51.1  39.9
    600.7   -488.9     84.0     -4.8     18.9
    660.8   -460.8     40.2     -3.0     16.3
    807.6   -389.2    -34.3     -5.8      5.5
    904.6   -250.8   -107.6     -2.1     -7.0
   1041.3   -110.1   -173.9    -30.2    -18.7
   1074.9    -32.0   -213.5    -40.1    -24.6
   1045.4    -75.5   -201.7    -35.6    -23.1
    984.5   -215.2   -141.6     -5.2    -12.3
    872.1   -364.0    -74.4     -9.1      1.2
    802.6   -551.0     19.0    -10.7     22.6
    583.7   -466.2     70.6      9.4      7.1
    434.3   -326.0     62.3     13.5      -.9
  772.  952. 1327. 1548. 1834. 1996. 1967. 1733. 1526. 1253.  781.  535.
  295.  352.  557.  813.  992.  943.  905.  893.  599.  349.  281.  288.
CIRA 1.0 LOC=TRY MEMPHIS,TN, LAT=35.1, TWHT=22, YEAR=1964, ALT=258
```

MIAMI-TR.CTY

```
  .034  .050  .023  .025  .032  .052  .067  .073  .062  .034  .018  .017
  .182  .184  .191  .23  .165  .132  .181  .165  .186  .226  .177  .211
  .18896      1.14036 11.0
  .50481E-01  1.52619 12.0
  .90920E-02  2.07920 10.5
  .10507E-10  9.04093 17.5
 69.8  69.4  76.7  78.7  80.4  83.2  84.9  85.8  84.4  79.3  77.4  74.2
 65.0  62.9  71.1  73.3  74.9  77.9  79.8  80.3  78.9  74.5  72.2  69.5
 62.8  60.7  67.9  69.3  70.9  74.9  76.1  76.7  75.6  71.3  69.1  66.5
   532.0   -281.9     33.0     -2.3     10.3
   744.0   -388.2      2.1    -17.0     20.0
   884.6   -276.2    -62.7    -22.9      6.2
   994.1   -143.9   -147.1    -22.0    -14.7
  1023.4    -15.7   -172.1    -12.3    -21.6
  1048.6     49.2   -156.5     -8.4    -17.0
  1070.6     36.6   -160.2    -21.6    -20.1
   997.6    -96.3   -150.1    -10.6    -17.3
   908.2   -227.1    -83.9    -12.8     -4.1
   778.6   -326.2    -16.1     -2.8      8.3
   622.7   -365.1     31.9    -10.8     20.2
   521.0   -342.6     49.8     -1.7     13.0
 744. 1184. 1436. 1682. 1774. 1788. 1783. 1717. 1474. 1193.  927.  740.
 482.  539.  853. 1039. 1090. 1179. 1213. 1079.  949.  716.  458.  368.
CIRA 1.0 LOC=TRY MIAMI,FL, LAT=25.8, TWHT=23, YEAR=1964, ALT=9
```

MINNEATR.CTY

```
  .251  .230  .208  .145  .094  .048  .048  .040  .082  .133  .191  .226
  .199  .214  .207  .276  .245  .213  .199  .184  .201  .223  .244  .208
  .41247E-01  1.67952 17.0
  .35577E-01  1.72035 14.5
  .15290E-01  1.97222 15.5
  .53837E-02  2.32001 14.5
  8.2  18.8  28.8  50.0  62.3  76.3  81.3  77.4  65.7  52.8  34.3  19.4
  4.7  13.8  23.9  42.1  54.7  67.0  70.1  66.6  57.3  46.3  31.0  17.1
  5.8  14.8  23.3  40.0  52.3  63.3  66.4  63.7  56.0  45.3  29.9  16.4
   398.0   -342.5     85.5      1.0      2.5
   560.3   -438.0     74.9     -6.4     14.7
   773.0   -486.0     17.5      3.1      5.9
   921.7   -329.5    -65.6    -14.8       .7
  1009.8   -242.0    -99.3     12.6     -8.8
  1146.4   -184.4   -162.6     -6.5    -18.2
  1160.6   -224.1   -186.3     -5.8    -17.5
  1023.4   -340.5   -127.7     -2.6     -6.7
   786.3   -411.2    -17.1      8.7       .8
   590.9   -422.8     53.2    -10.2     16.7
   349.9   -251.4     56.6      5.6      -.6
   314.6   -256.8     69.2     -1.2      1.9
 438.  712. 1142. 1448. 1617. 1943. 2023. 1733. 1187.  817.  408.  343.
 224.  299.  442.  786. 1029. 1054.  938.  753.  549.  325.  265.  207.
CIRA 1.0 LOC=TRY MINNEAPOLIS,MN, LAT=44.9, TWHT=21, YEAR=1970, ALT=834
```

NASHVITR.CTY

```
  .157  .164  .126  .078  .054  .046  .042  .038  .031  .084  .135  .158
  .208  .203  .218  .225  .172  .174  .156  .137  .144  .173  .196  .217
  .26389E-05  4.02766 35.0
  .19966E-02  2.40836 21.0
  .24075E-02  2.69726 14.0
  .58010E-03  3.16848 13.0
  44.7  44.2  54.9  65.5  73.6  78.9  82.1  81.9  80.5  64.1  51.1  44.3
  38.3  37.4  46.2  55.0  61.4  66.3  71.5  71.8  70.8  55.4  45.7  40.5
  37.8  36.5  44.0  53.0  61.5  64.2  70.3  70.5  69.2  55.0  45.2  39.0
    479.0   -360.0     62.7     10.4      2.9
    580.8   -390.2     43.8      7.8      7.6
    788.9   -371.9    -14.9      4.3      4.9
    964.9   -279.5   -103.3      6.1    -11.0
   1039.9   -133.9   -180.8    -19.7    -19.5
   1129.4    -65.6   -197.5    -23.5    -22.1
   1042.9   -103.1   -182.4    -14.7    -18.9
   1016.3   -245.8   -159.0     -9.2    -12.1
    837.7   -310.5    -55.4     -9.1      -.5
    630.6   -325.3      7.0     -3.8      9.5
    434.8   -260.3     39.1      2.5      5.1
    380.5   -272.6     57.4     -2.9      8.2
  593.  819. 1218. 1611. 1884. 1990. 1892. 1832. 1358.  911.  562.  475.
  301.  373.  642.  886.  928. 1093.  970.  829.  719.  504.  367.  273.
CIRA 1.0 LOC=TRY NASHVILLE,TN, LAT=36.1, TWHT=25, YEAR=1972, ALT=590
```

NEWORLTR.CTY

```
  .140  .137  .092  .045  .029  .054  .046  .052  .036  .035  .068  .122
  .191  .231  .215  .207  .177  .149  .128  .137  .16  .201  .193  .196
  .22967E-07  5.27749 35.0
  .17547E-02  2.65066 16.0
  .15799E-02  2.69718 14.0
  .19840E-13  8.80071 35.0
  51.0  50.5  61.3  73.1  79.0  84.6  83.1  84.6  81.4  72.3  66.4  55.2
  45.6  45.6  55.4  64.7  71.1  77.1  77.3  77.2  76.0  66.2  59.3  49.4
  43.6  42.4  52.2  62.2  68.8  73.9  75.0  74.1  73.7  62.7  57.5  47.7
    568.2   -374.0     44.7     -1.4     14.0
    681.4   -427.0     31.6      7.7      9.2
    800.6   -337.2    -42.2       .7      2.6
    954.2   -211.9   -123.2      8.2    -13.5
    970.2    -86.9   -166.1      2.3    -19.3
   1014.5     11.6   -195.9    -20.9    -22.9
   1017.0     16.1   -159.3    -57.7    -19.5
    949.9   -143.1   -173.4    -24.8    -21.6
    848.1   -235.4    -67.5    -26.9      4.4
    740.2   -414.9      2.2     11.4      6.7
    566.9   -390.3     46.6       .8     12.6
    494.5   -348.5     60.3     -7.6     14.9
  760. 1038. 1332. 1610. 1785. 1924. 1779. 1781. 1366. 1175.  810.  672.
  390.  442.  644.  962.  960.  947. 1086.  812.  849.  507.  346.  325.
CIRA 1.0 LOC=TRY NEW ORLEANS,LA, LAT=30.0, TWHT=53, YEAR=1958, ALT=4
```

NEWYORTR.CTY

```
  .178  .180  .164  .123  .078  .041  .027  .025  .038  .089  .155  .169
  .26  .276  .298  .231  .212  .19  .175  .177  .203  .24  .245  .225
  .10319E-01  2.17841 14.5
  .23905E-10  7.10849 35.0
  .10670E-01  2.17981 12.5
  .11383E-02  3.34710 10.0
  38.5  38.1  44.3  55.9  66.2  72.9  79.3  77.6  71.2  61.8  45.6  40.6
  35.2  34.1  39.4  49.2  58.1  65.9  72.6  70.6  65.0  56.3  41.8  37.4
  33.0  32.3  37.5  46.1  54.0  62.5  67.5  66.9  60.8  53.2  38.6  35.0
    443.8   -354.3     79.2     -4.4     10.2
    575.5   -413.1     57.1     -1.6     12.8
    742.4   -376.2    -18.7      8.2      3.4
    966.2   -306.4    -96.6     -7.7     -4.7
   1053.8   -210.7   -141.1      4.8     -9.3
   1054.1   -149.7   -142.3      6.2    -13.1
   1074.8   -157.8   -146.8     -5.5    -15.7
   1003.2   -278.8   -111.1      7.2     -9.5
    847.9   -372.2    -32.8    -15.5      8.3
    577.8   -371.3     30.3     10.7      2.9
    478.2   -371.0     77.8     -9.2     13.2
    391.4   -317.8     76.4      1.1      3.9
  527.  767. 1083. 1572. 1770. 1803. 1795. 1652. 1318.  795.  592.  453.
  271.  342.  556.  841. 1027. 1084. 1092.  927.  671.  380.  288.  244.
CIRA 1.0 LOC=TRY NEW YORK,NY, LAT=40.8, TWHT=62, YEAR=1951, ALT=16
```

OKLAHOTR.CTY

```
  .173  .158  .139  .100  .052  .042  .057  .071  .056  .085  .155  .160
  .313  .313  .318  .356  .279  .252  .227  .222  .258  .282  .258  .296
  .37285E-04  3.34696 35.0
  .18919E-01  1.75596 18.5
  .34972E-06  4.51851 35.0
  .20407       .91293 10.0
  40.5  44.8  51.4  61.0  71.9  78.7  86.1  89.3  77.6  65.9  46.7  43.5
  34.0  37.5  42.5  52.5  62.8  71.2  75.8  78.0  67.3  56.6  39.6  37.4
  32.0  36.9  39.5  48.6  60.4  68.9  72.8  71.7  63.6  54.5  39.1  35.0
    574.3   -464.9     82.1     16.1      2.8
    612.0   -395.5     46.5      7.3      6.9
    822.3   -355.8    -31.7     -4.7      4.7
    971.6   -300.9   -117.2      8.5    -11.8
   1045.1   -157.2   -175.9      9.0    -19.5
   1044.6   -106.0   -162.9     24.9    -15.4
   1079.3   -126.7   -210.3     14.8    -23.4
    980.5   -246.0   -180.4     -2.1    -18.5
    888.5   -403.6    -75.4      6.5     -3.3
    701.7   -444.7     15.7      3.4      8.0
    587.3   -463.7     72.0       .5     14.4
    542.5   -444.3     87.8      9.5      5.2
  720.  856. 1271. 1687. 1847. 1829. 2026. 1847. 1537. 1083.  783.  669.
  308.  426.  682.  811.  975. 1087.  928.  682.  569.  390.  294.  297.
CIRA 1.0 LOC=TRY OKLAHOMA CITY,OK, LAT=35.4, TWHT=70, YEAR=1951, ALT=1285
```

OMAHA-TR.CTY

```
  .226  .200  .149  .136  .083  .046  .049  .044  .071  .113  .168  .202
  .207  .179  .264  .238  .247  .23  .178  .173  .168  .22  .218  .2
  .39522E-05  3.94365 35.0
  .18450E-01  1.97030 14.5
  .30184E-02  2.58874 16.0
  .98911E-02  2.25638 12.0
  20.8  32.3  49.0  53.6  68.3  77.6  83.7  77.0  68.7  60.0  43.4  31.6
  15.8  24.2  39.0  43.9  55.5  67.7  74.7  65.3  57.8  46.9  35.4  24.2
  16.4  24.9  37.7  41.7  52.4  65.0  71.7  64.8  57.5  46.4  35.0  24.7
    473.3   -395.4     88.9     -6.1     11.7
    619.9   -463.1     63.2      5.7      9.2
    756.9   -384.0     -3.6    -11.1     11.2
    910.7   -266.6    -72.9    -11.8      -.8
   1099.5   -246.5   -172.5      9.2    -16.9
   1156.0   -160.9   -171.0      9.9    -16.2
   1123.0   -207.1   -198.6     14.0    -21.3
   1030.3   -311.8   -140.6       .2    -11.4
    848.0   -397.1    -43.5     16.1     -3.7
    729.6   -533.3     44.0     -1.5     16.0
    511.6   -414.7     88.1     -8.3     13.5
    419.3   -360.6     90.3     -4.2      6.5
  556.  813. 1143. 1429. 1977. 1967. 2074. 1779. 1319. 1043.  639.  478.
  260.  341.  566.  893.  893. 1141.  887.  788.  634.  334.  281.  230.
CIRA 1.0 LOC=TRY OMAHA,NE, LAT=41.3, TWHT=20, YEAR=1966, ALT=977
```

PHILADTR.CTY

```
  .198  .193  .170  .107  .064  .036  .030  .036  .052  .103  .153  .189
  .248  .272  .266  .233  .225  .192  .17  .169  .171  .178  .199  .249
  .31596E-04  3.59334 25.5
  .12031E-01  1.99765 15.5
  .31507E-01  1.80435 11.5
  .67048E-15 10.11939 34.5
  31.7  34.1  43.1  60.2  70.1  77.6  78.2  79.9  71.6  60.2  47.4  34.8
  28.0  30.0  35.5  50.3  59.4  68.4  70.9  69.9  62.0  50.5  41.4  31.9
  26.2  28.0  33.5  48.1  55.4  65.3  69.3  68.7  60.8  49.5  39.9  30.1
    463.5   -373.3     76.8     -7.7     15.1
    511.2   -312.1     41.6     -6.6     12.3
    799.0   -434.0    -17.2      5.1      4.4
    962.0   -310.6    -92.3      2.0     -7.2
   1084.7   -218.6   -177.4      7.3    -14.7
   1065.3   -154.2   -136.8     17.3    -11.3
   1000.7   -126.9   -114.8     -8.3    -11.7
   1011.9   -293.5   -124.3      1.1     -9.6
    847.1   -404.5    -25.4     -1.1      6.1
    665.8   -458.3     37.3      -.6     14.1
    462.6   -344.4     73.5     -8.1     11.3
    413.1   -333.6     77.3     -3.3      8.6
  550.  671. 1213. 1565. 1927. 1816. 1585. 1745. 1369.  944.  578.  486.
  265.  399.  524.  851.  918. 1129. 1145.  850.  630.  364.  305.  252.
CIRA 1.0 LOC=TRY PHILADELPHIA,PA, LAT=39.9, TWHT=20, YEAR=1969, ALT=5
```

PHOENITR.CTY

```
  .126  .108  .083  .065  .076  .083  .119  .091  .069  .068  .092  .124
  .086  .101  .114  .114  .112  .108  .107  .096  .074  .086  .076  .083
  .86677E-07  5.00288 33.5
  .19452E-05  4.53889 23.5
  .59541E-01  1.50920 15.0
  .30423E-01  1.81361 12.0
  57.7  61.9  68.4  75.0  86.1  93.6  99.9  93.4  91.7  80.2  65.5  57.2
  43.4  48.9  53.0  61.0  69.5  74.6  85.6  81.4  74.1  62.5  50.7  45.3
  41.6  46.1  46.1  53.4  57.2  59.3  71.1  71.0  66.8  57.2  49.9  44.6
    691.8   -597.1    104.1     12.4      8.9
    761.6   -515.6     40.4    -13.7     25.0
    962.2   -487.9    -54.5     -4.6      7.4
   1056.8   -261.8   -142.2    -24.6    -11.1
   1143.7   -151.6   -275.6      5.3    -32.5
   1154.8    -44.5   -325.9     -2.1    -41.7
   1118.2    -89.8   -255.0    -14.9    -31.0
   1024.0   -255.8   -209.5      5.5    -22.6
   1031.1   -518.3   -144.1     -3.3     -3.3
    890.0   -612.7     12.1     -1.1     17.2
    737.6   -620.4     88.0     -7.4     25.1
    604.7   -503.7    100.6     -9.4     18.9
  920. 1127. 1623. 1843. 2325. 2554. 2361. 2083. 2012. 1444. 1045.  794.
  285.  411.  576.  913.  755.  610.  786.  633.  349.  358.  263.  293.
CIRA 1.0 LOC=TRY PHOENIX,AZ, LAT=33.4, TWHT=29, YEAR=1951, ALT=1108
```

PITTSBTR.CTY

```
  .210  .184  .170  .118  .079  .042  .038  .048  .059  .131  .160  .181
  .229  .212  .247  .239  .211  .205  .174  .149  .167  .152  .216  .256
  .31869E-04  3.44355 31.0
  .59949E-02  2.26867 16.5
  .23395E-01  1.85228 14.0
  .79274E-11  7.49455 35.0
  26.4  37.1  42.5  56.4  66.4  74.9  76.9  75.9  69.1  53.5  45.0  37.5
  23.8  32.1  35.9  47.6  55.5  65.7  67.1  64.2  60.2  46.1  39.7  33.9
  23.2  31.9  34.5  46.5  53.6  63.2  64.0  61.8  58.5  45.1  38.5  32.8
    342.3   -200.7     44.4      1.5      2.9
    456.5   -267.1     40.4     11.0      -.9
    725.4   -356.3     -2.1      2.4      2.8
    911.4   -249.3    -67.6     -8.0     -3.7
   1071.6   -190.9   -135.7    -15.8    -10.5
   1147.3   -128.6   -148.6    -14.9    -15.3
   1148.6   -171.2   -157.2      1.1    -14.1
   1032.7   -231.3   -119.0    -25.0     -7.9
    805.2   -324.6    -17.6      -.8      2.9
    583.4   -345.4     24.6     -2.6     10.1
    423.8   -294.1     57.0     -1.2      7.2
    384.6   -301.1     71.4      7.0     -1.4
  418.  600. 1055. 1414. 1792. 1895. 1927. 1671. 1211.  819.  531.  445.
  330.  400.  591.  950. 1070. 1241. 1167. 1000.  759.  418.  310.  258.
CIRA 1.0 LOC=TRY PITTSBURGH,PA, LAT=40.5, TWHT=20, YEAR=1957, ALT=1151
```

PORTMETR.CTY

```
  .222  .216  .188  .163  .111  .072  .051  .056  .092  .141  .178  .203
  .191  .182  .176  .177  .169  .162  .163  .164  .163  .182  .188  .142
  .84298E-02  2.17145 15.0
  .18876E-01  1.94113 13.5
  .91899E-02  2.07079 16.0
  .14205E-01  2.10365 12.0
  22.9  25.4  37.5  47.0  60.9  70.3  73.9  71.9  63.7  52.0  40.1  30.9
  17.5  19.9  29.7  36.3  49.4  57.3  60.3  60.5  53.4  43.3  34.0  24.9
  18.1  19.8  28.8  36.2  48.3  56.9  59.7  60.5  54.3  43.4  33.8  25.9
    429.7   -365.4     81.7     -3.7     10.4
    585.4   -452.2     68.1      4.5      9.5
    739.2   -415.9      -.4      2.1      5.8
    953.1   -341.2    -77.9    -20.9     -1.8
   1067.5   -237.7   -127.1     -7.4    -11.5
   1163.0   -179.0   -165.3     -4.7    -16.7
   1148.1   -198.5   -168.5    -13.6    -13.5
    991.4   -277.3    -85.1       .7     -5.0
    823.3   -428.6    -23.8     15.0     -1.9
    611.4   -440.1     52.1     -5.9     14.0
    433.3   -347.0     73.5     -4.2     10.7
    371.5   -327.3     85.4      1.0      2.2
  480.  733. 1081. 1540. 1791. 1987. 1961. 1562. 1266.  836.  512.  406.
  233.  316.  494.  764. 1001. 1101. 1047.  985.  567.  329.  256.  205.
CIRA 1.0 LOC=TRY PORTLAND,ME, LAT=43.7, TWHT=20, YEAR=1965, ALT=43
```

PORTORTR.CTY

```
  .184  .163  .154  .131  .118  .072  .062  .067  .082  .112  .147  .174
  .252  .2  .191  .183  .156  .162  .159  .155  .13  .115  .193  .221
  .48907E-01  1.61415 11.5
  .42870E-02  2.40549 13.0
  .16079E-01  1.90493 15.5
  .10885E-01  1.95770 14.5
  36.3  44.2  47.0  53.9  57.1  68.2  75.1  69.3  66.2  58.0  48.8  40.5
  34.3  40.4  40.8  46.9  50.1  57.9  62.2  60.2  56.7  51.2  44.9  37.1
  33.5  39.3  40.5  46.0  48.9  54.8  58.0  56.8  54.6  51.3  44.0  36.5
    214.3   -108.8     25.6      3.7     -1.7
    407.7   -262.9     40.0      7.9       .6
    569.6   -287.2     15.0     22.0     -5.7
    822.9   -241.1    -20.1     -3.1     -1.8
    997.0   -203.2    -55.1      2.0     -2.0
   1153.7   -237.2   -177.3     28.9    -17.3
   1185.8   -306.8   -221.5     32.2    -24.0
    984.6   -356.4    -91.4     55.1    -18.9
    748.8   -410.1     -8.5     40.7     -9.6
    482.4   -310.2     39.0     25.2     -8.0
    307.3   -202.2     44.3      3.4       .4
    260.2   -193.8     54.7     -1.2       .5
  257.  511.  780. 1166. 1462. 2023. 2247. 1570. 1096.  625.  366.  293.
  239.  316.  523.  959. 1246.  962.  709.  860.  556.  369.  259.  203.
CIRA 1.0 LOC=TRY PORTLAND,OR, LAT=45.6, TWHT=20, YEAR=1960, ALT=21
```

RALEIGTR.CTY

```
  .164  .155  .153  .095  .044  .042  .028  .038  .043  .089  .125  .154
  .21  .21  .201  .211  .159  .165  .142  .138  .137  .163  .166  .168
  .44431E-02  2.24749 21.0
  .27270E-09  6.47907 35.0
  .12952E-01  2.16097 12.5
  .29948E-02  2.57356 12.0
  43.8  45.9  48.1  63.1  77.0  76.0  78.9  81.2  76.5  64.2  56.0  48.6
  36.1  38.5  40.1  52.5  64.8  66.1  69.9  70.3  65.9  51.8  46.0  38.8
  34.9  37.3  39.7  50.8  63.3  65.2  69.9  69.9  66.0  51.8  44.8  38.4
    584.9   -492.6     93.8     10.7      5.5
    628.4   -432.1     46.5      3.4      9.1
    786.9   -378.9    -12.2      4.4      4.2
    948.7   -251.1   -103.6     -9.9     -4.5
   1055.8   -167.2   -180.3     -3.2    -19.1
   1037.2    -92.2   -163.4      4.0    -13.0
   1034.2   -125.2   -141.2     10.5    -12.4
    983.2   -248.8   -130.4      6.5    -12.2
    883.0   -351.5    -60.7      9.3      -.7
    776.0   -536.7     35.1     -6.4     19.5
    585.5   -462.5     68.4     15.0      4.2
    535.9   -442.6     93.0     -6.0     14.5
  752.  897. 1232. 1570. 1926. 1839. 1778. 1755. 1410. 1207.  766.  673.
  282.  368.  623.  901.  936. 1065. 1120.  872.  746.  371.  298.  283.
CIRA 1.0 LOC=TRY RALEIGH,NC, LAT=35.8, TWHT=20, YEAR=1965, ALT=434
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RICHMOTR.CTY

```
  .185  .181  .158  .095  .061  .038  .032  .038  .055  .088  .144  .184
  .173  .205  .193  .182  .158  .145  .126  .117  .116  .136  .144  .163
  .15002E-03  3.03983 27.5
  .25249E-03  3.03931 22.0
  .21015E-01  1.97197 12.5
  .92578E-15  9.95955 35.0
  36.8  39.1  47.5  64.2  72.6  79.9  81.1  79.0  72.8  63.5  51.1  38.1
  31.3  33.8  37.0  52.3  58.9  69.7  72.1  68.8  61.8  52.6  41.9  32.2
  30.4  32.3  36.3  51.6  58.4  68.7  72.0  69.3  63.2  53.7  42.2  31.5
    471.4   -360.6     73.3     -6.8     13.4
    519.8   -300.8     38.4    -17.3     17.1
    855.5   -439.0    -24.7    -17.6     12.6
    985.3   -285.6   -108.9    -10.9     -5.4
   1077.7   -178.4   -204.9    -12.0    -20.3
   1110.0    -95.4   -160.3    -10.8    -16.9
   1059.9   -109.4   -139.6    -18.4    -14.4
   1004.5   -257.8   -135.9     -7.2    -10.9
    860.0   -327.1    -46.3    -12.9      4.2
    683.1   -459.8     28.6     18.1      7.7
    540.4   -408.5     72.8     -5.7     14.8
    493.3   -424.7     94.9       .5      7.7
  585.  713. 1381. 1643. 2007. 1861. 1755. 1744. 1351.  979.  690.  600.
  294.  413.  551.  873.  847. 1185. 1161.  867.  756.  399.  322.  248.
CIRA 1.0 LOC=TRY RICHMOND,VA, LAT=37.5, TWHT=20, YEAR=1969, ALT=164
```

SACRAMTR.CTY

```
  .168  .148  .132  .088  .083  .077  .077  .070  .073  .082  .116  .152
  .122  .194  .164  .154  .19  .182  .15  .143  .136  .118  .076  .061
  .23428E-10  7.19697 35.0
  .58761E-02  2.40502 11.5
  .47583E-04  3.50662 25.0
  .38872E-11  7.60496 35.0
  43.8  49.0  55.2  68.6  69.7  80.1  83.0  82.2  77.2  65.9  58.3  47.5
  36.8  44.2  45.1  51.9  53.4  59.8  61.8  62.7  59.5  55.9  48.8  42.7
  37.9  44.4  46.1  52.6  53.3  58.1  60.5  61.2  59.3  56.3  50.3  43.8
    575.1   -503.3     95.9     23.3     -3.4
    518.7   -303.6     25.5      4.5      5.2
    820.7   -393.9    -22.5     -1.1      3.5
   1057.8   -382.9   -145.9     -4.3    -12.3
   1096.1   -197.2   -207.5     -2.1    -22.3
   1138.8   -124.6   -299.7     -4.5    -34.4
   1145.5   -185.8   -297.0      9.0    -34.6
   1073.6   -355.4   -231.8     -6.5    -21.6
   1004.2   -564.1   -102.6      4.3     -1.5
    715.3   -509.0     30.4     27.9     -2.3
    607.3   -519.8     91.7     23.6     -1.9
    402.2   -306.9     64.9     17.0     -5.5
  685.  693. 1245. 1917. 2035. 2434. 2437. 2202. 1808. 1040.  761.  468.
  264.  402.  626.  667.  842.  562.  544.  422.  348.  352.  277.  277.
CIRA 1.0 LOC=TRY SACRAMENTO,CA, LAT=38.5, TWHT=20, YEAR=1962, ALT=17
```

SALTLATR.CTY

```
  .198  .189  .183  .132  .090  .064  .062  .059  .073  .117  .180  .207
  .126  .179  .186  .2  .185  .163  .188  .22  .165  .155  .162  .174
  .48828E-03  2.79707 26.0
  .11811E-07  5.46293 35.0
  .35935E-07  5.26991 33.5
  .58882E-12  8.24228 35.0
  33.1  36.9  38.8  54.1  66.1  75.8  84.6  84.0  74.6  59.7  39.0  28.7
  26.6  29.7  31.8  44.9  52.7  61.4  67.9  67.1  58.3  46.1  32.8  23.9
  27.1  29.0  30.8  41.0  45.8  53.7  56.3  56.2  51.0  43.5  31.9  23.8
    502.3   -428.9     91.4     -1.9     10.4
    553.4   -363.9     50.3      3.8      6.4
    775.3   -380.4      2.8    -12.9     11.0
   1003.8   -325.8    -70.6      4.8     -4.3
   1151.4   -236.5   -167.6    -11.6    -16.5
   1231.3   -154.0   -218.3    -15.6    -25.0
   1238.9   -215.5   -281.7    -21.9    -30.1
   1140.5   -396.0   -202.2    -23.1    -17.3
   1045.0   -591.2    -71.7     -3.7      4.1
    781.0   -589.7     52.7      7.0     13.5
    496.8   -387.5     75.5     -4.1     12.1
    368.7   -273.7     66.1      8.4     -3.1
  596.  725. 1143. 1596. 2083. 2262. 2557. 2264. 1796. 1110.  616.  429.
  253.  394.  624.  966.  976. 1031.  659.  513.  444.  341.  292.  274.
CIRA 1.0 LOC=TRY SALT LAKE CITY,UT, LAT=40.8, TWHT=58, YEAR=1948, ALT=4222
```

SANANTTR.CTY

```
  .127  .130  .110  .042  .043  .061  .065  .059  .052  .034  .069  .129
  .181  .229  .207  .219  .212  .19  .178  .182  .158  .177  .188  .202
  .11021E-05  4.37410 32.5
  .21324E-02  2.44214 20.0
  .16265E-08  6.29033 30.0
  .18717E-12  8.41525 35.0
 53.4  54.1  58.4  73.7  77.4  87.5  87.8  86.3  84.3  76.9  65.7  53.1
 46.4  46.0  50.6  64.1  68.2  77.3  78.5  77.9  72.4  69.1  59.0  46.5
 45.6  44.0  48.9  61.6  65.4  71.6  74.0  74.9  69.3  67.3  57.1  46.2
   522.9   -333.6     48.1       .7      9.5
   712.2   -465.9     30.4     15.4      6.4
   796.3   -312.2    -50.0     28.3     -8.7
   909.3   -227.1   -107.4     28.0    -13.5
  1004.3   -107.9   -177.1     30.1    -19.7
  1015.5    -25.6   -210.9     23.0    -23.0
  1021.0    -56.0   -201.6     18.5    -21.1
   951.9   -159.2   -130.9     13.4    -14.6
   951.7   -352.5   -131.1    -14.3     -6.6
   721.8   -344.5     -.5     18.0     -2.5
   537.4   -335.8     36.6      8.3      5.1
   496.0   -358.2     60.5      1.3     10.2
 725. 1102. 1255. 1532. 1827. 2029. 1983. 1658. 1739. 1094.  760.  673.
 389.  419.  726.  925.  990.  894.  934. 1003.  598.  629.  390.  317.
CIRA 1.0 LOC=TRY SAN ANTONIO,TX, LAT=29.5, TWHT=33, YEAR=1960, ALT=788
```

SANDIETR.CTY

```
  .105  .097  .096  .078  .073  .042  .016  .014  .016  .048  .079  .105
  .143  .12  .155  .164  .16  .168  .157  .163  .149  .148  .109  .114
  .59014E-15  9.95148 35.0
  .24671E-15  9.93506 35.0
  .99049E-02  1.93192 11.0
  .21587E-23 15.11182 35.0
 59.2  62.2  60.9  64.6  64.3  68.7  72.7  71.2  71.3  68.5  65.7  60.4
 53.9  53.5  56.3  58.2  60.5  64.0  68.2  67.2  67.3  63.7  57.8  52.0
 50.3  48.6  53.1  54.1  56.0  60.6  64.1  63.2  63.9  59.5  53.7  48.1
   598.0   -440.5     70.4      7.0      8.5
   845.3   -612.9     44.4      7.2     16.4
   870.7   -364.4    -26.5      9.0       .6
   993.8   -373.0   -171.9     57.9    -21.1
   925.2   -153.1   -128.6     39.5    -14.9
   907.5   -101.2   -197.9     56.6    -19.8
   898.6   -149.1   -183.7     64.4    -16.4
   871.0   -308.3   -128.8    105.6    -21.7
   857.5   -421.0    -65.1     84.9    -22.4
   741.2   -453.1     18.0     46.5     -9.2
   719.4   -587.5     78.4     14.6      9.4
   707.9   -634.0    115.4      8.3     12.8
 803. 1282. 1357. 1992. 1676. 1906. 1920. 1676. 1515. 1130. 1010.  928.
 362.  383.  784.  587.  976.  716.  716.  708.  619.  512.  296.  261.
CIRA 1.0 LOC=TRY SAN DIEGO,CA, LAT=32.4, TWHT=20, YEAR=1974, ALT=13
```

SANFRATR.CTY

```
  .141  .137  .125  .116  .116  .095  .081  .077  .086  .087  .120  .142
  .169  .181  .206  .228  .303  .288  .298  .26  .238  .179  .167  .171
  .32489E-14  9.56358 35.0
  .16372E-04  4.69905 11.0
  .18154E-01  1.94023 11.0
  .10000E-30 20.00000 35.0
  50.5  52.7  55.0  57.8  58.6  63.1  65.2  65.7  64.3  64.4  56.6  50.6
  46.2  46.6  50.1  50.3  50.6  54.6  57.3  57.5  56.5  56.3  50.7  46.5
  45.0  45.1  49.1  49.1  50.0  54.0  56.6  57.2  56.4  54.9  50.0  45.2
    513.3   -408.8     80.0     14.8      -.4
    689.5   -507.6     61.8     -1.3     15.3
    770.4   -345.8     -4.0      4.3      2.8
   1014.9   -343.7   -143.7      1.4    -11.9
   1026.7   -228.9   -217.6     17.7    -25.1
    990.7   -154.9   -221.0     36.9    -24.1
    989.0   -198.9   -214.6     53.9    -23.3
    927.8   -329.4   -161.2     42.7    -19.4
    909.8   -579.1    -65.8     96.6    -29.0
    750.1   -527.3     25.7     11.8      9.6
    593.4   -476.0     82.8     -4.6     15.0
    497.2   -430.9     90.3      9.1      3.8
  632.  940. 1132. 1794. 2113. 2087. 2028. 1870. 1630. 1123.  774.  587.
  301.  364.  698.  705.  611.  641.  654.  525.  372.  350.  296.  246.
CIRA 1.0 LOC=TRY SAN FRANCISCO,CA, LAT=37.6, TWHT=20, YEAR=1974, ALT=8
```

SEATTLTR.CTY

```
  .174  .167  .162  .141  .128  .091  .066  .086  .101  .125  .157  .170
  .174  .23  .235  .243  .214  .2  .181  .2  .188  .197  .226  .174
  .18265E-11  7.85844 35.0
  .26889E-02  2.70390 11.5
  .13446E-01  1.90105 16.5
  .17763E-09  6.69741 34.0
  39.7  42.9  44.7  51.7  55.2  63.3  72.1  65.0  60.7  54.8  45.8  41.2
  37.4  39.4  40.0  44.5  48.1  54.2  60.3  57.9  53.8  50.0  42.4  38.6
  36.1  38.1  39.7  44.8  48.1  53.0  57.2  56.1  53.6  49.4  41.1  37.6
    230.2   -158.2     42.1     -1.9      2.1
    385.2   -263.8     44.6      -.8      6.4
    510.2   -260.2     18.1     13.7     -1.2
    782.5   -254.0    -24.3      -.4      -.7
    939.3   -216.6    -54.3      5.1     -5.4
   1042.3   -223.5   -143.5     21.6    -11.0
   1120.8   -285.3   -186.4     10.2    -15.3
    849.7   -280.3    -62.6     36.6    -14.2
    656.7   -361.3     -5.3     29.6     -8.2
    434.5   -259.9     32.2      9.3       .2
    295.8   -227.5     53.9      2.7       .7
    218.1   -158.4     43.3      1.9     -1.1
  261.  478.  682. 1124. 1409. 1769. 2041. 1274.  945.  552.  336.  238.
  196.  275.  471.  851. 1100.  929.  745.  841.  479.  358.  205.  178.
CIRA 1.0 LOC=TRY SEATTLE,WA, LAT=47.5, TWHT=20, YEAR=1960, ALT=400
```

STLOUITR.CTY

```
  .196  .187  .146  .109  .064  .054  .047  .046  .044  .107  .168  .195
  .225  .234  .251  .233  .181  .193  .177  .15  .179  .182  .194  .216
  .19326E-04  3.44825 35.0
  .55427E-02  2.11712 20.5
  .14603E-06  5.13147 28.0
  .78070E-04  3.56617 19.5
 32.8  36.6  50.1  59.2  73.3  79.9  82.1  81.1  75.5  58.6  42.2  32.2
 26.6  29.4  41.0  50.7  60.9  66.8  73.0  71.0  67.7  51.5  38.3  28.7
 27.1  29.8  40.2  49.3  59.0  63.5  69.5  69.7  67.2  50.9  38.6  29.2
   523.4   -450.2     91.4      9.2      3.2
   564.3   -380.5     50.2       .8      7.4
   794.7   -389.3     -7.5     -3.1      5.3
   957.3   -249.7    -84.7    -29.6       .1
  1076.3   -162.1   -157.7    -25.3    -13.2
  1142.0    -98.8   -187.4    -16.1    -17.4
  1090.5    -96.7   -149.7    -35.5    -13.5
  1008.1   -235.8   -119.9    -15.8     -7.5
   806.1   -304.2    -30.3     -7.2      6.2
   582.9   -321.7     19.0     -9.3     12.1
   386.4   -213.2     35.6     -2.3      7.3
   357.2   -248.6     55.6       .4      4.0
 639.  773. 1203. 1536. 1877. 1982. 1765. 1686. 1258.  843.  485.  432.
 251.  367.  621.  946. 1026. 1110. 1184.  956.  761.  441.  367.  279.
CIRA 1.0 LOC=TRY ST LOUIS,MO, LAT=38.4, TWHT=20, YEAR=1972, ALT=535
```

TAMPA-TR.CTY

```
  .075  .063  .039  .038  .049  .048  .051  .042  .032  .034  .052  .060
  .185  .189  .181  .201  .184  .187  .138  .129  .168  .183  .192  .201
  .59175E-08  5.63287 35.0
  .28346E-01  1.91336 11.0
  .40602E-01  1.65564 10.0
  .76316E-11  7.18278 35.0
 65.2  67.7  74.0  75.4  84.5  84.3  84.9  83.3  81.5  76.0  69.9  66.5
 56.9  59.3  64.5  65.9  73.5  76.3  77.0  76.2  75.4  67.4  62.0  59.9
 56.0  58.6  62.9  64.1  70.7  74.2  75.0  75.1  74.1  65.8  61.0  58.5
   593.9   -442.4     59.6      5.3     11.1
   721.1   -439.6     18.9      -.5     14.1
   879.1   -381.7    -72.1     11.1     -3.7
   959.6   -200.2   -174.0     -1.0    -20.6
  1017.6    -38.4   -237.2    -14.8    -32.0
  1059.5     22.4   -147.5    -11.3    -15.6
  1039.3     21.9   -157.3    -40.7    -20.6
   968.8    -73.4   -126.7    -43.7    -14.4
   841.2   -205.9    -62.2     -9.4     -4.6
   791.5   -409.1    -16.5     -9.9     15.3
   588.4   -375.9     42.4      1.1     13.8
   520.7   -365.8     58.9      5.7      8.2
 856. 1144. 1537. 1775. 2046. 1767. 1830. 1574. 1299. 1269.  848.  721.
 315.  443.  617.  793.  795. 1225. 1138. 1117.  944.  543.  411.  346.
CIRA 1.0 LOC=TRY TAMPA,FL, LAT=28.0, TWHT=56, YEAR=1953, ALT=19
```

TULSA-TR.CTY

```
  .183  .171  .117  .094  .054  .042  .054  .053  .038  .071  .115  .174
  .182  .218  .247  .253  .232  .209  .192  .192  .192  .187  .244  .225
  .33348E-01  1.73404 15.5
  .13076E-05  4.34524 29.0
  .34786E-01  1.72751 12.5
  .16926E-15 10.49006 35.0
  36.8  42.5  57.2  61.6  72.9  81.2  85.5  84.8  74.9  69.4  56.5  40.7
  31.2  35.5  50.0  53.3  61.7  71.7  76.0  73.3  67.8  58.9  49.7  34.2
  31.4  35.3  48.8  51.3  58.8  69.1  73.3  70.9  67.2  58.5  48.1  34.1
    513.9   -381.0     71.9      3.4      7.4
    582.6   -380.6     42.8      5.6      6.6
    783.0   -321.4    -17.1     -1.0      3.6
    991.6   -276.8   -101.7     -5.8     -8.3
   1070.8   -180.2   -194.3      6.4    -22.1
   1117.3    -89.8   -194.1      1.6    -20.5
   1159.9   -137.5   -195.9      9.3    -19.1
   1058.0   -271.6   -204.1     -7.4    -21.3
    842.9   -281.5    -35.6      4.5       .6
    787.4   -522.3     26.5     -4.3     18.5
    548.7   -411.8     64.8     18.8       .0
    553.4   -487.2    103.3       .4     10.2
  654.  808. 1157. 1648. 1988. 1980. 2070. 2033. 1241. 1173.  700.  685.
  334.  392.  735.  930.  892. 1079. 1112.  670.  898.  419.  334.  248.
CIRA 1.0 LOC=TRY TULSA,OK, LAT=36.2, TWHT=23, YEAR=1973, ALT=650
```

WASHINTR.CTY

```
  .190  .166  .150  .095  .058  .050  .048  .040  .039  .108  .134  .164
  .144  .145  .177  .186  .18  .171  .161  .158  .158  .167  .163  .186
  .42548E-02  2.32165 18.0
  .53077E-08  5.69351 35.0
  .37750E-01  1.73471 13.5
  .78132E-01  1.39315 11.0
  34.6  43.1  48.7  62.3  71.6  79.8  83.3  79.3  74.1  58.7  52.1  43.2
  30.9  38.8  42.0  54.5  62.5  71.8  74.2  71.0  67.8  51.7  46.7  39.5
  29.5  37.5  39.2  51.0  58.3  68.2  67.2  65.3  64.7  49.5  44.7  37.4
    425.0   -305.7     64.3      4.6      3.5
    494.7   -314.2     37.1      6.8      4.5
    768.8   -369.6     -7.8     -6.9      7.2
    947.3   -310.6   -106.0     14.5     -9.1
   1015.4   -207.2   -162.5     -1.9    -14.1
   1058.2   -113.9   -174.1    -12.3    -16.6
   1108.8   -138.7   -182.2    -16.5    -19.0
    995.2   -265.4   -132.1     -3.6     -9.3
    783.5   -334.5    -20.8     25.3     -5.2
    652.0   -399.4     28.2     -4.7     14.7
    480.7   -372.0     71.7     -2.2      8.5
    434.1   -356.7     80.8     -1.7      7.8
  514.  662. 1162. 1576. 1866. 1909. 1974. 1744. 1202.  930.  620.  515.
  312.  361.  611.  806.  852.  991. 1021.  837.  725.  439.  277.  250.
CIRA 1.0 LOC=TRY WASHINGTON,DC, LAT=38.9, TWHT=93, YEAR=1957, ALT=14
```

TYPICAL METEOROLOGICAL YEAR

CITIES

AKRON-TM.CTY

```
  .211  .203  .178  .133  .090  .058  .035  .034  .069  .114  .161  .193
  .269  .215  .251  .216  .2  .166  .162  .16  .182  .192  .232  .232
  .13362E-04  3.78172 28.0
  .10207E-08  6.13454 35.0
  .10167E-06  5.29117 26.0
  .53126E-02  2.40996 13.0
  26.8  30.4  39.3  53.3  63.8  73.8  77.6  74.1  67.5  57.5  44.1  32.1
  22.8  25.1  34.0  44.4  53.6  62.1  67.8  65.1  57.3  50.0  39.7  30.0
  22.8  24.7  33.5  41.9  52.2  59.8  65.6  63.5  57.5  48.9  38.1  28.8
    340.6   -249.3     63.3    -18.7     13.3
    479.3   -290.4     45.7    -32.0     23.0
    614.4   -268.6     -1.7    -31.7     13.2
    849.1   -212.6    -87.7    -64.2      1.0
    938.8   -136.3   -142.8    -54.9    -15.8
    999.6    -81.8   -166.7    -61.9    -21.4
   1000.8   -101.9   -170.3    -66.9    -20.1
    855.5   -208.4    -96.3    -60.0     -1.1
    709.5   -305.4    -13.1    -38.6     12.9
    608.6   -361.6     47.8    -43.7     26.5
    391.6   -261.0     61.5    -22.0     15.4
    260.3   -181.2     51.6    -19.6     13.1
  431.  664.  927. 1403. 1708. 1876. 1872. 1553. 1175.  909.  522.  326.
  236.  354.  513.  722.  789.  864.  824.  687.  542.  414.  296.  203.
CIRA 1.0 LOC=AKRON,OH, LAT=40.9, TWHT=20, ALT=1208
```

ALLENTIM.CTY

```
  .208  .202  .172  .126  .083  .041  .040  .035  .067  .114  .150  .196
  .277  .239  .252  .266  .187  .185  .149  .153  .17  .183  .241  .213
  .14652E-01  1.85607 19.0
  .13425E-01  1.91671 15.0
  .28877E-03  3.27698 16.5
  .98297E-16 10.57377 35.0
  28.0  31.4  42.6  55.6  65.3  74.7  77.2  76.7  69.2  59.4  47.5  32.5
  23.9  25.9  34.6  46.1  56.4  63.6  65.5  66.6  59.3  48.3  41.6  29.3
  22.9  26.0  34.6  45.6  55.3  61.9  64.5  66.2  59.4  49.6  40.6  28.5
    414.2   -320.0     83.3    -29.2     20.5
    530.3   -317.8     54.9    -39.2     25.0
    680.4   -303.4     -2.7    -45.1     17.9
    799.8   -225.3    -77.5    -40.6      2.8
    914.7   -150.9   -130.3    -39.5    -12.8
    972.8    -96.9   -162.7    -44.6    -21.9
    940.4   -118.5   -156.8    -48.2    -19.0
    842.0   -221.0   -106.1    -45.3     -2.9
    732.5   -314.7    -24.7    -34.8     11.2
    627.0   -395.3     47.8    -36.6     25.3
    423.0   -293.8     69.4    -30.0     21.8
    340.5   -256.0     70.4    -23.1     17.2
  533.  737. 1060. 1363. 1664. 1839. 1783. 1542. 1215.  946.  558.  424.
  257.  399.  532.  681.  796.  830.  775.  645.  542.  386.  299.  237.
CIRA 1.0 LOC=ALLENTOWN,PA, LAT=40.7, TWHT=20, ALT=387
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ALPENATM.CTY

```
  .226  .227  .203  .163  .125  .073  .056  .049  .097  .133  .176  .213
  .142  .142  .167  .172  .171  .161  .13  .11  .11  .133  .159  .148
  .41407E-07  5.12810 35.0
  .11440E-08  6.12012 35.0
  .17250E-02  2.56847 18.0
  .62795E-03  3.01560 16.5
  20.5  20.9  30.8  46.2  57.0  68.7  73.9  72.6  61.7  53.0  39.7  25.3
  16.4  15.1  25.3  37.0  44.8  58.1  61.8  63.1  52.1  45.5  35.4  22.9
  16.6  16.1  24.4  37.0  43.7  56.8  59.8  62.4  52.6  45.1  34.4  22.0
    299.5   -204.8     58.5    -40.2     26.7
    460.4   -276.9     47.2    -47.3     26.0
    703.3   -299.4      -.9    -88.2     29.6
    842.3   -200.2    -77.4   -109.8      8.2
   1062.2    -87.3   -161.8   -154.3    -18.7
   1042.0    -42.4   -154.8   -120.8    -26.2
   1083.0    -51.6   -178.7   -162.0    -23.7
    922.8   -166.7   -105.4   -132.2      1.2
    770.1   -272.3    -34.9    -83.4     19.1
    558.8   -287.4     20.7    -46.6     22.5
    346.5   -225.7     38.7    -16.6     15.7
    209.7   -130.9     33.2    -21.2     15.8
  363.  589. 1030. 1362. 1845. 1832. 1972. 1568. 1153.  731.  394.  242.
  230.  335.  533.  669.  786.  860.  769.  696.  617.  433.  265.  183.
CIRA 1.0 LOC=ALPENA,MI, LAT=45.0, TWHT=33, ALT=689
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ANNETTIM.CTY

```
  .196  .184  .173  .161  .140  .124  .101  .102  .125  .150  .173  .180
  .204  .205  .194  .194  .187  .131  .148  .15  .168  .22  .216  .24
  .34505E-02  2.63269 10.5
  .93183E-03  3.14832 10.0
  .10000E-30 20.00000 35.0
  .10000E-30 20.00000 35.0
  31.1  36.2  41.1  45.2  51.2  55.1  60.0  59.9  54.7  47.6  39.6  37.0
  30.5  34.4  37.0  40.1  46.2  50.1  55.0  55.3  50.5  44.9  38.6  36.4
  29.0  33.0  36.0  39.2  44.7  49.0  53.7  54.7  49.6  43.3  37.4  35.0
    158.2   -122.4     42.1     -6.7      1.9
    307.6   -209.6     55.8    -19.5     12.0
    566.3   -339.6     46.5    -24.5     14.7
    775.6   -323.6    -23.1    -38.6     10.0
    960.0   -287.5    -86.2    -12.3    -13.7
    903.4   -206.6    -79.7    -16.6     -9.2
    861.9   -208.1    -75.7    -16.1     -9.9
    747.4   -255.7    -42.9    -29.0       .9
    586.3   -304.6     26.8    -19.1      8.7
    336.6   -197.8     41.3    -16.0     10.5
    172.1   -125.5     38.8     -5.7      2.6
    120.1    -96.6     35.1     -5.7      1.2
  167.  361.  740. 1183. 1514. 1448. 1332. 1147.  811.  421.  187.  122.
  125.  245.  419.  595.  786.  839.  806.  626.  477.  295.  141.   93.
CIRA 1.0 LOC=ANNETTE,AK, LAT=55.0, TWHT=53, ALT=110
```

APALACTM.CTY

```
  .116  .121  .077  .028  .036  .056  .061  .061  .046  .045  .079  .107
  .145  .2  .168  .153  .142  .116  .107  .089  .117  .135  .118  .128
  .28141E-01  1.80650 13.0
  .36022E-05  4.31679 24.0
  .45207E-02  2.54450 11.0
  .78835E-03  3.05288 12.0
  56.1  56.2  64.0  72.5  79.3  83.4  84.2  85.1  82.7  74.7  64.0  59.9
  50.0  48.9  57.3  65.5  70.4  78.0  79.1  78.7  75.9  64.9  55.9  50.4
  48.9  47.8  56.1  63.5  68.4  74.5  76.4  76.4  70.9  63.1  54.4  49.6
    591.2   -433.8     75.4      5.3      6.5
    723.1   -468.9     38.6     -5.6     18.1
    804.9   -363.7    -50.8     -1.3      4.8
    970.7   -281.3   -178.8     13.0    -15.8
    983.3   -111.0   -219.5     19.9    -27.1
    909.6     17.6   -189.7    -25.1    -24.4
    876.5    -25.1   -191.6    -14.7    -23.9
    876.2   -113.7   -166.3    -43.9    -11.8
    849.6   -293.2    -96.1    -19.5       .9
    832.8   -514.8     15.5     -2.9     15.4
    678.5   -528.9     81.3     16.0      5.0
    585.1   -482.4     92.0      6.4      7.1
  863. 1183. 1457. 1979. 2133. 1915. 1873. 1784. 1556. 1442. 1046.  832.
  352.  416.  544.  628.  736.  776.  708.  700.  618.  448.  327.  278.
CIRA 1.0 LOC=APALACHICOLA,FL, LAT=29.7, TWHT=50, ALT=19
```

ASHVILTM.CTY

```
  .164  .176  .156  .100  .072  .046  .038  .032  .068  .106  .149  .166
  .155  .222  .222  .201  .102  .129  .076  .121  .14  .137  .181  .194
  .15142E-03  3.24060 23.5
  .21077E-01  1.89671 10.5
  .93145E-02  2.14693 13.5
  .76378E-20 13.15287 35.0
  45.3  41.9  47.5  62.0  71.5  75.0  77.7  75.6  68.3  60.4  50.1  43.8
  36.5  32.8  38.7  51.0  57.7  63.1  66.1  65.5  59.0  50.0  39.6  36.7
  37.9  33.0  37.8  50.9  58.4  64.6  67.4  66.7  60.6  51.5  41.4  37.6
    511.2   -392.7     84.2    -36.9     29.2
    629.6   -403.2     52.8    -39.6     28.4
    782.2   -363.2    -26.0    -42.0     15.8
    911.3   -228.5   -113.3    -50.3     -5.6
    932.7    -86.3   -172.8    -58.5    -22.5
    937.0    -28.9   -175.0    -49.0    -22.9
    899.6    -42.2   -171.8    -64.7    -22.6
    810.6   -199.2   -102.3    -26.2     -5.0
    740.3   -290.5    -36.3    -49.2     14.3
    700.7   -434.7     42.3    -47.9     28.9
    584.9   -460.2     92.5    -41.7     31.9
    485.0   -394.9     97.2    -34.3     25.1
  710.  963. 1340. 1686. 1825. 1829. 1773. 1582. 1354. 1147.  846.  654.
  276.  381.  510.  715.  752.  831.  757.  658.  530.  388.  273.  250.
CIRA 1.0 LOC=ASHVILLE,NC, LAT=35.4, TWHT=20, ALT=2140
```

ATLANTIM.CTY

```
  .166  .158  .127  .069  .053  .032  .034  .031  .035  .076  .121  .153
  .197  .274  .2  .213  .154  .153  .165  .154  .182  .165  .213  .239
  .27781E-04  3.64163 26.0
  .90825E-02  2.12367 14.5
  .30498E-09  6.75431 30.0
  .65676E-21 13.90900 35.0
  43.7  46.4  54.8  68.8  74.2  78.6  81.6  81.3  76.5  66.2  55.8  47.4
  37.4  39.8  46.4  58.6  63.3  69.1  72.2  71.8  68.4  56.5  47.1  40.4
  36.3  38.3  44.9  54.9  61.4  66.9  70.7  69.7  67.2  54.6  46.3  39.3
    500.3   -353.3     67.8    -32.8     26.1
    605.7   -371.8     45.2    -26.2     21.3
    769.3   -328.1    -35.1    -39.2     13.7
    892.2   -212.0   -126.5    -48.2     -4.7
    987.2    -75.7   -198.7    -59.7    -25.2
    945.0    -13.8   -189.3    -43.2    -27.5
    913.1    -32.8   -191.3    -58.4    -26.1
    895.1   -177.2   -150.0    -42.2    -13.3
    763.9   -266.9    -48.3    -46.7     11.7
    737.9   -445.2     41.5    -61.1     34.9
    598.2   -452.2     87.0    -37.3     27.9
    500.0   -387.0     87.1    -38.8     30.5
  696.  928. 1325. 1661. 1978. 1890. 1883. 1783. 1347. 1254.  885.  689.
  308.  403.  544.  697.  767.  805.  717.  669.  608.  406.  300.  273.
CIRA 1.0 LOC=ATLANTA,GA, LAT=33.7, TWHT=20, ALT=1010
```

AUGUSTIM.CTY

```
  .146  .144  .115  .066  .047  .042  .045  .045  .038  .079  .110  .138
  .176  .17  .193  .158  .14  .13  .128  .107  .128  .153  .154  .133
  .41745E-03  2.87065 25.0
  .12135E-01  1.87877 19.0
  .64866E-10  6.86421 35.0
  .21279E-16 10.98656 35.0
  49.4  50.6  57.9  70.5  77.5  82.3  84.4  84.8  77.8  68.0  60.5  51.9
  41.9  39.9  47.5  58.2  64.7  70.2  72.6  72.4  68.0  54.5  46.4  42.3
  41.5  40.7  46.1  57.8  63.5  69.3  72.4  72.2  66.5  55.2  47.7  43.3
    512.9   -357.5     71.9    -25.9     21.4
    643.0   -413.7     47.3    -27.8     23.0
    784.8   -330.7    -31.4    -46.9     17.2
    897.9   -190.8   -123.9    -58.9     -7.0
    988.5    -64.0   -188.0    -62.0    -24.7
    959.9      6.7   -189.4    -59.3    -28.0
    912.1    -31.4   -173.3    -51.3    -23.0
    843.1   -155.9   -129.5    -42.2     -9.7
    759.7   -248.3    -49.0    -52.6     12.5
    728.5   -433.7     35.1    -49.0     29.4
    616.2   -448.4     81.0    -55.5     39.4
    496.5   -406.7     95.3    -41.0     30.9
  718.  998. 1340. 1664. 1913. 1893. 1814. 1666. 1373. 1221.  921.  699.
  335.  382.  568.  725.  838.  841.  798.  683.  622.  418.  312.  233.
CIRA 1.0 LOC=AUGUSTA,GA, LAT=33.3, TWHT=25, ALT=136
```

BALTIMTM.CTY

```
  .194  .186  .157  .126  .072  .050  .040  .039  .049  .099  .141  .183
  .209  .26  .255  .191  .184  .182  .168  .169  .134  .187  .196  .225
  .18814E-04  3.42001 35.0
  .31731E-05  3.94080 35.0
  .72131E-08  5.76498 32.5
  .10082E-07  5.51811 35.0
  32.8  35.3  44.5  53.0  63.9  73.8  78.0  75.8  71.0  60.0  49.0  36.2
  29.7  32.0  41.5  48.8  59.6  70.3  74.5  73.1  67.4  53.7  44.9  34.1
  27.9  30.6  37.0  44.3  53.6  63.6  69.0  67.5  61.8  51.2  42.1  31.6
    250.9   -187.0     26.4      -.1      2.7
    422.4   -218.7    -19.5    -21.1     13.6
    624.1   -215.0    -83.9    -26.2      2.2
    782.0    -96.5   -162.7    -48.8     -9.7
    965.8     16.7   -212.3    -59.3    -21.0
   1130.6    117.6   -254.3    -73.8    -27.8
   1066.8     53.5   -237.1    -56.9    -22.8
    822.6    -53.1   -193.1    -47.5    -17.3
    758.4   -181.4   -135.5    -38.4     -5.1
    527.2   -253.6    -52.1    -15.9     10.3
    345.0   -208.4      8.5     -5.7      7.7
    198.0   -148.2     24.8       .4      1.9
  284.  509.  832. 1091. 1371. 1586. 1511. 1163. 1003.  637.  392.  220.
  143.  280.  476.  698.  894. 1015.  989.  708.  630.  338.  240.  122.
CIRA 1.0 LOC=BALTIMORE,MD, LAT=39.2, TWHT=20, ALT=148
```

BARBERTM.CTY

```
  .023  .019  .012  .016  .018  .029  .031  .036  .031  .030  .016  .016
  .184  .207  .232  .21  .185  .168  .176  .171  .156  .139  .187  .178
  .10000E-30 20.00000 35.0
  .15516E-09  6.24891 35.0
  .46743E-31 22.14866 26.5
  .21820E-04  3.84432 14.0
  75.6  74.6  75.6  77.3  78.4  80.6  81.1  81.7  81.2  80.8  78.1  76.5
  67.7  67.9  68.6  70.5  72.3  74.0  74.3  75.2  74.9  73.6  72.8  70.0
  66.8  64.9  66.0  67.3  67.9  69.9  70.3  71.0  70.9  70.2  69.8  66.9
    702.8   -448.7     62.0    -48.1     40.0
    797.1   -395.0     -2.9    -55.2     34.5
    899.0   -237.8    -96.8    -65.9     12.9
    929.3    -53.8   -177.0    -71.6    -18.3
    971.8    110.9   -211.7    -72.8    -36.5
    994.7    185.5   -211.0    -60.9    -34.5
    969.4    165.6   -229.3    -70.7    -39.5
    919.7     20.4   -236.7    -71.3    -35.5
    886.9   -169.4   -151.0    -80.8     -1.6
    806.5   -340.6    -41.8    -71.6     30.2
    712.5   -424.0     44.6    -66.8     45.3
    687.2   -483.5     79.0    -57.6     46.5
 1234. 1465. 1714. 1843. 1981. 2028. 2029. 1991. 1810. 1568. 1298. 1200.
  410.  516.  740.  824.  859.  843.  773.  671.  642.  501.  404.  337.
CIRA 1.0 LOC=BARBERS POINT,HI, LAT=21.3, TWHT=20
```

BETHELTM.CTY

```
  .254  .255  .232  .218  .169  .127  .115  .129  .152  .200  .231  .255
  .312  .36  .346  .267  .253  .229  .209  .241  .222  .304  .26  .287
  .29483E-02  2.60338 13.5
  .36220E-05  4.53698 17.5
  .10000E-30 20.00000 35.0
  .10000E-30 20.00000 35.0
   5.7   6.0  17.8  24.5  44.7  55.7  57.6  54.0  48.9  31.1  16.7   5.1
   5.5   3.7  13.4  18.9  35.3  46.9  50.6  48.3  42.1  27.6  15.4   4.3
   4.5   4.2  14.4  20.4  36.1  47.4  50.9  48.9  43.1  28.0  15.3   4.0
     94.1    -74.1     28.0     -5.7      1.6
    346.7   -315.4     96.4    -24.4     13.6
    617.9   -434.9     68.1    -19.0     11.0
    800.9   -387.1     -9.3    -17.3     -1.0
   1002.3   -301.4    -74.5    -32.7     -4.2
   1022.4   -256.2    -81.3     -7.1     -8.0
    792.8   -217.5    -59.8     16.7     -8.1
    642.8   -249.8    -17.8      7.5     -4.7
    564.9   -289.9     25.7    -20.3      7.6
    324.4   -229.0     57.9    -13.6      8.5
    138.6   -116.0     41.6     -8.9      3.2
     55.4    -47.4     19.4     -2.8      -.4
   93.  336.  746. 1127. 1490. 1547. 1154.  899.  724.  367.  134.   51.
   77.  185.  372.  570.  838.  921.  779.  603.  473.  248.  100.   43.
CIRA 1.0 LOC=BETHEL,AK, LAT=60.7, TWHT=20, ALT=125
```

BIGDELTM.CTY

```
  .275  .261  .243  .204  .142  .097  .086  .101  .156  .209  .250  .277
  .279  .26  .197  .153  .173  .144  .139  .127  .153  .173  .236  .231
  .38463E-01  1.66353 14.5
  .14657E-02  2.78699 15.0
  .32754E-03  3.09172 20.0
  .10000E-30 20.00000 35.0
  -3.9   3.8  15.1  32.0  52.9  62.6  64.8  61.2  47.9  27.7   9.6  -5.8
  -5.5  -1.4   3.9  22.2  41.5  51.9  54.2  51.1  38.9  23.5   5.1  -6.7
  -5.4    .1   7.4  23.0  40.3  49.1  52.5  49.6  38.8  23.3   6.3  -6.8
     48.8    -38.9     12.4     -3.7      2.6
    268.1   -212.1     57.1    -36.6     25.2
    668.5   -426.9     59.3   -100.6     42.6
    900.7   -358.1    -23.0   -103.7     12.0
   1196.0   -237.9   -101.8   -142.9    -10.0
   1240.9   -141.1   -114.8   -127.9    -17.6
   1114.9   -221.8    -82.4    -87.7     -5.9
    926.5   -292.0    -45.6   -107.6      5.6
    647.7   -329.6     24.9    -81.7     23.1
    178.6   -124.2     27.0    -22.5     10.3
     10.0     -7.6      2.9     -1.6      1.0
      8.3     -4.6      1.8      -.9       .6
   43.  249.  753. 1183. 1683. 1777. 1618. 1260.  795.  189.    9.    9.
   37.  171.  369.  592.  831.  949.  875.  652.  438.  112.    8.    9.
CIRA 1.0 LOC=BIG DELTA,AK, LAT=64.0, TWHT=29, ALT=1268
```

BILLINTM.CTY

```
  .212  .205  .187  .160  .106  .074  .053  .056  .092  .126  .177  .216
  .325  .279  .272  .255  .244  .212  .203  .216  .218  .246  .253  .304
  .11480E-01  1.93096 21.5
  .11730E-01  2.02913 14.5
  .43850E-01  1.69346 14.0
  .88903E-10  6.77801 35.0
  25.7  29.5  37.5  46.9  61.9  70.1  79.9  78.7  64.8  55.9  39.1  23.7
  21.1  24.5  28.7  37.3  51.0  57.3  65.9  65.4  53.4  46.6  34.8  20.2
  19.0  23.6  27.4  35.2  46.5  53.3  58.5  56.2  49.4  40.5  30.5  18.5
    436.0   -401.4    116.7    -34.2     21.1
    574.9   -434.0     91.2    -43.9     27.4
    773.1   -418.5     15.0    -58.8     24.6
    917.2   -305.2    -75.8    -66.6      6.6
   1025.5   -201.0   -155.0    -69.0    -13.9
   1183.6   -135.7   -230.4    -98.2    -28.9
   1195.6   -200.3   -232.3    -87.2    -30.7
   1093.0   -360.3   -145.8    -97.7     -2.6
    891.2   -500.8     -5.0    -58.1     22.9
    711.6   -538.0     86.6    -54.3     35.5
    472.3   -415.4    106.9    -37.6     27.4
    389.5   -377.4    114.6    -29.1     17.8
  497.  757. 1142. 1505. 1862. 2280. 2332. 2063. 1470. 1005.  566.  421.
  197.  311.  489.  682.  726.  731.  653.  534.  442.  313.  215.  163.
CIRA 1.0 LOC=BILLINGS,MT, LAT=45.8, TWHT=25, ALT=3567
```

BIRMINTM.CTY

```
  .152  .143  .109  .076  .047  .042  .049  .041  .049  .067  .112  .152
  .187  .171  .2  .213  .179  .123  .138  .115  .141  .141  .156  .194
  .73889E-01  1.46200 15.0
  .37055E-03  2.82880 26.0
  .10213E-01  2.16961 13.0
  .12621E-01  2.10463 10.5
  46.7  49.9  58.2  67.1  76.6  81.1  84.8  82.6  78.5  68.4  58.6  47.9
  41.1  42.7  49.5  57.1  64.2  70.0  74.8  72.3  66.4  56.9  48.6  40.7
  40.0  40.3  47.6  53.6  63.1  67.9  71.5  71.3  64.7  56.3  47.3  40.2
    505.7   -362.9     74.0    -23.8     18.6
    613.9   -356.7     39.5    -35.4     25.2
    748.4   -315.8    -36.4    -27.4      8.1
    861.0   -214.6   -119.9    -47.8     -2.4
    975.7    -78.3   -186.5    -57.0    -21.2
    945.1    -12.0   -185.7    -43.7    -26.1
    912.6    -37.8   -174.0    -45.0    -22.8
    838.9   -166.1   -130.4    -38.8     -9.3
    801.0   -290.6    -61.8    -54.5     13.3
    732.5   -437.7     33.2    -48.7     30.8
    571.2   -418.9     78.7    -30.4     24.2
    466.3   -369.9     83.6    -27.7     21.9
  710.  940. 1277. 1633. 1913. 1864. 1796. 1660. 1481. 1217.  841.  642.
  312.  428.  547.  652.  810.  832.  804.  662.  562.  418.  313.  244.
CIRA 1.0 LOC=BIRMINGHAM,AL, LAT=33.6, TWHT=20, ALT=620
```

BOISE-TM.CTY

```
  .196  .178  .167  .141  .093  .069  .065  .063  .072  .122  .168  .195
  .207  .207  .228  .234  .198  .215  .188  .164  .194  .15  .159  .181
  .46016E-04  3.56732 23.5
  .18374E-06  5.02900 28.0
  .46114E-02  2.20044 19.5
  .19873E-10  7.27091 35.0
  32.9  40.4  44.4  52.4  64.5  73.8  82.8  81.0  71.2  57.9  43.6  33.7
  28.7  33.7  36.6  42.5  52.2  59.3  66.7  63.5  57.7  45.8  37.1  29.0
  28.7  31.9  34.4  38.3  45.2  53.4  55.3  54.2  50.6  43.0  36.9  29.5
    413.7   -358.4    100.9    -18.3     13.0
    650.4   -497.5     97.8    -59.0     41.2
    811.3   -415.7      3.9    -77.7     37.9
   1070.7   -389.4   -125.4    -40.1     -8.4
   1191.3   -246.1   -226.3    -45.8    -27.4
   1266.3   -116.9   -283.8    -95.1    -37.5
   1281.2   -193.5   -294.3    -92.9    -35.8
   1143.7   -386.7   -185.8    -76.7    -11.0
    992.8   -522.2    -39.3    -75.3     25.2
    775.8   -573.4     79.5    -71.4     45.2
    477.5   -404.4    104.9    -24.5     16.2
    376.8   -333.2     96.7    -24.7     19.2
  495.  878. 1259. 1854. 2243. 2505. 2636. 2229. 1714. 1138.  606.  436.
  225.  322.  515.  662.  722.  711.  589.  499.  455.  315.  242.  202.
CIRA 1.0 LOC=BOISE,ID, LAT=43.6, TWHT=20, ALT=2838
```

BUFFALTM.CTY

```
  .208  .207  .188  .142  .110  .054  .036  .038  .079  .121  .167  .198
  .338  .305  .291  .298  .236  .211  .225  .209  .188  .244  .246  .252
  .51927E-06  4.43119 35.0
  .16857E-02  2.58359 18.0
  .13089E-02  2.84946 15.0
  .19192E-03  3.44367 16.0
  26.6  27.6  35.3  49.7  58.5  70.8  76.9  73.0  66.3  54.5  41.5  31.2
  24.5  24.2  31.0  42.6  50.2  61.5  66.9  64.5  57.7  48.9  39.0  28.4
  23.4  23.2  29.9  41.1  47.8  58.4  63.7  61.9  56.0  46.7  37.2  27.2
    273.7   -171.0     46.2    -18.8     12.7
    395.9   -201.7     33.4    -27.6     17.6
    604.3   -277.0     12.0    -20.4      8.7
    772.1   -212.3    -61.7    -56.0      5.8
    927.4   -160.0   -125.4    -55.0    -10.4
    986.5   -101.4   -148.8    -59.9    -17.4
    946.8   -152.9   -150.7    -34.9    -19.6
    839.6   -217.6    -86.7    -59.1      -.7
    742.2   -304.4    -10.9    -37.0     12.7
    504.5   -280.3     39.3    -30.3     19.1
    271.7   -162.5     40.6    -15.8     10.7
    217.9   -138.5     39.0    -11.7      7.9
  342.  527.  890. 1279. 1678. 1799. 1768. 1485. 1177.  723.  347.  267.
  241.  366.  528.  673.  785.  879.  763.  673.  624.  400.  245.  195.
CIRA 1.0 LOC=BUFFALO,NY, LAT=42.9, TWHT=20, ALT=705
```

BURLIATM.CTY

```
  .218  .206  .175  .114  .089  .041  .037  .041  .064  .112  .156  .197
  .24  .221  .257  .26  .215  .167  .172  .162  .18  .169  .222  .239
  .91851E-02  2.03009 20.0
  .12934E-07  5.44058 35.0
  .14951E-09  6.68454 35.0
  .94841E-11  7.42485 35.0
  23.2  29.3  41.5  58.0  64.2  76.2  79.4  78.8  71.1  58.9  45.6  33.1
  18.9  23.7  33.4  48.4  54.3  67.1  69.5  69.0  60.9  48.7  39.2  28.1
  18.5  24.4  33.4  47.1  51.2  66.4  66.2  67.1  59.6  48.8  40.3  28.4
    500.5   -381.2     73.9    -37.0     31.9
    623.8   -395.8     59.6    -93.9     53.6
    765.2   -332.2    -32.3    -58.1     18.8
    940.9   -178.8   -115.3   -125.8     10.5
   1064.9    -52.4   -177.4   -126.9    -22.0
   1138.9     12.1   -202.6   -150.1    -33.2
   1163.1       .8   -223.1   -174.3    -34.6
   1058.4   -169.9   -170.8   -125.4      2.9
    865.1   -303.1    -55.7   -118.8     23.3
    730.0   -404.5     37.6   -129.4     60.5
    514.0   -352.5     67.3    -69.9     45.2
    350.8   -268.0     72.6    -53.0     36.0
  585.  871. 1149. 1579. 1858. 2116. 2194. 1865. 1450. 1096.  659.  431.
  288.  356.  544.  737.  853.  887.  807.  726.  570.  410.  307.  212.
CIRA 1.0 LOC=BURLINGTON,IA, LAT=40.8, TWHT=33, ALT=692
```

BURLVTTM.CTY

```
  .229  .220  .205  .166  .113  .061  .036  .050  .087  .134  .173  .207
  .173  .242  .173  .193  .186  .14  .17  .142  .195  .18  .221  .209
  .11451E-03  3.22259 24.5
  .54612E-04  3.45199 24.5
  .11567E-02  2.75798 18.0
  .95278E-02  2.15087 15.0
  18.7  22.4  28.4  43.5  56.3  67.8  72.5  69.8  60.8  50.9  39.8  26.1
  16.1  19.3  25.2  37.8  52.0  61.9  67.8  64.8  56.7  47.8  37.6  24.6
  14.9  18.2  23.5  35.3  48.0  58.0  63.1  59.6  54.4  44.6  36.1  23.3
    191.9   -140.7     21.4     -2.5      4.0
    356.2   -174.1    -14.2    -22.2     12.8
    565.4   -190.7    -74.9    -37.2      7.0
    768.5   -137.6   -148.9    -31.5     -9.2
   1016.1     41.6   -228.3    -92.4    -15.0
   1146.6     98.5   -264.7    -84.0    -18.0
   1152.5     65.0   -268.3    -80.5    -19.9
    986.4    -67.8   -233.3    -53.8    -19.4
    701.7   -179.4   -125.7    -40.2       .2
    443.2   -202.3    -33.3    -19.1     12.3
    202.2   -125.9     11.9     -3.2      4.8
    149.8   -108.6     17.1     -1.2      3.5
  202.  409.  710. 1044. 1387. 1603. 1596. 1317.  888.  516.  222.  155.
  119.  261.  430.  664.  899.  978.  985.  807.  569.  331.  150.  100.
CIRA 1.0 LOC=BURLINGTON,VT, LAT=44.5, TWHT=20, ALT=332
```

CAPEHATM.CTY

```
  .147  .148  .128  .080  .035  .025  .039  .034  .019  .050  .102  .142
  .254  .282  .289  .264  .234  .217  .182  .212  .218  .255  .234  .259
  .24292E-02  2.50721 17.5
  .78235E-06  4.57881 27.5
  .54475E-18 12.02067 35.0
  .18984E-03  3.52423 13.0
  48.2  47.5  52.9  62.5  69.5  77.9  81.1  80.6  76.4  68.0  58.5  49.1
  44.2  43.6  49.8  57.6  65.5  72.4  76.3  75.4  71.2  63.3  52.8  45.0
  42.3  42.5  47.4  55.5  61.9  71.0  74.0  73.4  68.9  60.4  51.5  43.8
    543.2   -444.0     83.5      4.4      8.9
    651.6   -457.8     62.7     19.0      1.9
    753.6   -360.0    -13.2    -15.4     14.1
    903.6   -288.8   -116.6    -12.6       .6
    970.7   -141.2   -186.5    -21.4    -19.1
   1007.2    -82.5   -215.9      9.3    -20.3
    936.1   -121.0   -175.5      7.2    -17.8
    856.6   -215.7   -130.8     -1.1    -10.2
    831.4   -381.1    -56.1      1.7      2.1
    715.4   -470.1     37.3     -6.6     16.6
    641.4   -515.1     93.8     -1.2     11.7
    484.8   -440.6    101.1      6.2      3.0
  719.  971. 1274. 1739. 1960. 2049. 1898. 1684. 1503. 1169.  897.  638.
  276.  400.  553.  643.  753.  789.  782.  660.  536.  390.  313.  202.
CIRA 1.0 LOC=CAPE HATTERAS,NC, LAT=35.2, TWHT=32, ALT=7
```

CARIBOTM.CTY

```
  .240  .236  .210  .182  .123  .085  .058  .080  .111  .155  .191  .230
  .238  .248  .226  .23  .219  .207  .175  .172  .209  .207  .216  .245
  .25389E-07  5.28551 35.0
  .68493E-07  5.08052 33.0
  .31091E-02  2.41406 18.0
  .84103E-12  8.13461 35.0
  14.7  15.6  28.5  38.1  54.6  63.2  67.3  63.8  57.0  46.0  33.3  17.9
  10.1  11.2  22.3  33.4! 48.1  57.5  62.0  59.2  52.6  42.1  31.5  15.7
  10.9  12.0  22.4  32.3  45.5  53.2  58.1  55.8  50.8  40.4  29.4  15.4
    206.6   -159.7     26.9     10.4     -2.6
    414.1   -273.4      4.0     18.8     -2.8
    640.2   -285.6    -62.9     12.9     -3.0
    809.8   -212.6   -144.7      4.2     -8.5
    972.7    -85.9   -197.1       .9     -5.4
   1085.3     20.2   -216.1    -28.0      2.0
    983.8    -18.2   -197.1    -25.0      1.0
    875.7   -114.2   -179.7     -9.5     -7.2
    654.0   -205.1   -104.1     -6.9      1.8
    384.0   -206.5    -19.1      7.4      2.8
    177.0   -117.0     12.2      4.5      1.0
    168.0   -135.1     24.4     11.6     -4.3
  202.  436.  758. 1057. 1334. 1513. 1371. 1150.  801.  423.  183.  156.
  137.  261.  496.  677.  874.  989.  900.  773.  558.  280.  132.  109.
CIRA 1.0 LOC=CARIBOU,ME, LAT=46.9, TWHT=31, ALT=624
```

CASPERIM.CTY

```
  .213  .201  .193  .169  .121  .084  .061  .059  .105  .137  .187  .203
  .367  .367  .307  .27  .268  .265  .225  .26  .226  .291  .359  .349
  .38844E-03  2.85517 28.0
  .37299E-08  5.76412 35.0
  .69120E-08  5.69086 34.5
  .13883E-03  3.40289 18.0
  26.7  32.3  35.7  44.3  58.7  71.3  80.9  79.1  63.5  53.4  36.6  30.0
  21.6  24.6  26.8  33.2  44.0  54.5  64.2  63.4  49.0  40.6  30.7  25.4
  20.1  24.0  26.0  31.7  41.8  50.1  54.8  51.7  45.2  36.8  28.5  23.3
    565.4   -560.6    151.4    -49.4     35.6
    746.4   -613.7    107.3    -66.2     43.0
    907.0   -538.1     -1.5    -70.3     27.8
   1037.5   -345.9   -141.3    -75.3     -3.6
   1194.0   -171.4   -251.5    -93.5    -30.9
   1261.5    -81.1   -293.7   -112.9    -43.1
   1260.1   -121.8   -289.2   -137.1    -37.4
   1138.0   -337.6   -191.0   -107.9     -9.4
   1002.9   -513.7    -59.5    -82.9     21.2
    832.9   -660.5     82.1    -49.9     37.2
    605.7   -592.6    148.7    -50.5     38.2
    473.5   -477.6    136.3    -44.9     33.6
  677. 1021. 1447. 1830. 2227. 2505. 2572. 2238. 1695. 1229.  763.  543.
  166.  255.  397.  581.  687.  671.  588.  491.  430.  264.  163.  148.
CIRA 1.0 LOC=CASPER,WY, LAT=42.9, TWHT=20, ALT=5338
```

CHARLOTIM.CTY

```
  .168  .158  .131  .080  .051  .030  .039  .037  .038  .083  .130  .158
  .185  .187  .194  .174  .192  .144  .135  .136  .165  .169  .13  .125
  .10587E-04  3.84499 28.5
  .84870E-04  3.41506 21.0
  .11903E-10  7.33489 35.0
  .12611E-02  2.82895 12.0
  43.4  46.1  54.4  66.4  74.8  79.2  82.3  81.6  77.2  66.5  54.9  46.5
  36.0  37.6  44.7  55.3  64.2  69.5  71.2  70.5  67.0  54.1  44.6  39.0
  35.0  36.8  43.1  52.7  62.0  65.8  69.1  68.1  64.4  54.1  44.2  38.2
    551.3   -433.3     92.2    -38.9     31.1
    600.6   -373.0     42.8    -38.3     29.0
    803.7   -361.9    -23.2    -51.8     21.1
    898.2   -217.8   -108.7    -61.4     -2.3
    922.0    -93.5   -162.6    -51.0    -19.8
    980.9    -21.7   -190.4    -66.5    -25.5
    929.8    -57.7   -179.2    -50.2    -24.3
    895.8   -189.2   -137.3    -49.3    -12.1
    811.4   -296.8    -54.4    -48.2     10.8
    737.6   -470.3     50.1    -52.8     34.7
    605.8   -463.9     89.6    -43.9     34.3
    462.4   -385.7     95.8    -33.2     24.3
  766.  901. 1343. 1643. 1821. 1993. 1864. 1768. 1446. 1222.  870.  629.
  279.  380.  558.  716.  763.  817.  763.  663.  606.  393.  300.  224.
CIRA 1.0 LOC=CHARLOTTE,NC, LAT=35.2, TWHT=20, ALT=736
```

CHARSCTM.CTY

```
  .134  .135  .095  .059  .039  .038  .042  .042  .032  .061  .100  .130
  .144  .176  .194  .162  .166  .149  .138  .143  .156  .151  .146  .137
  .37917E-01  1.63332 16.0
  .60462E-04  3.33375 26.5
  .79391E-02  2.16989 14.0
  .29501E-02  2.58879 11.0
  52.9  53.6  61.3  70.0  76.4  79.7  83.5  82.2  79.7  69.3  61.7  54.3
  44.4  43.8  52.1  58.9  65.9  71.0  74.5  74.1  70.2  59.4  50.5  44.4
  44.6  43.6  50.4  59.0  64.1  70.4  73.9  72.8  70.5  59.0  50.6  45.1
    499.5   -397.0     85.5       .9      7.6
    652.8   -451.4     63.8      -.4     11.4
    773.6   -363.4    -13.0    -22.1     16.1
    910.8   -289.9   -121.1     11.6     -8.8
    954.0   -103.5   -162.7    -22.0    -15.0
    902.2    -51.6   -174.4     -1.3    -18.1
    859.5    -63.7   -166.9    -16.6    -18.9
    782.8   -166.9   -101.5    -29.5     -5.8
    759.4   -299.6    -49.0    -21.7     10.8
    688.9   -414.8     36.3    -10.3     18.0
    668.4   -535.4    100.8     -2.9     15.8
    490.9   -416.3    100.8     -1.6      6.4
  714. 1037. 1368. 1755. 1866. 1777. 1736. 1592. 1408. 1137. 1001.  693.
  278.  383.  561.  685.  877.  831.  758.  664.  567.  454.  325.  247.
CIRA 1.0 LOC=CHARLESTON,SC, LAT=32.9 , TWHT=77, ALT=40
```

CHARWVTM.CTY

```
  .185  .187  .150  .108  .077  .052  .044  .036  .043  .106  .134  .166
  .147  .159  .148  .123  .118  .096  .108  .083  .087  .11  .144  .141
  .11570E-05  4.27481 35.0
  .19288E-01  1.80506 16.0
  .21751E-11  7.88447 35.0
  .65202E-12  8.13102 35.0
  35.8  35.9  48.7  59.1  67.7  77.9  82.5  77.3  72.4  61.2  51.9  42.0
  31.0  31.4  40.3  49.2  55.6  64.5  70.7  66.7  63.0  49.3  43.8  37.1
  29.4  29.9  38.1  46.3  53.7  63.1  67.9  66.5  62.7  49.0  42.6  35.8
    388.3   -271.2     62.0    -20.6     15.5
    467.4   -272.2     41.6    -19.2     14.7
    637.2   -267.0     -6.7    -31.5     13.3
    804.4   -214.0    -74.2    -37.3     -2.2
    898.0   -130.7   -137.1    -40.4    -15.3
    969.4    -71.4   -167.4    -44.5    -22.6
    886.3   -104.1   -141.3    -27.2    -18.3
    790.2   -228.8    -81.4    -15.7     -3.5
    734.7   -283.9    -25.1    -45.5     16.6
    640.8   -398.3     51.0    -34.9     25.6
    435.1   -309.0     69.0    -15.2     11.8
    308.5   -210.2     52.1    -14.6     10.6
  504.  657.  989. 1389. 1659. 1843. 1665. 1502. 1265. 1005.  589.  391.
  275.  370.  543.  711.  787.  866.  804.  646.  592.  408.  295.  239.
CIRA 1.0 LOC=CHARLESTON,WV, LAT=38.3, TWHT=32, ALT=939
```

CHERRYTM.CTY

```
  .144  .146  .118  .069  .039  .035  .040  .036  .021  .057  .105  .140
  .159  .187  .143  .16  .168  .197  .114  .092  .164  .106  .134  .129
  .63141E-08  5.68412 35.0
  .23776E-03  2.93210 24.0
  .39164E-02  2.66723 11.0
  .97698E-03  3.28681 10.0
  50.2  49.6  57.0  66.6  74.1  79.9  82.6  81.1  77.9  69.0  57.9  51.4
  41.5  42.0  47.8  57.2  64.6  71.3  74.4  73.8  70.8  60.9  52.1  44.3
  40.0  40.2  46.7  56.6  64.1  69.4  71.8  72.1  70.2  60.0  50.6  44.0
    556.8   -444.6     98.7    -28.9     24.0
    669.3   -439.6     66.0    -41.3     26.6
    864.8   -363.2    -37.7    -68.7     25.2
    935.2   -218.0   -129.7    -68.6     -1.9
    972.8    -88.2   -185.1    -57.8    -22.9
   1010.6    -11.7   -206.0    -60.4    -27.2
    930.6    -40.7   -175.1    -69.8    -22.5
    868.8   -155.9   -130.1    -64.1     -6.4
    789.7   -267.0    -52.3    -65.9     18.0
    691.3   -404.1     36.3    -44.9     30.7
    606.1   -469.5     94.7    -30.4     25.7
    523.2   -443.6    109.1    -38.9     30.7
  783. 1047. 1440. 1730. 1921. 2009. 1866. 1662. 1396. 1125.  893.  723.
  284.  392.  609.  713.  779.  833.  785.  702.  616.  437.  305.  241.
CIRA 1.0 LOC=CHERRY POINT,NC, LAT=34.9, TWHT=20
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CHEYENTM.CTY

```
  .208  .207  .189  .155  .125  .084  .059  .060  .094  .134  .181  .196
  .289  .312  .334  .286  .198  .241  .212  .214  .229  .254  .28  .273
  .16890E-03  3.03469 28.5
  .22359E-01  1.87641 12.0
  .95676E-01  1.36441 12.5
  .18406E-01  1.82496 12.0
  29.7  29.5  36.8  49.0  56.3  67.1  76.1  74.3  64.7  54.5  40.0  33.7
  21.7  22.6  28.8  37.3  44.6  54.3  61.7  60.1  51.3  42.0  31.8  27.1
  21.0  21.2  25.8  34.8  42.6  50.0  56.3  54.8  47.1  37.7  28.3  23.8
    608.8   -605.0    145.1    -51.6     39.1
    721.4   -557.2     79.6    -62.1     41.2
    907.9   -508.4    -28.4    -84.2     29.0
    979.6   -293.6   -142.2    -97.0      5.2
   1029.6   -105.4   -204.0   -105.6    -18.6
   1114.0    -16.2   -252.1   -127.3    -32.7
   1088.6    -54.7   -240.8   -136.7    -26.0
    999.4   -263.8   -169.2    -90.9     -6.4
    962.1   -477.5    -60.0    -76.1     20.6
    797.3   -605.2     62.9    -68.7     46.3
    670.1   -645.5    138.3    -36.0     31.1
    576.3   -617.5    166.1    -38.9     31.1
  736. 1011. 1474. 1760. 1951. 2182. 2195. 1971. 1685. 1215.  842.  668.
  140.  271.  369.  564.  686.  694.  633.  518.  434.  247.  164.  112.
CIRA 1.0 LOC=CHEYENNE,WY, LAT=41.2, TWHT=33, ALT=6126
```

CHINALTM.CTY

```
  .148  .125  .091  .086  .064  .084  .108  .089  .073  .072  .112  .158
  .089  .128  .224  .151  .181  .255  .162  .123  .178  .111  .1  .052
  .14394E-05  4.48964 26.5
  .15379E-02  2.65942 17.5
  .48191E-02  2.17914 19.5
  .39289E-03  3.05208 19.5
  51.5  58.3  64.6  67.9  83.5  93.2  97.5  91.9  89.4  72.2  59.8  47.9
  39.2  43.7  51.7  53.7  66.5  76.9  83.6  80.8  70.7  57.9  47.5  38.5
  36.6  39.5  45.5  44.4  53.9  58.6  60.6  58.5  57.7  46.2  42.6  34.9
    619.4   -554.0    134.0    -47.4     38.0
    805.8   -597.8     86.7    -62.5     47.2
    934.1   -485.1    -24.0    -63.4     26.9
   1110.7   -326.5   -202.1    -87.3     -6.9
   1196.0   -107.2   -304.4    -91.1    -39.0
   1252.7      8.6   -350.9    -94.7    -54.6
   1182.1    -58.9   -324.1    -81.7    -47.3
   1105.2   -256.6   -248.9    -80.5    -22.3
   1033.0   -478.3    -98.2    -78.6     18.6
    852.6   -610.5     55.3    -63.0     44.5
    693.4   -594.8    124.6    -52.2     41.6
    610.4   -590.3    151.2    -44.5     36.5
  886. 1295. 1686. 2254. 2573. 2755. 2634. 2409. 2010. 1470. 1028.  844.
  225.  333.  482.  527.  607.  614.  558.  466.  419.  293.  244.  175.
CIRA 1.0 LOC=CHINA LAKE,CA, LAT=35.6, TWHT=20, ALT=2265
```

COLORATM.CTY

```
  .193  .190  .179  .142  .103  .071  .055  .059  .083  .117  .174  .187
  .192  .222  .274  .263  .256  .228  .208  .185  .196  .209  .231  .214
  .16955E-02  2.52501 23.0
  .27837E-01  1.93089 11.0
  .54271E-03  2.92411 21.0
  .67083E-13  8.71643 35.0
  36.5  38.1  42.3  52.2  62.3  72.4  76.8  75.6  70.2  58.8  42.6  39.5
  25.3  26.0  29.6  40.3  49.5  57.9  63.9  62.5  55.1  45.9  33.1  27.7
  23.9  25.7  28.1  35.2  44.6  50.0  57.7  57.8  49.3  39.8  30.5  26.3
    688.9   -696.0    161.4    -59.5     45.3
    790.3   -636.1     90.6    -74.8     49.1
    947.4   -530.6    -42.0    -74.2     28.0
   1050.8   -291.1   -179.7   -101.8     -3.3
   1055.6   -106.6   -218.6   -108.5    -20.7
   1128.4    -27.1   -267.4   -102.0    -37.0
   1076.9    -27.5   -245.8   -128.5    -31.2
    998.9   -202.3   -188.8   -116.8     -9.4
    965.1   -446.8    -75.1    -95.1     23.5
    869.7   -670.1     64.2    -61.2     43.8
    720.6   -675.7    136.5    -62.9     49.4
    610.6   -619.7    153.9    -51.5     41.0
  873. 1162. 1580. 1951. 2143. 2343. 2175. 2017. 1778. 1382.  971.  750.
  117.  229.  374.  560.  649.  666.  665.  524.  416.  240.  157.  132.
CIRA 1.0 LOC=COLORADO SPRINGS,CO, LAT=38.8 , TWHT=22, ALT=6145
```

COLUSCTM.CTY

```
  .149  .151  .110  .070  .046  .047  .052  .046  .049  .065  .116  .143
  .137  .168  .156  .171  .139  .134  .128  .108  .135  .127  .151  .117
  .49072E-06  4.48867 35.0
  .41036E-06  4.56041 33.5
  .20441E-01  1.79919 14.5
  .76443E-07  5.74062 20.0
  48.2  49.9  60.0  70.8  77.5  84.0  85.9  84.5  78.4  70.3  58.3  51.2
  40.1  39.7  48.5  58.8  65.5  71.9  74.7  74.3  67.2  58.6  47.1  41.8
  40.3  39.7  47.7  55.3  64.0  69.0  72.2  73.0  65.8  58.5  47.6  42.0
    491.2   -360.1     75.2    -27.4     21.9
    656.8   -420.7     50.5    -49.4     35.3
    802.7   -374.8    -19.4    -36.7     14.3
    915.6   -230.4   -130.9    -53.6     -7.5
    936.1    -78.5   -180.0    -50.9    -22.4
    971.9      3.8   -194.4    -70.5    -27.7
    927.5    -37.7   -179.9    -58.6    -23.5
    876.9   -132.0   -149.5    -76.1    -10.4
    793.8   -297.0    -50.0    -49.2     13.9
    722.3   -411.6     29.0    -54.6     34.3
    607.1   -456.4     86.2    -48.1     38.3
    498.3   -414.1    100.1    -46.5     34.5
  689. 1026. 1366. 1721. 1856. 1965. 1875. 1730. 1438. 1185.  901.  699.
  293.  377.  549.  664.  766.  815.  771.  665.  584.  446.  304.  228.
CIRA 1.0 LOC=COLUMBIA,SC, LAT=34.0, TWHT=36, ALT=213
```

CONCORTM.CTY

```
  .220  .211  .193  .148  .099  .068  .048  .064  .091  .131  .174  .214
  .178  .145  .163  .158  .174  .124  .097  .12  .136  .154  .126  .155
  .59670E-05  4.06471 27.0
  .29802E-03  3.03286 22.0
  .29552E-07  5.24637 35.0
  .68424E-02  2.33558 14.0
  23.8  29.3  35.6  51.3  64.1  73.4  77.1  73.5  64.0  54.9  42.2  26.1
  18.1  18.8  27.7  39.1  50.2  58.6  64.2  60.5  53.5  43.6  34.2  20.5
  18.7  20.8  28.0  39.3  49.0  59.2  63.6  60.9  54.3  44.4  35.1  20.6
    370.5   -302.7     81.0    -16.9     13.0
    532.1   -356.9     62.9    -25.5     20.0
    632.4   -296.5       .1    -41.8     19.5
    760.3   -245.4    -58.9    -45.3      4.6
    930.8   -146.9   -141.6    -62.9    -12.5
    973.6    -66.7   -168.2    -75.5    -18.7
    907.3   -133.0   -137.6    -42.6    -13.4
    787.3   -213.1    -79.4    -54.9      2.4
    679.2   -300.0      -.4    -23.3     10.7
    563.9   -359.7     54.8    -30.4     19.3
    361.4   -270.4     69.8    -17.9     13.0
    281.0   -217.5     63.2    -13.3      9.5
  452.  714.  963. 1294. 1648. 1749. 1649. 1422. 1075.  816.  465.  336.
  221.  358.  478.  606.  756.  821.  777.  622.  568.  369.  243.  198.
CIRA 1.0 LOC=CONCORD,NH, LAT=43.2, TWHT=20, ALT=342
```

DAGGETTM.CTY

```
  .140  .115  .096  .078  .064  .072  .100  .085  .065  .066  .101  .141
  .167  .268  .274  .329  .337  .311  .271  .239  .263  .166  .202  .163
  .19950E-03  3.18150 21.5
  .42355E-02  2.39321 15.0
  .17572E-07  5.38771 35.0
  .22622E-02  2.61266 16.0
 54.6  59.8  63.4  68.6  80.9  87.5  96.3  92.5  87.6  74.1  63.5  52.9
 40.1  47.8  52.1  56.6  65.2  70.9  82.1  78.5  70.5  59.2  48.6  41.5
 39.4  40.2  44.3  45.6  52.4  56.5  63.3  61.3  57.6  51.3  44.1  39.1
   664.7   -592.7    138.0    -49.7     40.4
   806.2   -591.2     80.9    -65.5     49.0
   955.3   -499.4    -32.0    -65.8     29.4
  1112.3   -311.9   -209.3    -89.7     -7.0
  1200.0    -92.5   -312.9    -97.2    -41.4
  1241.5     15.8   -353.6    -87.6    -55.1
  1180.6    -49.9   -327.2    -75.9    -48.7
  1083.8   -242.5   -240.5    -79.8    -21.1
  1032.6   -453.0   -103.5    -85.3     20.5
   876.6   -607.1     48.3    -76.3     48.7
   714.2   -612.9    125.5    -57.0     45.9
   614.0   -569.4    142.5    -51.9     42.6
 964. 1305. 1745. 2266. 2615. 2747. 2638. 2368. 2017. 1518. 1072.  860.
 232.  331.  467.  539.  599.  606.  569.  486.  450.  307.  241.  204.
CIRA 1.0 LOC=DAGGETT,CA, LAT=34.9, TWHT=20, ALT=2003
```

DAYTONTM.CTY

```
  .102  .092  .058  .036  .019  .033  .042  .042  .037  .030  .051  .066
  .204  .191  .199  .205  .228  .155  .169  .154  .211  .198  .187  .169
  .62738E-07  4.97036 35.0
  .37013E-08  5.73786 35.0
  .68223E-12  8.05146 35.0
  .40570E-14 12.39407 15.5
 59.5  62.6  69.8  74.1  77.4  81.5  82.9  83.5  81.3  75.8  69.0  66.1
 51.3  53.5  58.9  64.5  70.9  73.4  75.9  75.2  75.3  67.8  60.5  59.0
 51.7  52.9  57.7  64.0  67.2  71.6  74.9  74.9  73.8  66.0  59.6  58.5
   619.6   -438.3     82.1    -27.2     25.0
   737.1   -413.8     29.8    -35.8     27.1
   915.3   -327.6    -65.0    -70.2     20.6
   989.5   -154.2   -159.5    -80.1     -9.4
   963.9    -17.4   -192.0    -57.4    -27.1
   925.8     59.0   -171.6    -62.4    -27.6
   905.8     37.9   -171.5    -66.4    -26.6
   868.7    -67.6   -159.7    -76.9    -16.9
   813.3   -203.4    -73.5    -78.5     15.3
   749.7   -373.7      6.3    -57.2     31.8
   649.1   -435.3     72.0    -50.5     39.3
   580.4   -431.4     93.0    -34.4     28.9
 939. 1196. 1605. 1890. 1931. 1789. 1755. 1673. 1462. 1280. 1038.  870.
 372.  500.  686.  813.  843.  896.  850.  741.  711.  508.  379.  332.
CIRA 1.0 LOC=DAYTONA,FL, LAT=29.2, TWHT=23, ALT=31
```

DODGECTM.CTY

```
  .203  .186  .164  .116  .066  .053  .050  .055  .066  .103  .157  .191
  .303  .275  .359  .256  .348  .291  .225  .346  .247  .325  .271  .306
  .18227E-02  2.40291 26.5
  .21794       .96401 11.5
  .51991E-02  2.23482 18.5
  .10863E-04  4.20739 18.5
  31.1  39.0  46.0  59.5  71.0  82.0  83.3  85.0  72.0  62.2  46.7  35.7
  24.3  29.1  33.0  47.2  59.3  68.8  70.6  70.6  59.8  51.3  38.4  28.6
  25.5  29.5  32.5  45.8  56.2  64.3  65.5  65.2  58.2  49.7  37.0  27.7
    636.6   -607.4    133.6     10.5      2.9
    754.0   -613.2     80.7      7.3     12.5
    858.8   -523.8      4.1     -2.9     11.5
    987.5   -378.9   -133.2      6.2     -9.2
   1003.6   -191.7   -190.9    -16.3    -17.5
   1067.5   -138.1   -255.2     11.6    -29.7
   1076.6   -150.6   -271.1     -2.0    -27.9
   1012.8   -339.7   -185.8      6.1    -17.0
    972.5   -526.9    -69.4     29.3    -10.9
    831.9   -651.2     58.2     11.5     12.9
    633.4   -558.1    110.2    -13.9     20.6
    567.2   -559.9    141.1     -8.7     12.1
  811. 1092. 1482. 1908. 2074. 2330. 2296. 2113. 1722. 1302.  871.  717.
  212.  293.  438.  572.  674.  611.  568.  509.  481.  295.  233.  178.
CIRA 1.0 LOC=DODGE CITY,KS, LAT=37.8, TWHT=20, ALT=2582
```

DULUTHTM.CTY

```
  .252  .237  .218  .179  .133  .091  .061  .068  .109  .148  .202  .235
  .243  .256  .238  .243  .284  .25  .202  .215  .247  .188  .231  .223
  .13370E-02  2.47901 23.0
  .25386E-01  1.86880 12.0
  .33590E-03  3.25184 16.5
  .10000E-30 20.00000 35.0
   8.8  17.5  25.5  40.3  54.4  64.3  70.3  68.3  59.2  48.8  30.1  16.5
   3.8  10.3  18.9  33.2  44.7  52.8  59.8  57.7  51.5  41.8  27.1  12.7
   4.8  12.3  20.1  32.3  43.6  51.9  59.4  57.8  51.5  40.1  26.7  13.2
    366.3   -314.2     91.8    -28.3     17.4
    519.5   -390.5     79.1    -41.1     28.1
    696.2   -369.8     24.2    -49.9     20.2
    807.0   -295.3    -44.9    -46.1      5.9
    913.8   -196.8   -122.7    -44.5    -11.6
    976.8   -135.9   -146.9    -61.0    -12.3
    993.9   -191.2   -154.1    -50.1    -19.2
    856.5   -274.4    -76.1    -52.7       .5
    673.8   -309.6     -1.6    -50.5     20.0
    532.1   -355.0     60.4    -32.3     21.0
    301.9   -220.1     60.3    -17.4     10.9
    276.0   -247.2     74.8    -26.4     17.7
  414.  667. 1008. 1320. 1556. 1765. 1830. 1508. 1048.  723.  366.  297.
  204.  286.  486.  621.  729.  803.  709.  619.  499.  342.  220.  145.
CIRA 1.0 LOC=DULUTH,MN, LAT=46.8, TWHT=21, ALT=1428
```

FAIRBATM.CTY

```
  .291  .274  .247  .198  .130  .082  .072  .103  .152  .212  .260  .282
  .068  .091  .119  .116  .136  .137  .155  .139  .115  .106  .075  .104
  .47886E-02  2.23121 16.0
  .47309E-01  1.69568 10.5
  .18046E-02  2.68589 14.5
  .10000E-30 20.00000 35.0
 -13.5  -3.3  13.5  34.3  55.9  64.9  66.3  60.4  49.1  27.6   3.2  -9.6
 -15.9  -6.8   2.6  25.2  43.9  54.8  57.1  52.9  41.3  21.5   1.3  -9.2
 -15.5  -6.1   5.7  23.8  42.0  51.7  53.6  50.6  40.7  22.6   1.8 -10.4
    29.0   -22.3     8.8    -1.5      .1
   231.4  -195.9    64.8   -14.3     6.3
   631.4  -478.2    90.8   -32.8    17.9
   926.8  -463.4    -6.9   -40.4     6.7
  1132.8  -318.0   -87.4   -63.7    -2.8
  1159.8  -243.1  -108.3   -45.1    -4.9
  1073.8  -258.7   -90.5   -59.4    -4.0
   786.5  -325.8   -28.0   -12.9    -1.8
   576.3  -338.3    35.4   -10.6     5.9
   312.2  -261.8    69.8   -13.4     7.8
    82.8   -73.6    27.5    -4.6      .8
     2.1    -1.1      .5     -.1     -.0
  28.  220.  712. 1233. 1618. 1692. 1568. 1078.  689.  306.   74.    3.
  25.  156.  349.  616.  886.  948.  841.  619.  438.  187.   57.    2.
CIRA 1.0 LOC=FAIRBANKS,AK, LAT=64.8, TWHT=33, ALT=436
```

FORTWATM.CTY

```
  .218  .201  .182  .126  .087  .042  .042  .041  .063  .113  .160  .192
  .266  .209  .264  .262  .192  .199  .176  .17  .181  .221  .265  .243
  .24901E-06  4.67576 35.0
  .11588E-01  2.12431 14.0
  .18669E-02  2.74912 15.0
  .10686E-01  2.16625 12.5
 24.0  31.2  38.1  54.5  65.7  76.0  77.8  75.9  69.3  58.4  44.5  33.0
 19.5  25.8  31.8  45.7  54.7  64.9  67.4  64.8  58.7  49.3  38.2  30.5
 20.2  26.1  31.2  44.8  53.3  61.5  65.2  63.9  58.3  49.5  37.8  29.3
   387.7  -307.6    69.3    20.9    -9.5
   524.2  -356.1    48.6    30.7    -5.9
   648.2  -337.1      .1    40.7    -7.3
   826.0  -296.0   -59.9    18.9    -1.0
   918.7  -220.4  -140.5    33.2    -7.3
   988.9  -185.5  -159.9    42.2    -6.8
   926.1  -207.6  -145.9    40.0    -6.6
   882.8  -339.3  -101.2    59.9    -9.7
   752.4  -381.9   -16.6    37.6    -1.9
   628.7  -439.1    48.7    40.0    -8.0
   422.3  -316.4    65.6    19.9    -6.3
   297.1  -223.8    55.4    14.1    -7.6
 464.  690.  950. 1382. 1658. 1848. 1745. 1607. 1201.  899.  527.  351.
 254.  383.  551.  741.  798.  900.  805.  678.  590.  401.  294.  223.
CIRA 1.0 LOC=FORT WAYNE,IN, LAT=41.0, TWHT=20, ALT=791
```

FRESNOTM.CTY

```
 .159  .134  .108  .092  .069  .068  .073  .065  .067  .075  .124  .161
 .098  .116  .128  .14  .165  .145  .118  .112  .125  .098  .082  .109
 .12818E-03  3.46934 18.0
 .13274E-01  2.05222 13.0
 .17399E-06  4.77204 34.0
 .39453E-06  4.85038 26.5
 47.2  54.6  61.9  66.4  75.8  84.5  90.3  87.3  81.9  72.0  57.4  46.0
 39.5  44.4  48.9  52.2  60.4  67.7  72.9  70.3  63.9  55.4  46.2  39.2
 40.5  45.4  49.4  50.5  54.2  58.3  62.4  63.3  58.6  52.9  48.0  40.2
   513.3   -392.5     86.7     12.6     -2.3
   690.7   -492.5     66.6     10.4      9.3
   933.8   -524.0    -35.6      4.6     10.2
  1114.7   -419.0   -175.7     20.4    -12.0
  1193.1   -217.5   -281.3     -1.6    -31.4
  1231.1   -119.0   -329.8      8.3    -36.5
  1234.5   -176.5   -336.4     26.4    -34.7
  1148.4   -369.5   -244.8     13.6    -22.1
  1072.4   -576.2    -84.9    -10.8      7.2
   877.7   -684.1     68.4      -.7     20.8
   656.5   -560.1    113.7      4.2      8.2
   448.5   -354.7     83.9      6.6       .3
 669. 1033. 1589. 2116. 2501. 2719. 2703. 2397. 2023. 1453.  910.  571.
 335.  403.  505.  634.  675.  624.  575.  526.  446.  303.  292.  283.
CIRA 1.0 LOC=FRESNO,CA, LAT=36.8, TWHT=42, ALT=328
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GOODLATM.CTY

```
 .202  .189  .175  .133  .103  .065  .057  .054  .080  .120  .176  .204
 .221  .241  .307  .317  .283  .259  .21  .254  .254  .25  .252  .271
 .17432E-04  3.62966 31.5
 .85047E-04  3.44434 20.5
 .10742E-06  4.90730 35.0
 .19579E-02  2.66125 14.5
 32.0  39.1  43.6  55.9  62.8  76.2  82.3  82.4  70.0  58.8  42.1  31.5
 23.7  26.2  30.4  41.1  49.7  62.4  67.1  67.2  56.3  45.5  32.1  24.2
 24.5  27.3  31.4  37.7  48.3  59.4  62.3  62.7  54.0  45.1  32.0  25.2
   620.8   -617.8    150.8    -38.3     30.4
   744.1   -565.1     77.3    -54.8     39.8
   844.3   -460.2    -22.0    -69.7     28.8
  1027.1   -312.1   -143.7    -84.7       .6
  1047.1   -165.1   -211.7    -57.0    -25.1
  1086.9   -125.6   -242.6    -37.5    -32.9
  1070.6   -143.4   -233.2    -71.2    -27.2
  1024.6   -306.4   -174.6    -59.7    -13.9
   923.4   -485.3    -44.1    -34.6     10.7
   818.0   -602.2     64.8    -52.3     35.6
   616.0   -542.6    113.8    -45.4     35.6
   567.9   -578.1    148.4    -38.0     31.6
 796. 1044. 1399. 1910. 2086. 2341. 2347. 2125. 1640. 1275.  813.  689.
 147.  304.  398.  607.  657.  641.  590.  500.  446.  303.  213.  140.
CIRA 1.0 LOC=GOODLAND,KS, LAT=39.4, TWHT=25, ALT=3654
```

GRANDJTM.CTY

```
  .214  .193  .167  .125  .074  .051  .059  .049  .066  .117  .168  .199
  .12  .111  .153  .253  .24  .209  .197  .222  .183  .153  .14  .106
  .26839E-06  4.64798 35.0
  .14402E-02  2.69877 16.5
  .63843E-04  3.55290 21.0
  .18836E-13  9.11861 35.0
  27.3  36.3  44.6  56.1  69.7  79.2  87.3  83.5  73.1  57.8  45.6  32.4
  20.6  27.8  35.2  45.0  57.0  65.4  72.2  69.8  58.9  47.2  34.1  25.9
  21.6  27.5  32.4  37.3  45.6  51.7  57.3  57.6  50.2  41.1  31.7  26.3
    601.3   -552.4    130.7    -57.4     42.4
    749.1   -561.5     89.6    -68.9     41.0
    916.5   -473.2    -16.2    -80.6     28.2
   1042.6   -316.6   -153.5    -79.6     -3.8
   1185.1   -117.4   -268.9   -118.7    -33.4
   1227.9    -33.2   -300.5   -116.4    -45.4
   1160.6   -118.2   -271.4    -90.2    -37.9
   1060.1   -265.9   -185.6   -103.9     -9.9
    993.4   -478.0    -65.8    -87.1     21.5
    824.6   -596.2     63.1    -68.3     45.9
    679.0   -600.2    123.4    -56.8     43.1
    587.2   -579.4    150.6    -63.7     45.6
  776. 1102. 1519. 1954. 2389. 2581. 2506. 2197. 1816. 1324.  918.  726.
  194.  309.  491.  589.  647.  665.  601.  520.  435.  303.  215.  151.
CIRA 1.0 LOC=GRAND JUNCTION,CO, LAT=39.1, TWHT=22, ALT=4843
```

GRANDRTM.CTY

```
  .213  .214  .187  .139  .090  .053  .046  .047  .083  .117  .168  .208
  .228  .261  .253  .281  .19  .208  .186  .145  .194  .192  .207  .223
  .11551E-01  1.96728 19.5
  .57719E-02  2.18589 17.5
  .10867E-01  2.05447 15.0
  .39011E-01  1.74294 11.5
  25.8  25.5  36.6  51.3  64.7  73.2  78.2  74.2  66.0  56.8  42.0  28.1
  22.7  21.7  31.0  42.6  53.8  62.0  65.5  62.6  55.8  49.2  37.9  24.8
  22.8  21.2  31.2  41.5  52.4  60.3  62.9  62.0  56.4  48.2  36.2  24.2
    301.1   -227.4     58.5    -11.2      8.6
    537.3   -360.2     55.6    -40.4     28.1
    656.4   -293.5     -7.1    -36.9     15.9
    874.9   -274.3    -92.2    -46.6     -1.5
    935.0   -181.7   -137.7    -43.9    -13.6
   1034.6   -107.7   -187.4    -63.5    -22.5
   1019.3   -140.2   -182.2    -67.9    -17.4
    901.6   -263.0   -109.6    -56.7     -1.2
    752.9   -334.4    -12.3    -50.6     18.1
    596.0   -383.2     55.9    -36.7     22.1
    362.3   -268.0     69.1    -23.6     15.9
    258.2   -189.9     54.7    -15.5     11.4
  364.  723.  967. 1466. 1741. 1966. 1970. 1680. 1238.  877.  465.  313.
  207.  329.  524.  654.  725.  794.  738.  616.  546.  370.  243.  195.
CIRA 1.0 LOC=GRAND RAPIDS,MI, LAT=42.9, TWHT=20, ALT=784
```

GREENSTM.CTY

```
  .174  .171  .141  .090  .056  .039  .037  .035  .047  .091  .126  .165
  .186  .187  .199  .191  .154  .15  .139  .139  .125  .127  .152  .155
  .67399E-02  2.11941 19.5
  .13025      1.22564 11.0
  .11057E-01  2.11962 13.5
  .54837E-06  5.05454 19.5
  42.2  43.5  51.9  65.6  71.8  79.5  81.2  80.4  75.1  64.8  55.4  44.3
  33.3  35.4  41.6  53.8  60.9  68.2  70.6  69.8  63.8  52.5  44.5  36.5
  33.1  34.2  40.7  49.7  60.1  66.1  70.1  69.4  62.8  52.4  45.2  36.7
    547.6   -437.8     95.2    -51.6     39.4
    636.0   -394.4     52.1    -39.9     27.7
    798.7   -389.5     -7.1    -43.8     18.3
    932.8   -268.8   -115.9    -55.7     -5.2
    915.7   -106.2   -163.2    -41.2    -20.7
    991.8    -47.6   -200.2    -49.8    -26.0
    940.8    -63.3   -174.8    -54.9    -23.7
    854.0   -197.0   -122.3    -42.4    -11.3
    766.1   -303.6    -39.6    -42.8     11.1
    735.2   -463.4     42.5    -53.5     36.2
    596.5   -452.3     88.8    -50.4     38.2
    493.4   -410.8    100.2    -46.6     34.8
  750.  952. 1349. 1774. 1780. 2007. 1844. 1691. 1373. 1192.  848.  659.
  261.  414.  533.  641.  753.  798.  789.  632.  553.  395.  302.  233.
CIRA 1.0 LOC=GREENSBORO,NC, LAT=36.1, TWHT=20, ALT=897
```

GREENVTM.CTY

```
  .163  .159  .126  .080  .062  .041  .027  .038  .036  .088  .120  .157
  .205  .154  .154  .168  .158  .14  .121  .103  .129  .169  .143  .162
  .56030E-06  4.60950 30.5
  .96555E-02  2.21894 12.5
  .16799E-01  2.08663 11.0
  .15950E-13  9.03130 35.0
  44.9  46.5  55.7  66.0  71.4  80.1  80.4  82.0  76.7  65.3  57.8  46.8
  37.0  37.1  45.7  54.9  59.6  68.6  71.4  71.1  66.4  54.5  46.2  39.4
  36.2  37.0  43.4  52.3  57.0  66.5  70.6  69.4  64.1  52.2  45.4  38.9
    555.3   -436.7     92.1    -37.6     29.7
    622.6   -414.8     56.0    -32.7     24.9
    798.2   -351.4    -27.2    -55.2     21.0
    908.5   -217.6   -126.1    -58.3     -8.0
    950.4    -82.0   -173.4    -63.3    -21.6
    991.0    -30.9   -195.7    -51.6    -26.2
    903.0    -60.5   -159.7    -42.4    -20.5
    897.7   -185.0   -134.4    -53.5     -8.1
    808.9   -303.8    -54.1    -47.7     10.7
    715.6   -451.8     46.9    -46.5     29.2
    613.1   -484.9     95.7    -49.5     37.1
    460.0   -376.2     88.8    -32.2     25.2
  767.  958. 1345. 1694. 1864. 2015. 1775. 1774. 1472. 1191.  910.  621.
  280.  356.  551.  675.  777.  826.  804.  684.  581.  387.  268.  230.
CIRA 1.0 LOC=GREENVILLE,SC, LAT=34.9, TWHT=23, ALT=957
```

GUANTATM.CTY

```
  .022  .020  .035  .047  .055  .062  .069  .067  .063  .051  .040  .029
  .151  .146  .153  .199  .155  .136  .148  .153  .192  .134  .122  .18
  .10000E-30 20.00000 35.0
  .10000E-30 20.00000 35.0
  .22261E-03  3.72127 12.5
  .23163E-05  4.92302 15.0
  75.8  76.5  77.7  80.0  81.0  82.3  83.6  83.8  82.1  80.7  78.4  76.2
  75.0  75.3  77.4  79.6  81.7  81.1  82.3  82.1  82.6  80.8  79.3  77.1
  69.5  70.1  70.9  71.8  74.5  75.8  76.5  76.5  75.8  75.1  73.3  70.1
    717.3   -330.8    -68.5    -44.9     36.9
    805.3   -280.0   -131.8    -43.3     13.3
    927.5   -185.1   -213.5    -16.6    -25.0
   1165.3    -13.7   -328.8    -11.9    -60.7
   1048.2    144.1   -254.0    -22.2    -38.3
   1112.8    235.7   -249.5    -18.5    -27.7
   1099.5    202.4   -260.9    -14.9    -32.8
   1096.4     64.7   -312.0     -8.0    -54.2
    978.7   -103.5   -253.0    -26.4    -40.3
    749.9   -210.4   -134.1    -53.1     10.6
    712.3   -320.1    -76.2    -46.3     39.0
    696.2   -353.4    -52.7    -48.6     46.9
  913. 1084. 1319. 1650. 1519. 1615. 1580. 1568. 1358. 1074.  966.  884.
  486.  567.  768.  986.  929.  949.  937.  903.  846.  565.  471.  445.
CIRA 1.0 LOC=GUANTANAMO BAY, CUBA, LAT=19.9, TWHT=20, ALT=21
```

GULKANTM.CTY

```
  .272  .262  .227  .193  .157  .114  .092  .121  .156  .207  .251  .273
  .076  .109  .132  .123  .169  .138  .213  .159  .125  .148  .081  .061
  .27079E-08  6.18433 29.0
  .31590E-02  2.50980 13.5
  .83001E-10  6.82330 35.0
  .10000E-30 20.00000 35.0
  -1.8   5.4  24.2  37.6  49.6  59.3  63.7  57.8  48.9  29.5   9.0  -3.6
  -6.3  -2.2  12.0  24.8  37.6  47.9  53.4  47.4  38.7  22.9   5.1  -4.8
  -4.7    .7  16.1  27.4  36.9  46.3  50.7  46.9  40.1  23.0   5.8  -5.0
     76.6    -64.6     25.2     -3.8       .0
    307.0   -270.0     83.6    -21.9     11.9
    628.4   -463.8     87.6    -25.0     14.6
    936.4   -445.3    -12.5    -60.0     14.2
   1078.9   -322.2    -82.1    -71.5     -2.6
   1081.4   -215.5   -101.3    -73.9     -5.2
   1058.3   -274.6    -91.3    -56.9     -3.5
    853.1   -360.9    -30.7    -51.6      7.4
    611.3   -372.1     45.2    -27.4     12.5
    385.0   -328.2     87.9    -17.8      9.8
    115.8    -97.2     36.5     -5.6       .4
     23.8    -15.9      6.5     -1.0      -.1
   72.  303.  742. 1299. 1605. 1651. 1617. 1233.  778.  399.  111.   25.
   58.  178.  371.  624.  797.  857.  820.  587.  420.  215.   86.   24.
CIRA 1.0 LOC=GULKANA,AK, LAT=62.1, TWHT=30, ALT=1572
```

HELENATM.CTY

```
  .223  .202  .192  .164  .113  .087  .059  .071  .110  .142  .183  .215
  .164  .188  .205  .195  .185  .188  .174  .167  .159  .184  .153  .183
  .29645E-01  1.67887 18.5
  .41284E-07  5.16937 35.0
  .53934E-02  2.19876 20.5
  .44955E-05  3.81800 35.0
  20.6  30.4  33.8  43.0  57.4  63.6  75.0  71.2  58.9  49.7  37.1  23.4
  17.4  25.3  29.9  38.6  50.5  57.2  66.3  62.0  49.7  43.8  33.1  21.5
  16.4  23.5  26.1  34.4  44.6  50.1  53.2  52.0  44.7  38.1  29.9  19.2
    189.1   -150.8     18.9       .1      4.4
    355.8   -199.9     -4.3     -9.7      8.8
    593.8   -225.6    -72.4    -23.9      6.8
    775.1   -139.8   -147.7    -37.4     -6.6
   1113.5     -4.5   -248.1    -71.4    -20.0
   1150.4     78.3   -245.4    -77.7    -17.6
   1345.0    141.6   -338.5   -137.4    -20.6
   1120.9    -61.2   -289.9    -97.7    -18.8
    813.4   -265.4   -150.5    -40.5     -3.3
    532.0   -277.6    -37.0    -18.8      9.7
    252.1   -198.9     26.5      -.4      2.2
    160.0   -130.9     26.8     -1.7      1.6
  178.  393.  721. 1052. 1523. 1596. 1852. 1509. 1033.  601.  254.  158.
   97.  248.  452.  650.  936.  982. 1012.  806.  520.  329.  125.   89.
CIRA 1.0 LOC=HELENA,MT, LAT=46.6, TWHT=20, ALT=3893
```

HILO--TM.CTY

```
  .020  .027  .015  .010  .018  .018  .018  .017  .019  .021  .012  .019
  .13  .159  .154  .128  .149  .16  .111  .117  .111  .146  .145  .153
  .27061E-03  3.77736 10.0
  .10000E-30 20.00000 35.0
  .34424E-04  4.43689 11.0
  .72264E-03  3.38878 11.0
  70.2  68.7  70.7  70.3  71.8  73.0  73.1  73.6  73.1  73.4  72.0  69.2
  72.0  70.4  72.2  72.7  73.9  74.8  76.0  76.4  76.5  75.6  73.8  72.6
  64.7  63.9  65.9  66.7  67.6  68.8  69.8  71.2  70.1  69.8  68.4  66.2
    241.5   -105.4     -7.7    -15.9      6.7
    300.7   -111.3    -29.0    -13.8       .7
    377.0    -45.0    -68.6    -37.2     -3.3
    461.0     38.6    -96.2    -54.2    -12.0
    520.4    101.9   -109.0    -50.1    -19.3
    561.6    137.6   -109.2    -42.5    -15.9
    554.2    129.7   -121.2    -43.4    -19.7
    474.4     52.6   -119.8    -37.8    -20.2
    415.5    -26.6    -94.1    -35.2    -10.8
    281.1    -84.8    -35.8    -17.2       .8
    243.2   -108.1     -9.6    -16.5      6.2
    226.0    -92.8     -4.8    -22.6     10.0
  351.  457.  597.  707.  813.  896.  898.  786.  671.  456.  367.  329.
  187.  225.  347.  478.  511.  527.  493.  415.  363.  218.  175.  184.
CIRA 1.0 LOC=HILO,HI, LAT=19.7, TWHT=57, ALT=27
```

HOMER-TM.CTY

```
  .223  .214  .207  .181  .159  .135  .119  .123  .146  .181  .203  .222
  .127  .14  .139  .127  .114  .164  .102  .102  .126  .112  .148  .134
  .41244E-20 13.26574 35.0
  .21437E-06  5.54834 18.0
  .10000E-30 20.00000 35.0
  .10000E-30 20.00000 35.0
 21.2  25.8  29.7  39.9  47.2  53.5  57.6  56.6  49.7  38.3  28.6  20.9
 19.1  22.0  23.1  32.7  39.6  47.0  50.0  49.7  44.5  34.0  27.2  19.4
 18.4  22.0  24.3  33.4  40.5  45.8  50.1  50.3  43.6  33.5  25.9  18.5
   131.8   -117.1     44.9     -8.1      1.3
   314.8   -265.8     80.4    -21.8     12.4
   610.6   -420.9     75.6    -40.6     23.9
   900.4   -425.9     -9.8    -65.6     16.5
  1047.8   -306.7    -86.6    -70.6      1.2
  1158.4   -275.2   -111.2    -42.1    -10.9
  1047.4   -288.1   -100.5    -46.1     -9.5
   772.5   -307.2    -20.8    -38.3      5.8
   593.0   -326.8     35.2    -37.1     17.0
   409.1   -318.5     79.7    -28.0     17.3
   189.6   -171.2     60.0    -11.5      4.0
    72.6    -62.7     24.9     -4.2       .2
 122.  330.  756. 1303. 1629. 1827. 1664. 1144.  774.  453.  178.   67.
  90.  193.  383.  601.  787.  920.  769.  614.  448.  254.  118.   54.
CIRA 1.0 LOC=HOMER,AK, LAT=59.6, TWHT=67, ALT=63
```

HURON-TM.CTY

```
  .240  .229  .207  .148  .099  .059  .052  .056  .091  .136  .191  .230
  .278  .24  .297  .272  .237  .244  .215  .256  .272  .255  .288  .229
  .34025E-05  3.98214 35.0
  .35128E-01  1.59204 19.0
  .53101E-01  1.55128 16.5
  .10530E-02  2.65512 22.0
 13.3  19.0  28.2  48.8  60.1  68.3  78.0  76.3  63.7  50.9  34.0  16.9
  9.7  14.4  23.8  42.6  54.5  64.2  71.7  69.6  57.7  45.9  30.5  15.4
 10.2  15.6  24.1  39.9  50.5  60.0  64.6  64.5  52.7  42.4  29.7  14.3
   227.1   -191.4     23.9      6.1      1.7
   401.3   -224.7    -13.6    -17.3     12.6
   604.9   -216.1    -87.8    -33.5      6.6
   744.5   -125.5   -149.3    -38.9     -6.4
  1069.9     23.4   -245.8    -88.3    -17.2
  1163.9    132.7   -268.5   -105.7    -15.0
  1242.9    122.2   -320.8   -116.6    -19.8
  1080.8    -44.7   -281.5    -89.0    -21.2
   744.9   -213.3   -137.7    -44.2      1.2
   530.9   -267.0    -43.9    -24.4     10.9
   256.6   -196.0     27.2      1.3      1.0
   167.5   -128.9     21.4     -3.7      3.7
 218.  444.  750. 1003. 1496. 1631. 1738. 1457.  967.  619.  273.  170.
 101.  253.  432.  632.  907.  984.  961.  813.  535.  320.  140.   96.
CIRA 1.0 LOC=HURON,SD, LAT=44.4, TWHT=20, ALT=1281
```

JACKFLTM.CTY

```
  .119  .107  .070  .040  .034  .040  .047  .047  .029  .040  .080  .108
  .198  .217  .206  .206  .173  .198  .184  .161  .197  .205  .198  .143
  .43232E-01  1.62920 15.5
  .18727E-06  4.68795 35.0
  .63834E-02  2.31986 12.5
  .22299E-03  3.44157 12.5
  56.3  59.6  67.9  75.8  80.4  82.5  84.2  84.6  80.7  73.5  64.5  59.2
  47.5  49.7  57.5  64.9  70.7  74.1  75.7  76.3  74.1  64.2  56.7  49.6
  47.7  49.1  55.9  62.2  67.1  71.4  74.2  74.5  73.0  63.3  56.7  51.0
    594.4   -419.0     80.5    -22.4     22.0
    719.5   -425.1     38.8    -29.2     24.0
    884.6   -350.0    -49.3    -44.6     14.0
    988.5   -184.8   -154.7    -73.2     -8.0
    983.5    -26.4   -201.0    -69.3    -27.4
    964.2     46.5   -189.8    -61.7    -31.2
    938.9     19.5   -183.2    -62.8    -26.8
    875.7    -78.6   -153.8    -92.0    -10.3
    790.6   -220.6    -57.9    -53.1     10.0
    724.3   -376.9     17.2    -53.4     30.9
    606.1   -407.4     73.1    -39.3     31.3
    548.6   -397.9     89.8    -30.6     24.8
  874. 1142. 1550. 1895. 1979. 1880. 1805. 1726. 1399. 1220.  947.  801.
  374.  475.  657.  776.  820.  887.  870.  729.  717.  489.  376.  343.
CIRA 1.0 LOC=JACKSONVILLE,FL, LAT=30.5, TWHT=21, ALT=26
```

KNOXVITM.CTY

```
  .174  .169  .138  .084  .055  .038  .035  .036  .039  .089  .141  .163
  .151  .139  .167  .145  .143  .106  .108  .094  .102  .116  .139  .141
  .14431E-02  2.60602 21.5
  .40751E-02  2.17240 19.0
  .19176E-09  6.91216 30.0
  .18258E-13  9.03349 35.0
  40.1  43.3  51.8  64.8  73.1  78.8  81.8  81.3  76.7  64.1  50.2  44.5
  34.3  35.6  44.4  54.6  62.9  69.0  71.2  71.3  67.3  53.1  42.7  38.1
  33.3  34.6  41.7  52.0  61.0  67.1  70.4  69.4  66.0  52.7  41.7  37.0
    473.1   -350.6     74.9    -26.4     20.7
    588.7   -345.4     45.9    -33.6     23.7
    737.1   -319.5    -15.8    -30.4     13.4
    872.8   -239.3   -101.9    -24.6     -7.0
    927.4    -93.6   -166.7    -50.9    -19.8
    976.0    -27.1   -184.0    -55.7    -24.8
    941.4    -78.7   -165.6    -43.1    -19.6
    862.6   -176.9   -126.2    -60.9     -3.6
    776.5   -292.8    -43.2    -40.9      8.6
    709.2   -417.7     41.9    -71.7     39.7
    516.2   -387.0     77.2    -21.7     16.7
    429.5   -316.7     74.4    -28.3     21.9
  638.  876. 1197. 1578. 1817. 1889. 1856. 1696. 1377. 1156.  729.  567.
  284.  426.  583.  716.  764.  856.  822.  660.  589.  413.  285.  276.
CIRA 1.0 LOC=KNOXVILLE,TN, LAT=35.8, TWHT=53, ALT=980
```

KODIAKTM.CTY

```
  .191  .195  .194  .177  .161  .140  .114  .118  .138  .169  .189  .198
  .159  .229  .156  .171  .178  .122  .102  .166  .155  .196  .207  .219
  .58522E-02  2.34165 10.5
  .21832E-01  1.55550 11.0
  .10000E-30 20.00000 35.0
  .10000E-30 20.00000 35.0
  33.4  32.2  33.2  39.9  45.1  51.2  57.2  55.9  51.4  42.6  34.6  30.2
  32.1  30.1  29.9  35.7  40.6  46.6  52.2  52.1  47.8  38.3  32.8  29.3
  31.0  28.7  28.7  34.3  40.7  45.3  51.5  50.5  45.5  36.3  30.9  26.6
    164.6   -150.3     56.6    -12.0      3.4
    298.9   -224.8     65.0    -22.0     13.5
    618.9   -415.4     71.9    -41.6     25.4
    861.0   -402.4     -7.5    -43.5     10.4
    883.7   -255.1    -63.5    -23.5     -7.0
   1066.7   -239.6   -106.1    -31.0    -12.7
    922.6   -223.4    -76.8    -35.7     -8.5
    807.8   -296.6    -40.4    -40.0       .2
    578.5   -289.0     26.6    -37.4     16.2
    431.5   -339.4     84.9    -28.2     17.9
    229.2   -215.4     72.7    -13.6      5.3
    100.1    -85.4     33.2     -6.3      1.1
  155.  331.  802. 1268. 1353. 1685. 1426. 1206.  761.  487.  214.   95.
  104.  216.  397.  619.  773.  897.  816.  635.  481.  262.  126.   74.
CIRA 1.0 LOC=KODIAK,AK, LAT=57.8, TWHT=60, ALT=14
```

LAKECHTM.CTY

```
  .121  .105  .074  .039  .031  .046  .056  .049  .040  .048  .077  .123
  .185  .197  .195  .245  .182  .181  .151  .122  .155  .159  .183  .194
  .60807E-06  4.50103 32.5
  .30688E-07  5.16380 35.0
  .14054E-10  7.23795 35.0
  .49026E-05  4.69641 14.5
  55.2  59.5  65.0  72.4  79.3  83.7  85.5  84.4  81.8  73.0  66.1  55.3
  47.8  50.3  57.0  63.5  69.5  75.5  77.4  76.6  72.6  62.2  57.4  48.1
  47.9  51.2  56.2  62.2  68.2  72.9  76.2  74.8  71.5  63.2  56.6  48.5
    512.0   -357.4     62.1      6.1      6.3
    662.5   -384.8     35.9     -2.2     11.2
    750.7   -302.3    -48.0     -5.3      4.5
    850.3   -203.6   -114.2     -5.5     -7.2
    940.5    -87.2   -177.8     -2.2    -19.9
    975.2    -10.4   -212.7     -1.4    -24.4
    853.5    -27.9   -177.8    -20.1    -21.1
    822.8   -127.8   -139.3    -23.3     -9.5
    809.9   -275.7    -76.7    -12.7      4.9
    745.0   -422.3     13.5      7.2     10.0
    592.3   -413.8     61.0     -5.1     14.2
    539.8   -421.1     74.0     20.9     -1.7
  730. 1045. 1296. 1589. 1870. 2012. 1773. 1568. 1468. 1246.  885.  736.
  347.  484.  591.  748.  841.  831.  734.  730.  659.  508.  356.  307.
CIRA 1.0 LOC=LAKE CHARLES,LA, LAT=30.2, TWHT=22, ALT=9
```

LAKEHUTM.CTY

```
  .199  .190  .167  .134  .091  .053  .043  .044  .061  .099  .143  .179
  .14  .23  .188  .157  .17  .16  .093  .121  .098  .116  .148  .138
  .21182E-01  1.88680 16.5
  .45950E-06  4.76873 27.5
  .10918E-08  6.15696 35.0
  .44190E-13  8.99199 35.0
  32.4  36.3  43.9  53.8  65.2  76.2  80.0  78.2  70.9  61.6  50.1  38.5
  26.4  29.4  36.3  44.4  53.7  64.8  68.4  66.7  60.1  51.6  43.0  34.1
  27.1  30.1  35.7  43.4  52.3  64.0  66.7  65.4  60.0  52.5  42.7  33.3
    453.5   -361.2     90.2    -25.5     19.2
    574.7   -366.5     60.3    -34.7     23.2
    722.9   -322.5     -4.9    -42.8     16.4
    833.1   -249.9    -77.7    -46.4      3.6
    960.7   -133.1   -154.1    -62.3    -12.5
    968.1    -63.2   -159.4    -60.6    -19.5
    941.6   -109.5   -154.3    -47.1    -14.8
    882.8   -205.3   -115.9    -54.3     -3.8
    751.5   -332.5    -11.0    -35.7     13.9
    633.5   -398.0     57.2    -38.4     26.5
    489.7   -354.4     84.8    -39.1     28.0
    353.3   -267.0     73.3    -23.3     17.3
  585.  808. 1135. 1456. 1775. 1776. 1751. 1592. 1261.  962.  661.  445.
  262.  392.  564.  669.  797.  881.  830.  710.  569.  410.  317.  243.
CIRA 1.0 LOC=LAKEHURST,NJ, LAT=40.0, TWHT=20
```

LIHUE-TM.CTY

```
  .023  .013  .007  .004  .013  .019  .026  .028  .032  .024  .012  .008
  .191  .241  .306  .307  .221  .282  .305  .278  .24  .24  .243  .224
  .10000E-30 20.00000 35.0
  .28304E-17 11.37411 35.0
  .13680E-21 14.81301 30.0
  .44382E-16 10.47072 35.0
  73.7  73.3  73.8  75.1  77.0  78.5  79.8  80.2  80.1  78.9  77.1  74.5
  66.8  68.8  70.3  71.6  72.5  74.7  75.8  76.0  76.7  75.4  72.8  70.4
  65.5  64.2  65.8  67.5  69.2  70.6  71.1  71.2  71.7  71.3  68.9  68.1
    647.2   -339.9     42.2   -105.9     64.8
    727.6   -290.1      -.5    -92.2     44.0
    856.0   -162.8    -93.4    -88.6     13.3
    900.2    -15.6   -138.1    -96.4    -12.1
    964.5    151.8   -194.2   -117.5    -37.6
    928.2    184.0   -177.2    -89.4    -35.3
    938.2    196.6   -193.3   -121.6    -40.3
    901.4     71.9   -205.4   -129.2    -31.8
    916.9   -109.2   -155.4   -126.3       .4
    922.1   -323.9    -88.6    -69.0     28.7
    754.9   -364.3      6.1    -82.0     52.1
    632.1   -358.5     55.1    -86.0     54.9
 1109. 1269. 1467. 1597. 1850. 1844. 1832. 1807. 1745. 1500. 1178. 1026.
  439.  582.  826.  946.  897.  862.  842.  735.  744.  708.  553.  433.
CIRA 1.0 LOC=LIHUE,HI, LAT=22.0, TWHT=20, ALT=103
```

LITTLEIM.CTY

```
  .164  .153  .119  .065  .052  .047  .054  .051  .044  .069  .126  .156
  .184  .194  .22  .212  .153  .168  .157  .177  .132  .173  .156  .196
  .38077E-02  2.21125 22.5
  .14319E-05  4.09895 35.0
  .21883E-03  3.22156 19.0
  .71291E-14  9.37597 35.0
 44.2  48.0  56.7  69.1  77.4  83.7  84.8  85.5  79.6  67.9  55.5  46.3
 36.6  40.0  47.9  58.2  65.0  72.6  74.3  75.3  67.7  58.7  45.1  40.0
 37.0  40.1  44.5  57.7  63.7  70.4  71.4  71.8  67.6  57.4  45.7  39.1
   545.5   -435.2     95.2    -34.0     26.8
   644.6   -411.6     52.5    -30.4     19.4
   754.6   -338.9    -11.9    -42.9     19.3
   886.2   -242.7   -100.0    -36.6     -3.2
   968.4   -105.6   -187.1    -52.8    -20.5
   993.6    -36.4   -224.9    -36.0    -33.6
   977.0    -43.1   -212.0    -58.3    -29.9
   908.1   -179.1   -159.6    -54.6    -14.2
   833.2   -331.4    -58.8    -49.7     14.7
   746.9   -477.9     42.6    -43.5     31.5
   590.0   -450.2     80.6    -26.0     23.0
   513.2   -439.8    102.3    -26.6     22.3
 764.  990. 1274. 1616. 1961. 2041. 1988. 1798. 1514. 1242.  847.  695.
 271.  390.  558.  720.  739.  740.  736.  639.  558.  389.  295.  227.
CIRA 1.0 LOC=LITTLE ROCK,AR, LAT=34.8, TWHT=20, ALT=257
```

LONGBEIM.CTY

```
  .118  .112  .096  .087  .078  .054  .036  .031  .042  .065  .083  .114
  .122  .14  .152  .148  .173  .144  .146  .145  .149  .121  .138  .144
  .86346E-10  6.77124 35.0
  .12831E-02  2.87038 10.5
  .33271E-01  1.80435 10.5
  .40462E-26 17.04849 35.0
 58.3  60.4  62.2  64.9  65.2  71.2  75.2  75.7  74.7  70.5  65.5  58.6
 48.7  50.4  53.7  55.6  58.6  61.5  65.5  67.0  64.8  59.5  55.5  50.3
 47.1  48.4  50.1  52.6  55.5  60.3  62.1  64.8  61.0  56.9  53.3  46.2
   632.7   -518.3    112.5    -41.7     33.4
   769.6   -536.9     68.5    -41.9     31.2
   835.9   -424.3    -20.0    -26.2     14.7
   997.4   -264.5   -156.5    -55.6     -6.4
   954.7   -152.7   -180.0      5.7    -22.7
   955.4   -117.6   -206.3     35.2    -26.0
  1016.6   -104.4   -244.9    -16.0    -33.0
   944.3   -282.7   -162.9      1.5    -14.9
   904.5   -405.5    -60.3    -15.8      4.0
   798.4   -532.2     50.6    -16.3     20.0
   686.4   -564.5    113.2    -33.5     28.9
   607.3   -536.2    128.9    -41.7     33.6
 912. 1243. 1488. 1975. 1956. 2114. 2315. 2112. 1715. 1340. 1041.  860.
 283.  369.  509.  653.  761.  718.  625.  539.  554.  414.  281.  235.
CIRA 1.0 LOC=LONG BEACH,CA, LAT=33.8, TWHT=20, ALT=25
```

LOSANGTM.CTY

```
  .108  .111  .110  .090  .069  .058  .033  .031  .037  .062  .088  .107
  .158  .138  .179  .188  .177  .174  .184  .135  .152  .142  .154  .113
  .15798E-01  2.11240 10.5
  .94048E-02  2.10457 10.0
  .10698E-01  2.33469 10.0
  .76613E-02  2.09498 11.0
  55.7  55.6  55.9  59.5  62.7  63.9  67.9  69.8  67.2  63.5  58.3  55.3
  56.5  55.6  55.7  59.1  62.4  64.2  67.3  68.3  68.0  63.5  60.6  56.8
  50.3  50.8  50.7  52.6  57.4  60.0  62.2  63.5  62.2  57.7  52.4  47.7
    330.0   -218.4      8.1    -17.7     21.4
    510.4   -234.3    -54.6    -33.4     26.4
    629.5   -193.3   -102.8    -22.7      2.9
    856.2   -114.0   -211.0     -4.8    -31.9
    913.9       .3   -199.4     -5.8    -27.6
   1098.7     80.7   -231.3     -2.3    -35.4
   1080.6     49.6   -262.0      8.7    -35.5
    916.6    -42.8   -248.2    -17.5    -37.1
    750.8   -155.2   -158.8    -28.6    -13.1
    459.2   -191.0    -46.2    -17.1     12.8
    387.3   -227.3     -7.6    -22.4     24.1
    226.8   -155.3     16.6    -28.5     22.8
  388.  624.  850. 1169. 1298. 1490. 1522. 1288.  997.  600.  464.  276.
  188.  338.  497.  712.  858. 1030.  936.  728.  615.  350.  239.  122.
CIRA 1.0 LOC=LOS ANGELES,CA, LAT=33.9, TWHT=20, ALT=97
```

LOUISVTM.CTY

```
  .187  .189  .149  .101  .061  .046  .041  .044  .056  .097  .139  .169
  .242  .21  .242  .213  .174  .19  .128  .144  .143  .145  .195  .206
  .61950E-05  3.80191 35.0
  .54680E-03  2.75074 25.0
  .27678E-09  6.55746 35.0
  .24137E-05  4.31020 26.0
  35.3  36.4  48.3  59.3  71.3  77.5  81.0  80.2  74.8  61.7  50.4  40.9
  30.3  29.9  40.6  51.9  61.8  69.1  72.8  71.5  64.2  52.6  43.9  36.9
  29.8  29.6  38.6  48.8  58.3  65.9  68.7  68.9  61.3  50.7  42.5  35.4
    394.9   -252.2     20.4    -10.7     17.5
    566.5   -256.9    -24.3    -44.7     31.7
    754.4   -238.5    -89.8    -46.1     15.3
    964.1   -105.6   -191.5    -88.6      -.5
   1101.8     39.4   -207.2   -101.7    -10.9
   1187.3    130.6   -221.2   -121.6    -10.6
   1199.0    103.3   -223.4   -117.0    -11.2
   1024.3    -61.0   -224.7    -88.3     -5.6
    892.2   -172.6   -155.2    -96.3     11.9
    732.7   -312.9    -56.0    -44.3     26.3
    479.5   -286.4     14.0    -16.5     21.8
    355.0   -222.7     21.8    -10.1     16.3
  441.  688. 1012. 1402. 1630. 1782. 1741. 1527. 1259.  916.  552.  388.
  280.  452.  645.  855. 1038. 1092. 1135.  882.  750.  564.  349.  270.
CIRA 1.0 LOC=LOUISVILLE,KY, LAT=38.2, TWHT=20, ALT=477
```

MACON-TM.CTY

```
  .151  .134  .096  .067  .048  .046  .044  .040  .045  .073  .111  .130
  .16  .191  .198  .166  .147  .165  .133  .122  .159  .16  .135  .186
  .17742E-02  2.50697 22.0
  .17772E-07  5.35813 35.0
  .20109E-09  6.55421 35.0
  .14036E-14  9.62855 35.0
  48.5  52.8  62.1  71.9  79.2  84.0  84.8  83.9  78.9  70.3  59.4  53.7
  40.5  43.9  51.8  57.8  65.6  72.3  74.0  73.8  68.1  56.8  47.5  44.1
  40.2  43.5  49.6  57.1  64.4  69.5  72.5  73.3  66.1  55.4  47.7  44.0
    492.7   -354.2     68.9    -30.2     24.4
    642.0   -390.4     41.4    -32.8     23.7
    794.8   -322.1    -43.8    -47.1     14.8
    957.2   -222.6   -139.0    -46.6     -8.9
    952.6    -53.7   -188.5    -67.1    -23.6
    976.8      8.8   -202.5    -55.0    -31.3
    912.7    -30.8   -175.1    -41.6    -25.3
    877.3   -155.7   -146.1    -46.1    -11.6
    787.8   -261.9    -62.1    -53.7     10.5
    719.8   -417.1     28.9    -60.2     32.7
    622.5   -465.6     86.5    -44.5     33.7
    532.8   -434.3    100.9    -38.2     28.9
  705. 1004. 1366. 1806. 1899. 1965. 1788. 1732. 1434. 1231.  934.  757.
  291.  408.  570.  742.  772.  819.  812.  691.  602.  402.  309.  254.
CIRA 1.0 LOC=MACON,GA, LAT=32.7, TWHT=23, ALT=354
```

MASONCTM.CTY

```
  .229  .230  .199  .147  .095  .050  .046  .046  .074  .130  .183  .223
  .292  .307  .302  .318  .304  .216  .181  .193  .242  .267  .254  .247
  .28803E-05  3.98777 35.0
  .13172E-04  3.77185 26.0
  .97717E-02  2.09578 15.5
  .11981E-01  2.09370 13.0
  19.1  19.6  32.6  50.3  63.4  74.2  78.9  75.2  67.6  54.5  37.7  21.4
  15.1  14.0  26.7  40.8  52.4  64.3  66.7  64.1  55.9  44.8  32.4  17.9
  15.6  15.6  27.8  41.3  51.1  62.4  64.5  64.0  55.8  44.1  32.9  18.0
    456.7   -403.6    108.2    -44.7     31.3
    630.1   -477.5     92.1    -61.3     37.5
    774.8   -419.2     10.0    -63.8     23.4
    848.6   -283.1    -75.0    -49.0      -.6
   1058.5   -166.9   -182.3    -71.0    -17.6
   1117.7   -112.6   -208.3    -73.6    -29.1
   1100.3   -147.8   -208.8    -74.5    -28.6
    936.8   -286.8   -121.5    -59.8     -3.7
    855.3   -398.8    -32.7    -72.9     23.5
    680.3   -480.3     62.8    -52.5     35.0
    456.9   -378.2     91.3    -34.5     25.0
    360.2   -328.1     94.3    -16.7     10.4
  553.  850. 1227. 1444. 1924. 2143. 2126. 1795. 1425.  984.  576.  412.
  206.  302.  446.  617.  772.  798.  716.  565.  505.  326.  229.  176.
CIRA 1.0 LOC=MASON CITY,IA, LAT=43.2, TWHT=20, ALT=1194
```

MASSENTM.CTY

```
  .234  .222  .208  .159  .111  .061  .047  .060  .096  .140  .185  .217
  .28  .182  .206  .187  .223  .184  .21  .187  .181  .167  .158  .162
  .66871E-05  3.84405 31.5
  .15581E-01  1.92177 15.5
  .14639E-02  2.68081 17.5
  .57445E-13  8.89374 35.0
  16.3  23.1  29.0  46.5  59.1  70.6  75.0  71.7  64.2  51.9  36.6  23.5
  13.5  17.4  22.9  38.5  48.4  58.8  64.0  59.6  53.5  43.0  31.6  20.3
  13.6  18.9  24.0  38.4  47.8  57.8  62.8  59.2  53.9  43.2  32.9  20.5
    341.8   -271.5     72.9    -18.3     12.4
    511.4   -350.3     67.6    -39.2     25.7
    715.0   -377.9     13.5    -48.3     22.1
    905.9   -313.9    -77.1    -55.5      3.1
   1020.5   -200.1   -166.4    -54.3    -18.2
   1092.3   -121.4   -202.5    -68.7    -23.8
   1045.6   -171.6   -179.5    -62.4    -18.9
    938.1   -262.9   -114.2    -69.8     -2.6
    779.7   -387.9     -3.4    -35.3     10.9
    577.6   -364.1     49.7    -43.4     30.3
    350.9   -245.4     62.5    -22.1     15.2
    282.9   -225.9     66.8    -22.8     16.1
  402.  664. 1076. 1514. 1831. 2021. 1979. 1695. 1262.  810.  431.  328.
  216.  330.  478.  647.  724.  804.  731.  636.  520.  376.  262.  188.
CIRA 1.0 LOC=MASSENA,NY, LAT=44.9, TWHT=20, ALT=202
```

MERIDITM.CTY

```
  .149  .135  .098  .063  .061  .043  .052  .051  .045  .077  .109  .139
  .113  .166  .187  .156  .121  .089  .072  .086  .121  .117  .152  .145
  .69365E-07  5.02015 35.0
  .30043E-03  2.90538 24.5
  .14342E-01  1.96343 14.0
  .12374E-18 12.43111 35.0
  49.4  52.5  61.8  72.1  79.2  83.8  86.7  86.0  80.9  69.0  59.8  52.4
  41.0  42.0  49.7  58.7  63.5  72.4  74.3  72.9  67.5  56.7  48.0  42.7
  41.8  42.8  49.6  57.4  63.4  71.4  73.0  73.1  67.6  57.7  48.9  43.8
    509.4   -346.7     65.2    -33.4     25.1
    632.6   -346.2     31.9    -48.0     29.4
    753.3   -298.5    -35.1    -38.4     13.4
    916.2   -218.2   -129.3    -35.1     -7.6
    929.0    -59.2   -178.3    -50.1    -21.7
    949.7      1.2   -197.9    -45.1    -28.0
    943.9     -5.7   -193.1    -63.7    -27.4
    894.3   -131.5   -162.0    -72.3    -10.7
    801.5   -253.1    -69.3    -64.4     14.6
    708.1   -400.5     25.8    -48.0     32.1
    581.7   -420.6     72.9    -32.4     28.1
    497.5   -363.4     77.7    -38.8     29.0
  729.  995. 1304. 1721. 1827. 1956. 1878. 1814. 1470. 1202.  873.  698.
  326.  445.  581.  736.  797.  797.  809.  663.  612.  438.  317.  294.
CIRA 1.0 LOC=MERIDIAN,MS, LAT=32.3, TWHT=20, ALT=290
```

MIAMI-TM.CTY

```
  .037  .038  .017  .026  .032  .050  .053  .065  .059  .031  .022  .046
  .201  .197  .218  .174  .161  .206  .136  .181  .154  .163  .192  .181
  .10000E-30 20.00000 35.0
  .84785E-06  4.16524 35.0
  .10023E-02  2.79609 13.0
  .41357E-05  5.36532 11.5
  71.4  72.8  75.8  78.2  80.4  83.2  84.4  85.5  84.1  79.9  76.6  71.0
  64.6  65.5  69.3  71.1  75.0  77.6  77.5  79.1  78.7  74.3  69.8  62.8
  62.6  61.0  65.9  66.9  70.8  74.3  75.4  76.1  76.2  71.3  66.5  59.9
    673.0   -462.1     64.8     -4.9     19.8
    784.5   -475.1     23.1      -.8     18.2
    849.6   -334.4    -72.9    -21.8     10.6
    917.3   -190.0   -168.9     -8.4    -10.8
    924.2    -32.9   -175.9      3.7    -22.0
    851.3     56.6   -154.6    -25.0    -20.8
    911.2     37.9   -173.5    -24.8    -22.3
    833.0    -90.8   -149.8    -22.2    -13.0
    839.0   -239.9    -81.4    -10.7      -.6
    742.2   -362.6    -22.3    -19.5     20.7
    733.3   -512.2     57.5      -.5     21.2
    687.7   -517.6     77.6      9.8     14.1
 1045. 1341. 1592. 1901. 1794. 1673. 1748. 1692. 1496. 1285. 1184. 1030.
  414.  479.  594.  702.  889.  857.  903.  755.  774.  510.  402.  375.
CIRA 1.0 LOC=MIAMI,FL, LAT=25.8, TWHT=23, ALT=7
```

MILESCTM.CTY

```
  .236  .223  .194  .157  .111  .065  .056  .058  .092  .133  .189  .219
  .181  .159  .218  .241  .211  .172  .202  .199  .187  .202  .203  .185
  .50622E-04  3.20113 35.0
  .68788E-02  2.08404 21.0
  .98246E-03  2.62753 23.5
  .79659E-06  4.32666 35.0
  15.0  20.8  32.7  44.1  57.2  68.3  79.7  77.8  63.0  52.9  35.8  22.3
  11.3  17.4  29.4  40.0  50.8  63.8  72.4  70.4  55.5  45.0  29.6  19.5
  11.3  17.0  27.8  36.0  45.6  57.3  57.8  55.9  49.4  40.5  27.6  19.0
    230.7   -188.8     31.1     -1.8      2.5
    373.8   -229.4      -.1    -10.5      7.7
    606.1   -243.3    -70.5    -22.5      3.6
    808.7   -159.2   -167.5    -38.0    -11.1
   1096.2     21.0   -255.3    -85.9    -16.8
   1195.8    103.7   -290.3    -81.1    -19.1
   1341.2    108.9   -348.2   -111.0    -27.8
   1140.2    -92.1   -297.1    -73.3    -24.0
    833.9   -256.7   -157.6    -36.5     -5.5
    552.4   -299.5    -47.3    -18.4     12.8
    263.8   -215.4     26.3      6.5       .1
    205.2   -171.3     29.1       .6      2.3
  224.  412.  745. 1080. 1491. 1669. 1861. 1536. 1037.  601.  257.  190.
  114.  223.  434.  636.  919.  945.  984.  801.  575.  311.  124.  104.
CIRA 1.0 LOC=MILES CITY,MT, LAT=46.4, TWHT=40, ALT=2629
```

MINNEATM.CTY

```
  .244  .228  .203  .137  .096  .056  .042  .042  .093  .129  .187  .226
  .241  .205  .28  .245  .287  .22  .191  .212  .187  .199  .206  .208
  .18259E-03  3.19826 24.0
  .21524E-04  3.65372 26.0
  .20429E-02  2.41985 21.0
  .41896E-01  1.77375 10.0
  12.4  19.9  31.3  52.5  62.7  74.7  79.0  75.2  66.0  54.4  36.1  19.6
   8.5  15.4  24.5  42.9  53.2  63.5  67.1  66.0  57.1  46.3  31.9  16.9
   9.1  15.5  24.8  41.4  49.8  59.9  65.4  63.5  55.9  44.5  31.5  16.2
    394.6   -344.6     96.6    -34.5     23.1
    583.1   -440.1     86.7    -41.8     26.6
    763.7   -417.4      7.4    -60.1     23.1
    838.1   -268.3    -70.5    -61.6      5.6
    946.9   -209.3   -130.0    -48.9     -7.3
   1022.9   -131.9   -170.5    -60.7    -19.7
   1035.6   -179.7   -168.3    -55.5    -20.6
    917.4   -259.3   -109.6    -77.8      2.7
    745.1   -364.3     -4.7    -51.9     19.6
    620.8   -407.2     61.7    -48.4     31.5
    375.0   -284.8     73.2    -27.6     19.6
    298.4   -243.4     70.6    -19.3     12.7
  461.  770. 1136. 1395. 1757. 1909. 1957. 1683. 1243.  873.  463.  338.
  198.  306.  448.  634.  717.  794.  747.  615.  480.  380.  242.  189.
CIRA 1.0 LOC=MINNEAPOLIS,MN, LAT=44.9, TWHT=21, ALT=834
```

MISSOUTM.CTY

```
  .213  .195  .185  .155  .122  .092  .070  .075  .111  .158  .187  .209
  .11  .137  .162  .178  .169  .152  .144  .129  .116  .107  .103  .086
  .97022E-02  2.10652 16.5
  .15916E-08  6.44502 27.5
  .58838E-04  3.46364 24.5
  .10000E-30 20.00000 35.0
  25.1  33.8  38.5  48.6  57.7  66.2  76.5  74.4  60.8  47.7  36.7  27.7
  22.6  28.6  30.9  37.7  46.4  51.9  58.9  57.3  47.3  37.8  31.7  24.5
  22.1  28.2  30.3  37.4  43.4  50.0  54.6  52.2  47.0  37.5  31.7  25.1
    264.8   -194.5     54.7    -13.6      9.4
    461.2   -295.2     59.7    -27.7     18.1
    680.8   -320.3     15.8    -52.9     25.2
    840.9   -296.9    -56.5    -35.0      3.2
    985.2   -187.4   -140.9    -69.0     -7.9
   1071.3   -125.9   -178.5    -90.5    -16.8
   1185.4   -255.0   -225.7    -59.2    -27.7
   1030.2   -343.9   -130.0    -74.2     -2.4
    836.8   -444.8     -4.5    -52.6     19.2
    586.5   -406.7     72.8    -43.0     25.0
    325.0   -239.3     66.9     -6.3      2.1
    228.6   -167.6     50.7     -6.3      2.7
  312.  585.  975. 1337. 1716. 1981. 2312. 1874. 1348.  803.  388.  260.
  199.  350.  554.  678.  763.  780.  620.  565.  478.  343.  243.  182.
CIRA 1.0 LOC=MISSOULA,MT, LAT=46.9, TWHT=20, ALT=3190
```

MONTGOTM.CTY

```
  .145  .137  .095  .055  .045  .041  .048  .054  .043  .068  .107  .144
  .136  .178  .217  .143  .155  .127  .132  .098  .127  .103  .138  .15
  .39730E-06  4.59537 33.0
  .16289E-07  5.52238 32.0
  .63420E-12  8.19111 35.0
  .24343E-02  2.73624 11.0
  50.1  52.3  61.8  71.3  76.9  83.7  85.0  86.2  81.1  70.0  60.2  50.2
  42.2  44.5  52.6  59.4  65.3  72.5  74.7  74.6  69.2  58.7  49.2  42.0
  42.8  43.7  50.5  59.0  62.9  71.5  73.5  71.7  70.0  57.5  49.2  41.8
    535.4   -381.5     67.8    -28.3     23.2
    600.0   -342.9     34.9    -39.3     27.6
    777.7   -308.0    -42.0    -44.1     14.2
    895.6   -209.5   -134.7    -39.6     -7.4
    939.2    -82.5   -187.6    -30.8    -24.7
    967.6     21.9   -201.4    -63.9    -30.2
    903.8      2.1   -178.3    -83.7    -22.8
    865.0   -123.2   -148.3    -61.0    -12.8
    838.7   -309.1    -59.7    -42.6      9.7
    712.6   -408.3     23.3    -46.3     28.0
    599.7   -437.4     77.4    -39.7     31.4
    518.9   -392.5     81.9    -43.8     34.3
  756.  922. 1338. 1723. 1882. 1969. 1875. 1723. 1534. 1203.  904.  730.
  313.  418.  579.  687.  773.  811.  756.  689.  616.  420.  314.  280.
CIRA 1.0 LOC=MONTGOMERY,AL, LAT=32.3, TWHT=23, ALT=192
```

MOUNTSTM.CTY

```
  .191  .175  .154  .142  .106  .074  .051  .070  .072  .131  .162  .182
  .156  .147  .172  .184  .157  .225  .096  .092  .143  .175  .161  .129
  .23349E-06  4.72701 33.0
  .93837E-02  1.98307 17.5
  .40097E-05  4.02543 31.0
  .70055E-07  4.96641 35.0
  35.0  41.2  46.6  51.4  58.3  66.8  74.7  75.8  69.2  56.1  44.8  38.8
  30.7  35.0  41.5  42.6  52.3  59.3  67.9  61.5  57.8  44.2  39.8  33.3
  29.9  34.9  38.3  39.9  45.9  52.8  57.9  54.1  51.7  42.4  38.8  33.4
    466.7   -317.5     38.3    -15.9     22.1
    610.5   -360.2     19.1    -52.4     40.7
    893.4   -325.4    -82.0    -58.7     18.3
   1120.8   -175.5   -206.3   -127.5      3.5
   1322.4     15.1   -257.0   -163.6    -11.5
   1490.8    174.6   -311.8   -211.5    -25.2
   1492.8    142.7   -335.1   -244.4    -25.9
   1313.3   -107.0   -296.2   -175.9     -3.8
   1146.8   -319.9   -181.4   -181.5     33.0
    848.4   -432.4    -29.0   -125.9     69.8
    496.3   -330.5     34.0    -36.3     33.9
    449.4   -324.7     50.9    -35.2     34.9
  507.  751. 1225. 1710. 2120. 2447. 2584. 2146. 1748. 1122.  560.  480.
  318.  406.  713.  842. 1016. 1042.  881.  811.  673.  486.  314.  283.
CIRA 1.0 LOC=MOUNT SHASTA,CA, LAT=41.2, TWHT=32, ALT=3535
```

NEWARKTM.CTY

```
  .194  .189  .167  .118  .081  .042  .034  .036  .042  .100  .144  .182
  .242  .248  .265  .228  .24  .192  .197  .167  .196  .193  .209  .263
  .80177E-02  2.02588 18.0
  .24196E-02  2.38076 17.5
  .21751E-01  1.89890 12.5
  .22366E-02  2.68306 12.5
  33.8  35.8  43.6  57.0  67.2  77.0  80.2  77.9  70.8  61.1  48.3  37.2
  29.0  30.6  37.4  48.8  57.3  67.5  70.8  69.0  63.2  53.1  44.2  33.9
  27.8  29.4  35.0  46.0  54.0  63.1  65.8  65.8  60.4  52.0  41.3  32.1
    424.6   -336.7     88.2    -28.2     20.2
    564.4   -376.7     64.4    -37.7     26.6
    732.6   -339.8     -3.6    -32.6     13.6
    848.7   -244.5    -82.3    -55.1      2.3
    968.5   -168.0   -153.1    -38.7    -15.7
    958.1    -90.9   -162.1    -50.1    -19.6
    938.4   -108.5   -162.9    -54.6    -17.5
    837.4   -218.2   -103.9    -48.8     -1.7
    775.4   -338.2    -17.2    -38.9     13.5
    625.5   -397.3     51.1    -32.9     22.7
    438.3   -310.7     72.5    -25.4     18.7
    381.7   -308.6     86.6    -24.7     18.0
  542.  792. 1137. 1458. 1798. 1825. 1768. 1559. 1299.  948.  577.  475.
  253.  360.  566.  682.  778.  809.  773.  634.  579.  387.  301.  235.
CIRA 1.0 LOC=NEWARK,NJ, LAT=40.7, TWHT=20, ALT=7
```

NEWORLTM.CTY

```
  .109  .110  .076  .039  .038  .040  .052  .057  .039  .044  .082  .100
  .18  .181  .169  .197  .156  .138  .147  .116  .116  .118  .157  .156
  .68459E-07  5.00413 35.0
  .67071E-08  5.63786 35.0
  .38985E-02  2.60965 12.0
  .13280E-05  5.86627 12.0
  57.6  58.1  64.6  73.1  79.0  82.3  84.4  84.8  78.1  76.7  63.5  59.1
  50.3  51.2  57.1  65.0  69.3  74.3  77.5  77.5  70.8  66.4  56.6  52.2
  49.4  49.2  55.5  63.2  67.9  72.0  75.8  74.2  69.9  65.7  56.1  52.7
    553.5   -382.6     73.7    -22.5     19.8
    668.0   -372.7     40.8    -40.1     23.3
    803.8   -290.1    -53.3    -61.7     18.0
    893.4   -170.7   -132.9    -57.4     -6.6
    950.0    -10.5   -204.6    -75.9    -28.6
    919.2     53.8   -198.5    -62.4    -30.1
    888.6     57.5   -186.1    -93.6    -26.4
    878.2    -91.3   -162.0    -75.3    -14.3
    818.1   -243.4    -76.5    -77.3     15.6
    774.2   -439.7     16.8    -51.1     32.0
    612.2   -431.8     70.7    -32.4     28.2
    555.4   -406.5     84.9    -22.6     20.1
  816. 1082. 1412. 1698. 1954. 1887. 1780. 1731. 1537. 1372.  949.  806.
  356.  469.  605.  735.  757.  773.  770.  710.  611.  433.  338.  335.
CIRA 1.0 LOC=NEW ORLEANS,LA, LAT=30.0, TWHT=53, ALT=4
```

NEWYCPTM.CTY

```
  .192  .192  .172  .124  .088  .044  .022  .023  .048  .099  .140  .178
  .195  .255  .289  .239  .212  .203  .189  .184  .178  .205  .225  .205
  .43052E-01  1.69889 11.5
  .29059E-01  1.72050 11.0
  .22016E-03  3.46198 14.5
  .25457E-02  2.67683 10.5
  33.7  34.6  41.7  54.5  62.1  71.3  77.1  77.5  69.4  60.6  48.9  39.1
  30.5  29.9  36.6  49.5  56.9  64.2  69.8  71.3  63.4  54.0  45.9  35.0
  28.8  28.8  34.3  46.3  53.0  61.7  65.7  66.9  59.8  52.2  42.2  32.9
    387.0   -339.6     84.4     15.0     -7.9
    534.5   -391.2     67.1     19.3     -1.1
    648.1   -340.1      8.3    -16.0     13.9
    762.4   -265.0    -60.7    -10.5      1.2
    852.5   -184.6   -126.9    -27.0     -8.2
    911.1   -117.0   -134.7    -26.3    -10.2
    868.6   -149.3   -134.0     -6.6     -8.4
    831.0   -243.6    -77.6    -21.1      2.5
    717.7   -328.9    -28.5    -10.5      6.6
    602.7   -414.9     47.3     -1.4     10.8
    400.8   -271.9     59.7    -32.0     22.6
    312.1   -266.0     74.2      3.9     -3.3
  467.  727. 1035. 1351. 1656. 1720. 1625. 1502. 1189.  899.  524.  379.
  205.  346.  463.  621.  656.  837.  770.  719.  517.  343.  282.  185.
CIRA 1.0 LOC=NEW YORK CENTRAL PARK, LAT=40.8 , TWHT=68, ALT=132
```

NEWYLGTM.CTY

```
  .193  .188  .168  .131  .088  .037  .024  .032  .033  .094  .137  .179
  .251  .218  .227  .215  .184  .177  .184  .189  .194  .22  .223  .297
  .90170E-09  6.15579 35.0
  .32073E-02  2.42517 14.5
  .65659E-03  3.06192 14.5
  .79252E-11  7.26812 35.0
  32.5  35.5  43.0  53.0  62.7  74.9  79.3  78.1  71.5  61.3  50.4  38.2
  30.7  31.4  37.6  47.1  55.7  67.0  73.0  71.4  65.4  55.5  47.0  35.3
  27.4  29.0  35.1  42.6  52.8  62.6  66.8  66.1  61.2  52.6  41.9  32.3
    414.0   -326.2     84.9    -19.0     14.7
    557.7   -351.2     59.4    -39.7     28.2
    679.8   -314.2      4.6    -36.8     16.6
    824.7   -253.4    -67.0    -44.3      4.8
    853.2   -134.2   -116.3    -40.8     -8.8
    909.1    -77.7   -138.2    -54.4    -15.6
    870.3   -102.3   -120.6    -56.9    -10.4
    779.4   -172.3    -88.4    -68.5      4.5
    723.3   -291.7     -8.2    -50.1     19.8
    592.6   -368.5     54.7    -34.1     22.9
    421.1   -284.3     69.9    -19.1     14.6
    348.3   -281.7     80.6    -17.2     12.2
  528.  792. 1065. 1422. 1545. 1677. 1614. 1425. 1205.  904.  559.  434.
  257.  389.  537.  687.  775.  839.  805.  647.  598.  394.  325.  220.
CIRA 1.0 LOC=NEW YORK LA GUARDIA, LAT=40.8, TWHT=83, ALT=11
```

NORFOLTM.CTY

```
  .167  .172  .142  .086  .052  .033  .041  .031  .033  .094  .117  .162
  .227  .234  .26  .237  .19  .205  .158  .145  .162  .226  .197  .223
  .95292E-01  1.39347 13.0
  .18058E-05  4.29663 28.0
  .34515E-01  1.77915 12.0
  .65071E-02  2.37702 10.5
  42.2  41.0  50.2  64.1  72.0  79.4  82.9  80.6  75.2  60.7  57.2  43.6
  36.6  37.9  43.9  56.4  63.9  70.4  75.1  72.3  67.6  55.0  49.5  39.4
  35.0  34.6  41.6  52.8  61.6  66.8  72.0  70.6  65.1  53.0  46.6  37.2
    533.5   -447.1    109.5    -31.6     24.4
    548.9   -304.2     42.8    -46.3     29.9
    745.6   -334.6    -11.3    -50.9     21.4
    911.2   -240.6   -112.3    -56.2      -.1
    989.9   -112.6   -182.3    -60.0    -19.9
   1009.7    -46.0   -198.1    -58.4    -27.7
    937.0    -73.7   -171.8    -67.3    -19.7
    872.1   -187.4   -122.6    -67.2     -1.9
    824.1   -350.3    -40.0    -44.0     13.5
    636.5   -386.7     45.8    -36.1     26.9
    617.5   -502.3    107.6    -41.5     32.9
    428.5   -339.3     84.9    -27.3     21.8
  728.  795. 1235. 1644. 1907. 2017. 1904. 1711. 1489. 1011.  882.  564.
  258.  426.  544.  704.  785.  809.  746.  656.  554.  412.  280.  249.
CIRA 1.0 LOC=NORFOLK,VA, LAT=36.9, TWHT=34, ALT=24
```

NORTHBTM.CTY

```
  .152  .151  .150  .143  .123  .107  .096  .092  .097  .118  .130  .149
  .205  .226  .225  .221  .223  .228  .235  .235  .183  .179  .191  .209
  .57347E-03  3.09167 12.0
  .58081E-02  2.29269 10.5
  .26478E-03  3.74266 10.0
  .10000E-30 20.00000 35.0
  47.4  48.5  49.6  51.0  55.9  59.4  61.7  62.4  61.6  57.1  53.5  47.8
  42.9  43.5  42.7  45.6  50.2  53.9  55.4  55.5  54.5  50.9  49.0  44.7
  42.9  43.2  43.3  45.4  49.8  54.1  55.0  55.3  55.7  51.0  49.2  43.9
    377.0   -285.3     80.9    -27.2     16.7
    544.1   -359.7     71.3    -20.7     14.3
    735.9   -380.5     23.1    -41.9     20.7
    887.2   -327.0    -48.0    -19.2       .4
   1007.0   -240.4   -132.0    -18.3    -13.3
    999.6   -200.3   -139.5     -3.3    -18.0
   1006.3   -253.8   -144.3      1.1    -19.3
    965.6   -352.9    -98.7    -30.2     -4.3
    815.0   -421.5      3.3    -29.4     14.7
    627.1   -413.9     67.6    -33.7     22.6
    391.0   -276.4     70.1    -17.2     11.0
    307.9   -229.7     69.2    -19.0     11.1
  461.  716. 1118. 1508. 1875. 1943. 2043. 1866. 1355.  914.  500.  369.
  258.  395.  543.  729.  803.  829.  719.  593.  541.  396.  286.  228.
CIRA 1.0 LOC=NORTH BEND,OR, LAT=43.4, TWHT=20
```

NORTHPTM.CTY

```
  .220  .207  .186  .144  .085  .063  .052  .059  .091  .124  .183  .207
  .2  .192  .237  .294  .24  .235  .215  .169  .194  .213  .177  .165
  .19151E-04  3.61798 31.0
  .17524E-08  6.01747 35.0
  .87550E-03  2.80574 20.0
  .40008E-02  2.46851 14.5
  25.0  31.8  38.5  51.9  66.7  75.2  80.9  78.8  66.2  59.7  39.9  30.9
  15.8  20.8  27.4  39.1  54.3  60.7  66.7  64.0  51.7  41.3  29.4  21.7
  17.3  22.4  28.8  38.6  53.2  58.1  63.1  62.1  52.3  43.1  30.1  23.1
    557.2   -512.0    127.4    -43.2     32.5
    681.3   -536.6     86.4    -40.0     30.7
    827.6   -445.1    -13.4    -56.7     24.3
    958.9   -310.1   -114.8    -57.3     -2.0
   1039.8   -186.8   -183.5    -54.1    -19.8
   1143.4    -96.8   -252.3    -74.9    -31.4
   1076.3   -166.0   -219.1    -51.8    -26.0
   1000.6   -311.4   -151.3    -59.9     -8.3
    913.3   -462.6    -45.8    -49.4     15.6
    792.3   -581.4     74.4    -68.5     39.3
    585.1   -514.6    123.1    -45.8     32.9
    500.9   -489.5    131.3    -23.0     19.7
  690.  925. 1333. 1699. 2033. 2320. 2227. 1995. 1577. 1191.  767.  589.
  207.  287.  446.  633.  704.  723.  652.  536.  463.  304.  231.  179.
CIRA 1.0 LOC=NORTH PLATTE,NE, LAT=41.1, TWHT=20, ALT=2775
```

OAKLANTM.CTY

```
  .142  .128  .124  .115  .099  .086  .076  .068  .062  .086  .113  .137
  .182  .201  .207  .219  .214  .234  .2  .206  .194  .169  .115  .141
  .63996E-03  3.35923 10.5
  .13614E-02  2.77580 10.5
  .12818E-01  1.99434 10.5
  .10000E-30 20.00000 35.0
  50.1  54.3  54.7  57.7  61.3  62.9  64.8  66.0  68.1  63.2  58.6  51.8
  46.2  50.0  51.2  52.3  54.8  57.2  59.0  60.1  59.5  57.0  51.1  47.7
  45.1  47.8  48.1  50.3  53.4  55.4  57.5  57.9  57.8  54.6  50.0  46.4
    486.1   -392.4     98.1    -22.0     16.3
    658.1   -431.7     70.6    -52.1     32.0
    812.8   -401.3       .6    -45.5     19.8
   1019.5   -327.2   -130.0    -54.7     -1.1
   1046.7   -194.0   -199.8    -33.4    -22.1
   1076.3   -123.2   -232.2    -23.4    -31.4
   1034.7   -162.9   -219.0    -22.4    -26.4
    978.2   -310.0   -150.7    -25.2    -12.8
    900.6   -445.8    -34.9    -39.6     16.3
    732.9   -495.7     61.1    -36.2     27.6
    557.8   -457.7    108.0    -31.5     24.2
    483.2   -429.8    117.1    -33.3     24.2
  658. 1001. 1353. 1973. 2204. 2347. 2284. 2086. 1677. 1190.  784.  635.
  267.  393.  554.  641.  687.  704.  646.  538.  498.  379.  272.  218.
CIRA 1.0 LOC=OAKLAND,CA, LAT=37.7, TWHT=20, ALT=6
```

OKLAHOTM.CTY

```
  .183  .169  .139  .084  .056  .055  .057  .051  .061  .080  .129  .168
  .238  .253  .281  .254  .261  .212  .194  .185  .228  .206  .237  .209
  .62894E-04  3.33300 29.0
  .35715E-01  1.62563 18.0
  .28252E-06  4.75635 32.0
  .28529E-08  5.92023 35.0
  36.7  41.4  50.4  62.5  69.8  77.6  82.9  81.5  76.7  63.2  51.8  41.7
  32.5  36.5  43.9  57.1  64.6  73.9  77.9  77.7  70.8  59.0  47.7  37.7
  31.0  33.7  39.2  49.9  59.2  66.9  68.9  69.2  64.7  53.9  44.5  35.4
    389.2   -257.7      3.3    -18.0     16.9
    514.6   -252.7    -42.6    -23.5     17.8
    646.5   -180.7   -109.0    -45.1      4.7
    922.8    -60.8   -243.5    -84.5    -15.9
    951.7     26.8   -224.6    -50.3    -28.7
   1175.5    167.1   -275.7    -93.1    -31.0
   1193.7    166.8   -306.7   -103.5    -36.3
   1031.0     21.5   -297.7    -90.0    -30.1
    815.3   -190.3   -169.7    -42.7     -8.9
    640.1   -278.1    -73.8    -36.1     12.7
    437.9   -291.8     -2.0    -11.7     12.9
    304.1   -227.9     24.0     -8.0      9.1
  443.  626.  870. 1310. 1421. 1686. 1708. 1463. 1142.  817.  510.  349.
  199.  335.  497.  729.  831. 1024.  981.  794.  608.  406.  210.  147.
CIRA 1.0 LOC=OKLAHOMA CITY,OK, LAT=35.4, TWHT=70, ALT=1285
```

ORLANDTM.CTY

```
  .089  .066  .056  .040  .041  .042  .051  .051  .037  .033  .046  .086
  .194  .208  .227  .228  .193  .167  .153  .13  .212  .185  .164  .192
  .13789E-01  1.99314 15.5
  .61689E-01  1.49882 11.0
  .43008E-02  2.50721 12.5
  .49267E-02  2.33264 10.5
  63.6  68.1  73.0  76.2  82.3  84.0  85.2  85.1  82.6  78.5  73.6  64.3
  53.5  58.4  61.4  65.4  69.9  74.9  76.5  76.6  75.2  70.0  63.1  54.0
  53.7  58.1  60.6  61.9  67.7  73.3  75.0  75.3  73.1  68.5  62.6  53.6
    658.8   -456.8     82.8    -34.4     30.1
    754.2   -426.4     34.7    -42.5     31.7
    890.2   -315.9    -65.3    -57.0     15.2
    992.0   -150.2   -173.0    -71.4    -15.3
    997.3     13.8   -215.7    -74.9    -32.6
    954.0     76.4   -177.2    -67.2    -30.4
    915.0     58.7   -181.1    -75.5    -29.4
    873.7    -43.0   -162.3    -89.2    -16.2
    823.1   -197.6    -81.4    -65.3      8.4
    754.3   -376.3      7.4    -55.2     30.8
    688.7   -484.9     74.8    -54.4     43.2
    601.3   -447.9     92.1    -34.8     30.2
 1008. 1256. 1575. 1912. 2013. 1812. 1793. 1670. 1473. 1310. 1124.  908.
  399.  502.  679.  793.  834.  928.  843.  768.  738.  510.  344.  333.
CIRA 1.0 LOC=ORLANDO,FL, LAT=28.5, TWHT=20, ALT=96
```

PALMBETM.CTY

```
  .048  .045  .028  .029  .041  .051  .055  .063  .053  .036  .024  .034
  .2  .222  .224  .272  .208  .158  .163  .174  .229  .251  .216  .238
  .19925      1.13910 10.0
  .13840E-01  1.91808 13.5
  .83331E-02  2.31743 10.0
  .15073E-01  1.94982 10.0
  69.4  71.3  75.3  78.3  82.1  83.8  85.1  85.5  83.1  80.0  75.4  71.8
  61.9  62.9  66.6  70.9  74.7  77.0  77.6  78.7  78.3  73.6  68.8  64.4
  60.7  60.9  63.5  64.5  69.8  74.3  75.7  75.7  75.7  69.9  65.1  60.8
    633.4   -408.6     65.7    -42.4     34.1
    726.3   -354.1      8.4    -54.1     34.6
    877.4   -277.3    -70.8    -59.8     14.1
    965.9   -119.5   -162.0    -69.0    -13.6
    944.3     25.0   -181.9    -64.5    -26.9
    909.7    125.5   -179.4    -87.7    -33.5
    896.7    103.4   -182.8    -92.5    -33.1
    851.3    -32.4   -159.7    -81.7    -17.9
    750.8   -183.6    -77.4    -54.6      4.9
    716.8   -330.7     -3.3    -57.0     29.5
    644.3   -408.0     60.4    -48.8     37.5
    619.0   -432.8     83.6    -47.5     38.5
  981. 1207. 1551. 1843. 1844. 1732. 1733. 1650. 1390. 1268. 1067.  960.
  409.  534.  722.  848.  886.  853.  822.  754.  651.  507.  397.  366.
CIRA 1.0 LOC=PALMBEACH,FL, LAT=26.7, TWHT=20, ALT=15
```

PATUXETM.CTY

```
  .183  .172  .143  .112  .055  .036  .037  .034  .042  .078  .136  .170
  .199  .198  .186  .171  .169  .142  .129  .172  .115  .148  .155  .165
  .14336E-01  1.93292 15.0
  .14560      1.13514 10.5
  .24782E-05  4.67011 19.5
  .10747E-01  2.29618 10.0
  37.6  41.7  49.9  58.4  67.6  77.7  81.1  80.1  75.2  63.2  51.0  41.4
  32.0  35.9  43.7  51.3  61.4  69.5  73.9  72.3  68.0  57.8  46.9  37.8
  30.6  34.6  41.5  48.1  57.7  65.3  70.4  70.0  63.1  54.1  44.1  36.0
    467.4   -366.8     88.6    -29.9     22.4
    620.2   -398.0     61.8    -40.3     25.9
    715.0   -311.7    -10.7    -38.8     15.2
    893.2   -226.8   -100.1    -61.1      1.0
    896.6   -135.6   -134.5    -33.3    -13.6
   1035.2    -51.4   -191.2    -69.6    -27.1
    972.7   -103.6   -163.6    -51.3    -19.5
    892.2   -200.7   -123.4    -67.3     -3.0
    796.0   -318.5    -33.6    -52.5     15.5
    666.5   -414.7     48.4    -35.3     25.2
    517.8   -380.0     84.1    -30.3     22.7
    431.1   -360.0     96.6    -27.8     20.4
  620.  905. 1140. 1559. 1661. 2007. 1896. 1694. 1370. 1036.  711.  559.
  266.  398.  563.  732.  799.  859.  821.  670.  589.  414.  318.  232.
CIRA 1.0 LOC=PATUXENT RIVER,MD, LAT=38.3, TWHT=20, ALT=184
```

PHOENITM.CTY

```
  .121  .112  .081  .060  .065  .097  .121  .110  .083  .062  .076  .115
  .12  .137  .141  .114  .142  .128  .167  .153  .147  .123  .116  .129
  .71484E-02  2.16937 17.5
  .10060E-04  3.99374 25.5
  .20494E-02  2.49408 20.0
  .35068E-02  2.35393 18.5
  55.8  58.7  66.2  72.5  83.5  93.8  96.4  94.5  89.4  78.0  64.8  55.9
  48.1  48.9  56.4  63.3  73.5  83.1  89.1  86.3  81.0  68.3  57.3  48.6
  43.6  43.2  45.9  51.3  55.2  61.8  69.1  68.0  63.8  55.8  50.1  42.9
    546.7   -373.9      3.6      4.1     11.2
    744.0   -423.7    -54.2     18.6      5.7
    901.2   -279.9   -178.6    -26.7     -2.1
   1182.0   -180.8   -311.3     -2.4    -34.1
   1308.3     83.3   -373.7    -58.0    -34.2
   1475.9    176.5   -376.7    -43.1    -30.8
   1298.4    114.3   -341.0    -39.3    -32.8
   1153.8    -20.7   -337.6    -51.7    -28.6
   1083.7   -235.3   -264.6    -44.6     -8.0
    825.8   -394.6   -112.6      6.1      7.8
    730.0   -452.7    -37.7     -2.6     26.4
    420.2   -320.8     15.7     18.2      4.2
  610.  897. 1211. 1706. 1995. 2179. 1928. 1703. 1483. 1027.  811.  461.
  290.  446.  631.  893.  974. 1161. 1035.  865.  800.  509.  405.  203.
CIRA 1.0 LOC=PHOENIX,AZ, LAT=33.4, TWHT=29, ALT=1083
```

POCATETM.CTY

```
  .215  .198  .174  .158  .105  .075  .063  .064  .099  .137  .180  .209
  .241  .263  .262  .27  .24  .254  .17  .158  .237  .209  .215  .236
  .66698E-04  3.31737 28.5
  .30464E-06  4.75641 30.5
  .20425E-02  2.52184 19.5
  .67137E-02  2.20961 15.0
  25.1  33.2  42.7  47.8  61.8  70.7  81.8  79.0  67.5  54.0  39.5  27.6
  20.7  26.6  33.6  37.3  49.1  56.8  63.5  61.7  52.3  41.2  33.3  23.8
  20.2  25.8  32.8  36.0  44.1  51.6  53.8  53.0  45.7  38.7  31.8  22.9
    471.7   -413.3    108.1    -30.3     23.7
    704.7   -554.4     89.3    -23.4     23.1
    879.0   -468.1     -7.8    -64.7     28.6
   1050.1   -331.4   -146.2    -87.3      1.4
   1196.0   -177.9   -235.8    -96.3    -34.9
   1227.0    -89.2   -258.3   -106.1    -38.5
   1291.8   -180.4   -307.2    -92.5    -39.3
   1142.0   -346.1   -189.9    -88.4    -14.9
   1020.5   -523.5    -45.0    -75.2     14.1
    811.2   -603.0     78.3    -77.3     45.5
    542.7   -498.5    129.2    -23.0     15.0
    391.4   -337.5     97.6    -31.0     20.6
  575.  936. 1381. 1815. 2246. 2422. 2671. 2213. 1755. 1195.  687.  459.
  228.  324.  503.  615.  695.  727.  566.  525.  461.  300.  215.  212.
CIRA 1.0 LOC=POCATELLO,ID, LAT=42.9, TWHT=20, ALT=4454
```

PORTMETM.CTY

```
  .213  .212  .186  .161  .119  .072  .041  .054  .086  .133  .172  .208
  .208  .211  .256  .208  .224  .187  .186  .178  .184  .185  .211  .177
  .55625E-02  2.30783 15.0
  .17028E-07  5.81488 25.5
  .14021E-01  2.13180 11.5
  .66498E-14  9.41421 35.0
  26.5  26.5  37.5  46.6  56.9  69.1  73.9  73.1  64.0  54.1  42.3  28.2
  20.6  22.1  30.8  38.3  48.6  57.0  63.0  60.4  54.4  45.6  35.8  23.4
  21.1  21.1  30.1  39.0  47.4  57.2  62.1  61.4  55.4  45.7  36.4  22.9
    364.6   -307.2     82.2    -11.0      8.8
    499.5   -352.0     67.9    -20.7     16.3
    665.4   -329.5     11.1    -33.7     16.7
    754.7   -234.7    -57.6    -39.8      3.3
    886.5   -136.8   -137.8    -52.2    -14.5
    935.7   -105.5   -156.5    -45.5    -16.4
    970.0   -117.0   -148.0    -72.8    -13.5
    832.0   -241.5    -87.9    -48.4      1.5
    733.0   -311.1    -14.0    -56.9     21.0
    587.7   -382.8     61.5    -46.7     27.1
    369.9   -290.5     80.4    -22.6     14.5
    313.8   -273.4     81.4    -17.7     12.2
  438.  679. 1009. 1250. 1574. 1710. 1778. 1488. 1186.  856.  478.  368.
  208.  318.  505.  637.  716.  779.  813.  639.  554.  358.  231.  177.
CIRA 1.0 LOC=PORTLAND,ME, LAT=43.6, TWHT=20, ALT=43
```

PRESCOTM.CTY

```
  .176  .171  .142  .126  .092  .062  .048  .050  .057  .096  .149  .181
  .183  .193  .228  .224  .239  .25  .172  .139  .17  .152  .165  .156
  .85681E-07  4.96597 35.0
  .12779E-01  2.16898 11.5
  .35411E-13  9.05651 35.0
  .95520E-14  9.30423 35.0
  43.9  45.2  54.3  57.7  69.6  81.8  82.4  78.3  76.1  65.5  51.9  42.9
  30.0  32.7  37.9  43.2  51.2  64.1  68.6  64.2  60.8  48.5  36.6  27.8
  29.9  32.1  35.0  39.0  43.0  52.8  60.0  57.3  53.4  44.0  37.0  27.8
    744.3   -688.9    141.4    -50.1     45.0
    833.4   -604.3     67.2    -53.0     41.1
   1020.4   -500.2    -78.0    -88.7     31.6
   1175.5   -266.3   -242.2   -120.3    -20.5
   1237.5    -33.3   -338.1   -135.0    -52.2
   1266.6     63.8   -369.0   -115.4    -61.8
   1100.2       .7   -282.6    -89.1    -43.3
   1036.4   -154.0   -232.8   -104.3    -23.1
   1002.2   -391.7   -115.2   -121.0     22.4
    909.2   -626.8     37.5    -94.8     52.4
    764.9   -669.1    118.7    -74.1     57.8
    664.0   -645.2    155.7    -66.7     52.8
 1044. 1314. 1816. 2313. 2619. 2756. 2266. 2048. 1921. 1569. 1135.  927.
  194.  340.  443.  556.  581.  581.  678.  582.  436.  268.  188.  151.
CIRA 1.0 LOC=PRESCOTT,AZ, LAT=34.7, TWHT=20, ALT=5014
```

PUEBLOTM.CTY

```
  .202  .177  .166  .125  .083  .064  .056  .059  .079  .100  .158  .181
  .126  .168  .161  .214  .24  .223  .181  .149  .178  .155  .149  .164
  .42157E-01  1.61663 19.0
  .19242E-02  2.49717 18.5
  .44702E-04  3.58000 24.0
  .83459E-03  3.06890 14.0
  33.1  42.2  45.4  57.6  69.9  79.5  83.2  82.9  73.4  65.6  49.4  42.6
  20.8  27.4  30.9  43.3  54.2  62.9  68.1  66.6  58.1  47.7  34.8  26.6
  23.0  27.8  31.4  39.7  47.1  54.7  58.9  59.3  51.6  41.7  33.2  26.9
    658.5   -654.8    151.2    -55.2     43.4
    789.6   -628.5     90.8    -75.1     50.8
    947.5   -482.7    -47.3    -96.2     33.7
   1032.5   -295.7   -163.3    -92.1     -2.3
   1112.6   -104.6   -238.5   -111.9    -24.7
   1178.5    -24.5   -286.2   -110.4    -41.0
   1095.6    -30.4   -254.9   -138.5    -32.5
   1017.2   -203.8   -197.5   -128.6     -5.6
    959.5   -449.3    -77.6    -72.9     16.4
    863.8   -633.9     57.4    -62.8     41.7
    701.2   -631.1    126.8    -54.7     43.3
    635.6   -644.6    157.1    -53.2     43.9
  859. 1172. 1603. 1935. 2220. 2501. 2311. 2064. 1742. 1378.  960.  791.
  127.  245.  427.  579.  694.  663.  624.  521.  435.  285.  199.  133.
CIRA 1.0 LOC=PUEBLO,CO, LAT=38.3, TWHT=34, ALT=4684
```

RALEIGTM.CTY

```
  .161  .158  .133  .089  .055  .038  .032  .035  .045  .090  .125  .161
  .188  .219  .181  .204  .149  .158  .16  .139  .149  .173  .179  .181
  .23910E-05  4.01316 35.0
  .27960E-01  1.58736 16.5
  .58267E-07  5.39000 26.5
  .98446E-14  9.19850 35.0
  45.2  46.0  54.1  64.9  71.8  80.4  81.3  80.5  75.9  63.3  55.9  45.2
  38.2  37.2  43.7  52.6  61.9  69.3  72.0  69.6  64.2  52.2  45.1  38.0
  37.5  36.4  42.3  52.1  60.7  67.2  71.4  69.2  63.4  53.1  45.0  37.4
    467.8   -321.5     79.6    -22.6     16.2
    634.5   -360.5     54.3    -48.7     29.2
    780.3   -342.9    -11.3    -34.4     13.4
    939.0   -215.1   -122.3    -60.9     -3.6
    922.0   -109.8   -155.5    -35.6    -18.4
    967.8    -24.5   -182.7    -59.0    -23.8
    944.3    -63.1   -173.8    -51.3    -22.7
    877.1   -171.5   -127.6    -61.6     -7.7
    781.8   -284.3    -37.1    -42.8     11.5
    696.4   -385.6     41.1    -38.0     25.3
    590.3   -397.2     85.8    -41.9     30.9
    463.9   -334.8     87.5    -25.4     18.3
  647.  942. 1263. 1658. 1749. 1863. 1830. 1673. 1355. 1095.  843.  626.
  344.  477.  616.  773.  804.  854.  818.  691.  641.  510.  408.  326.
CIRA 1.0 LOC=RALEIGH,NC, LAT=35.9, TWHT=20, ALT=434
```

RAPIDCTM.CTY

```
  .213  .206  .189  .151  .106  .073  .049  .059  .094  .132  .185  .210
  .252  .234  .272  .337  .246  .244  .198  .204  .217  .233  .233  .207
  .14756E-02  2.51719 25.0
  .21786E-10  7.21749 35.0
  .23524E-02  2.46822 19.5
  .14088E-07  6.07186 22.5
  27.3  29.4  37.8  48.9  61.8  72.1  78.9  82.3  65.7  55.2  36.7  27.3
  19.4  23.7  27.9  39.1  49.1  57.9  65.6  65.7  51.7  43.6  29.5  22.5
  19.9  23.8  28.5  37.5  48.1  53.5  62.3  58.9  47.9  39.6  27.3  22.0
    466.7   -427.8    119.7    -35.4     25.1
    564.4   -418.3     77.9    -45.3     29.9
    809.1   -426.9      3.0    -84.0     34.8
    932.0   -315.7    -88.3    -70.9      4.7
   1042.9   -178.2   -172.6    -78.6    -16.0
   1118.3   -103.5   -214.0    -96.8    -22.8
   1101.1   -162.7   -218.7    -85.8    -21.0
   1053.8   -315.8   -158.7    -92.4     -4.7
    894.5   -442.6    -34.9    -80.1     24.2
    721.1   -533.0     75.6    -55.8     35.2
    535.0   -490.8    120.1    -43.7     30.8
    409.7   -399.3    116.7    -35.1     27.1
  553.  758. 1247. 1589. 1903. 2167. 2197. 2005. 1488. 1037.  657.  462.
  207.  295.  465.  627.  736.  759.  645.  533.  462.  310.  190.  162.
CIRA 1.0 LOC=RAPID CITY,SD, LAT=44.1, TWHT=21, ALT=3162
```

REDBLUTM.CTY

```
  .159  .135  .130  .097  .065  .064  .075  .066  .061  .077  .125  .156
  .183  .255  .185  .198  .176  .195  .176  .171  .173  .194  .192  .193
  .27215E-01  1.72044 15.0
  .14225E-01  2.07086 11.5
  .28606E-01  1.75465 15.5
  .30376E-01  1.83210 11.5
  46.6  53.1  55.3  63.5  73.9  84.2  91.5  89.2  81.6  70.7  55.8  47.1
  38.5  45.1  45.9  50.9  60.1  70.2  74.2  72.2  66.0  56.6  47.6  41.2
  38.7  42.7  44.7  47.7  53.5  59.7  62.6  62.7  57.5  51.0  44.5  40.1
    435.1   -356.5     98.6    -26.3     17.7
    596.9   -424.5     81.7    -34.5     25.1
    807.8   -425.7     11.8    -47.4     22.1
   1056.5   -344.3   -132.5    -68.4      -.8
   1168.5   -182.3   -237.0    -80.1    -26.0
   1229.1    -86.2   -285.4    -83.0    -41.2
   1260.6   -145.5   -305.9    -85.1    -43.7
   1149.6   -324.6   -208.7    -88.4    -13.4
   1017.7   -507.7    -60.6    -77.6     22.0
    798.6   -585.7     77.4    -56.7     40.1
    541.3   -455.1    110.1    -34.6     25.5
    393.5   -338.0     97.5    -18.7     11.8
  568.  864. 1315. 1949. 2332. 2541. 2684. 2346. 1852. 1251.  735.  493.
  249.  352.  524.  645.  704.  706.  601.  518.  450.  330.  252.  215.
CIRA 1.0 LOC=RED BLUFF,CA, LAT=40.1, TWHT=20, ALT=342
```

REDMONTM.CTY

```
  .185  .181  .175  .154  .124  .093  .075  .089  .109  .135  .167  .189
  .154  .143  .155  .142  .2  .158  .123  .127  .144  .109  .122  .181
  .92321E-02  2.05288 18.0
  .16572E-03  3.14093 23.5
  .18512E-01  1.86785 18.5
  .10000E-30 20.00000 35.0
  36.9  40.2  44.4  50.5  57.9  68.2  77.8  72.3  66.5  56.5  44.4  36.4
  30.9  31.4  31.8  37.4  43.7  52.1  58.2  51.6  48.3  40.5  36.6  29.7
  29.9  32.1  32.1  37.5  41.8  48.4  54.0  50.1  45.6  40.7  37.1  30.1
    391.4   -310.0     85.4    -36.6     25.9
    574.4   -410.3     79.8    -31.8     21.5
    783.4   -375.5      6.9    -77.2     34.0
    965.0   -292.6   -105.7    -83.5      7.6
   1117.7   -202.4   -193.1    -69.2    -19.7
   1189.2   -131.2   -248.8    -82.3    -33.8
   1200.7   -145.3   -249.2   -122.1    -30.3
   1086.4   -321.4   -170.5    -92.8     -4.4
    934.5   -489.3    -28.4    -68.1     21.5
    681.0   -472.0     66.1    -60.0     39.7
    449.6   -356.5     91.6    -44.3     31.2
    362.6   -314.0     92.2    -25.9     17.5
  472.  763. 1188. 1648. 2045. 2340. 2385. 2051. 1566.  983.  567.  414.
  242.  350.  558.  670.  760.  695.  626.  545.  463.  348.  255.  202.
CIRA 1.0 LOC=REDMOND,OR, LAT=44.3, TWHT=20
```

RENO--TM.CTY

```
  .189  .178  .156  .142  .108  .074  .077  .079  .092  .132  .169  .193
  .097  .115  .142  .165  .187  .18  .128  .13  .107  .111  .139  .118
  .83044E-03  2.72385 22.5
  .18234E-07  5.33999 35.0
  .16822E-04  3.81418 25.5
  .28360E-03  3.07532 20.5
  38.7  43.3  51.0  54.0  63.0  74.1  83.4  79.8  71.3  58.3  46.3  35.0
  27.7  29.8  34.5  39.2  46.1  56.6  60.3  57.9  49.7  39.0  31.6  28.1
  29.2  30.2  33.9  37.5  42.4  49.6  55.6  51.0  47.3  38.9  32.8  27.0
    638.2   -611.7    157.2    -63.3     46.0
    793.6   -581.5     80.8    -87.5     57.0
   1002.7   -539.8    -33.1    -80.7     26.5
   1108.5   -361.4   -168.4    -81.1     -5.3
   1243.6   -145.6   -293.3    -94.0    -38.2
   1311.1    -49.4   -338.7   -101.0    -51.0
   1257.5   -102.3   -320.3   -102.6    -45.3
   1160.0   -280.4   -235.6   -132.2    -11.9
   1112.8   -549.2    -90.8    -95.2     20.8
    901.6   -679.0     67.5    -67.1     48.1
    679.6   -603.7    126.6    -45.8     37.9
    538.8   -532.1    146.1    -45.9     36.2
  838. 1128. 1673. 2068. 2450. 2725. 2660. 2425. 2022. 1422.  904.  679.
  183.  333.  457.  576.  653.  651.  579.  465.  422.  286.  231.  167.
CIRA 1.0 LOC=RENO,NV, LAT=39.5, TWHT=20, ALT=4404
```

RICHMOTM.CTY

```
  .181  .165  .141  .092  .057  .047  .039  .041  .046  .088  .131  .164
  .16  .183  .204  .194  .162  .164  .143  .153  .131  .136  .149  .16
  .31459E-04  3.52243 28.5
  .17182E-01  1.74321 18.5
  .27714E-09  6.48270 35.0
  .26298E-01  1.69782 12.0
  39.8  44.1  51.2  64.8  70.9  77.6  82.2  81.6  75.3  63.5  55.2  45.4
  31.6  35.5  42.6  53.0  61.2  66.2  71.9  70.5  63.9  52.6  43.1  36.6
  31.5  35.1  40.5  50.0  59.3  65.7  71.0  68.3  64.5  53.6  43.2  36.1
    485.5   -383.9     92.9    -27.5     20.2
    600.0   -360.8     56.6    -50.5     30.5
    770.5   -354.1     -6.6    -36.8     14.6
    872.8   -229.0   -100.2    -48.0     -2.6
    918.2   -114.4   -145.6    -40.4    -16.8
    966.7    -41.8   -181.5    -58.4    -25.3
    935.7    -74.6   -161.1    -53.4    -19.9
    864.8   -162.2   -123.1    -75.4     -3.3
    810.1   -315.5    -40.8    -56.4     18.1
    645.5   -401.4     48.3    -28.1     23.2
    525.5   -391.4     84.7    -42.0     30.3
    426.0   -343.5     89.2    -33.6     25.6
  653.  880. 1231. 1522. 1680. 1856. 1770. 1631. 1398.  995.  740.  562.
  271.  417.  584.  713.  822.  826.  827.  686.  602.  418.  296.  239.
CIRA 1.0 LOC=RICHMOND,VA, LAT=37.5, TWHT=20,. ALT=164
```

ROANOKTM.CTY

```
  .182  .167  .150  .099  .061  .044  .041  .036  .043  .103  .139  .171
  .164  .178  .225  .179  .156  .151  .126  .115  .115  .151  .141  .168
  .16993E-01  1.89228 18.0
  .51386E-09  6.29261 35.0
  .72675E-02  2.24043 15.0
  .10278E-16 11.25010 35.0
  38.4  42.8  48.7  61.7  69.7  78.1  80.5  79.3  74.9  61.7  52.1  42.4
  32.6  35.1  40.5  51.1  59.7  66.7  70.0  68.4  64.6  51.6  42.4  35.7
  30.6  32.8  37.5  47.9  57.4  62.9  67.5  66.9  63.8  48.9  41.0  33.9
    493.4   -369.4     81.6    -35.7     28.3
    618.3   -407.1     59.2    -31.0     24.5
    772.6   -371.6     -5.9    -31.0     10.5
    867.9   -264.0    -87.3    -32.8     -3.1
    922.5   -130.8   -148.3    -35.5    -18.8
   1000.9    -40.6   -195.6    -62.0    -29.3
    935.6    -66.0   -170.3    -59.9    -21.7
    843.2   -173.6   -125.4    -57.3    -10.6
    786.2   -313.4    -35.1    -46.2     12.7
    673.8   -432.4     50.6    -45.2     29.3
    534.5   -412.2     86.0    -35.9     26.8
    443.1   -369.2     92.5    -35.0     25.7
  660.  903. 1257. 1578. 1744. 1951. 1806. 1588. 1383. 1085.  744.  577.
  294.  386.  549.  676.  789.  824.  796.  642.  580.  373.  277.  221.
CIRA 1.0 LOC=ROANOKE,VA, LAT=37.3, TWHT=60, ALT=1149
```

ROCHNYTM.CTY

```
  .215  .217  .191  .148  .105  .061  .044  .042  .079  .123  .164  .203
  .252  .274  .262  .213  .249  .211  .141  .162  .165  .171  .231  .234
  .51815E-03  2.78855 24.5
  .36053E-01  1.64846 16.5
  .14228E-01  1.93286 17.0
  .49556E-02  2.18112 20.0
  23.5  23.5  33.0  46.1  56.0  69.9  72.6  70.4  63.5  53.2  42.4  28.6
  22.5  21.0  31.6  44.2  54.2  66.0  69.3  67.6  61.6  50.1  39.3  27.6
  20.9  20.3  29.8  40.0  49.4  60.8  63.7  62.3  56.9  46.4  37.6  26.4
    142.4    -84.8     13.7     -7.2      5.0
    279.2   -141.7       .1    -10.8      7.9
    470.1   -167.6    -44.6    -20.1      4.2
    705.0   -103.6   -130.0    -44.1     -5.6
    923.2    -19.3   -189.7    -50.7    -14.2
   1081.7     66.2   -226.9    -62.9    -20.9
   1063.0     26.9   -227.3    -55.6    -20.4
    844.6    -73.2   -185.0    -45.4    -13.6
    650.3   -170.3    -98.0    -27.1     -1.6
    389.5   -172.1    -23.1    -15.5      9.8
    187.3   -108.7     13.1     -5.5      4.8
    121.6    -74.4     12.7     -5.5      4.2
  166.  339.  612.  968. 1283. 1505. 1488. 1158.  846.  471.  217.  138.
  116.  224.  398.  640.  874.  999.  970.  737.  573.  314.  154.   99.
CIRA 1.0 LOC=ROCHESTER,NY, LAT=43.1, TWHT=60, ALT=547
```

ROCKSPTM.CTY

```
  .217  .217  .199  .174  .129  .091  .059  .064  .100  .151  .195  .218
  .318  .281  .303  .257  .251  .206  .195  .218  .16  .235  .207  .232
  .50603E-05  3.98284 31.0
  .38355E-01  1.73123 12.0
  .17549E-01  2.03482 13.5
  .17190E-02  2.78746 13.5
  25.4  25.2  33.0  43.8  56.4  64.9  76.4  73.9  63.1  48.7  34.6  25.2
  19.1  19.6  26.0  32.2  43.1  51.9  60.2  58.9  49.1  38.8  26.7  19.1
  19.0  20.2  25.2  30.7  39.9  45.0  51.2  47.3  41.9  34.4  26.1  20.0
    591.0   -567.2    151.1    -78.6     56.4
    775.0   -613.9     93.7    -61.3     41.8
    976.3   -557.7    -13.3    -93.1     32.4
   1108.0   -339.4   -168.2   -126.0      1.2
   1214.8   -151.2   -272.9   -108.2    -36.8
   1279.1    -40.7   -318.0   -126.7    -50.9
   1239.7   -119.7   -301.7   -119.3    -44.8
   1128.6   -288.2   -213.5   -128.1    -11.0
   1051.5   -525.6    -71.4   -108.4     27.2
    871.0   -677.7     80.5    -79.6     51.5
    631.9   -588.3    137.2    -57.3     42.2
    543.5   -571.7    163.0    -58.0     41.2
  742. 1072. 1578. 2017. 2315. 2558. 2590. 2234. 1850. 1326.  821.  640.
  175.  285.  411.  535.  643.  647.  538.  479.  403.  251.  186.  120.
CIRA 1.0 LOC=ROCK SPRINGS,WY, LAT=41.6, TWHT=20, ALT=6741
```

SALTLATM.CTY

```
  .204  .185  .162  .135  .096  .073  .064  .066  .086  .119  .172  .201
  .159  .185  .178  .181  .179  .151  .135  .174  .144  .149  .154  .151
  .83805E-06  4.46625 31.5
  .38249E-01  1.60832 15.0
  .53082E-03  2.85395 23.0
  .11052E-03  3.35123 21.5
  30.0  38.1  47.1  52.9  65.0  75.8  87.1  83.4  73.5  58.7  42.7  31.4
  24.8  31.5  36.7  43.5  50.8  60.1  69.5  65.3  56.6  45.1  34.7  25.9
  24.4  30.0  34.1  39.7  45.8  54.0  56.8  54.2  50.6  41.8  34.9  26.3
    478.4   -406.6    104.0    -25.3     20.2
    705.2   -555.9     92.0    -36.0     30.3
    927.6   -524.8     -6.0    -72.4     30.3
   1032.5   -343.7   -131.5    -68.7     -4.9
   1200.2   -146.7   -258.0   -106.6    -35.0
   1223.8    -81.4   -289.2    -88.9    -45.4
   1239.8   -157.9   -303.4    -74.3    -40.2
   1155.1   -315.1   -213.7    -99.1    -18.2
   1043.0   -502.9    -72.3   -100.9     23.7
    844.3   -622.2     73.7    -81.8     50.7
    558.6   -477.2    116.1    -48.1     34.8
    452.4   -419.9    122.2    -37.6     25.4
  596.  992. 1517. 1916. 2308. 2528. 2626. 2306. 1859. 1305.  746.  558.
  247.  303.  446.  586.  690.  649.  573.  507.  438.  298.  244.  193.
CIRA 1.0 LOC=SALT LAKE CITY,UT, LAT=40.8, TWHT=58, ALT=4221
```

SANFRATM.CTY

```
  .141  .129  .130  .116  .109  .095  .083  .078  .078  .092  .120  .141
  .169  .223  .243  .228  .25  .285  .298  .263  .214  .186  .166  .148
  .67896E-02  2.29959 11.0
  .20153E-02  2.46618 12.0
  .12677E-01  1.91386 13.5
  .10000E-30 20.00000 35.0
  50.7  54.6  54.6  57.8  60.0  62.9  65.0  65.6  67.1  63.5  56.6  51.0
  46.0  48.8  48.3  50.3  51.7  54.8  55.6  56.4  57.3  54.8  50.7  46.2
  44.9  48.1  46.6  48.9  50.8  53.8  55.4  55.8  55.6  52.4  49.9  45.0
    493.9   -401.8    101.1    -24.3     17.5
    706.9   -496.5     81.1    -52.4     33.4
    836.7   -429.8     -5.2    -47.0     20.4
   1001.8   -316.2   -131.9    -63.8      .9
   1069.6   -178.3   -208.7    -47.7    -23.3
   1108.2   -103.4   -250.6    -42.8    -34.8
   1074.1   -147.9   -246.6    -42.2    -31.3
    982.8   -301.7   -148.7    -38.1    -10.2
    934.3   -464.6    -40.9    -50.0     19.2
    762.7   -534.3     66.9    -31.4     26.6
    623.0   -521.2    119.1    -48.2     36.4
    464.9   -405.8    110.1    -25.8     18.7
  673. 1076. 1412. 1945. 2243. 2440. 2424. 2097. 1775. 1225.  892.  610.
  265.  366.  516.  611.  698.  679.  592.  544.  478.  373.  266.  225.
CIRA 1.0 LOC=SAN FRANCISCO,CA, LAT=37.6, TWHT=20, ALT=8
```

SANJUATM.CTY

```
  .018  .026  .024  .030  .045  .055  .053  .057  .051  .046  .037  .027
  .18  .168  .222  .248  .177  .221  .218  .177  .17  .135  .177  .145
  .10000E-30 20.00000 35.0
  .10000E-30 20.00000 35.0
  .64944E-05  4.86210 11.5
  .70769E-23 14.65182 35.0
  78.7  79.6  79.8  80.6  82.2  83.5  84.1  85.0  82.9  83.6  82.1  80.4
  73.1  72.2  73.3  75.3  77.4  78.1  77.5  77.8  78.0  76.6  74.7  73.3
  69.6  68.7  70.3  69.6  72.3  75.3  75.5  75.8  75.7  75.1  73.7  71.4
    723.9   -453.4     46.7    -46.0     38.6
    810.9   -370.9    -21.0    -52.5     30.3
    898.7   -216.2   -121.5    -69.0      7.6
    943.5    -24.8   -193.2    -61.4    -25.7
    907.3    134.7   -173.2    -64.6    -28.8
    956.0    215.9   -176.3    -64.0    -28.5
    915.7    178.2   -189.2    -55.7    -30.8
    881.8     62.9   -211.3    -74.2    -35.0
    845.4   -119.7   -147.3    -70.9     -5.5
    793.6   -285.0    -57.9    -74.6     29.4
    729.6   -408.5     21.4    -71.7     48.5
    698.0   -464.1     61.9    -51.9     43.3
 1323. 1512. 1793. 1938. 1769. 1891. 1894. 1863. 1691. 1515. 1378. 1260.
  395.  546.  694.  837.  879.  845.  775.  718.  701.  563.  403.  358.
CIRA 1.0 LOC=SAN JUAN,PR, LAT=18.4, TWHT=20, ALT=13
```

SANTAMTM.CTY

```
  .136  .128  .121  .114  .108  .103  .082  .083  .085  .095  .109  .123
  .107  .148  .169  .154  .153  .206  .116  .137  .126  .119  .167  .097
  .50054E-11  7.57960 35.0
  .92922E-02  2.10053 11.0
  .46281E-01  1.40725 14.5
  .10000E-30 20.00000 35.0
  55.2  56.9  57.5  59.8  61.3  61.6  67.3  66.0  66.1  63.5  60.4  57.5
  42.6  45.3  48.4  48.4  51.8  51.3  54.7  55.5  55.5  52.9  50.1  45.8
  43.5  46.3  49.0  49.3  51.2  52.7  55.6  56.3  55.6  54.0  49.9  47.2
    614.6   -541.1    117.8      5.4      6.5
    711.2   -511.5     72.6      7.0     10.3
    874.6   -480.0    -25.0      5.6      8.4
    982.8   -370.3   -132.3     30.7     -8.1
    971.9   -218.2   -192.2     43.7    -23.7
   1050.6   -156.7   -251.2     64.1    -17.5
   1018.4   -224.6   -240.6     78.7    -21.6
    972.8   -352.5   -178.4     60.7    -17.0
    898.4   -482.2    -42.8     47.5     -7.6
    835.7   -601.2     53.0     29.5      1.5
    675.3   -578.6    108.9      3.6     10.2
    599.9   -568.7    132.4      2.8      6.1
  843. 1101. 1549. 1920. 2043. 2394. 2367. 2108. 1688. 1366.  958.  802.
  264.  399.  502.  641.  698.  673.  595.  526.  533.  404.  275.  205.
CIRA 1.0 LOC=SANTA MARIA,CA, LAT=34.9, TWHT=24, ALT=236
```

SAVANNTM.CTY

```
  .130  .132  .095  .055  .039  .041  .038  .045  .027  .049  .100  .127
  .17  .218  .204  .183  .164  .158  .153  .151  .17  .179  .193  .153
  .54249E-06  4.45066 35.0
  .13201E-06  4.91616 32.5
  .50036E-01  1.70480 10.0
  .26681E-05  4.73119 16.5
  53.4  54.6  63.2  72.2  77.5  82.7  83.1  84.2  79.2  72.4  60.9  55.1
  45.1  44.6  52.1  58.8  66.3  72.9  74.4  74.9  71.3  62.1  51.7  44.8
  44.5  44.9  51.0  58.4  64.8  70.1  73.5  74.2  70.9  61.1  51.9  45.7
    513.9   -368.9     75.9    -34.8     28.1
    659.7   -421.0     52.3    -38.0     29.7
    822.6   -355.9    -32.2    -34.0     13.7
    951.6   -173.2   -141.2    -81.7     -7.6
    915.5    -50.2   -176.3    -61.0    -23.3
    934.5     38.4   -192.8    -74.4    -30.6
    867.9      4.8   -170.5    -62.2    -26.2
    825.1    -91.9   -142.5    -79.5    -10.0
    727.2   -237.7    -42.5    -54.3     12.4
    720.2   -390.6     23.5    -63.1     36.9
    593.3   -423.6     76.9    -48.3     38.1
    533.5   -444.9    108.2    -40.0     31.3
  758. 1069. 1421. 1788. 1815. 1873. 1683. 1610. 1320. 1219.  915.  785.
  307.  391.  599.  757.  777.  797.  768.  675.  597.  455.  322.  243.
CIRA 1.0 LOC=SAVANNAH,GA, LAT=32.1, TWHT=20, ALT=46
```

SCOTTSTM.CTY

```
  .213  .199  .184  .147  .105  .072  .058  .055  .095  .137  .178  .206
  .246  .243  .22  .296  .254  .24  .193  .198  .202  .202  .258  .222
  .70612E-03  2.68521 27.5
  .12376E-08  6.03189 35.0
  .10651E-01  1.99890 18.0
  .38633E-13  9.15058 32.0
  27.8  34.1  39.3  51.5  63.7  73.8  80.8  80.4  68.8  54.7  42.1  31.6
  19.0  24.3  28.7  37.0  48.6  58.7  64.8  64.7  50.2  40.8  29.9  21.1
  19.9  24.9  29.1  36.2  46.3  54.6  60.1  61.0  49.0  40.5  30.1  22.6
    531.7   -441.0     95.1    -70.9     53.5
    691.9   -463.8     62.0   -126.9     70.6
    812.9   -352.9    -40.0    -94.1     29.7
    940.0   -181.3   -123.5   -158.9      8.5
   1077.0    -46.3   -185.2   -152.2    -19.6
   1183.9     58.8   -235.3   -208.1    -39.0
   1179.0      4.3   -229.5   -202.4    -32.0
   1071.7   -185.7   -167.8   -155.6     -3.1
    978.9   -358.6    -75.2   -172.1     32.4
    718.9   -419.2     39.8   -138.9     60.9
    571.7   -459.7    104.8   -105.7     65.8
    434.4   -391.0    112.7    -86.0     58.0
  622.  950. 1221. 1606. 1906. 2251. 2276. 1986. 1647. 1067.  733.  521.
  236.  308.  512.  631.  794.  766.  731.  616.  510.  344.  230.  169.
CIRA 1.0 LOC=SCOTTSBLUFF,NE, LAT=41.9, TWHT=20, ALT=3957
```

SEATTLTM.CTY

```
  .174  .163  .160  .147  .118  .093  .079  .068  .093  .130  .150  .169
  .206  .198  .223  .21  .169  .193  .177  .163  .172  .137  .193  .277
  .26981E-01  1.93612 10.5
  .11003E-02  2.87282 12.5
  .12782E-08  6.01803 35.0
  .10000E-30 20.00000 35.0
  39.8  43.8  46.1  49.8  57.5  63.2  68.2  67.9  63.3  53.5  47.7  41.2
  38.0  40.7  39.8  43.4  49.4  54.9  57.2  59.0  54.1  48.7  44.8  39.4
  36.5  38.8  39.1  41.7  48.3  53.3  55.7  55.9  53.9  48.0  43.6  39.0
    236.9   -158.1     43.4     -1.9      1.1
    376.7   -251.7     51.0      9.0     -1.8
    633.5   -360.9     22.9     18.7     -2.6
    820.1   -303.7    -47.2     -4.2      2.9
    938.8   -253.3   -102.0      -.1     -4.2
    984.4   -274.0   -131.7     66.5    -13.9
   1068.6   -311.9   -163.6     31.5    -17.3
    975.3   -397.2    -93.3     29.3     -9.9
    740.0   -419.0      6.1     20.5     -2.2
    481.2   -320.9     51.9      6.1       .1
    271.9   -179.1     47.0     -5.5      4.5
    184.9   -140.7     39.3      1.9     -1.3
  279.  466.  897. 1293. 1645. 1761. 1994. 1678. 1146.  637.  330.  201.
  208.  303.  487.  713.  792.  826.  714.  679.  501.  344.  235.  142.
CIRA 1.0 LOC=SEATTLE,WA, LAT=47.5, TWHT=20, ALT=19
```

SHREVETM.CTY

```
  .138  .130  .096  .050  .040  .049  .061  .057  .045  .061  .111  .144
  .233  .204  .244  .201  .19  .156  .192  .154  .192  .221  .184  .192
  .44327E-02  2.30742 18.5
  .23374E-07  5.28302 35.0
  .24703E-11  7.85599 35.0
  .28751E-12  8.34891 35.0
  51.8  54.4  61.7  70.6  77.6  82.6  87.2  86.5  81.2  71.5  58.3  50.8
  43.6  45.5  52.3  61.8  69.0  73.1  76.9  76.0  72.4  61.0  49.7  42.6
  43.5  45.7  50.8  59.6  66.2  70.0  74.4  73.0  70.7  60.1  49.1  41.6
    553.8   -373.6     60.4    -54.1     39.7
    675.3   -363.0     19.9    -71.8     38.2
    829.4   -288.5    -75.0    -64.1     13.0
    887.3   -114.0   -124.5    -92.5     -3.0
   1069.9      5.0   -210.3    -84.8    -15.8
   1091.3    114.4   -227.1   -128.9    -35.8
   1105.2     43.3   -235.3    -77.8    -25.2
   1068.5    -32.5   -217.5   -133.5    -17.4
    865.3   -198.2   -103.9   -122.4     14.9
    778.3   -355.7     -9.1   -115.4     50.9
    624.4   -375.0     55.6   -118.1     67.2
    550.3   -398.5     59.8    -31.4     32.4
  767. 1006. 1346. 1529. 1922. 2059. 2027. 1892. 1517. 1249.  919.  701.
  332.  440.  616.  798.  915.  909.  901.  814.  650.  497.  361.  317.
CIRA 1.0 LOC=SHREVEPORT,LA, LAT=32.5, TWHT=20, ALT=254
```

SIOUXFTM.CTY

```
  .235  .222  .194  .145  .098  .061  .046  .046  .089  .123  .187  .219
  .224  .217  .306  .35  .27  .258  .214  .222  .242  .269  .233  .26
  .19568E-05  4.10581 35.0
  .34632E-01  1.71850 15.0
  .10201E-01  2.12483 16.0
  .13278E-08  6.03684 35.0
  16.8  22.9  34.8  51.5  63.3  75.9  79.5  77.7  64.3  57.7  37.2  23.6
  12.2  17.0  26.5  40.6  51.4  63.2  68.0  66.7  54.4  44.6  29.4  19.2
  12.9  18.0  27.9  39.7  49.4  60.3  65.5  64.7  54.8  42.7  30.3  19.3
    446.1   -405.7    106.9    -17.4     13.3
    607.8   -475.6     90.4    -40.0     29.8
    778.4   -384.0     -5.5    -73.0     29.7
    954.6   -272.9   -106.7    -89.8      3.2
    990.8   -171.8   -163.5    -60.5    -17.4
   1062.3   -143.8   -191.1    -43.8    -26.9
   1056.8   -181.4   -184.1    -50.6    -22.4
    941.3   -279.5   -123.2    -65.7     -6.7
    818.9   -391.3    -21.8    -65.2     18.9
    733.7   -545.7     80.4    -53.5     34.3
    499.0   -444.6    115.5    -44.1     31.1
    409.0   -382.2    110.9    -41.0     27.9
  523.  821. 1188. 1608. 1805. 2043. 2065. 1754. 1359. 1058.  624.  463.
  202.  289.  499.  671.  717.  759.  715.  570.  486.  319.  210.  174.
CIRA 1.0 LOC=SIOUX FALLS,SD, LAT=43.6, TWHT=17, ALT=1418
```

SPRINGTM.CTY

```
  .183  .176  .153  .106  .064  .036  .047  .042  .057  .097  .135  .182
  .278  .306  .298  .323  .184  .2  .234  .191  .266  .224  .233  .243
  .11698E-04  3.71563 32.5
  .13796E-03  3.04582 30.5
  .11784E-07  5.77921 30.0
  .25591E-02  2.49937 18.0
  36.0  39.9  45.3  57.0  66.5  73.2  78.7  78.0  69.8  58.6  49.5  36.6
  33.3  34.0  40.8  51.8  63.7  71.5  75.3  73.9  67.5  55.3  46.0  33.6
  31.5  33.1  37.6  48.0  58.1  66.9  69.5  69.6  62.4  50.6  43.1  31.4
    306.8   -225.6     23.8     -6.9      7.3
    446.4   -232.9    -24.8    -23.2     14.1
    603.4   -207.0    -80.3    -28.7      1.7
    843.1    -73.2   -201.1    -68.8    -13.9
    965.3     18.3   -227.6    -53.8    -25.6
   1132.0    117.6   -271.0    -69.7    -28.5
   1142.1     95.7   -288.8    -70.5    -33.4
   1004.9    -30.0   -280.2    -69.7    -31.1
    813.4   -187.3   -169.1    -42.2    -10.0
    499.9   -227.3    -56.7    -22.4     11.5
    410.5   -246.4     -8.5    -24.3     16.6
    278.9   -239.6     31.7      3.7      2.1
  356.  552.  816. 1193. 1413. 1651. 1663. 1456. 1101.  624.  459.  299.
  155.  276.  454.  698.  847.  986.  950.  738.  615.  316.  227.  104.
CIRA 1.0 LOC=SPRINGFIELD,MO, LAT=37.2, TWHT=20, ALT=1268
```

SYRACUTM.CTY

```
  .219  .213  .191  .139  .095  .056  .045  .044  .070  .129  .164  .197
  .262  .204  .277  .235  .196  .19  .176  .16  .201  .211  .218  .259
  .38656E-03  2.85773 24.5
  .18356E-07  5.31592 35.0
  .25663E-02  2.54974 16.5
  .21295E-03  3.33233 17.5
  23.1  26.7  34.6  51.9  62.0  71.3  75.8  74.3  67.2  54.1  42.4  31.1
  19.3  21.2  30.5  43.2  53.4  61.6  65.0  64.3  58.1  46.4  39.1  27.9
  19.2  21.7  29.3  41.4  52.0  58.9  62.8  62.7  56.8  45.2  37.2  27.3
    307.0   -210.7     56.6    -15.8     10.2
    396.1   -231.7     41.8    -16.9     12.1
    590.5   -271.1      6.1    -21.7      9.1
    800.9   -242.7    -74.4    -43.7      1.4
    898.8   -140.5   -117.1    -55.8     -8.1
    943.7   -117.3   -146.7    -40.8    -18.2
    946.2   -161.5   -137.0    -32.3    -16.8
    862.8   -256.6    -85.9    -35.7     -2.5
    715.5   -312.3     -7.0    -41.7     14.2
    523.2   -300.8     43.1    -24.9     16.9
    306.8   -207.7     52.9    -12.2      8.1
    240.0   -164.1     46.7    -11.5      7.9
  379.  526.  865. 1336. 1572. 1736. 1756. 1553. 1142.  738.  394.  291.
  243.  330.  500.  648.  816.  818.  798.  678.  557.  408.  241.  199.
CIRA 1.0 LOC=SYRACUSE,NY, LAT=43.1, TWHT=21, ALT=410
```

TALLAHTM.CTY

```
  .121  .122  .078  .052  .046  .046  .045  .041  .031  .041  .095  .119
  .144  .16  .171  .14  .155  .165  .1  .102  .117  .137  .118  .116
  .12853E-01  2.03348 17.0
  .73833E-05  3.95943 28.0
  .26525E-01  1.98615 10.0
  .21265E-08  5.64629 35.0
  56.0  56.7  65.2  73.6  79.2  83.3  84.3  83.9  81.4  74.9  63.2  56.8
  46.0  46.5  55.2  61.7  66.0  71.9  75.6  74.0  73.1  64.0  51.2  46.7
  46.7  46.4  54.6  60.6  65.8  70.0  74.5  74.1  71.8  63.5  52.1  48.6
    588.4   -395.5     74.7    -29.9     24.8
    725.1   -424.0     42.0    -40.3     29.5
    850.9   -312.5    -44.3    -46.9     14.4
    963.1   -185.5   -149.1    -52.6     -8.1
    962.2    -56.8   -182.2    -38.2    -23.1
    945.9     19.3   -187.6    -38.3    -27.3
    901.8     10.1   -167.6    -58.0    -23.4
    898.5    -80.6   -165.0    -84.5    -12.7
    821.8   -243.5    -69.1    -63.1     11.9
    724.8   -353.8     12.5    -69.0     35.0
    632.6   -432.2     76.8    -46.2     35.5
    551.5   -393.9     84.9    -29.1     24.8
  870. 1173. 1455. 1822. 1901. 1889. 1761. 1730. 1488. 1251.  992.  799.
  390.  478.  693.  794.  860.  861.  851.  756.  672.  498.  372.  352.
CIRA 1.0 LOC=TALLAHASSEE,FL, LAT=30.4, TWHT=25, ALT=55
```

TAMPA-TM.CTY

```
  .081  .083  .049  .043  .033  .043  .053  .053  .040  .039  .053  .076
  .171  .206  .193  .223  .233  .205  .233  .141  .175  .176  .177  .168
  .37209E-07  5.14647 35.0
  .28188E-10  7.14599 35.0
  .72089E-02  2.29595 12.0
  .14393E-02  3.00799 10.0
  64.0  64.7  72.3  74.7  81.1  83.5  84.4  84.9  83.3  77.9  72.3  65.5
  55.2  54.9  61.2  64.3  71.8  75.5  77.1  77.4  75.3  68.0  61.3  54.8
  54.6  54.3  60.9  61.4  68.7  74.4  74.7  75.0  74.2  66.5  60.8  55.1
    666.6   -478.0     84.4    -39.4     34.3
    717.2   -370.4     19.9    -48.9     31.9
    912.6   -333.8    -67.4    -52.2     13.2
    986.3   -137.2   -170.9    -72.9    -14.2
    995.1     22.2   -214.8    -80.0    -34.4
    958.3     85.5   -188.5    -67.9    -31.8
    916.1     52.3   -182.9    -67.2    -28.8
    869.0    -39.0   -162.7    -87.8    -16.1
    847.8   -208.2    -88.4    -73.7     10.5
    760.1   -356.3     -8.4    -75.1     38.0
    692.9   -476.4     73.0    -51.6     40.8
    621.1   -465.4     96.1    -40.1     34.1
 1042. 1183. 1658. 1898. 2005. 1859. 1812. 1664. 1519. 1340. 1134.  955.
  364.  514.  670.  813.  831.  898.  845.  769.  730.  498.  367.  334.
CIRA 1.0 LOC=TAMPA,FL, LAT=28.0, TWHT=22, ALT=19
```

TONOPATM.CTY

```
  .197  .177  .160  .133  .095  .064  .058  .064  .075  .125  .167  .196
  .172  .167  .268  .262  .226  .241  .19  .209  .196  .232  .209  .199
  .31648E-01  1.74477 15.5
  .18728E-05  4.71065 21.5
  .27862E-01  1.94447 11.5
  .12798E-09  6.70634 35.0
  35.7  43.6  48.5  55.6  65.0  76.9  82.5  80.9  73.4  59.2  46.3  34.8
  24.0  30.7  35.8  39.8  49.1  61.1  66.6  63.1  53.8  41.8  34.5  26.8
  25.2  30.7  32.3  35.3  40.6  47.4  54.7  50.4  44.4  37.9  32.0  26.5
    708.6   -713.3    168.0    -59.9     47.7
    852.3   -662.0     87.8    -74.6     53.6
   1022.6   -550.7    -42.1    -84.2     30.0
   1173.1   -362.9   -213.2   -101.9     -9.7
   1280.6   -105.1   -326.2   -127.3    -40.7
   1295.1    -19.1   -353.8   -102.4    -52.1
   1247.0    -53.4   -333.6   -121.0    -47.3
   1150.0   -278.6   -248.6   -113.3    -17.2
   1119.7   -543.7   -106.2    -89.5     20.5
    957.9   -718.1     58.9    -70.3     48.0
    766.1   -722.7    151.1    -72.5     58.4
    635.1   -651.9    168.9    -58.4     48.1
  939. 1275. 1730. 2272. 2619. 2746. 2678. 2425. 2055. 1545. 1065.  816.
  127.  288.  444.  512.  607.  616.  561.  456.  420.  271.  164.  134.
CIRA 1.0 LOC=TONOPAH,NV, LAT=38.1, TWHT=20, ALT=5426
```

TOPEKATM.CTY

```
  .207  .193  .164  .095  .063  .043  .039  .057  .063  .093  .148  .196
  .183  .189  .209  .227  .171  .156  .14  .143  .21  .174  .166  .189
  .19518E-03  3.03048 27.5
  .44938E-02  2.34009 17.5
  .16127E-08  5.99308 35.0
  .28288E-02  2.48491 15.0
  29.1  36.0  45.6  62.3  72.1  78.7  81.9  85.2  73.4  64.1  49.2  33.4
  22.5  27.4  35.0  51.3  60.0  68.6  72.5  73.1  61.7  51.7  39.0  26.7
  22.9  28.5  34.2  48.9  58.7  67.0  70.8  69.5  60.6  52.7  39.4  26.6
    545.0   -467.2    111.3    -45.4     33.9
    650.7   -484.3     73.2    -26.7     23.4
    803.1   -395.4    -15.3    -48.4     16.2
    929.2   -232.3   -113.1    -90.1      3.5
   1023.3   -138.9   -190.7    -60.5    -23.1
   1056.4    -56.0   -217.2    -72.3    -31.9
   1055.9   -130.4   -217.6    -48.1    -31.1
    965.3   -238.9   -144.9    -68.6    -12.7
    841.3   -359.3    -52.9    -57.6     13.5
    720.7   -483.6     50.7    -51.5     33.1
    590.6   -501.3    110.7    -39.4     30.7
    448.5   -385.7    102.5    -34.1     24.4
  705.  939. 1279. 1638. 1969. 2086. 2158. 1903. 1480. 1137.  795.  564.
  238.  317.  512.  688.  741.  775.  701.  604.  513.  346.  248.  220.
CIRA 1.0 LOC=TOPEKA,KS, LAT=39.1, TWHT=72, ALT=877
```

TUCSONTM.CTY

```
  .125  .120  .085  .067  .068  .080  .079  .071  .051  .059  .095  .118
  .185  .156  .165  .179  .197  .214  .195  .179  .195  .196  .176  .201
  .20235E-01  1.91231 15.0
  .30605E-10  7.11110 35.0
  .34046E-01  1.80942 12.0
  .53475E-02  2.52246 11.5
  57.5  59.8  68.0  75.3  83.3  91.9  90.9  89.8  85.2  77.7  64.5  58.3
  45.4  43.6  51.2  58.7  64.6  77.2  79.9  78.0  74.0  62.1  51.0  45.0
  43.0  39.1  42.9  47.5  51.0  57.7  66.4  67.9  61.5  53.6  45.1  40.0
    723.3   -629.8    125.9    -53.2     47.7
    847.7   -626.2     63.0    -59.5     48.7
   1004.4   -455.2    -75.7    -95.4     28.8
   1156.0   -220.5   -253.6   -140.2    -19.1
   1208.3    -15.3   -347.4   -116.3    -55.7
   1207.0    100.0   -347.1   -120.7    -61.2
   1020.8     20.2   -257.4    -99.8    -40.2
   1009.7   -142.2   -220.0   -102.1    -23.5
    970.8   -365.5   -101.8   -106.6     23.8
    896.1   -585.8     23.7    -90.9     52.3
    763.0   -644.2    112.3    -66.7     53.3
    666.5   -621.3    148.4    -64.3     50.7
 1082. 1415. 1873. 2385. 2682. 2714. 2306. 2178. 1948. 1631. 1205. 1001.
  235.  294.  480.  538.  565.  616.  622.  563.  486.  294.  216.  178.
CIRA 1.0 LOC=TUCSON,AZ, LAT=32.1, TWHT=20, ALT=2584
```

TULSA-TM.CTY

```
  .181  .165  .135  .085  .050  .049  .067  .055  .058  .069  .127  .168
  .23  .209  .266  .251  .203  .231  .213  .231  .234  .188  .235  .214
  .82343E-04  3.20266 31.5
  .19712E-01  1.72469 18.5
  .21433E-02  2.47203 19.0
  .82588E-02  2.34206 11.5
  39.2  44.9  53.0  66.0  74.4  82.5  88.3  86.9  77.2  70.6  53.8  43.4
  31.0  35.6  43.4  55.3  64.1  72.3  77.2  74.1  67.5  59.4  45.2  35.1
  30.9  35.2  40.3  51.7  62.7  69.9  73.0  69.6  65.9  57.7  43.9  35.6
    539.1   -443.1    101.9    -51.4     38.3
    631.2   -414.2     54.5    -18.2     17.4
    805.7   -358.3    -24.0    -58.8     22.2
    887.4   -227.2   -104.6    -45.5     -5.5
    976.5   -104.6   -172.3    -51.8    -21.6
   1016.1    -45.7   -203.0    -48.5    -28.7
   1003.0    -71.2   -207.3    -57.0    -26.7
    951.9   -185.9   -159.2    -78.6    -13.4
    809.6   -306.6    -54.1    -54.7     13.1
    703.1   -437.8     44.2    -47.2     30.8
    591.9   -446.8     87.0    -45.0     33.4
    478.3   -395.9     98.6    -41.0     30.0
  730.  933. 1328. 1575. 1848. 2030. 2050. 1906. 1438. 1148.  844.  636.
  248.  394.  559.  725.  819.  818.  748.  633.  573.  396.  303.  236.
CIRA 1.0 LOC=TULSA,OK, LAT=36.2, TWHT=23, ALT=650
```

WASHINTM.CTY

```
  .195  .189  .153  .110  .075  .049  .039  .042  .047  .100  .142  .179
  .139  .155  .18  .154  .184  .103  .115  .099  .103  .108  .141  .13
  .62981E-06  4.40022 35.0
  .82693E-03  2.75107 19.5
  .73793E-02  2.22749 15.0
  .22031E-02  2.74459 13.0
  33.8  37.3  47.9  60.3  68.2  76.1  81.6  80.3  74.9  61.8  51.1  39.1
  27.6  28.9  38.8  49.7  58.8  63.9  70.2  68.3  63.7  51.8  42.2  34.8
  27.0  29.4  38.6  47.3  55.3  64.1  69.2  66.8  63.9  52.4  42.0  32.5
    471.1   -399.5     95.3     -8.2     10.1
    571.5   -401.2     59.3      3.2      6.1
    736.5   -394.5     -8.0     12.9      2.6
    838.3   -295.1    -93.0      2.0     -2.8
    904.3   -171.8   -148.6     -2.0    -12.0
    935.3   -110.9   -167.7    -20.3    -16.5
    925.9   -155.4   -160.3     17.0    -16.9
    896.0   -239.8   -129.2    -24.2     -5.2
    754.1   -358.1    -25.5     -8.1      9.0
    647.0   -438.4     55.0      1.0     10.1
    509.2   -392.0     79.9     -9.0     12.4
    400.6   -347.8     86.8      4.5      -.1
  608.  813. 1180. 1482. 1708. 1891. 1716. 1699. 1312.  982.  676.  489.
  240.  350.  508.  631.  745.  745.  814.  655.  524.  392.  295.  211.
CIRA 1.0 LOC=WASHINGTON,DC, LAT=39.0, TWHT=93, ALT=10
```

WILMINTM.CTY

```
  .199  .192  .161  .123  .082  .033  .037  .031  .048  .093  .146  .180
  .222  .239  .223  .226  .204  .17  .173  .163  .146  .153  .191  .223
  .44577E-01  1.61461 15.0
  .19992E-03  2.97393 24.0
  .16095E-01  2.09554 11.5
  .22746E-01  1.93865 10.0
  31.6  35.0  45.7  56.8  64.4  76.0  80.7  79.2  72.3  62.9  48.6  38.4
  27.0  29.4  38.6  47.6  55.8  67.2  71.1  69.8  63.3  52.9  43.0  34.1
  26.4  28.7  37.7  45.8  53.2  64.0  67.2  67.3  61.4  53.2  41.7  32.3
    445.9   -361.9     90.8    -24.2     18.0
    578.8   -377.5     64.3    -45.5     28.7
    696.8   -308.7     -7.8    -50.9     19.5
    847.6   -243.7    -93.2    -43.1      -.9
    915.8   -151.6   -138.2    -28.5    -15.5
    970.9    -78.6   -166.3    -55.3    -19.8
    964.5   -106.4   -166.1    -54.4    -20.0
    882.4   -212.9   -106.3    -63.8      -.2
    782.6   -342.6    -17.7    -44.0     17.2
    659.8   -422.2     56.4    -39.3     28.5
    470.9   -343.9     79.8    -23.4     17.3
    393.5   -323.6     88.1    -21.3     15.7
  576.  828. 1106. 1484. 1663. 1864. 1859. 1645. 1334. 1011.  633.  495.
  247.  369.  525.  666.  796.  831.  788.  689.  573.  404.  305.  229.
CIRA 1.0 LOC=WILMINGTON,DE, LAT=39.7, TWHT=20, ALT=74
```

YAKUTATM.CTY

```
  .211  .204  .195  .183  .157  .140  .120  .123  .142  .170  .195  .211
  .177  .145  .182  .124  .169  .158  .15  .173  .177  .179  .177  .17
  .15730E-02  2.95155 11.0
  .27342E-02  2.38439 13.5
  .10000E-30 20.00000 35.0
  .10000E-30 20.00000 35.0
  24.8  28.9  31.8  37.4  44.5  49.6  54.6  54.1  49.3  40.2  31.3  25.1
  23.9  26.5  30.5  33.9  43.3  48.4  52.8  52.5  47.3  40.0  30.7  24.0
  22.9  26.4  29.0  33.3  41.0  46.3  51.1  51.8  46.4  38.1  30.0  23.3
     16.0    -10.5      2.9     -1.1       .5
    139.3   -102.1     13.7      1.3      1.1
    340.8   -157.4    -10.4     -8.1      4.7
    671.4   -175.8    -93.6    -28.2      -.9
    810.1    -70.6   -104.7    -33.7      4.5
    923.5    -18.5   -118.5    -50.8      4.8
    833.2    -46.1   -110.4    -26.6      7.8
    548.1    -97.7    -64.8    -23.4      1.9
    393.5   -134.5    -33.8    -12.8      3.5
    181.6    -95.7      5.3     -6.4      4.3
     39.6    -24.6      5.9     -2.5      1.4
      5.3     -3.8      1.2      -.5       .2
   16.  128.  385.  811. 1030. 1211. 1083.  687.  467.  195.   41.    5.
   14.   90.  289.  568.  815.  927.  829.  553.  360.  155.   35.    4.
CIRA 1.0 LOC=YAKUTAT,AK, LAT=59.5, TWHT=20, ALT=28
```

YUCCAFTM.CTY

```
  .177  .170  .152  .112  .088  .076  .080  .080  .084  .104  .144  .189
  .17  .156  .151  .18  .292  .167  .173  .163  .151  .146  .141  .108
 .36565E-06  4.73764 31.0
 .19764E-04  3.63756 29.0
 .54123E-02  2.23110 19.0
 .10663E-02  2.63352 23.0
 44.1  46.6  52.3  61.9  70.7  84.1  89.7  87.1  79.7  66.0  54.1  38.1
 29.8  30.8  35.3  43.9  53.1  63.2  69.2  65.8  57.8  44.7  37.0  27.5
 30.3  30.7  32.8  39.5  43.1  51.4  54.7  53.3  47.5  40.4  35.4  29.3
   689.9   -649.8    155.4    -63.5     48.2
   836.8   -640.4     84.8    -63.3     47.3
  1014.6   -518.0    -52.5    -95.9     37.1
  1141.0   -322.5   -202.8    -96.0     -7.7
  1241.9   -106.4   -310.3   -102.3    -39.7
  1277.7     -6.5   -353.1   -103.6    -54.0
  1234.9    -75.6   -337.7    -88.6    -49.7
  1112.7   -286.5   -243.4    -80.4    -21.3
  1097.1   -521.8   -110.9    -91.1     20.2
   950.5   -673.0     50.6   -103.7     56.6
   717.3   -633.0    134.3    -68.3     50.7
   615.2   -601.5    154.9    -48.2     39.2
  946. 1291. 1768. 2159. 2558. 2770. 2704. 2382. 2084. 1562. 1028.  815.
  190.  302.  456.  603.  650.  613.  557.  452.  397.  277.  218.  174.
CIRA 1.0 LOC=YUCCA FLATS,NV, LAT=37.0, TWHT=20
```

YUMA--TM.CTY

```
  .108  .079  .070  .061  .064  .089  .121  .121  .095  .052  .069  .094
  .176  .171  .182  .174  .171  .178  .226  .216  .171  .146  .158  .173
  .48089E-02  2.32930 15.0
  .28510E-06  5.14165 22.5
  .17209E-01  1.99454 13.0
  .11888E-01  2.04527 12.5
 60.3  68.2  72.5  78.6  88.2  94.3  99.6  99.6  94.3  81.5  71.3  63.2
 49.6  52.5  57.1  63.3  72.1  77.6  85.8  85.9  81.3  67.0  57.4  51.1
 46.0  44.4  48.6  51.9  58.0  61.1  71.0  72.7  68.6  57.1  49.7  44.9
   779.1   -469.2     32.9   -139.1     91.8
   969.0   -483.8    -34.6   -180.9     99.2
  1173.3   -314.3   -182.8   -193.1     39.8
  1284.1    -34.3   -292.3   -269.4     -1.1
  1465.7    186.8   -373.7   -238.8    -44.6
  1502.0    395.6   -378.9   -330.3    -76.4
  1402.6    250.2   -343.2   -225.3    -48.0
  1272.5     64.0   -310.1   -248.0    -16.1
  1160.6   -193.0   -205.6   -242.1     29.6
  1098.2   -460.2   -109.7   -137.6     61.4
   861.5   -533.4     19.4   -122.3     87.9
   727.7   -528.0     59.5    -70.5     65.6
 1008. 1399. 1831. 2301. 2639. 2802. 2489. 2277. 1965. 1552. 1141.  901.
  433.  509.  737.  797.  939.  901.  953.  829.  738.  659.  442.  365.
CIRA 1.0 LOC=YUMA,AZ, LAT=32.7, TWHT=20, ALT=194
```

CALIFORNIA CLIMATE ZONES

ARCATA01.CTY

```
  .157  .145  .146  .137  .127  .123  .118  .097  .102  .116  .125  .140
  .091  .135  .124  .112  .131  .111  .103  .08  .07  .09  .086  .076
  .31169E-07  6.42176 16.5
  .83579E-02  2.22924 10.5
  .10325E-15 10.53281 35.0
  .10000E-30 20.00000 35.0
  47.7  49.9  50.2  53.6  56.0  57.3  58.1  61.1  60.1  57.4  55.2  51.4
  39.2  44.6  44.1  45.5  48.0  48.4  49.8  54.8  54.4  51.1  49.4  45.1
  40.4  44.5  45.2  47.5  49.3  50.0  51.2  56.1  55.3  52.1  49.7  45.7
    571.7   -479.8    104.0     -4.2     10.3
    568.8   -374.4     55.8      8.2      1.2
    708.1   -352.2     -2.5     10.1      1.6
    937.0   -373.3    -99.9     31.8    -11.3
   1013.2   -224.1   -170.7     18.5    -17.4
   1089.5   -203.3   -211.5     55.3    -23.1
   1022.1   -244.5   -174.7     69.5    -21.7
    865.5   -286.9    -98.1     48.5    -16.8
    730.7   -330.8    -16.8     25.6     -5.6
    582.0   -342.1     34.5     17.1     -1.5
    489.1   -359.9     78.0      2.4      3.6
    435.8   -353.0     87.8     -1.0      4.0
  676.  761. 1044. 1635. 1862. 2087. 1937. 1457. 1112.  803.  619.  510.
  298.  408.  578.  676.  806.  826.  815.  760.  644.  466.  336.  273.
CIRA 1.0 LOC=CEC ARCATA,CA,LAT=40.6, TWHT=88, REGION=01, ALT=34
```

SANTAR02.CTY

```
  .152  .138  .123  .107  .083  .078  .073  .079  .078  .092  .123  .144
  .087  .115  .151  .146  .166  .153  .139  .124  .103  .1  .093  .065
  .36122E-03  3.04377 19.5
  .62404E-01  1.58124 10.0
  .96267E-06  4.18542 35.0
  .10000E-30 20.00000 35.0
  48.8  54.0  58.6  63.5  67.4  72.2  74.8  73.3  74.2  67.7  58.4  51.1
  40.7  43.2  45.0  47.6  50.9  54.9  56.6  55.1  55.5  51.4  45.1  42.7
  42.7  45.9  47.4  50.2  51.9  57.3  58.7  58.7  57.0  52.5  46.4  43.6
    616.3   -509.9    113.1     13.9     -2.3
    780.4   -569.9     72.8     13.1      6.4
    920.7   -515.1    -16.3      4.6      5.7
   1098.1   -418.4   -165.3     -1.4    -11.8
   1083.1   -250.6   -211.2     28.4    -23.3
   1150.8   -199.4   -262.5     48.3    -28.6
   1165.7   -233.7   -265.4     29.5    -28.6
   1051.7   -388.6   -159.3     41.5    -14.8
   1011.3   -553.8    -56.5     20.6       .9
    834.7   -595.0     63.9     18.9      6.5
    640.8   -506.3    103.6     12.3       .7
    515.7   -420.8    100.3     14.0     -5.0
  756. 1075. 1466. 2020. 2103. 2407. 2470. 2080. 1780. 1256.  833.  618.
  345.  434.  560.  619.  760.  731.  684.  647.  536.  452.  373.  317.
CIRA 1.0 LOC=CEC SANTA ROSA,CA, LAT=38.8, TWHT=20, REGION=02, ALT=167
```

OAKLAN03.CTY

```
  .141  .135  .130  .101  .102  .086  .086  .069  .084  .088  .109  .139
  .107  .177  .207  .179  .234  .187  .178  .216  .198  .18  .127  .106
  .51630E-02  2.29503 13.0
  .84490E-02  2.06103 10.0
  .44847E-01  1.56166 11.0
  .10000E-30 20.00000 35.0
  51.6  52.5  54.6  62.1  60.7  65.7  64.0  67.6  63.9  62.7  59.3  51.2
  44.0  48.0  48.4  52.9  53.5  56.2  55.8  59.0  57.4  56.5  51.9  46.9
  41.7  46.0  46.0  50.7  50.4  53.7  54.4  57.1  55.7  54.5  50.7  46.1
    678.2   -584.8    122.2      5.7      7.7
    650.1   -441.7     53.8     16.0      1.7
    898.2   -505.6    -22.9     24.7     -1.9
   1078.3   -441.3   -159.4     35.5    -16.6
   1111.0   -240.7   -234.6     17.1    -25.8
   1117.2   -207.8   -248.2     68.0    -24.9
   1090.2   -254.9   -229.1     80.3    -27.0
   1036.7   -390.9   -158.7     58.8    -19.1
    904.5   -496.4    -34.5     53.5     -8.3
    727.7   -490.6     44.0     28.6     -1.5
    647.7   -518.9    102.1     14.7       .9
    492.7   -403.2     92.9     12.7     -2.8
  854.  901. 1436. 2030. 2256. 2374. 2293. 2080. 1573. 1083.  852.  600.
  319.  422.  551.  607.  710.  738.  721.  638.  575.  444.  359.  294.
CIRA 1.0 LOC=CEC OAKLAND,CA, LAT=37.7, TWHT=20, REGION=03, ALT=6
```

SUNNYV04.CTY

```
  .145  .121  .124  .101  .105  .067  .056  .049  .067  .085  .119  .145
  .087  .115  .151  .146  .166  .153  .139  .124  .103  .1  .093  .065
  .69417E-02  2.38359 11.5
  .10461E-01  2.25051 10.0
  .35896E-01  1.60887 12.0
  .41538E-12  8.11097 35.0
  49.9  56.7  56.7  62.4  60.7  69.1  70.9  69.0  69.6  65.4  57.3  49.8
  44.1  49.5  48.5  51.2  52.5  60.1  61.7  62.4  59.0  55.9  49.4  45.0
  44.2  48.8  48.2  51.0  51.1  58.3  59.4  60.4  57.2  53.4  47.6  44.2
    614.5   -503.6    109.5     14.4     -2.0
    777.4   -560.1     67.6     13.7      6.3
    915.9   -501.4    -23.5      5.2      5.3
   1091.1   -398.1   -175.1      -.8    -13.3
   1077.6   -229.7   -219.2     29.0    -24.6
   1143.8   -174.4   -270.6     49.1    -29.3
   1158.6   -207.9   -274.5     30.3    -29.8
   1044.7   -367.4   -169.0     42.1    -16.3
   1004.8   -536.0    -65.6     21.3       .1
    830.3   -583.1     57.6     19.5      6.6
    638.6   -499.3     99.8     12.8       .9
    514.5   -416.0     97.7     14.5     -4.8
  775. 1096. 1485. 2036. 2110. 2412. 2477. 2093. 1801. 1278.  851.  633.
  345.  434.  560.  618.  760.  730.  684.  647.  535.  451.  373.  317.
CIRA 1.0 LOC=CEC SUNNYVALE,CA, LAT=37.4, TWHT=20, REGION=04, ALT=130
```

SANTAM05.CTY

```
  .136  .128  .121  .114  .108  .103  .082  .083  .085  .095  .109  .123
  .107  .148  .169  .154  .153  .206  .116  .137  .126  .119  .167  .097
  .53862E-11  7.55842 35.0
  .54914E-02  2.28693 11.5
  .46233E-01  1.40748 14.5
  .10000E-30 20.00000 35.0
 55.2  56.9  57.5  59.8  61.3  61.6  67.3  66.0  66.1  63.5  60.4  57.5
 42.6  45.3  48.4  48.4  51.8  51.3  54.7  55.5  55.5  52.9  50.1  45.8
 43.3  46.3  48.9  49.3  51.2  52.7  55.6  56.4  55.7  54.0  49.9  47.1
   614.8   -528.9    115.2     -8.4     14.5
   696.1   -483.7     70.5    -18.3     21.0
   866.3   -457.4    -27.1    -15.3     12.3
   979.4   -361.4   -133.0     20.5     -8.3
   973.0   -220.6   -194.6     48.4    -23.3
  1041.8   -151.0   -249.9     50.3    -21.0
  1017.0   -205.7   -241.1     57.7    -23.4
   973.1   -337.3   -179.2     44.8    -16.8
   901.8   -485.8    -49.8     55.4    -10.2
   855.0   -620.3     41.1     53.8     -6.7
   694.3   -601.6    104.7     26.1       .6
   624.7   -580.9    125.7     12.1      2.8
 841. 1085. 1532. 1904. 2027. 2379. 2360. 2098. 1670. 1344.  952.  807.
 274.  393.  499.  639.  698.  662.  592.  527.  534.  419.  287.  231.
CIRA 1.0 LOC=CEC SANTA MARIA,CA, LAT=34.9, TWHT=24, REGION=05, ALT=236
```

LONGBE06.CTY

```
  .118  .113  .095  .086  .078  .054  .035  .031  .042  .066  .084  .114
  .11  .132  .137  .138  .16  .132  .134  .137  .137  .109  .128  .13
  .12761E-09  6.65263 35.0
  .18328E-02  2.71514 10.5
  .28097E-01  1.82280 11.0
  .10845E-26 17.42680 35.0
 58.1  60.1  62.7  64.9  65.3  71.7  75.3  75.2  74.6  70.7  64.9  58.5
 48.9  50.5  53.7  55.7  58.5  61.8  65.7  66.7  64.9  59.3  55.3  50.1
 46.9  47.9  50.4  52.5  55.3  60.5  62.0  64.6  60.8  56.5  52.9  46.0
   675.4   -574.7    113.4      7.1      8.8
   832.5   -625.3     65.9     21.1      7.3
   926.7   -522.0    -25.5     35.8     -1.5
  1006.9   -330.2   -157.1     16.0    -12.2
   983.8   -209.2   -190.9     63.4    -21.2
   979.9   -161.3   -217.4     90.0    -20.8
  1026.3   -174.3   -249.4     57.6    -27.1
   969.6   -346.4   -173.8     75.8    -21.0
   913.7   -452.8    -68.3     43.9     -8.9
   841.7   -600.4     43.2     38.1      -.7
   708.2   -601.2    109.5     17.1      3.2
   667.7   -611.7    134.8      7.2      7.0
 928. 1281. 1587. 1941. 1981. 2110. 2300. 2083. 1677. 1356. 1023.  896.
 305.  386.  562.  681.  782.  743.  646.  577.  568.  414.  299.  256.
CIRA 1.0 LOC=CEC LONG BEACH,CA, LAT=33.8, TWHT=20, REGION=06, ALT=25
```

SANDIE07.CTY

```
  .107  .110  .113  .086  .077  .069  .040  .026  .040  .064  .090  .109
  .109  .145  .136  .15  .152  .151  .144  .138  .136  .132  .11  .111
  .14849E-02  2.83754 11.0
  .55150E-14  9.07520 35.0
  .11741E-02  3.06883 10.0
  .29811E-34 22.21393 35.0
  60.3  58.4  58.8  63.9  64.3  65.2  69.5  72.2  69.7  66.6  62.4  59.1
  51.3  53.3  51.5  56.7  58.7  60.2  63.6  65.9  64.0  60.4  56.2  52.6
  47.8  50.9  48.9  54.9  55.5  57.9  61.3  63.6  61.6  58.3  54.1  50.9
    752.2   -616.4    106.3      5.2     13.3
    762.0   -501.8     47.2     13.2      8.5
    931.8   -475.8    -58.2     19.3       .4
    980.7   -335.6   -156.2     49.9    -18.5
   1002.5   -185.9   -209.3     48.8    -24.7
    939.5   -121.4   -189.6     67.2    -17.0
   1013.5   -185.8   -229.8     86.6    -22.0
   1015.1   -326.0   -192.8     72.7    -21.7
    937.1   -480.8    -68.6     68.4    -12.4
    854.8   -585.6     44.6     48.5     -7.6
    710.5   -542.6     96.9     27.3     -5.6
    664.3   -541.4    112.5     13.9      1.9
 1025. 1141. 1570. 1862. 2020. 1918. 2223. 2125. 1743. 1386. 1006.  887.
  351.  478.  576.  691.  770.  819.  732.  654.  589.  480.  413.  361.
CIRA 1.0 LOC=CEC SAN DIEGO,CA, LAT=32.4, TWHT=20, REGION=07, ALT=13
```

ELTORO08.CTY

```
  .124  .115  .100  .083  .068  .058  .047  .042  .049  .063  .095  .101
  .094  .124  .094  .111  .114  .092  .096  .09  .079  .09  .079  .11
  .13451E-05  4.74630 21.5
  .10586E-01  2.03981 10.5
  .19529E-01  1.94542 12.5
  .18531E-02  2.65838 11.5
  56.0  58.0  61.9  67.0  69.8  70.5  77.3  74.5  77.3  69.9  62.2  61.2
  48.3  50.6  53.3  55.7  58.6  60.5  64.5  63.8  65.2  59.9  53.7  52.2
  46.5  48.4  52.6  53.9  56.4  60.1  63.4  63.6  63.8  57.4  52.2  47.7
    727.9   -589.4    108.7     -1.6     16.0
    803.2   -547.9     49.5       .8     17.3
    917.7   -485.7    -39.8     34.3     -4.8
   1066.0   -366.1   -187.4     20.8    -18.0
   1085.6   -165.4   -256.7     14.0    -30.2
   1017.7   -158.7   -224.3     89.0    -19.8
   1112.8   -148.8   -282.9     33.3    -31.0
   1049.8   -336.0   -202.1     58.6    -21.3
   1005.3   -508.8    -83.8     37.5     -5.7
    890.7   -601.8     33.8     26.2      5.2
    717.3   -552.3     95.8     11.6      6.3
    741.2   -641.6    135.4      -.1     13.9
 986. 1204. 1530. 2068. 2236. 2168. 2466. 2196. 1885. 1428. 1002.  981.
 362.  450.  594.  633.  720.  777.  679.  640.  559.  469.  396.  335.
CIRA 1.0 LOC=CEC EL TORO,CA, LAT=33.7, TWHT=20, REGION=08, ALT=240
```

SANFER09.CTY

```
  .124  .121  .116  .096  .083  .086  .081  .085  .083  .084  .092  .116
  .094  .124  .094  .111  .114  .092  .096  .09  .079  .09  .079  .11
  .10010E-06  5.18152 28.5
  .27556E-01  1.66328 11.0
  .14393E-03  3.13279 25.5
  .10000E-30 20.00000 35.0
 57.5  57.9  60.3  66.8  71.5  74.0  82.9  81.4  77.7  72.4  64.9  58.8
 46.3  46.5  47.2  50.9  53.9  54.4  59.8  58.6  57.1  54.2  52.1  48.0
 46.1  47.0  49.8  52.3  55.5  58.5  62.9  62.8  61.0  56.1  52.2  45.9
   728.1   -590.5    110.4     -3.9     16.9
   803.8   -549.6     51.6     -1.6     18.1
   919.1   -488.7    -36.9     31.7     -4.1
  1068.4   -370.7   -183.9     17.7    -17.2
  1087.9   -170.8   -254.0     10.9    -29.9
  1019.5   -164.7   -222.4     86.0    -20.3
  1115.5   -155.3   -280.0     29.8    -30.8
  1052.4   -341.5   -198.5     55.4    -20.7
  1007.0   -512.7    -80.2     34.2     -4.7
   891.6   -604.4     36.3     23.4      6.2
   717.3   -553.5     97.4      9.4      7.2
   740.9   -642.6    136.9     -2.5     15.0
 978. 1196. 1525. 2064. 2234. 2169. 2465. 2193. 1878. 1420.  995.  971.
 363.  450.  594.  633.  720.  777.  679.  640.  558.  469.  396.  335.
CIRA 1.0 LOC=CEC SAN FERNANDO,CA, LAT=34.2, TWHT=20, REGION=09, ALT=977
```

RIVERS10.CTY

```
  .126  .122  .110  .092  .075  .065  .065  .065  .063  .069  .094  .117
  .098  .098  .123  .123  .123  .123  .123  .123  .098  .098  .098  .098
  .25078E-06  4.83855 30.0
  .79763E-02  2.22501 14.0
  .39041E-05  4.09839 28.5
  .11434E-05  4.51940 26.5
 55.8  58.0  61.6  66.4  71.1  77.4  84.5  85.1  82.5  74.0  64.9  58.8
 46.2  46.1  48.4  52.1  57.0  62.6  66.9  69.1  65.6  57.9  51.1  47.2
 44.1  46.5  49.3  50.3  52.6  56.0  60.4  62.6  59.0  53.9  50.6  45.2
   681.6   -497.0     86.2    -33.3     28.3
   820.2   -507.4     23.9    -48.2     30.4
   960.2   -425.0    -80.9    -46.3      7.8
  1056.1   -274.2   -195.4    -35.8    -18.6
  1068.0    -92.6   -223.0    -28.0    -27.2
  1148.4     19.7   -270.3    -34.3    -34.5
  1154.9    -19.4   -283.5    -44.4    -38.4
  1091.7   -194.1   -234.8    -44.6    -27.4
  1031.1   -413.5   -131.3    -25.9     -5.6
   886.9   -539.4      6.9     -5.8     13.1
   810.1   -623.0     79.9     -3.8     18.3
   700.1   -563.2    115.6    -17.4     22.9
 901. 1211. 1599. 1918. 2009. 2179. 2264. 2078. 1790. 1359. 1083.  912.
 391.  439.  564.  671.  825.  809.  746.  686.  593.  502.  385.  370.
CIRA 1.0 LOC=CEC RIVERSIDE,CA, LAT=33.9, TWHT=20, REGION=10, ALT=1511
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REDBLU11.CTY

```
  .159  .135  .130  .097  .065  .064  .075  .066  .061  .077  .125  .156
  .171  .243  .171  .187  .165  .183  .164  .159  .163  .18  .179  .18
  .23361E-01  1.78106 15.5
  .19195E-01  2.02531 11.0
  .15573E-03  3.11447 25.5
  .70212E-02  2.13809 16.0
  46.2  52.6  55.0  63.0  73.4  83.6  90.6  88.3  80.9  70.7  55.8  46.9
  38.8  45.5  46.2  51.5  60.6  70.8  75.1  73.1  66.7  56.6  47.6  41.4
  38.7  42.6  44.7  47.7  53.5  59.6  62.6  62.7  57.4  50.9  44.4  40.0
    466.1   -394.0     97.0      6.5      -.6
    623.6   -472.0     79.8     11.4      4.1
    832.4   -484.2      8.3     10.5      5.3
   1067.6   -417.6   -136.8      4.4     -8.1
   1162.5   -262.3   -238.2      -.8    -22.3
   1209.3   -169.0   -285.3      1.3    -30.3
   1248.8   -237.2   -307.3      9.4    -33.9
   1167.1   -417.5   -216.9      7.3    -17.6
   1035.1   -589.9    -62.1      3.4      6.4
    828.4   -647.1     75.6      3.9     16.2
    572.3   -498.8    111.8      3.5      5.1
    421.5   -367.8     96.0      7.0     -2.9
  576.  865. 1314. 1943. 2321. 2519. 2667. 2341. 1849. 1252.  747.  503.
  261.  357.  533.  653.  704.  696.  599.  539.  453.  337.  265.  230.
CIRA 1.0 LOC=CEC RED BLUFF,CA, LAT=40.1, TWHT=20, REGION=11, ALT=342
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SACRAM12.CTY

```
  .168  .148  .132  .088  .083  .077  .077  .070  .073  .082  .116  .152
  .112  .181  .153  .143  .178  .17  .138  .134  .125  .109  .066  .051
  .23428E-10  7.19697 35.0
  .58761E-02  2.40502 11.5
  .47583E-04  3.50662 25.0
  .38872E-11  7.60496 35.0
  43.8  49.0  55.2  68.6  69.7  80.1  83.0  82.2  77.2  65.9  58.3  47.5
  36.8  44.2  45.1  51.9  53.4  59.8  61.8  62.7  59.5  55.9  48.8  42.7
  37.5  44.3  45.9  52.2  52.9  57.5  59.9  60.6  58.8  56.1  50.0  43.5
    565.9   -475.2    104.3     18.8     -4.7
    548.8   -337.6     39.8     13.3       .3
    909.9   -516.5    -26.8     14.9      3.8
   1182.0   -455.6   -202.5      7.3    -16.9
   1230.1   -248.1   -289.0     16.6    -31.1
   1353.2   -140.3   -354.7      9.1    -39.1
   1306.0   -205.0   -330.5     16.1    -36.8
   1221.5   -390.8   -246.1      5.4    -23.2
   1097.4   -578.2    -92.5      2.8      3.3
    745.3   -508.8     40.6     21.8      1.6
    683.4   -578.7    117.0     19.9     -1.2
    398.1   -298.7     70.0     12.6     -4.6
  706.  748. 1470. 2182. 2433. 2787. 2701. 2412. 1931. 1105.  890.  480.
  308.  422.  527.  599.  697.  714.  690.  610.  525.  422.  337.  288.
CIRA 1.0 LOC=CEC SACRAMENTO,CA, LAT=38.5, TWHT=20, REGION=12, ALT=17
```

FRESNO13.CTY

```
  .159  .134  .108  .092  .069  .068  .073  .065  .067  .075  .124  .161
  .11  .129  .143  .156  .184  .162  .131  .125  .14  .11  .092  .122
  .12818E-03  3.46934 18.0
  .13274E-01  2.05222 13.0
  .17399E-06  4.77204 34.0
  .61275E-06  4.74333 26.0
  47.2  54.6  61.9  66.4  75.8  84.5  90.3  87.3  81.9  72.0  57.4  46.0
  39.5  44.4  48.9  52.2  60.4  67.7  72.9  70.3  63.9  55.4  46.2  39.2
  40.3  45.5  49.5  50.5  54.2  58.3  62.4  63.2  58.6  52.9  48.0  40.1
    512.6   -386.8     86.0      5.9      1.6
    682.2   -470.8     63.2     -8.5     16.2
    930.3   -509.5    -38.9     -8.1     11.4
   1124.4   -424.5   -179.8     24.9    -13.7
   1200.4   -235.9   -285.3     23.1    -28.0
   1234.6   -126.3   -330.2     16.7    -34.8
   1248.3   -159.6   -337.7      9.4    -38.9
   1151.9   -366.9   -247.4     13.2    -22.5
   1084.5   -601.7    -96.6     23.1       .7
    898.8   -719.2     58.9     40.1      5.5
    680.3   -587.6    106.5     33.2     -5.0
    461.7   -364.9     81.4     15.0     -3.6
  667. 1020. 1571. 2097. 2479. 2695. 2687. 2382. 2001. 1432.  904.  571.
  339.  401.  504.  651.  688.  632.  590.  531.  456.  313.  304.  295.
CIRA 1.0 LOC=CEC FRESNO,CA, LAT=36.8, TWHT=20, REGION=13, ALT=328
```

CHINAL14.CTY

```
  .154  .125  .101  .070  .056  .094  .108  .079  .059  .077  .127  .159
  .05  .118  .227  .195  .223  .142  .15  .143  .148  .151  .098  .067
  .23322E-08  5.98318 35.0
  .12702E-02  2.70345 17.5
  .29540E-03  3.02285 22.5
  .18731E-03  3.24265 20.0
  50.7  57.2  62.2  72.5  75.3  93.5  97.5  91.0  82.5  72.2  56.2  47.9
  36.5  44.7  50.5  58.9  62.4  78.0  83.6  78.5  67.9  58.9  44.6  37.8
  34.5  40.2  43.1  47.9  51.4  59.2  61.7  63.9  55.4  49.1  41.3  37.6
    726.7   -623.1    130.5      1.7     12.8
    868.5   -651.7     75.0      4.5     18.8
   1058.7   -613.7    -57.4      8.7      8.6
   1207.5   -425.2   -237.7      7.2    -21.2
   1265.2   -191.8   -326.4     -5.2    -35.4
   1319.4    -85.2   -366.7      7.7    -40.3
   1247.4   -144.6   -329.0     10.4    -36.5
   1121.7   -314.2   -223.8     -2.0    -20.5
   1117.7   -562.0   -113.4      4.1      1.5
    893.3   -597.7     38.1    -13.7     23.8
    738.0   -603.9    113.0     -1.8     15.4
    688.2   -617.3    143.5      2.2      9.3
  963. 1293. 1804. 2312. 2606. 2787. 2621. 2266. 2038. 1422. 1026.  888.
  338.  413.  496.  597.  681.  702.  699.  644.  531.  448.  351.  305.
CIRA 1.0 LOC=CEC CHINA LAKE,CA, LAT=35.7, TWHT=20, REGION=14, ALT=2265
```

ELCENT15.CTY

```
  .111  .097  .081  .072  .073  .090  .114  .111  .090  .072  .082  .101
  .146  .146  .146  .146  .146  .146  .146  .146  .146  .146  .146  .146
  .78366E-04  3.05020 35.0
  .22199E-01  1.85133 15.5
  .33543E-02  2.37078 20.5
  .16259E-02  2.57926 20.0
  60.8  64.2  71.7  79.6  86.8  95.0  99.8  98.6  94.6  83.9  70.5  63.5
  46.0  50.8  56.0  62.4  69.8  75.6  84.6  84.9  77.9  66.2  54.7  48.1
  44.5  45.1  47.3  52.9  55.5  61.4  69.4  68.8  64.4  56.9  50.8  44.9
    888.1   -732.2    107.7    -33.9     36.9
    958.9   -649.0     27.9    -45.5     34.7
   1062.6   -523.4    -96.2    -40.7      8.9
   1212.9   -329.0   -270.6    -26.1    -30.1
   1198.1   -111.5   -331.0    -18.6    -43.0
   1294.7     54.3   -369.5    -24.8    -45.8
   1173.9    -14.2   -306.1    -33.5    -41.1
   1147.3   -205.6   -279.1    -33.4    -34.3
   1121.9   -485.2   -174.5    -13.3    -12.0
   1013.1   -677.7     -5.9      8.2     12.4
    970.1   -801.7     86.8      8.9     20.6
    815.2   -727.9    140.9     -9.6     25.9
 1169. 1428. 1826. 2317. 2517. 2613. 2361. 2272. 2026. 1590. 1292. 1080.
  333.  409.  504.  602.  610.  659.  709.  618.  496.  425.  346.  303.
CIRA 1.0 LOC=CEC EL CENTRO,CA, LAT=32.8, TWHT=20, REGION=15, ALT=-30
```

MTSHAS16.CTY

```
  .190  .174  .151  .144  .104  .074  .051  .071  .072  .132  .163  .183
  .144  .135  .162  .174  .144  .212  .084  .076  .133  .16  .153  .118
  .90143E-08  5.57847 35.0
  .11207E-02  2.68793 18.5
  .12321E-04  3.78448 29.0
  .58976E-04  3.44237 24.5
  34.7  42.1  46.7  52.3  58.3  65.2  74.5  76.4  68.5  56.4  43.7  38.5
  31.5  34.9  42.5  41.2  53.0  60.8  68.8  60.6  58.5  42.7  40.4  32.8
  31.1  36.4  40.0  41.2  47.8  54.8  60.2  55.8  53.6  43.6  39.8  34.0
    479.5   -396.6     90.8     -5.3      8.9
    607.9   -462.5     75.9     10.3      3.3
    844.5   -459.0     -2.5      5.4      5.6
    996.0   -396.0   -120.1      1.9     -3.1
   1117.7   -260.5   -211.4     -4.1    -18.2
   1172.5   -170.6   -266.8    -18.6    -26.1
   1203.6   -246.9   -292.1      2.0    -31.2
   1109.9   -421.7   -198.8      6.0    -16.1
   1007.0   -615.6    -46.8     15.2      3.3
    796.4   -632.6     75.9      7.4     12.9
    497.0   -422.2     92.1      9.6       .2
    465.4   -408.6    105.4      -.6      3.5
  574.  797. 1303. 1769. 2180. 2457. 2583. 2224. 1778. 1167.  607.  540.
  267.  345.  583.  629.  721.  657.  530.  475.  404.  318.  258.  247.
CIRA 1.0 LOC=CEC MT SHASTA,CA, LAT=41.2, TWHT=32, REGION=16, ALT=3535
```

OTHER CITIES

HONOLU53.CTY

```
  .016  .011  .011  .013  .018  .024  .026  .032  .029  .025  .011  .012
  .137  .166  .183  .181  .231  .234  .243  .223  .179  .18  .208  .173
  .10000E-30 20.00000 35.0
  .18604E-23 15.39109 35.0
  .75331E-23 16.34341 26.0
  .49084E-32 26.77145 16.0
  75.8  75.3  75.8  77.0  78.4  79.6  80.2  81.2  80.8  80.0  76.9  75.0
  68.7  69.8  69.8  71.2  73.3  74.4  75.0  75.8  75.1  74.3  72.7  69.8
  66.0  65.7  65.8  66.5  67.7  68.5  69.0  70.0  69.0  69.1  66.7  66.4
    823.1   -542.5     40.7     -2.0     21.8
    945.3   -439.2    -21.9    -12.0     18.3
    986.0   -288.8   -106.9    -19.8      -.5
   1076.5   -121.8   -190.2    -10.1    -24.2
   1089.8     49.0   -230.6     -4.7    -30.6
   1118.5    116.4   -194.5      3.8    -18.4
   1059.5     77.8   -205.7      8.5    -21.6
   1045.2    -64.6   -216.0      2.1    -30.5
   1001.5   -257.5   -179.1     -2.9    -21.0
    948.6   -418.2    -58.9     -9.5     10.8
    832.9   -468.7     30.7      -.4     15.3
    724.5   -447.6     45.2    -10.9     24.1
 1284. 1486. 1712. 1932. 2095. 2038. 2046. 2008. 1856. 1620. 1292. 1076.
  473.  760.  881. 1067. 1005. 1124. 1015.  956.  775.  690.  624.  506.
CIRA 1.0 LOC=HONOLULU, LAT=21.3, TWHT=93, YEAR=1953, ALT=7
```

Section XI

UTILITY PROGRAMS

The utility programs supplied on disk "C" are designed to help you alter CIRA to your special needs. Currently, two utility programs are available: one to tailor CIRA to your terminal and another to help you file the houses you build with CIRA. A third feature described here is the use of metric units for CIRA input and output.

Additional utility programs may be issued in the future. They would make it easier to change the wording of questions, their "ghost status" and their units, help you define new retrofits or change the assumptions in existing ones. You can do all of these things now, but you have to use your own editing program (not supplied in this package). More important, you have to be careful not to violate the question and retrofit formats, as described in sections VIII and IX, respectively.

CIRATRM

CIRA needs to know how to operate your terminal. It has to be told what codes your terminal uses to do such things as clear the screen or send the cursor to the top left of the screen. These codes are stored in a file called TERM.DEF (for terminal definition). CIRA comes with a number of ready-made terminal definitions. These are stored in files named, for example, ADM3A.DEF for the ADM3A terminal. These files are stored on the "C" disk.

If your terminal is one of these, simply copy the appropriate file from your copy of disk "C" into the file TERM.DEF on your copy of disk "A". If your terminal is any other type, you need to use the CIRATRM program to build your own TERM.DEF. This program will help you put the codes in the correct format.

BEFORE you use the program, find the manual for your terminal and write down the codes it uses for the following operations:

- **Clear SCREEN and HOME cursor**
- **NORMAL video (or RESET video)**
- **UNDERLINE**
- **BLINK**
- **REVERSE video**
- **UNDERLINE and BLINK**
- **UNDERLINE and REVERSE video**

- BLINK and REVERSE video
- UNDERLINE, BLINK and REVERSE video
- FULL intensity
- HALF intensity
- HOME cursor
- Clear LINE
- Cursor OFF
- Cursor ON
- Cursor ADDRESSING type

Once you have done that, put your COPY of the "C" disk in any drive and log into that drive. Type CIRATRM then press carriage return. The screen will display some existing .DEF files for popular terminals from which you can choose as a start, e.g.:

```
-------------\/-------------\/-------------\/-------------
 ADM3A.DEF       ADM31.DEF       TV950.DEF       STANDARD.DEF
-------------/\-------------/\-------------/\-------------
```

Please enter the file to read or <return> to edit existing TERM.DEF

_____.DEF

Enter the name of the ".DEF" file you think is closest to your terminal, (the manual for your terminal may provide some helpful hints) and press carriage return. The program will now display the first page of terminal codes and their effects:

HOME - SUMMARY of cursor & screen control (a,b,c & f must work!)....

a) CLEAR SCREEN: should have occured before this was printed.

b) HOME: the word 'HOME' should be at upper left.

c) CLEAR LINE: no X's should follow this message ->

d) VISIBLE CURSOR: enter this letter to check.

e) NO CURSOR: enter this letter to check.

f) CURSOR ADDRESSING test.

Unless your TERM.DEF is correct, your screen will not look like this; it will probably be a mess. The first step to fixing it is to put in the correct code for clear screen. Type the letter "a" and the following should appear:

CIRA--------Computerized Instrumented Residential Audit--------CIRA

Values for CLEAR SCREEN are currently set as:

Characters:	**'<ESC>*'**
HEX of Characters	**'1B 2A'**
DECIMAL of characters	**'27 42'**

The screen should have been CLEARED before this entry

Any changes (y/n)?

Answer "y", and then enter the code your terminal uses for clear screen. The computer will then use that code to try to clear the screen, so you will know immediately if you got it right. If it works, confirm that you don't want to make any more changes by typing "n" , and move on to fix the other codes. **Note** :Be careful to enter the right code. If you just guess and enter the wrong code, your screen may end up looking very, very odd. Codes that must be entered correctly are those for clear screen, cursor addressing, and home; blank spaces can safely be entered for the others.

You may also have to invent codes. For example, for clear line on the adm3a, CIRA types a carriage return plus the precise number of tabs and spaces to fill in a line, and another carriage return to get back to the beginning of the line.

If you have one of the types of terminal shown below, item "f" can be answered by one of six preset addressing types (1-6):

1:	<ESC>={row+32.}{column+32.}	- ADM 3a / Televideo
2:	<ESC>Y{row+32.}{column+32.}	- DEC vt52 / Zenith/ADDS
3:	~<DC1>{column+32.}{row+32.}	- Hazeltine
4:	<ESC>a{row+32.}{column+32.}	- Concept
5:	<ESC>Y{row+32.}<ESC>X{column+32.}	- Perkin Elmer
6:	<DC4>{row}{column}	- Micro-Term

If your terminal does not use one of these types, choose type 0 and enter the full sequence of codes for your terminal. Below is shown the way in which these codes are entered.

```
**************************************************************************
CIRA-------------Computerized Instrumental Audit----------------------CIRA
*                                                                        *
* CURSOR ADDRESSING info is currently set as:                            *
*                                                                        *
*       1)  Initial lead in sequence is                                  *
*                   Characters:                 '<ESC>='                 *
*                   HEX of characters:          '1B 3D'                  *
*                   DECIMAL of characters:      '27 61'                  *
*       2)  ROW address is sent first.                                   *
*       3)  Secondary sequence is (ok if none!):                         *
*                   Characters:                 ''                       *
*                   HEX of characters:          ''                       *
*                   DECIMAL of characters:      ''                       *
*       4)  OFFSET added to row/column address is: 32                    *
*                                                                        *
*   'Initial seq. , (R or C)+offset , Secondary seq. , (R or C)+offset'  *
*------------------------------------------------------------------------*
* The CURSOR should draw a box of *'s around the screen...               *
*------------------------------------------------------------------------*
*                                                                        *
* Any CHANGES (1, 2, 3, 4 or NONE) ?                                     *
*                                                                        *
************************************ This corner should be left blank-->
```

When you have finished items "a" through "f", press carriage return to move on to the second page. This should look like:

SUMMARY of supported video attributes (your terminal may not have them!)..

a) NORMAL > < 1 character

b) NORMAL > < 1 ch UNDERLINE > < 1 ch NORMAL

c) NORMAL > < 1 ch BLINKING > < 1 ch NORMAL

d) NORMAL > < 1 ch REVERSED VIDEO > < 1 ch NORMAL

e) NORMAL > < 1 ch UNDERLINE/BLINK > < 1 ch NORMAL

f) NORMAL > < 1 ch UNDERLINE/REVERSE > < 1 ch NORMAL

g) NORMAL > < 1 ch BLINK/REVERSE > < 1 ch NORMAL

h) NORMAL > < 1 ch UNDERLINE/BLINK/REVERSE > < 1 ch NORMAL

i) FULL >< 0 characters FULL INTENSITY

j) FULL >< 0 ch HALF INTENSITY >< 0 ch FULL

Enter choice, <RETURN> if all are OK or <Q> to re-read terminal:

The first item ("a") is "reset to NORMAL video"; this is essential if any of the other codes are used. If your terminal does not support these features, you should leave a blank space in this field.

The code actions as displayed are not obligatory. If your terminal supports only some of the availiable codes, feel free to substitute anything you wish, such as underline for reverse video, etc. In fact, if you have a "no bells and whistles" terminal, you might have to use a blank space for all terminal codes (except, of course cursor addressing, clear screen and home). One item of great importance to the output format is the amount of space which each code occupies on your screen. If the program indicates a code should take "1 ch.", you should make sure there is in fact only one space between the "> <" on the screen.

After having thus created a TERM.DEF file for your terminal, transfer it to your COPY of disk "A" using the "PIP" program supplied with CP/M. You also might want to copy TERM.DEF into a holding file, called, say, MYTERM.DEF, since the file you just created may be altered if you run CIRATRM again.

If, for any reason, you want to fiddle with the TERM.DEF file using your own editor, you may do so, but at your own risk! You must respect the following format: Each of the terminal codes discussed above appears on a separate line in TERM.DEF in the exact order indicated, and is defined with two or more numbers separated by spaces: The first number indicates the NUMBER of CHARACTERS which make up the code and, also, how many more numbers follow on the current line. Each following number represents the DECIMAL value for the ASCII character in the code sequence. For example, reverse video on a Televideo 950 is activated by the code sequence "<ESC>G4". In the file TERM.DEF, this would be represented as:

3 27 71 52

Line 16 is the code for cursor addressing, indicated by a single digit between 1 and 6, corresponding to the six fixed types of cursor addressing currently supported:

1:	<ESC>={row+32.}{column+32.}	- ADM 3a / Televideo
2:	<ESC>Y{row+32.}{column+32.}	- DEC vt52 / Zenith/ADDS
3:	~<DC1>{column+32.}{row+32.}	- Hazeltine
4:	<ESC>a{row+32.}{column+32.}	- Concept
5:	<ESC>Y{row+32.}<ESC>X{column+32.}	- Perkin Elmer
6:	<DC4>{row}{column}	- Micro-Term

The last three lines are an expansion of the cursor addressing type. Line 17 is the initial lead in. Line 18 is the secondary lead in. Line 19 consists of two items: first is a flag indicating whether X or Y is sent first, next is the cursor offset (the same for X and Y).

CIRAHSE

This program will help you with "house-keeping" during your CIRA runs in more than one sense. It permits you to store a house that you've built for later use or to retrieve a house you built earlier. When you input information to CIRA, the program looks on "disk A" for the file called HOUSE.DAT. At the end of a session, you should copy HOUSE.DAT to another safe file, for example, JOE.HSE, or 4BR3STRY.HSE. This will keep it from being altered by CIRA during your next session (As the latter file name suggests, you may generate a whole library of prototype houses; next time you analyze a 4-bedroom 3-story house, you can pull the closest file from your library and alter it to match the new house). To use a previously defined house, for example, INLAW.HSE, you must copy INLAW.HSE into HOUSE.DAT. CIRAHSE helps you do both of these things by asking the name of the stored house and onto which disk you want it to go.

The first question you are asked after you start CIRAHSE is if you want to SAVE or GET a house. To "SAVE" a house, you must tell the program where the HOUSE.DAT file is (it should be on the drive where "disk A" is). Then, you can choose a file name to "SAVE" it in (see our examples for ideas and your CP/M manual for legal file name formats). If you don't specify a file type, the program will automatically add ".HSE" as a file type. When you want to run this house again, you can simply "GET" it from that file. NOTE: There is only limited space on the CIRA disks; thus, it is suggested that you store your ".HSE" files on a separate disk.

To "GET" a saved house, you follow the same procedure in reverse. First you are asked the file name of the saved house, then the drive where you want it copied to (again, you will normally choose disk "A"). Simply follow the instructions.

METRIC INPUT AND OUTPUT

CIRA is supplied with two parallel sets of files, one for English units and one for Metric units. The metric files have exactly the same names as the English ones, and to avoid confusion they are stored on disk C as system files. Therefore, they will not be listed if you use the CP/M DIR command; you have to use the STAT *.* command. Similarly, they will not be copied if you use the usual PIP A:=B:*.* command; you have to use the PIP A:=B:*.*[R] command. The parallel files are: all the .INF files; the energy calculation program CIRAEGY.COM; and the report program CIRARPT.COM

To make a metric version of CIRA:

1. Make an English version by copying our disks A and B.

2. Use the CP/M PIP command with [R] to copy all the .INF files from our disk C onto your copy of disk A. (You can copy the .INF files as a block by using PIP A:=B:*.INF[R])

3. Use the CP/M PIP command with [R] to copy the metric CIRARPT.COM and CIRAEGY.COM from our disk C onto your copy of disk B.

You now have a metric version of CIRA.