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FOSSIL ENERGY

Great Plains ASPEN Model Development: Phosam Section

Final Topical Report

By
S.S. Stern
J.J. Kirman

February 1985

Work Performed Under Contract No.: DE-AC21-82MC19163

For
U.S. Department of Energy
Office of Fossil Energy
Morgantown Energy Technology Center
Morgantown, West Virginia

By
Scientific Design Company
Division of the Halcon SD Group, Inc.
New York, New York

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ABSTRACT

An ASPEN model has been developed of the PHOSAM Section, Section 4600, of the Great Plains Gasification Plant. The bases for this model are the process description given in section 6.18 of the "Great Plains Project Management Plan" and the Lummus Phosam Schematic Process Flow Diagram, Dwg. No. SK D-7102-IM-0.

The ASPEN model that has been developed contains the complete set of components that are assumed to be in the gasifier effluent. The model is primarily a flowsheet simulation that will give the material and energy balances and equipment duties for a given set of process conditions. The model is unable to predict fully changes in process conditions that would result from load changes on equipment of fixed sizes, such as a rating model would predict. The model can be used to simulate the steady-state operation of the plant at or near design conditions or to design other PHOSAM units.

Because of the limited amount of process information that was available, several major process assumptions had to be made in the development of the flowsheet model. Patent literature was consulted to establish the ammonia concentration in the circulating fluid.

An ionic equilibrium model should be used to predict the vapor liquid equilibrium. However, because of the limited capability of ASPEN in this area, this was not possible. The Peng-Robinson equation of state, as the next most suitable VLE model, was used. Appropriate parameters were established for this model using the Data Regression (DRS) System in ASPEN. The data did not fit precisely, because of the chemical reactions that occur. The model needed to be tuned to give results which approximate the patent literature data.

The simulation model is not very robust. Certain modifications were needed to help the simulation converge. For the Superstill and Fractionator, estimates of the initial temperature profiles and the composition profiles were required. The total number of outside iterations had to be increased above the default values for both towers. Since almost all of the equipment items are in the convergence loop, convergence of the RADFRC was essential for overall flowsheet convergence. Furthermore, large deviations from the values used in the simulation runs of this report could lead to convergence problems, and retuning of the process parameters may be required for further use of the model.

Case studies were made with the ammonia content of the feed 25% higher and 25% lower than the base feed. Results of these runs show slightly lower recoveries of ammonia with less ammonia in the feed. As expected, the duties of the Stripper and Fractionator reboilers were higher with more ammonia in the feed.

CONCLUSIONS

1. The model gives a reasonable approximation of the flows, as judged by comparison to a Kremser chart for absorption.

2. The model is useful for simulations at or near the design conditions or for designing a new PHOSAM plant.

3. The model is capable of handling variations in the ammonia content of the feed. The overall model, however, requires initial guesses of flows for convergence.

4. The tear stream tolerance needed to be increased from .01%, the default value, to 0.5% to avoid long computer running times of the model (8000 seconds was reduced to 3000 seconds).

5. Results of case studies were as expected. Increased reboiler duties for the Stripper and Fractionator were required when the ammonia content in the feed was increased.

6. The water going to the Cooling Tower contains about 2445 pounds per hour of other species. These species are predominantly acidic and could cause severe corrosion problems. A portion of this material will be stripped in the Cooling Tower. This vapor emission may be environmentally unacceptable.

RECOMMENDATIONS

1. The model is based on the assumption of 0.35 pounds of liquid circulation to the Superstill per pound of water feed. An ionic equilibrium model for VLE should give more precise indication of the ammonia absorption for any given circulation rate. It should be verified that the assumed liquid circulation rate to the Superstill corresponds to the process design.

2. A distillation routine capable of handling VLE and including reaction kinetics on each stage should be added to ASPEN. This would be required to simulate the complex VLE in the various towers in PHOSAM.

3. An ionic equilibrium database which includes phosphoric acid should be established.

4. Since ASPEN has problems finding the optimum sequence when there are several DESIGN-SPECS and FORTRAN blocks, the sequencing algorithm should be improved by experts in ASPEN.

5. When major processing steps fail, the outlet flow streams are sometimes assigned a value of zero; sometimes flow information from the last iteration is used. A mechanism should be developed to terminate the simulation run rather than to continue to waste computer time when major processing steps such as RADFRC or a reactor model fail. A criterion based on overall material balance should be used to determine whether or not the run should continue.

6. An investigation should be made of emissions and corrosion problems that may develop in the Cooling Tower as a result of contaminated, acidic water from the PHOSAM section being sent there.

PHOSAM is a patented process of U.S. Steel for the recovery of ammonia from sour water streams. The overall process involves stripping the ammonia and acid gases from the sour water. The ammonia next is recovered by contact with phosphoric acid solution. The acidity of this solution retards the undesired capture of the other acid gases. Ammonia chemically combines with phosphoric acid by the following reaction:

$$NH_3 + H_3PO_4 \Longrightarrow NH_4 + H_2PO_4$$

In the flowsheet for Great Plains, the sour water stripping and phosphoric acid contacting (absorption) are combined as the lower and upper sections, respectively, of the Superstill. The ammonia-rich solution is heated and stripped, with a mixture of water and ammonia being taken overhead from the Stripper. The water/ammonia overhead mixture is condensed and next distilled, producing an anhydrous ammonia overhead product and an ammonia-free water bottoms that is returned to the lower section of the Superstill. The phosphoric acid concentration is maintained constant by condensing an amount of water in the upper section of the Superstill equal to the amount of water that is stripped in the Stripper. A pump-around loop removes the heat of condensation.

TABLE 1A
PHYSICAL PROPERTIES DATA FOR PHOSPHORIC ACID

```
PROP-DATA
 COMP-LIST                H3PO4
 CVAL MW       1   1   98.
 CVAL TC       1   1   854.4
 CVAL PC       1   1   4230905.
 CVAL ZC       1   1   .25
 CVAL OMEGA    1   1   .2368808
 CVAL DHFORM   1   1   -595667800.
 CVAL DGFORM   1   1   0.
 CVAL PLXANT   1   1  23.90065/
                   2  -6610.491/
                   3  0./
                   4  0./
                   5  0./
                   6  0./
                   7  0./
                   8  0./
                   9  1000.
 CVAL CPIG     1   1  113078.7/
                   2  35.763800/
                   3  0./
                   4  0./
                   5  0./
                   6  0./
                   7  0./
                   8  1000./
                   9  113078.7/
                  10  35.763800/
                  11  0.
```

THERMODYNAMICS

The PHOSAM process involves highly non-ideal vapor/liquid equilibrium because ammonia, phosphoric acid, and the other components in the waste water react chemically. The salts formed by these weak acid/weak base reactions are ionic; however, since they are formed from weakly acidic and basic gases, the constituents have finite vapor pressures above the solution. Ideally, Chau

TABLE 1B
PENG ROBINSON INTERACTION PARAMETERS

Water Phosphoric Acid Interaction Parameters

```
PROP-DATA
  COMP-LIST              H3PO4
  CVAL PRWHCK 1   1   .3184528D00/
                  2  -.1483066D-2/
                  3  -.4633515D00/
                  4   .2323703D-3
```

Ammonia Phosphoric Acid Interaction Parameters

```
PROP-DATA
  COMP-LIST                    H3PO4       NH3
  BCVAL PRKIJ 1 1 H3PO4        .0         -2.190824
  BCVAL PRKIJ 1 1 NH3        -2.190824     .0
```

Assumed Interaction Parameters for Acid Gases and H3PO4

```
PROP-DATA
  COMP-LIST                    H3PO4       CO2
  BCVAL PRKIJ 1 1 H3PO4        .0         2.000000
  BCVAL PRKIJ 1 1 CO2        2.000000      .0

PROP-DATA
  COMP-LIST                    H3PO4       H2S
  BCVAL PRKIJ 1 1 H3PO4        .0         2.000000
  BCVAL PRKIJ 1 1 H2S        2.000000      .0

PROP-DATA
  COMP-LIST                    H3PO4       HCN
  BCVAL PRKIJ 1 1 H3PO4        .0         2.000000
  BCVAL PRKIJ 1 1 HCN        2.000000      .0
```

Chen's ionic vapor/liquid equilibrium model should be used for phase equilibrium calculations; however, this was not possible for a number of reasons. First, the only working model in ASPEN that allows for the use of ionic equilibrium is the FLASH model, but this model is not very robust; attempts to simulate a simple water/ammonia system were not successful. Furthermore, the flow sheet shows four distillation steps for which RADFRC or ABSP are the most efficient and appropriate models, but neither RADFRC nor ABSR can handle ionic equilibrium. The compromise approach taken was to use the Peng-Robinson equation of state in vapor/liquid equilibrium calculations. Critical pressure, acentric factor, Antione constants, and water and ammonia interaction parameters were developed for phosphoric acid. These values are summarized in Tables 1A and 1B.

PROCESS DESCRIPTION (DWG. 2136-D-146)

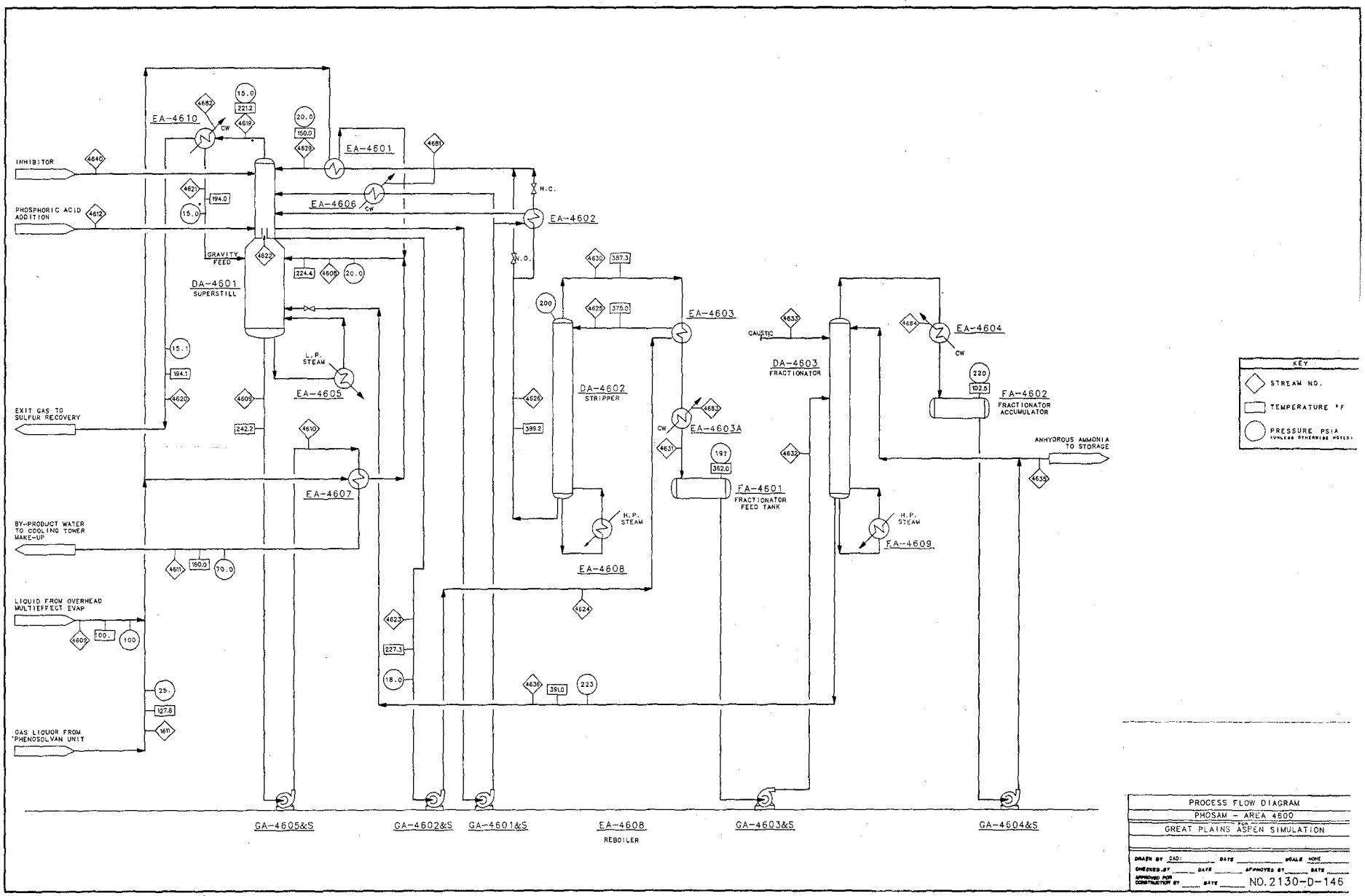
Sour water from the Phenosolvan unit is combined with liquid from the overhead of the multi-effect evaporation system. The combined liquids are heated in exchanger EA-4607 and EA-4601 against Superstill bottoms and Stripper bottoms. The heated liquid enters the lower portion of the Superstill, DA-4601, where ammonia and acid gases are stripped from the sour water. Stripping steam for the operation is provided by reboiler EA-4605. The vapors from the lower portion containing all of the acid gases are contacted with cooled Stripper bottoms in the upper section of the Superstill. The Stripper bottoms is an aqueous solution of ammonium phosphate.

A portion of the stripping steam is condensed to maintain a process water balance. The heat of condensation is removed in a pump-around loop consisting of pump GA-4601 and exchangers EA-4602 and EA-4606. The amount of the heat removed in these exchangers is controlled by the amount of water stripped from the phosphoric acid solution in Stripper DA-4602.

The overhead vapor from the upper section of the Superstill is cooled and partially condensed in exchanger EA-4610. The liquid condensate is returned to the upper portion of the lower section of the Superstill. The vent vapors are sent to the Sulfur Recovery Unit. The bottoms from lower section of the Superstill are pumped in GA-4605, cooled against incoming feed in EA-4607, and next sent to the Cooling Tower as makeup. The bottoms of the upper section of the Superstill are pumped by GA-4602, heated against overhead from the Stripper in EA-4603 and next sent to the top tray of the Stripper. In the Stripper, the solution of ammonia and phosphoric acid in water is stripped of ammonia, and a mixture of water and ammonia is taken overhead. The overhead is partially condensed against the stripper feed in EA-4603 and totally condensed against cooling water in EA-4603A. The liquid next is pumped to the Fractionator, DA-4603, where an anhydrous ammonia product is taken overhead and the bottoms is ammonia-free water. The bottoms water is returned to the Superstill and the net anhydrous ammonia product is pumped to reflux and storage via GA-4604.

ASPEN MODEL (DWG. 2130-D-4600)

The Superstill, the Stripper, and the Fractionator each are simulated using RADFRC unit operations blocks. Since the process functions of the upper and lower sections of the Superstill are different, the two sections are each simulated by separate RADFRC blocks. The feed preheaters and the partial condenser for the stripper overhead each are simulated using heater blocks and heat information streams. The heating of the Superstill feed against the Superstill bottoms (net section bottoms) and the Stripper bottoms by cooling these streams is simulated by using two HEATER blocks. The Superstill feed is heated using heat information streams going to a MIXER block. One material stream and two heat streams enter the MIXER. The pump-around loop is simulated using a heater on tray 5 the RADFRC block that simulates the upper



PROCESS FLOW DIAGRAM
PHOSAM – AREA 4600
GREAT PLAINS ASPEN SIMULATION

DRAWN BY CAD: _____ DATE _____ SCALE NONE
CHECKED BY _____ DATE _____ APPROVED BY _____ DATE _____
APPROVED FOR CONSTRUCTION BY _____ DATE _____ NO. 2130-D-146

TABLE 2
LIST OF ASSUMPTIONS

1. 99.5% of all the ammonia fed to the lower section of the Superstill is to be removed.

2. The anhydrous ammonia product is to contain no more than 10 ppm water.

3. The phosphoric acid make-up is a equimolar mixture of water and phosphoric acid.

4. For simplicity in simulation, the inhibitor (PHOSAM proprietary) and the caustic additions indicated on the Lummus flowsheet are assumed to be water.

section of the Superstill. The amount of heat that is removed is controlled by a DESIGN-SPEC which calculates the amount of water that must be condensed.

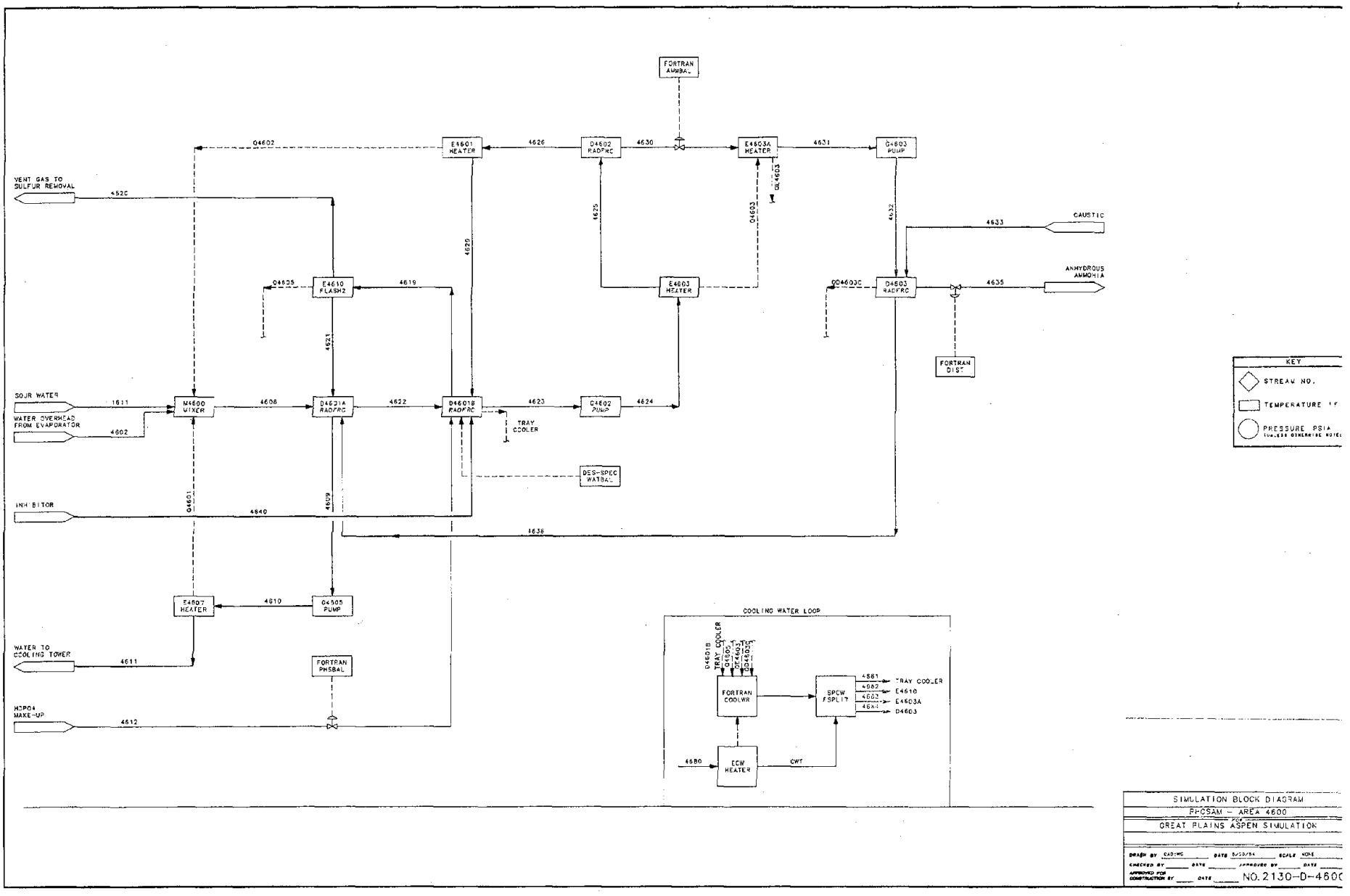
The amount of stripping that is required of the Stripper is set equal, via a FORTRAN block, to the amount of ammonia that is absorbed. The amount of anhydrous ammonia distillate leaving the Fractionator also is controlled using a FORTRAN block. Table 2 shows the process assumptions used in the simulation. A summary of all FORTRAN blocks and DESIGN-SPECs is shown in Table 3. Some of the RADFRC blocks use internal design specifications; these are summarized in Table 4.

SIMULATION COMMENTS

Because limited process information was available, several major process assumptions had to be made in the development of the flowsheet model. The assumptions listed in Table 2 are arbitrary, based on process design experience and engineering judgement. The PHOSAM patent literature was consulted to establish the ammonia concentration in the circulating fluid.

An ionic equilibrium model should be used to predict the vapor/liquid equilibrium; however, with ASPEN's limited capability to simulate tower operations with such a model, this was not possible and the Peng-Robinson equation of state had to be used for this purpose. Appropriate parameters were established using the DRS System of ASPEN. The data did not fit precisely because of the chemical reactions that occur. The model needed to be tuned to give results which approximate patent literature data; however, large deviations from these values in further uses of the model could lead to convergence problems. To develop new initializations for other cases, stand-alone runs of the individual RADFRC blocks must be made.

The overall flowsheet model is not very robust. Certain modifications were needed to help the simulation converge. For two of the four towers, the upper section of the Superstill and the ammonia Fractionator RADFRC, initial temperature profiles and composition profiles were required to be specified. Also, for the upper section of the Superstill, the maximum number of feed flash iterations was increased to 50; the restart flag was set to zero; and the



SIMULATION BLOCK DIAGRAM

PHOSAM – AREA 4600

GREAT PLAINS ASPEN SIMULATION

DRAWN BY CAD/MC DATE 5/30/94 SCALE NONE

CHECKED BY ____ DATE ____ APPROVED BY ____ DATE ____

APPROVED FOR CONSTRUCTION BY ____ DATE ____ NO. 2130-D-4600

TABLE 3. LIST OF DES-SPECS AND FORTRAN BLOCKS USED IN THE METHANATION SIMULATION.

BLOCK NAME	BLOCK TYPE	BLOCK FUNCTION
PHSBAL	FORTRAN	Calculates phosphoric acid make-up rate.
AMMBAL	FORTRAN	Sets the amount of ammonia stripped in D-4602 equal to the amount of ammonia absorbed.
DIST	FORTRAN	Sets the distillate rate of the Ammonia Fractionator equal to the amount of ammonia fed.
COOLWR	FORTRAN	Calculates the cooling water flowrate to the various water cooled exchangers.
WATBAL	DES-SPEC	Varies the side cooler duty so that sufficient water condenses to keep the plant in water balance.

maximum number of outside loop iterations was increased to 70. Similarly, the number of outside loop iterations for the Fractionator was increased to 40.

A problem arose in trying to simulate the Superstill Condenser, EA-4610, using a PV flash with a vapor fraction of zero. Probably, because high vapor pressure inerts are present, a finite vapor fraction is required to give a reasonable outlet temperature. The problem was corrected by specifying a vapor fraction of 1%. Since the feed to the flash also contains a large quantity of organics a FLASH3 model appears more appropriate than a FLASH2 model; however, a FLASH3 model was tried but did not converge.

The overall flowsheet convergence was a problem. When a RADFRC block did not converge, zero-flow streams were passed forward, causing failures in the downstream blocks. The approach built into ASPEN is to allow a simulation run to continue when a major process block fails to converge. This approach should be reexamined.

The run time for the program was excessive when the default tolerance was used. On the VS370 system, the run time was in the order of 8000 seconds. When the tear stream tolerance was relaxed from 0.01%, the default value, to 0.5%, the run time was cut down to about 3000 seconds.

The simulation strategy follows the guidelines set forth in "Final Topical Report, Great Plains ASPEN Model Development, Executive Summary," that is, allowing ASPEN to choose the tear streams and using WEGSTEIN the default convergence algorithm. When there are numerous FORTRAN blocks and DESIGN-SPECs in a model, ASPEN has problems in defining an appropriate sequence. This is the case for the PHOSAM simulation, so a user-supplied sequence is required. Improvement of the sequencing routines should be considered.

TABLE 4
INTERNAL DESIGN-SPEC FOR RADFRC BLOCK

BLOCK NO.	BLOCK FUNCTION	SPEC-FUNCTION
D-4601A	Sour Water Stripper	Varies reboiler duty so that 99.5% of the ammonia fed is stripped.
D-4602	Ammonia Stripper	Varies the reboiler duty to give a fixed recovery of ammonia in the overhead. (See also AMMBAL Table 3.)
D-4603	Ammonia Fractionator	Varies the reflux ratio to give an ammonia product purity of 99.999%.

CASE STUDIES

Because of the convergence problems with the overall simulation, only two cases were studied: increasing the ammonia content of the feed by 25%, and decreasing the ammonia content of the feed by 25%. The utilities required for the Stripper and Fractionator increase or decrease almost proportionally to amount of ammonia recovered.

The reboiler duty of the Superstill decreases with increased ammonia content. An analysis of the process showed this apparently surprising result to be true. The amount of steam required to meet the criterion of stripping 99.5% of the ammonia from the feed waters is essentially constant with changes in ammonia concentration because the amount of water fed to the lower section of the Superstill is almost constant at the low concentrations of ammonia typical of PHOSAM applications. Furthermore, the composition of the Stripper overhead is constant; therefore, with more ammonia in the feed, more water is condensed in the upper section of the Superstill. Water uncondensed in the upper Superstill is condensed in E-4610, from where it is returned relatively cold to the lower Superstill. Condensed water is stripped in the Stripper and taken hot from the bottom of the Fractionator directly to upper Superstill. The change, with increased ammonia feed concentration, in the gradient of sensible heat between the hot water stream from the Fractionator and the cold water stream from E-4610 is the reason for the decrease in duty.

A summary of the results of the case studies is shown in Table 5.

TABLE 5
CASE STUDIES

Case	Ammonia in the Feed (LB M/HR)	Ammonia in Product (LB M/HR)	Percent Ammonia Recovered	Heat Duty of EA-4605 (LB M/HR)	EA-4608 (LB M/HR)	EA-4609 (LB M/HR)
Base	372.5	357.9	96.1	196.5	123.7	307.2
1	298.0	280.39	94.0	202.0	107.1	240.9
2	465.7	454.4	97.5	190.6	142.1	389.7

TABLE 6
NON-WATER COMPONENTS OF THE EFFLUENT WATER

COMPONENT	LB/HR
HCL	40.47
NH3	44.71
HOAC	2192.98
PYRIDINE	102.61
PHENOL	44.08
O-CRESOL	0.57
H3PO4	20.21
TOTAL	2445.63
TEMP °F	160.0000
PRESS PSIA	70.0000
DENSITY LB/CUFT	51.1827
AVG MW	18.0412

ENVIRONMENTAL CONSIDERATIONS

Table 6 shows the non-aqueous constituents of the waste water leaving PHOSAM and sent to the Cooling Tower as make-up. There are 2445 pounds per hour of organic and inorganic compounds present in the water leaving PHOSAM. If the simulation is correct and the predicted components are present in the waste water to the degree shown, two problems may appear in a plant: (1) corrosion in the cooling water circuit and (2) venting organics to atmosphere.

The waste water with the acids present and without treatment is well below pH 7. This will cause corrosion of stainless steel heat exchanger elements.

The organic components are volatile enough that they will be stripped from the water in the Cooling Tower. The organics level in that overhead from the Cooling Tower is high enough to be a hazard. The simulation assumptions must be verified, and the performance of any intermediate water treatment steps between PHOSAM and the Cooling Tower must be known and taken into account.

REFERENCES

GENERAL

ANON, 1981

"Great Plains Project Management Plan", U.S. Dept. of Energy, Memorandum. November 1, 1981 (Revised January 14,1982).

ASPEN, 1981

"ASPEN Technical Reference Manual", M.I.T., December,1981

HONEA, 1982

Honea, F. I. "GPGP Process Streams and Stream Properties For ASPEN Process Simulation", U.S. Dept. of Energy, Memorandum. July 28, 1982.

MILLMAN, 1983

M.C. Millman, "Final Topical Report, Great Plains ASPEN Model Development: ASPEN Physical Property Evaluation," (DE-AC21-82MC19163), Jan., 1985.

STERN, 1984

Stern, S.S., Millman, M.C., Kirman, J.J., Nwogu, D. "Final Topical Report, Great Plains ASPEN Model Development: Binary Interaction Parameters and Activity Coefficent Parameters," Dec., 1984.

THERMODYNAMICS

BRELVI, 1972

Brelvi, S.W., O'Connell, J.P., "Corresponding States Correlations for Liquid Compressibility and Partial Molal Volumes of Gases at Infinite Dilution in Liquids," AIChE Journal, Vol. 18, No. 6, (1972), pp, 1238-1243.

BRELVI, 1975

Brelvi, W.S. and O'Connell, J.P., "A Generalizer Isothermal Equation of State for Dense Liquids," AIChE Journal, Vol. 21, No. 1, (Jan. 1975), pp. 171-174.

BRELVI, 1975

Brelvi, S.W., O'Connell, J.P., "Generalized Prediction of Isothermal Compressibilities and an Isothermal Equation of State for Liquid Mixtures," AIChE Journal, Vol. 21, No. 5, (Sept. 1975), pp. 1024-1027.

BRULE, 1979

Brule, M.R., Lee, L.L., and Starling, K.E., "Predicting Thermodynamic Properties for Fossil Fuel Chemicals," Chem. Eng., Nov. 19, 1979, pp. 155-164.

BRULE, 1982

Brule, M.R., Lin, C.T., Lee, L.L., and Starling, K.E., "Multiparameter Corresponding-States Correlation of Coal-Fluid Thermodynamic Properties," AIChE Journal, Vol. 28, No. 4, (July 1982), pp. 616-625.

CHEN, 1982

Chen, C-C; Britt, H.I.; Boston, J.F.; and Evans, L.B., "Local Composition Model for Excess Gibbs Energy of Electrolyte Systems" - Part 1., AIChE Journal, Vol. 28, No. 4, (July 1982), pp.588-596.

CARLSON, 1942

Carlson, H.C. and Colburn, A.P., "Vapor-Liquid Equilibria of Nonideal Solutions," E.I. du Pont Nemours & Company, Wilmington, Del., Ind. and Eng. Chemistry, May 1942, pp. 581-589.

ENELEIN, 1979

Enelein, K.A., Moore, R.G., "Prediction of Phase Equilibria in Sour Natural Gas Systems Using the Soave-Redlich-Kwong Equation of State," Ind. Eng. Chem. Process Des. Dev., Vol. 18, No. 4, (1979), pp. 618-624.

FISHER, 1982

Fisher, C.H., Equations Correlate n-alkane Physical Properties with Chain Length," Chem. Eng., Sept. 20, 1982, pp. 111-112.

GRABOSKI, 1978

Graboski, M.S., Daubert, T.E., "A Modified Soave Equation of State for Phase Equilibrium Calculations," Ind. Eng. Chem. Process Des. Dev., Vol. 17, No. 4, (1978), pp. 443-454.

KABADI

Kabadi, V.N., Danner, R.P., "Nomograph Solves for Solubilities of Hydrocarbons in Water," Hydrocarbon Proc., pp. 245-246.

KATINAS, 1977

Katinas, T.G., Danner, R.P., "Method Makes Prediction of Heats of Vaporization Easy," Hydrocarbon Proc., (March 1977), pp. 157-160.

KHAN, 1982

Khan, A.A., Barker, R.E. and Begovich, J.M., "Physical Property Estimation for Coal Liquids," presented at Amer. Institute of Chemical Engineers, 1982 Annual Meeting, Los Angeles, CA., Nov. 14-19, 1982, pp. 1-37.

LIN, 1980

Lin, C.T., Brule, M.R., Young, F.K., Lee, L.L., Starling, K.E., "Data Bank for Synthetic Fuels," Hydrocarbon Proc., (May 1980), pp. 229-233; (Aug. 1980), pp. 118-232.

MACKNICK, 1979

Macknick, A.B., Prausnitz, J.M., "Vapor Pressures of Heavy Liquid Hydrocarbons by a Group Contribution Method," Ind. Eng. Chem. Fundam., Vol. 18, No. 4, (1979), pp. 348-351.

MATHIAS

Mathias, P.M., "A Versatile Phase Equilibrium Equation of State," Energy Laboratory and Chemical Engineering Department, MIT, Cambridge, MA 02139, pp. 1-31.

NEWMAN, 1981

Newman, S.A., "Correlations Evaluated for Coal-Tar liquids," Hydrocarbon Proc. (Dec. 1981), pp. 133-142.

OELLRICH

Oellrich, L., Plocker, U., Prausnitz, J. M., Knapp, H., "Methoden zur Berechnung von Phasengleichgewichten und Enthalpien mit Hilfe von Zustandsgleichungen."

PAN, 1981

Pan, W.P., Maddox, R.N., "Determining Properties of Saturated Liquids and Vapors," Chem. Eng., Nov. 2, 1981, pp. 79-87.

PATEL, 1982

Patel, N.C., Teja, A.S., "A New Cubic Equation of State for Fluids and Fluid Mixtures," Chemical Eng. Science, Vol. 37, No. 3, pp. 463-473.

PAWLIKOWSKI, 1982

Pawlikowski, E.M., Newman, J., Prausnitz, J.M., "Phase Equilibria for Aqueous Solutions of Ammonia and Carbon Dioxide," Ind. Eng. Chem. Process Des. Dev., (1982), Vol. 21, pp. 764-770.

PENG, 1975

Peng, D.Y., Robinson, D.R., "A New Two-Constant Equation of State,"Dept. of Chemical Eng., Univ. of Alberta, Edmonton, Alberta, Canada.

RADOSZ, 1982

Radosz, M.; Lin, H-M.; Chao, K-C., "High-Pressure Vapor-Liquid Equilibria in Asymmetric Mixtures Using New Mixing Rules," Ind. Eng. Chem. Process Des. Dev. (1982), Vol. 21, pp. 653-658.

RITTMANN, 1982

Rittmann, B., Knapp, H., and Prausnitz, J.M., "Enthalpy and Dew-Point Calculations for Aqueous Gas Mixtures Produced in Coal Gasification and Processes," Ind. Eng. Chem. Process Des. Dev., (1982), pp. 695-698.

ROBINSON, 1979

Robinson, D.B., Peng, D.Y., Ng, H.J., "Capabilities of the Peng-Robinson Programs," Hydrocarbon Proc. (Sept. 1979), pp. 269-270.

SHARMA, 1982

Sharma, R., Kidnay, A.J., and Yesavage, V.F., "Measurement and Correlation of the Enthalpy of Coal-Derived Liquids," Energy Progress, Vol. 2, No. 1 (March 1982), pp. 9-13.

SHINNAR, 1982

Shinnar, R., Fortuna, G., and Shapira, D., "Thermodynamic and Kinetic Constraints of Catalytic Synthetic Natural Gas Processes," Ind. Eng. Chem. Process Des. Dev., (1982), pp. 728-750.

TSONOPOULOS, 1971

Tsonopoulos, C. and Prausnitz, J.M., "Activity Coefficients of Aromatic Solutes in Dilute Aqueous Solutions," Univ. of California, Ind. Eng. Chem. Fundam., Vol. 10, No. 4, 1971, pp. 593-598.

WATANASIRI, 1982

Watanasiri, S., Brule, Mr., and Starling, K.E., "Correlation of Phase-Separation Data for Coal-Conversion Systems," AIChE Journal, Vol. 28, No. 4, (July 1982), pp. 626-636.

WHITE, 1981

White, C. W. III, Seider, W.D., "Computation of Phase and Chemical Equilibrium", AIChE Journal, Vol. 27, No. 3, May 1981, pp. 466-471.

PHOSAM

BADGER, 1938

Badger, E.H.M. and Silver,J. "The Examination of Solutions Containing Ammonia, Carbon Dioxide and Hydrogen Sulfide," Soc. Chem. Ind., 57, pp. 110-112, (1938).

BEYCHOK, 1967

Beychok, M. R., "Aqueous Wastes from Petroleum and Petrochemical Plants," John Wiley & Sons, (1967). This includes a critical review of stripping of some water streams. See pp. 48-59, 117-122, 158-198.

BOMBAUGH, 1981

Bombaugh and Lee, "Fingerprinting Pollutant Discharges from Synfuels Plants," Env. Sci. & Tech., Oct. 1981, pp. 1142-1149. Contains chromatograms with possible compound identification in the tar, medium oil, naphtha and crude phenol by-products from the Lurgi lignite-based gasification plant located in Kosovo region of Yugoslavia.

CHEN, 1979

Chen, C.C., "Extension and Application of the Pitzer Equation for VLE of Aqueous Electrolyte Systems with Molecular Solutes," A.I.Ch. E. J., (Sept. 1979), pp. 820-830.

CHEN, 1980

"Computer Simulation of of Chemical Processes with Electrolytes," Doctoral Thesis for Doctor of Science, submitted (June 1980), M.I.T.

CHEN

Chen, C.C., Britt, H.I., Boston, J.F., Evans, L.B., "Two New Activity Coefficient Models for the VLE of Electrolyte Systems. See Newman, S.A., A.C.S. Symposium Series No. 133.

CLARK, 1971

Clark, C.W. and Glen, D.N., "Solubility of H2S in Water," Can. J. Chem., 49, pp. 691-698, (1971).

DRAVO

Dravo Handbook, "US Phosam-W Process," 3 pages, pp. 142-144.

EDWARDS, 1975

Edwards, T.J., Newman, J., Prausnitz, J.M., "Thermodynamics of Aqueous Solutions containing Volatile Weak Electrolytes," A.I.Ch.E. J., 21, pp. 248-258, (1975).

EDWARDS, 1978

Edwards, T.J., Maurer, G., Newman, J., Prausnitz, J.M., " VLE in Multicomponent Aqueous Solutions of Volatile Weak Electrolytes," A.I.Ch.E.J., (Nov. 1978), pp. 966-975.

FIELDS, 1965

U. S. Patent 3,186,795, "Method of Recovering Ammonia," (June 1, 1965) (filed 10/31/61), M. C. Fields, et al.

HAMILTON, 1975

C. W. Hamilton, Jr., R. D. Rice, "New Developments in the USS Phosam Process," Ironmaking Proc. Metall. Soc. AIME, v34 1975, Ironmaking Conf., Toronto, Ont., (Apr. 13-16, 1975), pp. 622-637. This paper describes the commercial development of the USS PHOSAM Process for the recovery of coke- oven by-product ammonia in the form of high-purity anhydrous liquid ammonia. The process is gaining world-wide acceptance among coke producers, and applications outside the coke-plant field are anticipated.

LENFESTY, 1960

Lenfesty, F.A., Brosheer, J.C., "Ammonia--Phosphoric Acid--Water System at 25 deg. C.," Div. of Chem. Dev., Tennessee Valley Authority, Wilson Dam, AL., Journal of Chemical and Engineering Data, Vol. 5, No. 2, (April 1960), pp. 152-154.

MASON

Mason, D.M. and Kao, R., "Correlation of VLE of Aqueous Condensates from Coal Processing." See Newman, S.A., A.C.S. Symposium Series No. 133.

MATHER

Mather, A.E. and Deshmukh, R.D., "Phase Equilibria in Aqueous Electrolyte Solutions." See Newman, S.A., A.C.S. Symposium Series No. 133.

MAURER

Maurer, G., "On the Solubility of Volatile Weak Electrolytes in Aqueous Solutions." See Newman, S.A., A.C.S. Symposium Series No. 133.

NAKAMURA, 1978

Nakamura, R., Breedveld, J.F., Prausnitz, J.M., "Thermodynamic Properties of Gas Mixtures Containing Common Polar and Nonpolar Components," I.&EC, Proc D&D, 15, 4, pp. 557-563, (1978).

NEWMAN, 1980

Newman, S.A. "Thermodynamics of Aqueous Systems with Industrial Applications," ACS Symposium Series No. 133, ACS, Washington, D.C., (1980). This records papers presented at a Symposium, October 22-25, 1979, at Warrenton, VA., co-sponsored by A.I.Ch.E., NBS, NSF.

OTSUKA, 1960

Otsuka, E., Yashimuri, S., Yakake, M., Inoue, S., "Equilibria of the Systems NH3-CO2-H2O and Na2CO3-NH3-CO2-H2O," Kogyo Kagaku Zashi, 62, pp. 1214-1222, (1960).

PEXTON, 1938

Pexton, S. and Badger, E.H.M., "Vapor Pressures of Ammonia and Carbon Dioxide in Equilibrium with Aqueous Solutions," J. Soc. Chem. Ind., 57, pp. 106-110, (1938).

RENON, 1978

Renon, H. and Beutier, D., "Representation of NH3-H2S-H2O, NH3-CO2-H2O, NH3-SO2-H2O VLE, I.&EC, Proc. D&D, 17, 3, pp. 220-230, (1978).

RENON

Renon, H., "Representation of NH3-H2SH2O, NH3-SO2-H2O, and NH3-CO2-H2O VLE." See Newman, S.A., A.C.S. Symposium Series No. 133.

RICE, 1976

US Patent 3,985,863, "Process for the Separation and Recovery of Ammonia and Acid Gases," by Rice, Bassler and Hamilton. Assignee USS Corp., Oct. 12,1976 (filed 4/18/75).

STAUFFER, 1974

"Phosphoric Acid," Stauffer Chemical Co., Industrial Bulletin, 1974.

TSONOPOULOS, 1976

Tsonopoulos, C., Coulson, D.M., Inman, L.B., "Ionization Constants of Water Pollutants," J. Chem. Eng. Data, 21, pp. 190-193, (1976).

VAN KRERELEN, 1949

Van Krerelen, D.W., Hoftijzer, P.J., Huntjens, F.J., "Compositions and Vapor Pressures of Aqueous Solutions of Ammonia, Carbon Dioxide and Hydrogen Sulfide," Rec. Trav. Chim Pays-Bas, 68, pp. 191-216, (1949).

WILSON, 1978

Wilson, G.M., "A New Correlation of NH3, CO2 and H2S Volatility Data from Aqueous Sour Water Systems," Final Report to API Committee on Refinery Environmental Control under EPA Grant No. R804364010, Thermochemical Institute, BYU Univ., Provo, Utah, (1978).

WILSON

Wilson, G.M., Owens, R.S., Roe, M.W., "Ammonia Volaility Down to PPM Levels, PHR Composition, and Effects of Electrolytes on Ammonia Volatility." See Newman, S.A., A.C.S. Symposium Series No. 133.

APPENDIX A. TABLE OF NOMENCLATURE

ABSBR	An ASPEN UOS block used to simulate an absorber or stripper
ANG	American Natural Gas
ASPEN	Advanced System for Process Engineering A process simulator developed at M.I.T for D.O.E.
BROYDEN	A convergence algorithm which employs a Jacobian matrix usually used when converging multiple variables simultaneously
CES	ASPEN Cost Estimation System
CLASS-CHANGER	An ASPEN option which allows the user to class of a stream
COMPR	An ASPEN UOS block used to simulate compressors
CONVEN	An ASPEN stream type containing only liquids and gases
DES-SPEC	An ASPEN option which allows the user to specify that a flowsheet variable attain a desired value
DIPPR	Design Institute for Physical Properties data at Penn State University sponsored by A.I.Ch.E.
D.O.E.	Department of Energy
DRS	ASPEN Data Regression System
EXTRC	An ASPEN UOS block used to simulate extractors
FLASH2	An ASPEN UOS block used to simulate partial condensation with two outlet streams
FLASH3	An ASPEN UOS block used to simulate partial condensation with three outlet streams
FORTRAN	An ASPEN option which allows the user to insert Fortran statements into the flowsheet calculation
FSPLIT	An ASPEN UOS block used to split streams
HEATER	An ASPEN UOS block used to simulate one side of a heat exchanger
HEATX	An ASPEN UOS block used to simulate both sides of a heat exchanger
ME	Major Equipment, cost estimating category
M.I.T.	Massachusetts Institute of Technology
MIXCISLD	An ASPEN stream type containing only liquids, gases and conventional solid components, such as salt
MIXER	An ASPEN UOS block used to mix streams
MIXNC	An ASPEN stream type containing only liquids, gases and nonconventional solid components, such as coal
OE	Other Expenses Associated with ME Installation
PRKIJ	Peng-Robinson equation of state interaction parameter
PUMP	An ASPEN UOS block used to simulate pumps
RADFRC	An ASPEN UOS block used to simulate fractionators
RKS	Redlich-Kwong-Soave equation of state
RGIBBS	An ASPEN UOS block used to simulate reactors where the products of reaction are calculated using free energy minimization
RPLUG	An ASPEN UOS block used to simulate reactors where the products of reaction are calculated using plug flow kinetic model
RSTOIC	An ASPEN UOS block used to simulate reactors where the products of reaction are calculated using stoichiometric equations

SAS	Statistical Analysis System offered by SAS Institute, Cary,N.C.
SD	Scientific Design Company
SDF	ASPEN System Definition File
SEP	An ASPEN UOS block used to split streams
SEP2	An ASPEN UOS block used to split streams
SNG	Synthetic Natural Gas
TEAR-STREAM	A stream (informational, such as heat, or material) which is checked to ascertain if convergence is achieved
UOS	Unit Operation Subroutine such as FLASH2 and RADFRC
WEGSTEIN	A convergence algorithm which employs acceleration

APPENDIX B. PHOSAM INPUT FILE

```
NEW
;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\
;*                                                                          *
;*                      HALCON SD GROUP, INC.                               *
;*                                                                          *
;* AUTHOR : S. S. STERN                       DATE: JANUARY 4, 1984         *
;*                                    REV 1   DATE: JANUARY 25, 1985        *
;*                                                                          *
;* SHORT TITLE :  PHOSAM                                                    *
;*                                                                          *
;* DESCRIPTION :  SIMULATION OF THE AMMONIA STRIPPER AND REABSORBER         *
;*                                                                          *
;* USER DATA FILES:  NONE                                                   *
;*           FILENAME:            FILETYPE (USRPP1A,ETC)      DISK PATHNAME: *
;*                                                                          *
;*                                                                          *
;* USER INSERT FILES:  PRKIJ                                                *
;*           FILENAME:            FILETYPE (INSERT)           DISK PATHNAME: *
;*                                                                          *
;*                                                                          *
;* USER SUBROUTINES REQUIRED:  NONE                                         *
;*           FILENAME:                                        DISK PATHNAME: *
;*                                                                          *
;*           DESCRIPTION:                                                   *
;*                                                                          *
;\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
;
TITLE 'PHOSAM'
DESCRIPTION  "SIMULATION OF AMMONIA STRIPPER AND REABSORBER"
;
;
HISTORY
  MSG-LEVEL SIMULATION=8 PROPERTIES=2 STREAM=8
;
STREAM-REPORT SUPPLEMENTAL 1 OPTIONS = MASS-FLOW
              SUPPLEMENTAL 2 OPTIONS = MOLE-FRAC
              SUPPLEMENTAL 3 OPTIONS = MASS-FRAC
;
IN-UNITS  ENG
OUT-UNITS ENG
RUN-CONTROL  MAX-TIME=9000
;
;*********************************************************************
;*                                                                   *
;*                        COMPONENTS                                 *
;*                                                                   *
;*********************************************************************
;
COMPONENTS AR                   ARGON                 /
           CL2                  CHLORINE              /
```

```
 HCL                  HYDROGEN-CHLORIDE   /
H2                    HYDROGEN            /
H2O                   WATER               /
H2S                   HYDROGEN-SULFIDE    /
NH3                   AMMONIA             /
N2                    NITROGEN            /
O2                    OXYGEN              /
CO                    CARBON-MONOXIDE     /
COS                   CARBONYL-SULFIDE    /
CO2                   CARBON-DIOXIDE      /
HCN                   HYDROGEN-CYANIDE    /
CH4                   METHANE             /
C2H4                  ETHYLENE            /
C2H6                  ETHANE              /
HOAC                  ACETIC-ACID         /
C3H6                  PROPYLENE           /
ACETONE               ACETONE             /
C3H8                  PROPANE             /
THIOPHENE             THIOPHENE           /
1-C4H8                1-BUTENE            /
MEK                   METHYL-ETHYL-KETONE /
NC4H10                N-BUTANE            /
PYRIDINE              PYRIDINE            /
BENZENE               BENZENE             /
PHENOL                PHENOL              /
N-C6H14               N-HEXANE            /
DIPE                  DIISOPROPYL-ETHER   /
TOLUENE               TOLUENE             /
O-CRESOL              O-CRESOL            /
NAPHTHAL              NAPHTHALENE         /
NC10H22               N-DECANE            /
H3PO4
;
FORMULA H2O H2O
;
;*****************************************************************************
;*                                                                           *
;*                          PHYSICAL PROPERTIES                              *
;*                                                                           *
;*****************************************************************************
;
; USE SYSOP4W
;
PROPERTIES SYSOP4W  GLOBAL/SYSOP12
;
INSERT * PRKIJ
;
; PHYSICAL PROPERTIES DATA FOR PHOSPHORIC ACID
;
PROP-DATA
 COMP-LIST           H3PO4
 CVAL MW      1  1  98.
 CVAL TC      1  1  854.4
 CVAL PC      1  1  4230905.
```

```
 CVAL ZC      1  1  .25
 CVAL OMEGA   1  1  .2368808
 CVAL DHFORM  1  1  -595667800.
 CVAL DGFORM  1  1  0.
 CVAL PLXANT  1  1 23.90065/
                 2 -6610.491/
                 3 0./
                 4 0./
                 5 0./
                 6 0./
                 7 0./
                 8 0./
                 9 1000.
 CVAL CPIG    1  1 113078.7/
                 2 35.763800/
                 3 0./
                 4 0./
                 5 0./
                 6 0./
                 7 0./
                 8 1000./
                 9 113078.7/
                10 35.763800/
                11 0.
;
;    ADDITIONAL
;     PENG ROBINSON INTERACTION PARAMETERS
;
PROP-DATA
  COMP-LIST            DIPE
  CVAL PRWHCK 1   1 -.8211872        /
                  2  .1247992D-2     /
                  3 -.8422792        /
                  4  .2356721D-2
PROP-DATA
  COMP-LIST             H3PO4
  CVAL PRWHCK 1   1  .3184528D00/
                  2 -.1483066D-2/
                  3 -.4633515D00/
                  4  .2323703D-3
;
PROP-DATA
  COMP-LIST                 DIPE         PHENOL
  BCVAL PRKIJ 1 1 DIPE      .0          -.2677077
  BCVAL PRKIJ 1 1 PHENOL   -.2677077     .0
;
PROP-DATA
  COMP-LIST                 DIPE         N2
  BCVAL PRKIJ 1 1 DIPE      .0          -.1530241
  BCVAL PRKIJ 1 1 N2       -.1530241     .0
;
PROP-DATA
  COMP-LIST                 PHENOL       N2
  BCVAL PRKIJ 1 1 PHENOL    .0          -.4926959
```

```
  BCVAL PRKIJ 1 1 N2       -.4926959     .0
;
PROP-DATA
  COMP-LIST                  H3PO4       NH3
  BCVAL PRKIJ 1 1 H3PO4     .0          -2.190824
  BCVAL PRKIJ 1 1 NH3      -2.190824     .0
;
; ASSUMED INTERACTIONS FOR ACID GASES AND H3PO4
;
PROP-DATA
  COMP-LIST                  H3PO4       CO2
  BCVAL PRKIJ 1 1 H3PO4     .0          2.000000
  BCVAL PRKIJ 1 1 CO2      2.000000     .0
;
PROP-DATA
  COMP-LIST                  H3PO4       H2S
  BCVAL PRKIJ 1 1 H3PO4     .0          2.000000
  BCVAL PRKIJ 1 1 H2S      2.000000     .0
;
PROP-DATA
  COMP-LIST                  H3PO4       HCN
  BCVAL PRKIJ 1 1 H3PO4     .0          2.000000
  BCVAL PRKIJ 1 1 HCN      2.000000     .0
;
PROP-DATA
  PROP-LIST PLXANT 1
    PVAL H2O * * * * * * * * 1 1000
;
;*****************************************************************************
;*                                                                           *
;*                          FLOWSHEET                                        *
;*                                                                           *
;*****************************************************************************
;
FLOWSHEET MAIN
;
 BLOCK  M4600    IN= 1611 4602 Q4601 &
                     Q4602                OUT= 4608
 BLOCK  D4601A   IN= 4608 4621  4636      OUT= 4622 4609
 BLOCK  G4605    IN= 4609                 OUT= 4610
 BLOCK  E4607    IN= 4610                 OUT= 4611 Q4601
 BLOCK  D4601B   IN= 4629 4622 4612 4640  OUT=4619 4623
 BLOCK  E4610    IN= 4619                 OUT= 4620 4621 Q4605
 BLOCK  G4602    IN= 4623                 OUT= 4624
 BLOCK  D4602    IN= 4625                 OUT= 4630 4626 QD4602R
 BLOCK  E4603    IN= 4624                 OUT= 4625 Q4603
 BLOCK  E4603A   IN= 4630 Q4603           OUT= 4631 QE4603
 BLOCK  E4601    IN= 4626                 OUT= 4629 Q4602
 BLOCK  G4603    IN= 4631                 OUT= 4632
 BLOCK  D4603    IN= 4632 4633            OUT= 4635 4636 QD4603R QD4603C
;
;*****************************************************************************
;*                                                                           *
;*                      CONVERGENCE DATA                                     *
```

```
;*                                                                              *
;*******************************************************************************
;
CONVERGENCE LOOP1 WEGSTEIN
 TEAR Q4601 -.5D0/Q4603 -.5D0/ 4625 -.5D0/ 4621 -.5D0
 PARAM MAXIT=25 WAIT=5 ACCELERATE=3
CONVERGENCE LOOP2 ONE-VAR
 SPEC WATBAL
;
; COMPUTATION ORDER FOR THE FLOWSHEET IS:
;
SEQUENCE CW1 LOOP1 D4602 DIST E4601 E4603A G4603 D4603 M4600&
 D4601A AMMBAL G4605 E4607 PHSBAL &
 LOOP2 D4601B (RETURN LOOP2) G4602 E4603 E4610 &
 (RETURN LOOP1) COOLWR ECW SPCW (RETURN COOLWR)
;
;*******************************************************************************
;*                                                                              *
;*                        STREAM DATA                                           *
;*                                                                              *
;*******************************************************************************
;
;
; INLET STREAM DATA
;
DEF-STREAMS HEAT Q4601 Q4602 Q4603 Q4605
DEF-STREAMS HEAT QD4602R QE4603 QD4603R QD4603C
;
; GAS LIQUOR
; AQUEOUS FEED FROM THE N2 STRIPPER(ESTIMATED FROM S. S. STERN, 1/4/84 )
;
STREAM 1611 TEMP=127.8 PRES=18.5 FLASH-OPTION=1-PHASE V-FRAC=0.0
 MOLE-FLOW  AR      .93911D-06/
      CL2           .20742D-08/
      HCL             1.1099/
      H2            .26324D-03/
      H2O           .61090D+05/
      H2S             0.1740/
      NH3            372.5242/
      N2              0.5160/
      O2              0.0   /
      CO            .76534D-04/
      COS           .30961D-04/
      CO2             0.4562/
      HCN           .18153D-04/
      CH4           .14524D-03/
      C2H4          .46852D-04/
      C2H6          .79394D-04/
      HOAC            36.5460/
      C3H6          .54164D-03/
      ACETONE         0.4583/
      C3H8          .17071D-04/
      THIOPHEN        0.0061/
      1-C4H8        .46857D-03/
```

```
     MEK                4.8553/
     NC4H10          .61540D-05/
     PYRIDINE           2.1423/
     BENZENE            0.4717/
     PHENOL             0.4705/
     N-C6H14         .59215D-03/
     DIPE               8.1200/
     TOLUENE            0.5810/
     O-CRESOL           0.0054/
     NAPHTHAL        .25827D-04/
     NC10H22         .29156D-04/
     H3PO4              0.0
;
;    OVERHEAD FROM EVAPORATORS
;
STREAM 4602 TEMP=100.0 PRES =100. V-FRAC=0.0  FLASH-OPTION=1-PHASE
       MOLE-FLOW H2O 3050.3
;
;    PHOSPHORIC ACID MAKE-UP
;
STREAM 4612 TEMP=100.0 PRES =100. V-FRAC=0.0  FLASH-OPTION=1-PHASE
       MOLE-FLOW H2O .05/H3PO4 .05
;
;TEAR STREAMS-4621 LIQUID FLASH FROM E4610
;
STREAM 4621  TEMP=100.0 PRES = 40. V-FRAC=0.0  FLASH-OPTION=1-PHASE
;      MOLE-FLOW HCL .0043/H2O 9000/H2S .013/NH3 158/HOAC 4.3/
;                ACETONE .27/MEK 5.5/PYRIDINE 12.7/PHENOL .22/
;                DIPE .46
;
;4621
 MOLE-FLOW AR  .16610D-08/CL2 .95806D-10/HCL 0.0041/
 H2 .35691D-06/ H2O  6790.4212/ H2S  0.0128/
 NH3 137.0537/N2  .43140D-3/O2  0.0/CO .91742D-07/
 COS         .23603D-06/ CO2       0.0088/ HCN          .32754D-06/
 CH4          .23783D-06/ C2H4         .22250D-06/  C2H6         .14185D-06/
 HOAC      4.0093/  C3H6          .36323D-05/ ACETONE           0.2698/
 C3H8              .20646D-07/  THIOPHEN          .59048D-03/
 1-C4H8            .15686D-05/  MEK                5.7271/
 NC4H10              .46117D-08/ PYRIDINE           12.9870/
 BENZENE             0.0395/  PHENOL             0.2139/
 N-C6H14             .96247D-06/ DIPE                0.4816/
 TOLUENE             0.0306/  O-CRESOL           0.0045/
 NAPHTHAL            .43219D-05/ NC10H22             .13474D-05/
 H3PO4               0.0567
;TEAR STREAMS-4625 IS FEED TO THE AMMONIA STRIPPER
STREAM 4623 TEMP=220. PRES =20.  V-FRAC=0.0  FLASH-OPTION=1-PHASE
       MOLE-FLOW H2O 20657./NH3 1339.2/H3PO4 1444.
;
;
STREAM 4625 TEMP=331.65 PRES =210.  V-FRAC=0.0  FLASH-OPTION=1-PHASE
;      MOLE-FLOW H2O 20657./NH3 1339.2/H3PO4 1444.
; 4625
 MOLE-FLOW  AR          .48799D-10/
```

```
 CL2          .55888D-11/
 HCL           0.0014/
 H2           .60029D-08/
 H2O          .20772D+05/
 H2S          .17502D-04/
 NH3         1340.0595/
 N2           .45562D-05/
 O2            0.0/
 CO           .76027D-09/
 COS          .15061D-07/
 CO2          .15606D-04/
 HCN          .74696D-10/
 CH4          .69337D-08/
 C2H4         .44126D-08/
 C2H6         .71876D-08/
 HOAC           4.5109/
 C3H6         .46236D-10/
 ACETONE      .12050D-03/
 C3H8         .15262D-07/
 THIOPHEN     .37332D-04/
 1-C4H8       .44151D-10/
 MEK             0.0210/
 NC4H10       .77880D-13/
 PYRIDINE        1.0090/
 BENZENE      .50219D-05/
 PHENOL          0.0247/
 N-C6H14      .38182D-12/
 DIPE         .26051D-05/
 TOLUENE      .49098D-06/
 O-CRESOL     .22487D-03/
 NAPHTHAL     .72388D-11/
 NC10H22      .36939D-22/
 H3PO4       1443.9431
;
;   CAUSTIC MAKE-UP
;
STREAM 4633 TEMP=100.0 PRES =100. V-FRAC=0.0  FLASH-OPTION=1-PHASE
;
       MOLE-FLOW H2O 1.00
;   INHIBITOR
;
STREAM 4640 TEMP=100.0 PRES =100. V-FRAC=0.0  FLASH-OPTION=1-PHASE
       MOLE-FLOW H2O 1.00
;
;   FEED BOTTOMS EXCHANGER E-4607 DUTY
;
STREAM Q4601
 STREAM-ATTR HEAT DUTY=98.D6
;
;   FEED AMMONIA STRIPPER BOTTOMS EXCHANGER E-4601 DUTY
;
STREAM Q4602
 STREAM-ATTR HEAT DUTY=20.D6
;
```

```
;*****************************************************************************
;*                                                                           *
;*                        SIMULATION BLOCKS                                  *
;*                                                                           *
;*****************************************************************************
;
;
;  MIX GAS LIQUOR AND OVERHEAD FROM MULTI EFFECT EVAPORATOR
;
BLOCK M4600 MIXER
  PARAM PRES=-1
;
;  GAS STRIPPER
;
BLOCK D4601A RADFRC
  PARAM NS=10
  FEEDS 4621 1/4608 1/4636 9
  PRODUCTS 4622 1 1/4609 10 0
  P-SPEC 1 20/10 25
  T-EST  1 220/10 230
  COL-SPECS RDV=1  QN= .216D9 Q1=0
  VARY 1 QN .100D9 .400D9
  SPEC 1 RECOV 0.995 CIDS=NH3 SIDS=4622
;
;  PUMP BOTTOMS FROM GAS STRIPPER
;
BLOCK G4605 PUMP
  PARAM PRES=80 TYPE=1 EFF=0.5
;
;  EXCHANGE GAS STRIPPER BOTTOMS WITH FEED
;
BLOCK E4607 HEATER
  PARAM PRES=-10 TEMP=160
;
;  H3PO4 BALANCE
;
FORTRAN PHSBAL
  DEF PF1 MOLE-FLOW STREAM= 4612 COMPONENT=H3PO4
  DEF PO1 MOLE-FLOW STREAM= 4609 COMPONENT=H3PO4
  DEF PSMU STREAM-VAR STREAM= 4612 VARIABLE=MOLE-FLOW
F     PSMU=PSMU *PO1/ PF1
F     WRITE(6,102) PF1,PO1
F 102 FORMAT(3D15.8)
  EXECUTE AFTER E4607
;
;  AMMONIA ABSORBER
;
BLOCK D4601B RADFRC
  BOPT SIM-LEVEL=4 STREAM-LEVEL=4 RESTART=0
  PARAM NS=12 MAXOL=70 F23=3.D-4 MAXFLASH=50 TOLIL0=1D-3 TOLOL=1.3D-4
  FEEDS 4629 1/4612 3/4622 13/4640 13
  PRODUCTS 4619 1 1/4623 12 0
  HEATERS 5 -.10D9
  P-SPEC 1 15/12 18
```

```
  COL-SPECS RDV=1  Q1=0 QN=0
;
; TEMPERATURE ESTIMATES
;
 T-EST 1 212.14/2 212.14/3 212.14/4 212.14/5 212.14/6 212.14/
         7 212.14/8 212.14/9 212.14/10 212.14/11 212.14/12 212.14

;
;   ****   X-PROFILE          ****
;
 X-EST 1 H2O                    .85317/
         NH3                    .79207D-01/
         CO2                    .57420D-09/
         HOAC                   .10366D-03/
         ACETONE                .37130D-08/
         MEK                    .46986D-06/
         PYRIDINE               .58244D-05/
         BENZENE                .25574D-09/
         DIPE                   .14475D-09/
         TOLUENE                .26633D-10/
         O-CRESOL               .47299D-08/
         H3PO4                  .67514D-01/
       2 H2O                    .85317/
         NH3                    .79207D-01/
         CO2                    .57420D-09/
         HOAC                   .10366D-03/
         ACETONE                .37130D-08/
         MEK                    .46986D-06/
         PYRIDINE               .58244D-05/
         BENZENE                .25574D-09/
         DIPE                   .14475D-09/
         TOLUENE                .26633D-10/
         O-CRESOL               .47299D-08/
         H3PO4                  .67514D-01/
       3 H2O                    .85317/
         NH3                    .79207D-01/
         CO2                    .57420D-09/
         HOAC                   .10366D-03/
         ACETONE                .37130D-08/
         MEK                    .46986D-06/
         PYRIDINE               .58244D-05/
         BENZENE                .25574D-09/
         DIPE                   .14475D-09/
         TOLUENE                .26633D-10/
         O-CRESOL               .47299D-08/
         H3PO4                  .67514D-01/
       4 H2O                    .85317/
         NH3                    .79207D-01/
         CO2                    .57420D-09/
         HOAC                   .10366D-03/
         ACETONE                .37130D-08/
         MEK                    .46986D-06/
         PYRIDINE               .58244D-05/
         BENZENE                .25574D-09/
```

```
   DIPE                .14475D-09/
   TOLUENE             .26633D-10/
   O-CRESOL            .47299D-08/
   H3PO4               .67514D-01/
 5 H2O                 .85317/
   NH3                 .79207D-01/
   CO2                 .57420D-09/
   HOAC                .10366D-03/
   ACETONE             .37130D-08/
   MEK                 .46986D-06/
   PYRIDINE            .58244D-05/
   BENZENE             .25574D-09/
   DIPE                .14475D-09/
   TOLUENE             .26633D-10/
   O-CRESOL            .47299D-08/
   H3PO4               .67514D-01/
 6 H2O                 .85317/
   NH3                 .79207D-01/
   CO2                 .57420D-09/
   HOAC                .10366D-03/
   ACETONE             .37130D-08/
   MEK                 .46986D-06/
   PYRIDINE            .58244D-05/
   BENZENE             .25574D-09/
   DIPE                .14475D-09/
   TOLUENE             .26633D-10/
   O-CRESOL            .47299D-08/
   H3PO4               .67514D-01/
 7 H2O                 .85317/
   NH3                 .79207D-01/
   CO2                 .57420D-09/
   HOAC                .10366D-03/
   ACETONE             .37130D-08/
   MEK                 .46986D-06/
   PYRIDINE            .58244D-05/
   BENZENE             .25574D-09/
   DIPE                .14475D-09/
   TOLUENE             .26633D-10/
   O-CRESOL            .47299D-08/
   H3PO4               .67514D-01/
 8 H2O                 .85317/
   NH3                 .79207D-01/
   CO2                 .57420D-09/
   HOAC                .10366D-03/
   ACETONE             .37130D-08/
   MEK                 .46986D-06/
   PYRIDINE            .58244D-05/
   BENZENE             .25574D-09/
   DIPE                .14475D-09/
   TOLUENE             .26633D-10/
   O-CRESOL            .47299D-08/
   H3PO4               .67514D-01/
 9 H2O                 .85317/
   NH3                 .79207D-01/
```

```
          CO2                    .57420D-09/
          HOAC                   .10366D-03/
          ACETONE                .37130D-08/
          MEK                    .46986D-06/
          PYRIDINE               .58244D-05/
          BENZENE                .25574D-09/
          DIPE                   .14475D-09/
          TOLUENE                .26633D-10/
          O-CRESOL               .47299D-08/
          H3PO4                  .67514D-01/
       10 H2O                    .85317/
          NH3                    .79207D-01/
          CO2                    .57420D-09/
          HOAC                   .10366D-03/
          ACETONE                .37130D-08/
          MEK                    .46986D-06/
          PYRIDINE               .58244D-05/
          BENZENE                .25574D-09/
          DIPE                   .14475D-09/
          TOLUENE                .26633D-10/
          O-CRESOL               .47299D-08/
          H3PO4                  .67514D-01/
       11 H2O                    .85317/
          NH3                    .79207D-01/
          CO2                    .57420D-09/
          HOAC                   .10366D-03/
          ACETONE                .37130D-08/
          MEK                    .46986D-06/
          PYRIDINE               .58244D-05/
          BENZENE                .25574D-09/
          DIPE                   .14475D-09/
          TOLUENE                .26633D-10/
          O-CRESOL               .47299D-08/
          H3PO4                  .67514D-01/
       12 H2O                    .85317/
          NH3                    .79207D-01/
          CO2                    .57420D-09/
          HOAC                   .10366D-03/
          ACETONE                .37130D-08/
          MEK                    .46986D-06/
          PYRIDINE               .58244D-05/
          BENZENE                .25574D-09/
          DIPE                   .14475D-09/
          TOLUENE                .26633D-10/
          O-CRESOL               .47299D-08/
          H3PO4                  .67514D-01
;
;       ****   Y-PROFILE         ****
;

 Y-EST 1  H2O                          .94688/
          NH3                          .51227D-01/
          CO2                          .41396D-04/
          HOAC                         .28078D-03/
```

```
      ACETONE                    .41583D-04/
      MEK                        .44011D-03/
      PYRIDINE                   .17851D-03/
      BENZENE                    .42802D-04/
      DIPE                       .73682D-03/
      TOLUENE                    .52721D-04/
      O-CRESOL                   .19713D-06/
      H3PO4                      .14553D-05/
2     H2O                        .94688/
      NH3                        .51227D-01/
      CO2                        .41396D-04/
      HOAC                       .28078D-03/
      ACETONE                    .41583D-04/
      MEK                        .44011D-03/
      PYRIDINE                   .17851D-03/
      BENZENE                    .42802D-04/
      DIPE                       .73682D-03/
      TOLUENE                    .52721D-04/
      O-CRESOL                   .19713D-06/
      H3PO4                      .14553D-05/
3     H2O                        .94688/
      NH3                        .51227D-01/
      CO2                        .41396D-04/
      HOAC                       .28078D-03/
      ACETONE                    .41583D-04/
      MEK                        .44011D-03/
      PYRIDINE                   .17851D-03/
      BENZENE                    .42802D-04/
      DIPE                       .73682D-03/
      TOLUENE                    .52721D-04/
      O-CRESOL                   .19713D-06/
      H3PO4                      .14553D-05/
4     H2O                        .94688/
      NH3                        .51227D-01/
      CO2                        .41396D-04/
      HOAC                       .28078D-03/
      ACETONE                    .41583D-04/
      MEK                        .44011D-03/
      PYRIDINE                   .17851D-03/
      BENZENE                    .42802D-04/
      DIPE                       .73682D-03/
      TOLUENE                    .52721D-04/
      O-CRESOL                   .19713D-06/
      H3PO4                      .14553D-05/
5     H2O                        .94688/
      NH3                        .51227D-01/
      CO2                        .41396D-04/
      HOAC                       .28078D-03/
      ACETONE                    .41583D-04/
      MEK                        .44011D-03/
      PYRIDINE                   .17851D-03/
      BENZENE                    .42802D-04/
      DIPE                       .73682D-03/
      TOLUENE                    .52721D-04/
```

```
      O-CRESOL                .19713D-06/
      H3PO4                   .14553D-05/
  6   H2O                     .94688/
      NH3                     .51227D-01/
      CO2                     .41396D-04/
      HOAC                    .28078D-03/
      ACETONE                 .41583D-04/
      MEK                     .44011D-03/
      PYRIDINE                .17851D-03/
      BENZENE                 .42802D-04/
      DIPE                    .73682D-03/
      TOLUENE                 .52721D-04/
      O-CRESOL                .19713D-06/
      H3PO4                   .14553D-05/
  7   H2O                     .94688/
      NH3                     .51227D-01/
      CO2                     .41396D-04/
      HOAC                    .28078D-03/
      ACETONE                 .41583D-04/
      MEK                     .44011D-03/
      PYRIDINE                .17851D-03/
      BENZENE                 .42802D-04/
      DIPE                    .73682D-03/
      TOLUENE                 .52721D-04/
      O-CRESOL                .19713D-06/
      H3PO4                   .14553D-05/
  8   H2O                     .94688/
      NH3                     .51227D-01/
      CO2                     .41396D-04/
      HOAC                    .28078D-03/
      ACETONE                 .41583D-04/
      MEK                     .44011D-03/
      PYRIDINE                .17851D-03/
      BENZENE                 .42802D-04/
      DIPE                    .73682D-03/
      TOLUENE                 .52721D-04/
      O-CRESOL                .19713D-06/
      H3PO4                   .14553D-05/
  9   H2O                     .94688/
      NH3                     .51227D-01/
      CO2                     .41396D-04/
      HOAC                    .28078D-03/
      ACETONE                 .41583D-04/
      MEK                     .44011D-03/
      PYRIDINE                .17851D-03/
      BENZENE                 .42802D-04/
      DIPE                    .73682D-03/
      TOLUENE                 .52721D-04/
      O-CRESOL                .19713D-06/
      H3PO4                   .14553D-05/
 10   H2O                     .94688/
      NH3                     .51227D-01/
      CO2                     .41396D-04/
      HOAC                    .28078D-03/
```

```
           ACETONE                        .41583D-04/
           MEK                            .44011D-03/
           PYRIDINE                       .17851D-03/
           BENZENE                        .42802D-04/
           DIPE                           .73682D-03/
           TOLUENE                        .52721D-04/
           O-CRESOL                       .19713D-06/
           H3PO4                          .14553D-05/
      11   H2O                            .94688/
           NH3                            .51227D-01/
           CO2                            .41396D-04/
           HOAC                           .28078D-03/
           ACETONE                        .41583D-04/
           MEK                            .44011D-03/
           PYRIDINE                       .17851D-03/
           BENZENE                        .42802D-04/
           DIPE                           .73682D-03/
           TOLUENE                        .52721D-04/
           O-CRESOL                       .19713D-06/
           H3PO4                          .14553D-05/
      12   H2O                            .94688/
           NH3                            .51227D-01/
           CO2                            .41396D-04/
           HOAC                           .28078D-03/
           ACETONE                        .41583D-04/
           MEK                            .44011D-03/
           PYRIDINE                       .17851D-03/
           BENZENE                        .42802D-04/
           DIPE                           .73682D-03/
           TOLUENE                        .52721D-04/
           O-CRESOL                       .19713D-06/
           H3PO4                          .14553D-05
;
;  WATER BALANCE DESIGN SPEC
;
DES-SPEC WATBAL
  DEF WF MOLE-FLOW STREAM= 4622 COMPONENT=H2O
  DEF WO MOLE-FLOW STREAM= 4619 COMPONENT=H2O
  DEF WP MOLE-FLOW STREAM= 4612 COMPONENT=H2O
  DEF WC MOLE-FLOW STREAM= 4632 COMPONENT=H2O
  DEF WI MOLE-FLOW STREAM= 4640 COMPONENT=H2O
F     WNET=WF-WC-WI-WP
F     WRITE(36,100) WNET,WF,WC
F 100 FORMAT(3D15.8)
  SPEC WO TO WNET
  TOL-SPEC .1
  VARY BLOCK-VAR BLK=D4601B SENT= HEATERS VAR=Q ID1= 5
  LIMITS -.3D9 -.1D7
;
;  COOL AMMONIA ABSORBER OVERHEAD
;
BLOCK E4610 FLASH2
  PARAM PRES=15 V=.01
;
```

```
;  PUMP RICH PHOSAM SOLUTION
;
BLOCK G4602 PUMP
  PARAM PRES=240 TYPE=1 EFF=0.5
;
;  AMMONIA STRIPPER
;
BLOCK  D4602 RADFRC
  PARAM NS=8
  FEEDS 4625 1
  PRODUCTS 4626 8 0/4630 1 1/QD4602R 8
  P-SPEC 1 200/8 210
  T-EST  1 380/8 385
  COL-SPECS RDV=1  QN=.518D8 Q1=0
  VARY 1 QN .150D8 .200D9
  SPEC 1 RECOV 0.2778 CIDS=NH3 SIDS= 4630
;
;  AMMONIA BALANCE
;
FORTRAN AMMBAL
  DEF AF1 MOLE-FLOW STREAM= 4608 COMPONENT=NH3
  DEF AF2 MOLE-FLOW STREAM= 4636 COMPONENT=NH3
  DEF AO1 MOLE-FLOW STREAM= 4609 COMPONENT=NH3
  DEF AO2 MOLE-FLOW STREAM= 4620 COMPONENT=NH3
  DEF AC MOLE-FLOW STREAM= 4625 COMPONENT=NH3
  DEF RD4602 BLOCK-VAR BLK=D4602 SENT= SPEC ID1=1 VAR=VALUE
F     RD4602= (AF1 + AF2 - AO1 -AO2)/AC
F     WRITE(6,101) RD4602,AF1,AF2,AO1,AO2,AC
F 101 FORMAT(3D15.8)
  EXECUTE AFTER D4601A
;
;
;  COOL AMMONIA STRIPPER OVERHEAD AGAINST RICH PHOSAM SOLUTION
;
BLOCK E4603 HEATER
  PARAM PRES=-10  TEMP=375
BLOCK E4603A HEATER
  PARAM PRES=-3  V=0.
;
;  COOL LEAN PHOSAM AGAINST FEED TO SECTION
;
BLOCK E4601 HEATER
  PARAM PRES=-10  TEMP=150
;
;  AQUA AMMONIA PUMP
;
BLOCK G4603 PUMP
  PARAM PRES=300 TYPE=1 EFF=0.5
;
;  SETTING DISTILLATED RATE FOR AMMONIA FRACTIONATOR
;
FORTRAN DIST
  DEF AF MOLE-FLOW STREAM= 4630 COMPONENT=NH3
```

```
  DEF DD4603 BLOCK-VAR BLK=D4603 SENT= COL-SPECS VAR=D
F      DD4603=AF-.001
  EXECUTE AFTER D4602
;
;  AMMONIA FRACTIONATOR
;
BLOCK  D4603 RADFRC
  PARAM NS=12 MAXOL=40 F23=3.D-3
  FEEDS 4633 2/4632 6
  PRODUCTS 4635 1 0/4636 12 0/QD4603C 1/QD4603R 12
  P-SPEC 1 220/12 223
  COL-SPECS RR=40.0 D=372. RDV=0
  VARY 1 RR 20 100
  SPEC 1 COMP .99999 PHASE=1 STAGE=1 CIDS=NH3
;
; TEMPERATURE ESTIMATES
;
 T-EST 1  102.40/
       2  102.48/
       3  104.26/
       4  199.49/
       5  343.39/
       6  374.09/
       7  384.68/
       8  388.49/
       9  389.93/
      10  390.53/
      11  390.81/
      12  390.99

;
;    ****   X-PROFILE          ****
;
 X-EST 1 H2O .45649D-07/ NH3 1.0000/     H3PO4 .0/
       2 H2O .33514D-04/ NH3 .99997/     H3PO4 .31948D-70/
       3 H2O .22734D-01/ NH3 .97727/     H3PO4 .40281D-34/
       4 H2O .54378/ NH3     .45622/     H3PO4 .15461D-16/
       5 H2O .87248/ NH3     .12752/     H3PO4 .48413D-10/
       6 H2O .95573/ NH3     .44267D-01/ H3PO4 .36601D-05/
       7 H2O .98349/ NH3     .16508D-01/ H3PO4 .36439D-05/
       8 H2O .99390/ NH3     .60982D-02/ H3PO4 .36381D-05/
       9 H2O .99776/ NH3     .22384D-02/ H3PO4 .36356D-05/
      10 H2O .99918/ NH3     .81201D-03/ H3PO4 .36345D-05/
      11 H2O .99971/ NH3     .28544D-03/ H3PO4 .36339D-05/
      12 H2O .99990/ NH3     .91111D-04/ H3PO4 .85563D-05
;
;       ****   Y-PROFILE          ****
;
 Y-EST 1 H2O .62028D-10/ NH3 1.0000/     H3PO4 .0/
       2 H2O .45649D-07/ NH3 1.0000/     H3PO4 .0/
       3 H2O .31917D-04/ NH3 .99997/     H3PO4 .30423D-70/
       4 H2O .21486D-01/ NH3 .97851/     H3PO4 .38071D-34/
       5 H2O .49606/ NH3     .50394/     H3PO4 .14104D-16/
       6 H2O .79623/ NH3     .20377/     H3PO4 .44182D-10/
```

```
       7 H2O .92271/ NH3      .77289D-01/ H3PO4 .11616D-09/
       8 H2O .97132/ NH3      .28685D-01/ H3PO4 .16410D-09/
       9 H2O .98946/ NH3      .10542D-01/ H3PO4 .18602D-09/
      10 H2O .99618/ NH3      .38248D-02/ H3PO4 .19459D-09/
      11 H2O .99866/ NH3      .13443D-02/ H3PO4 .19766D-09/
      12 H2O .99957/ NH3      .42889D-03/ H3PO4 .46781D-09
;
;*************************************************************************
;*                                                                       *
;*                        COOLING WATER FLOWRATES                        *
;*                                                                       *
;*************************************************************************
;
DEF-STREAMS HEAT QCW
;
FLOWSHEET CW
 ECW    IN=4680                        OUT=CWT QCW
 SPCW   IN=CWT                         OUT=4681 4682 4683 4684
;
STREAM 4680 PRES=75. TEMP=82. FLASH-OPTION= 1-PHASE V-FRAC=0.0
 MOLEFLOW H2O 1.00
;
; COOLING WATER LOOP
;
BLOCK ECW HEATER
 PROPERTIES SYSOP12
 PARAM TEMP=100 PRES=-2 NPK=1 KPH=2
    BOPT HMB-RESULTS=2
BLOCK SPCW FSPLIT
 BOPT HMB-RESULTS=2 RESTART=0
 PROPERTIES SYSOP12
 MOLE-FLOW 4681 .25/4682 .25/4683 .25/4684 .25
;
FORTRAN COOLWR
  DEF FCW STREAM-VAR STREAM= 4680 VARIABLE=MOLE-FLOW
  DEF CW1 BLOCK-VAR BLK=SPCW SENT= MOLE-FLOW VAR=FLOW ID1=4681 ;REV 1
  DEF CW2 BLOCK-VAR BLK=SPCW SENT= MOLE-FLOW VAR=FLOW ID1=4682
  DEF CW3 BLOCK-VAR BLK=SPCW SENT= MOLE-FLOW VAR=FLOW ID1=4683
  DEF CW4 BLOCK-VAR BLK=SPCW SENT= MOLE-FLOW VAR=FLOW ID1=4684
  DEF QW1A BLOCK-VAR BLK=D4601B SENT= HEATERS VAR=Q ID1= 5
  DEF QW2 STRM-ATTR-VAR STREAM=Q4605   ATTRIBUTE=HEAT VARIABLE=DUTY
  DEF QW3 STRM-ATTR-VAR STREAM=QE4603  ATTRIBUTE=HEAT VARIABLE=DUTY
  DEF QW4 STRM-ATTR-VAR STREAM=QD4603C ATTRIBUTE=HEAT VARIABLE=DUTY
  DEF QWT STRM-ATTR-VAR STREAM=QCW     ATTRIBUTE=HEAT VARIABLE=DUTY
F      ICONVG=2
C
C    ON THE FIRST PASS EXECUTE THE HEATER AND SPLITTER
C    WITH THE NOMINAL FLOW RATE.
C
F      IF(KOUNT .LE. 0) GO TO 100
F      IF (KOUNT.GT.1) GO TO 50
C
C    ON THE SECOND PASS (KOUNT=1) RECALCULATE THE
C    TOTAL FLOW TO THE HEATER AND EXECUTE HEATER AND
```

```
C   SPLITTER WITH NEW INPUT DATA
C
F     QW1= -QW1A
F     QTOTAL=QW1+QW2+QW3+QW4
F     FCW=-QTOTAL/QWT
F     CW1=QW1/QTOTAL*FCW
F     CW2=QW2/QTOTAL*FCW
F     CW3=QW3/QTOTAL*FCW
F     CW4=FCW-CW1-CW2-CW3
C
C   ON THE THIRD PASS SET THE CONVERGENCE FLAG TO 0 (CONVERGED)
C   AND PERFORM A RESULTS PASS
C
F 50  IF(KOUNT .GE. 2) ICONVG=0
F 100 CONTINUE
;
```

PHOSAM
DESCRIPTION

SIMULATION OF AMMONIA STRIPPER AND REABSORBER

RUN CONTROL INFORMATION

TYPE OF RUN: NEW

INPUT FILE NAME: PHOSAM11

INPUT PROBLEM DATA FILE NAME: PS02 UPDATE NO. 0

MAIN CALLING PROGRAM NAME: PS02

SIMULATION REQUESTED FOR ENTIRE FLOWSHEET

TABLE OF CONTENTS

PHOSAM

TABLE OF CONTENTS

ASPEN VERSION 1.4 RELEASED BY JSD, INC., DENVER, COLORADO ON NOV. 5, 1984

PHOSAM

FLOWSHEET SECTION

FLOWSHEET CONNECTIVITY BY STREAMS

FLOWSHEET SECTION MAIN

STREAM	SOURCE	DEST	STREAM	SOURCE	DEST
4608	M4600	D4601A	4622	D4601A	D4601B
4609	D4601A	G4605	4610	G4605	E4607
4611	E4607	----	Q4601	E4607	M4600
4619	D4601B	E4610	4623	D4601B	G4602
4620	E4610	----	4621	E4610	D4601A
Q4605	E4610	----	4624	G4602	E4603
4630	D4602	E4603A	4626	D4602	E4601
QD4602R	D4602	----	4625	E4603	D4602
Q4603	E4603	E4603A	4631	E4603A	G4603
QE4603	E4603A	----	4629	E4601	D4601B
Q4602	E4601	M4600	4632	G4603	D4603
4635	D4603	----	4636	D4603	D4601A
QD4603R	D4603	----	QD4603C	D4603	----
1611	----	M4600	4602	----	M4600
4612	----	D4601B	4640	----	D4601B
4633	----	D4603			

FLOWSHEET SECTION CW

STREAM	SOURCE	DEST	STREAM	SOURCE	DEST
CWT	ECW	SPCW	QCW	ECW	----
4681	SPCW	----	4682	SPCW	----
4683	SPCW	----	4684	SPCW	----
4680	----	ECW			

FLOWSHEET CONNECTIVITY BY BLOCKS

FLOWSHEET SECTION MAIN

BLOCK	INLETS	OUTLETS
M4600	1611 4602 Q4601 Q4602	4608
D4601A	4608 4621 4636	4622 4609
G4605	4609	4610
E4607	4610	4611 Q4601
D4601B	4629 4622 4612 4640	4619 4623
E4610	4619	4620 4621 Q4605
G4602	4623	4624
D4602	4625	4630 4626 QD4602R
E4603	4624	4625 Q4603
E4603A	4630 Q4603	4631 QE4603
E4601	4626	4629 Q4602
G4603	4631	4632
D4603	4632 4633	4635 4636 QD4603R QD4603C

FLOWSHEET SECTION CW

BLOCK	INLETS	OUTLETS
ECW	4680	CWT QCW
SPCW	CWT	4681 4682 4683 4684

PHOSAM

FLOWSHEET SECTION

```
DESIGN-SPEC:  WATBAL

  SAMPLED VARIABLES:
    WF       IS H2O MOLEFLOW     IN STREAM 4622     SUBSTREAM MIXED
    WO       IS H2O MOLEFLOW     IN STREAM 4619     SUBSTREAM MIXED
    WP       IS H2O MOLEFLOW     IN STREAM 4612     SUBSTREAM MIXED
    WC       IS H2O MOLEFLOW     IN STREAM 4632     SUBSTREAM MIXED
    WI       IS H2O MOLEFLOW     IN STREAM 4640     SUBSTREAM MIXED

  FORTRAN STATEMENTS:
        WNET=WF-WC-WI-WP
        WRITE(36,100) WNET,WF,WC
    100 FORMAT(3D15.8)

  SPECIFICATION:
    MAKE WO APPROACH WNET
    WITHIN          0.100000

  MANIPULATED VARIABLES:
    VARY THE ENERGY-FLOW     IN BLOCK D4601B
    BETWEEN          -0.300000+09 AND -1,000,000.          BTU/HR

FORTRAN BLOCK:  PHSBAL

  SAMPLED VARIABLES:
    PF1      IS H3PO4 MOLEFLOW   IN STREAM 4612     SUBSTREAM MIXED
    PO1      IS H3PO4 MOLEFLOW   IN STREAM 4609     SUBSTREAM MIXED
    PSMU     IS TOTAL MOLEFLOW   IN STREAM 4612     SUBSTREAM MIXED

  FORTRAN STATEMENTS:
        PSMU=PSMU *PO1/ PF1
        WRITE(6,102) PF1,PO1
    102 FORMAT(3D15.8)

FORTRAN BLOCK:  AMMBAL

  SAMPLED VARIABLES:
    AF1      IS NH3 MOLEFLOW     IN STREAM 4608     SUBSTREAM MIXED
    AF2      IS NH3 MOLEFLOW     IN STREAM 4636     SUBSTREAM MIXED
    AO1      IS NH3 MOLEFLOW     IN STREAM 4609     SUBSTREAM MIXED
    AO2      IS NH3 MOLEFLOW     IN STREAM 4620     SUBSTREAM MIXED
    AC       IS NH3 MOLEFLOW     IN STREAM 4625     SUBSTREAM MIXED
    RD4602   IS                  IN BLOCK D4602

  FORTRAN STATEMENTS:
        RD4602= (AF1 + AF2 - AO1 -AO2)/AC
        WRITE(6,101) RD4602,AF1,AF2,AO1,AO2,AC
    101 FORMAT(3D15.8)
```

PHOSAM
FLOWSHEET SECTION

FORTRAN BLOCK: DIST

SAMPLED VARIABLES:

AF	IS NH3 MOLEFLOW	IN STREAM 4630	SUBSTREAM MIXED
DD4603	IS MOLE-FLOW	IN BLOCK D4603	

FORTRAN STATEMENTS:

```
      DD4603=AF-.001
```

PHOSAM

FLOWSHEET SECTION

PHOSAM
FLOWSHEET SECTION

FORTRAN BLOCK: COOLWR

SAMPLED VARIABLES:

FCW	IS TOTAL MOLEFLOW	IN STREAM 4680	SUBSTREAM MIXED
CW1	IS MOLE-FLOW	IN BLOCK SPCW	
CW2	IS MOLE-FLOW	IN BLOCK SPCW	
CW3	IS MOLE-FLOW	IN BLOCK SPCW	
CW4	IS MOLE-FLOW	IN BLOCK SPCW	
QW1A	IS ENERGY-FLOW	IN BLOCK D4601B	
QW2	IS STRM-ATTR-VA	IN STREAM Q4605	SUBSTREAM
QW3	IS STRM-ATTR-VA	IN STREAM QE4603	SUBSTREAM
QW4	IS STRM-ATTR-VA	IN STREAM QD4603C	SUBSTREAM
QWT	IS STRM-ATTR-VA	IN STREAM QCW	SUBSTREAM

FORTRAN STATEMENTS:

```
      ICONVG=2
C
C   ON THE FIRST PASS EXECUTE THE HEATER AND SPLITTER
C   WITH THE NOMINAL FLOW RATE.
C
      IF(KOUNT .LE. 0) GO TO 100
      IF (KOUNT.GT.1) GO TO 50
C
C   ON THE SECOND PASS (KOUNT=1) RECALCULATE THE
C   TOTAL FLOW TO THE HEATER AND EXECUTE HEATER AND
C   SPLITTER WITH NEW INPUT DATA
C
      QW1= -QW1A
      QTOTAL=QW1+QW2+QW3+QW4
      FCW=-QTOTAL/QWT
      CW1=QW1/QTOTAL*FCW
      CW2=QW2/QTOTAL*FCW
      CW3=QW3/QTOTAL*FCW
      CW4=FCW-CW1-CW2-CW3
C
C   ON THE THIRD PASS SET THE CONVERGENCE FLAG TO 0 (CONVERGED)
C   AND PERFORM A RESULTS PASS
C
  50  IF(KOUNT .GE. 2) ICONVG=0
  100 CONTINUE
```

PHOSAM
FLOWSHEET SECTION

CONVERGENCE BLOCK: LOOP1
TEAR STREAMS: Q4601 Q4603 4625 4621
MAXIT= 25 WAIT 5 ITERATIONS BEFORE ACCELLERATING
ACCELERATE EVERY 3 ITERS. QMAX= 0.0 QMIN= -5.000
LOOP1 (WEGSTN) ITER= 8 *** CONVERGED ***

		X	OLD X	ERROR
TOTAL MOLEFLOW	LBMOL/HR	0.2356000D+05	0.2355786D+05	0.2134880D+01
TOTAL MOLEFLOW	LBMOL/HR	0.7521984D+04	0.7514735D+04	0.7249306D+01
STRM-ATTR-VA		0.3055270D+08	0.3055849D+08	-.5789697D+04
STRM-ATTR-VA		-.2198563D+08	-.2198383D+08	-.1800032D+04
AR MOLEFLOW	LBMOL/HR	0.5071464D-10	0.5071827D-10	-.3630781D-14
CL2 MOLEFLOW	LBMOL/HR	0.5808713D-11	0.5809441D-11	-.7281189D-15
HCL MOLEFLOW	LBMOL/HR	0.1507621D-02	0.1506905D-02	0.7160442D-06
H2 MOLEFLOW	LBMOL/HR	0.6223541D-08	0.6224195D-08	-.6535035D-12
H2O MOLEFLOW	LBMOL/HR	0.2080331D+05	0.2080089D+05	0.2412489D+01
H2S MOLEFLOW	LBMOL/HR	0.1817018D-04	0.1816601D-04	0.4164451D-08
NH3 MOLEFLOW	LBMOL/HR	0.1307100D+04	0.1307378D+04	-.2781984D+00
N2 MOLEFLOW	LBMOL/HR	0.4732622D-05	0.4733135D-05	-.5138712D-09
O2 MOLEFLOW	LBMOL/HR	0.0	0.0	0.0
CO MOLEFLOW	LBMOL/HR	0.7885241D-09	0.7886232D-09	-.9904964D-13
COS MOLEFLOW	LBMOL/HR	0.1566815D-07	0.1566907D-07	-.9237175D-12
CO2 MOLEFLOW	LBMOL/HR	0.1620232D-04	0.1620080D-04	0.1523233D-08
HCN MOLEFLOW	LBMOL/HR	0.7782722D-10	0.7780183D-10	0.2539016D-13
CH4 MOLEFLOW	LBMOL/HR	0.7196642D-08	0.7197328D-08	-.6862371D-12
C2H4 MOLEFLOW	LBMOL/HR	0.4585545D-08	0.4585983D-08	-.4381229D-12
C2H6 MOLEFLOW	LBMOL/HR	0.7473280D-08	0.7473933D-08	-.6527995D-12
HOAC MOLEFLOW	LBMOL/HR	0.4671732D+01	0.4670662D+01	0.1070028D-02
C3H6 MOLEFLOW	LBMOL/HR	0.4757530D-10	0.4759726D-10	-.2195101D-13
ACETONE MOLEFLOW	LBMOL/HR	0.1247504D-03	0.1247635D-03	-.1319191D-07
C3H8 MOLEFLOW	LBMOL/HR	0.1596081D-07	0.1596022D-07	0.5897435D-12
THIOPHENMOLEFLOW	LBMOL/HR	0.3893625D-04	0.3893644D-04	-.1951097D-09
1-C4H8 MOLEFLOW	LBMOL/HR	0.4554717D-10	0.4556683D-10	-.1966360D-13
MEK MOLEFLOW	LBMOL/HR	0.2163056D-01	0.2163454D-01	-.3984426D-05
NC4H10 MOLEFLOW	LBMOL/HR	0.8017757D-13	0.8021846D-13	-.4089006D-16
PYRIDINEMOLEFLOW	LBMOL/HR	0.9276864D+00	0.9281825D+00	-.4960670D-03
BENZENE MOLEFLOW	LBMOL/HR	0.5197031D-05	0.5198136D-05	-.1105568D-08
PHENOL MOLEFLOW	LBMOL/HR	0.2407760D-01	0.2407432D-01	0.3275127D-05
N-C6H14 MOLEFLOW	LBMOL/HR	0.3956546D-12	0.3958808D-12	-.2261785D-15
DIPE MOLEFLOW	LBMOL/HR	0.2709698D-05	0.2710938D-05	-.1239363D-08
TOLUENE MOLEFLOW	LBMOL/HR	0.5082906D-06	0.5085803D-06	-.2897164D-09
O-CRESOLMOLEFLOW	LBMOL/HR	0.2157677D-03	0.2157814D-03	-.1370925D-07
NAPHTHALMOLEFLOW	LBMOL/HR	0.7443318D-11	0.7445632D-11	-.2314636D-14
NC10H22 MOLEFLOW	LBMOL/HR	0.3775232D-22	0.3781280D-22	-.6047219D-25
H3PO4 MOLEFLOW	LBMOL/HR	0.1443946D+04	0.1443946D+04	0.1547263D-04
PRESSURE	PSIA	0.2300000D+03	0.2300000D+03	0.0
MASS ENTHALPY	BTU/HR	-.4256308D+08	-.4256210D+08	-.9781173D+03
AR MOLEFLOW	LBMOL/HR	0.1642356D-08	0.1642554D-08	-.1973332D-12
CL2 MOLEFLOW	LBMOL/HR	0.9421474D-10	0.9423799D-10	-.2325767D-13
HCL MOLEFLOW	LBMOL/HR	0.3961528D-02	0.3960564D-02	0.9642015D-06

H2 MOLEFLOW	LBMOL/HR	0.3544088D-06	0.3544334D-06	-.2456149D-10
H2O MOLEFLOW	LBMOL/HR	0.7347289D+04	0.7340262D+04	0.7026818D+01
H2S MOLEFLOW	LBMOL/HR	0.1272527D-01	0.1272626D-01	-.9926464D-06
NH3 MOLEFLOW	LBMOL/HR	0.1526947D+03	0.1524677D+03	0.2270158D+00
N2 MOLEFLOW	LBMOL/HR	0.4269660D-03	0.4270146D-03	-.4853389D-07
O2 MOLEFLOW	LBMOL/HR	0.0	0.0	0.0
CO MOLEFLOW	LBMOL/HR	0.9084451D-07	0.9085375D-07	-.9233633D-11

FLOWSHEET SECTION

CONVERGENCE BLOCK: LOOP1 (CONTINUED)

COS MOLEFLOW	LBMOL/HR	0.2348252D-06	0.2348379D-06	-.1269956D-10
CO2 MOLEFLOW	LBMOL/HR	0.8753924D-02	0.8755407D-02	-.1483017D-05
HCN MOLEFLOW	LBMOL/HR	0.3235376D-06	0.3235746D-06	-.3702948D-10
CH4 MOLEFLOW	LBMOL/HR	0.2350883D-06	0.2351141D-06	-.2580360D-10
C2H4 MOLEFLOW	LBMOL/HR	0.2192362D-06	0.2192695D-06	-.3327287D-10
C2H6 MOLEFLOW	LBMOL/HR	0.1395112D-06	0.1395330D-06	-.2171272D-10
HOAC MOLEFLOW	LBMOL/HR	0.4065964D+01	0.4060827D+01	0.5137304D-02
C3H6 MOLEFLOW	LBMOL/HR	0.3562659D-05	0.3563391D-05	-.7321083D-09
ACETONE MOLEFLOW	LBMOL/HR	0.2653720D+00	0.2653970D+00	-.2502745D-04
C3H8 MOLEFLOW	LBMOL/HR	0.2018232D-07	0.2018677D-07	-.4449409D-11
THIOPHENMOLEFLOW	LBMOL/HR	0.5833321D-03	0.5833877D-03	-.5560028D-07
1-C4H8 MOLEFLOW	LBMOL/HR	0.1532456D-05	0.1532826D-05	-.3701980D-09
MEK MOLEFLOW	LBMOL/HR	0.5547577D+01	0.5549513D+01	-.1935423D-02
NC4H10 MOLEFLOW	LBMOL/HR	0.4501673D-08	0.4502761D-08	-.1088344D-11
PYRIDINEMOLEFLOW	LBMOL/HR	0.1130780D+02	0.1131522D+02	-.7420051D-02
BENZENE MOLEFLOW	LBMOL/HR	0.3853745D-01	0.3854373D-01	-.6285774D-05
PHENOL MOLEFLOW	LBMOL/HR	0.1984172D+00	0.1983861D+00	0.3111807D-04
N-C6H14 MOLEFLOW	LBMOL/HR	0.9287338D-06	0.9290824D-06	-.3486121D-09
DIPE MOLEFLOW	LBMOL/HR	0.4636487D+00	0.4639202D+00	-.2715229D-03
TOLUENE MOLEFLOW	LBMOL/HR	0.2963666D-01	0.2965162D-01	-.1496527D-04
O-CRESOLMOLEFLOW	LBMOL/HR	0.4169695D-02	0.4169971D-02	-.2760515D-06
NAPHTHALMOLEFLOW	LBMOL/HR	0.4145435D-05	0.4145997D-05	-.5626028D-09
NC10H22 MOLEFLOW	LBMOL/HR	0.1297488D-05	0.1298351D-05	-.8629859D-09
H3PO4 MOLEFLOW	LBMOL/HR	0.5332833D-01	0.5334906D-01	-.2072956D-04
PRESSURE	PSIA	0.1500000D+02	0.1500000D+02	0.0
MASS ENTHALPY	BTU/HR	-.5216960D+08	-.5216927D+08	-.3345428D+03

CONVERGENCE BLOCK: LOOP2
SPECS: WATBAL
MAXIT= 30
INITIAL STEP-SIZE IS 1% OF RANGE

LOOP2 (SECANT) ITER= 28 *** CONVERGED ***

		X	OLD X	ERROR
ENERGY-FLOW	BTU/HR	-.1022695D+09	-.1022695D+09	-.1553232D-05

COMPUTATIONAL SEQUENCE

SEQUENCE USED WAS:
LOOP1 D4602 DIST E4601 E4603A G4603 D4603 M4600 D4601A AMMBAL G4605
E4607 PHSBAL LOOP2 D4601B LOOP2<--- G4602 E4603 E4610 LOOP1<--- COOLWR
ECW SPCW COOLWR<---

OVERALL FLOWSHEET BALANCE

OVERALL FLOWSHEET BALANCE (CONTINUED)

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE DIFF.
CONVENTIONAL COMPONENTS (LBMOL/HR)			
AR	.939110D-06	.939112D-06	-.234999D-05
CL2	.207420D-08	.206842D-08	.278660D-02
HCL	1.10990	1.10990	.151431D-05
H2	.263240D-03	.263241D-03	-.222687D-05
H2O	.210073D+07	.210072D+07	.449345D-05
H2S	.174000	.174002	-.863958D-05
NH3	372.524	372.576	-.137766D-03
N2	.516000	.516001	-.221975D-05
O2	.0	.0	.0
CO	.765340D-04	.765342D-04	-.225109D-05
COS	.309610D-04	.309611D-04	-.264675D-05
CO2	.456200	.456203	-.559526D-05
HCN	.181530D-04	.181531D-04	-.437000D-05
CH4	.145240D-03	.145240D-03	-.231678D-05
C2H4	.468520D-04	.468521D-04	-.289153D-05
C2H6	.793940D-04	.793942D-04	-.241772D-05
HOAC	36.5460	36.5398	.169855D-03
C3H6	.541640D-03	.541642D-03	-.354718D-05
ACETONE	.458300	.458328	-.612687D-04
C3H8	.170710D-04	.170710D-04	-.235323D-05
THIOPHEN	.610000D-02	.610008D-02	-.123271D-04
1-C4H8	.468570D-03	.468571D-03	-.294499D-05
MEK	4.85530	4.85728	-.407903D-03
NC4H10	.615400D-05	.615401D-05	-.228735D-05
PYRIDINE	2.14230	2.15023	-.368630D-02
BENZENE	.471700	.471708	-.163782D-04
PHENOL	.470500	.470466	.730920D-04
N-C6H14	.592150D-03	.592152D-03	-.272194D-05
DIPE	8.12000	8.12029	-.362216D-04
TOLUENE	.581000	.581017	-.284735D-04
O-CRESOL	.540000D-02	.540029D-02	-.538213D-04
NAPHTHAL	.258270D-04	.258277D-04	-.253215D-04
NC10H22	.291560D-04	.291569D-04	-.322405D-04
H3PO4	.206243	.206246	-.155183D-04
TOTAL BALANCE			
MOLE(LBMOL/HR)	.210116D+07	.210115D+07	.446619D-05
MASS(LB/HR)	.378549D+08	.378547D+08	.445784D-05
ENTHALPY(BTU/HR)	-.258125D+12	-.257953D+12	-.666236D-03

PHOSAM

PHYSICAL PROPERTIES SECTION

COMPONENTS

ID	TYPE	FORMULA	NAME OR ALIAS
AR	C	MISSING	ARGON
CL2	C	MISSING	CHLORINE
HCL	C	MISSING	HYDROGEN-CHLORIDE
H2	C	MISSING	HYDROGEN
H2O	C	H2O	WATER
H2S	C	MISSING	HYDROGEN-SULFIDE
NH3	C	MISSING	AMMONIA
N2	C	MISSING	NITROGEN
O2	C	MISSING	OXYGEN
CO	C	MISSING	CARBON-MONOXIDE
COS	C	MISSING	CARBONYL-SULFIDE
CO2	C	MISSING	CARBON-DIOXIDE
HCN	C	MISSING	HYDROGEN-CYANIDE
CH4	C	MISSING	METHANE
C2H4	C	MISSING	ETHYLENE
C2H6	C	MISSING	ETHANE
HOAC	C	MISSING	ACETIC-ACID
C3H6	C	MISSING	PROPYLENE
ACETONE	C	MISSING	ACETONE
C3H8	C	MISSING	PROPANE
THIOPHEN	C	MISSING	THIOPHENE
1-C4H8	C	MISSING	1-BUTENE
MEK	C	MISSING	METHYL-ETHYL-KETONE
NC4H10	C	MISSING	N-BUTANE
PYRIDINE	C	MISSING	PYRIDINE
BENZENE	C	MISSING	BENZENE
PHENOL	C	MISSING	PHENOL
N-C6H14	C	MISSING	N-HEXANE
DIPE	C	MISSING	DIISOPROPYL-ETHER
TOLUENE	C	MISSING	TOLUENE
O-CRESOL	C	MISSING	O-CRESOL
NAPHTHAL	C	MISSING	NAPHTHALENE
NC10H22	C	MISSING	N-DECANE
H3PO4	C	MISSING	MISSING

OPTION SETS

KEY TO OPTION SET TABLES:
OPTION SET ID
MP KEYWORD MP ROUTE ID

PHOSAM

PHYSICAL PROPERTIES SECTION

OPTION SETS (CONTINUED)

SYSOP0		SYSOP4W		SYSOP12	
PHILMX	PHILMX00	PHIVMX	PHIVMX4W	PHIVMX	PHIVMX12
HVMX	HVMX00	PHILMX	PHILMX4W	PHILMX	PHILMX12
HLMX	HLMX00	HVMX	HVMX4W	HVMX	HVMX12
GVMX	GVMX00	HLMX	HLMX4W	HLMX	HLMX12
GLMX	GLMX00	GVMX	GVMX4W	GVMX	GVMX12
SVMX	SVMX00	GLMX	GLMX4W	GLMX	GLMX12
SLMX	SLMX00	SVMX	SVMX4W	SVMX	SVMX12
VVMX	VVMX00	SLMX	SLMX4W	SLMX	SLMX12
VLMX	VLMX01	VVMX	VVMX4W	VVMX	VVMX12
MUVMX	MUVMX01	VLMX	VLMX4W	VLMX	VLMX12
MULMX	MULMX01	MUVMX	MUVMX02		
KVMX	KVMX01	MULMX	MULMX02		
KLMX	KLMX01	KVMX	KVMX02		
DVMX	DVMX01	KLMX	KLMX01		
DLMX	DLMX01	DVMX	DVMX02		
SIGLMX	SIGLMX01	DLMX	DLMX01		
PHIV	PHIV00	SIGLMX	SIGLMX01		
PHIL	PHIL00				
HV	HV00				
HL	HL00				
GV	GV00				
GL	GL00				
SV	SV00				
SL	SL00				
VV	VV00				
VL	VL01				
KS	KS01				
VS	VS01				
PHISMX	PHISMX02				
HSMX	HSMX02				
GSMX	GSMX02				
SSMX	SSMX01				
VSMX	VSMX02				
KSMX	KSMX01				
PHIS	PHIS02				
HS	HS02				
GS	GS02				
SS	SS02				

PHOSAM
U-O-S BLOCK SECTION

MIXER (MIXER): M4600
INLET STREAM(S): 1611 4602 Q4601 Q4602

OUTLET STREAM: 4608
PROPERTY OPTION SET SYSOP4W

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE DIFF.
CONVENTIONAL COMPONENTS (LBMOL/HR)			
AR	.939110D-06	.939110D-06	.0
CL2	.207420D-08	.207420D-08	.0
HCL	1.10990	1.10990	.0
H2	.263240D-03	.263240D-03	.0
H2O	64140.3	64140.3	.0
H2S	.174000	.174000	.0
NH3	372.524	372.524	.152590D-15
N2	.516000	.516000	.0
O2	.0	.0	.0
CO	.765340D-04	.765340D-04	.0
COS	.309610D-04	.309610D-04	.0
CO2	.456200	.456200	.0
HCN	.181530D-04	.181530D-04	.0
CH4	.145240D-03	.145240D-03	.0
C2H4	.468520D-04	.468520D-04	.0
C2H6	.793940D-04	.793940D-04	.0
HOAC	36.5460	36.5460	.0
C3H6	.541640D-03	.541640D-03	.0
ACETONE	.458300	.458300	.0
C3H8	.170710D-04	.170710D-04	.0
THIOPHEN	.610000D-02	.610000D-02	.0
1-C4H8	.468570D-03	.468570D-03	.0
MEK	4.85530	4.85530	.0
NC4H10	.615400D-05	.615400D-05	.0
PYRIDINE	2.14230	2.14230	.0
BENZENE	.471700	.471700	.0
PHENOL	.470500	.470500	.0
N-C6H14	.592150D-03	.592150D-03	.0
DIPE	8.12000	8.12000	.0
TOLUENE	.581000	.581000	.0
O-CRESOL	.540000D-02	.540000D-02	.0
NAPHTHAL	.258270D-04	.258270D-04	.0
NC10H22	.291560D-04	.291560D-04	.0
H3PO4	.0	.0	.0
TOTAL BALANCE			
MOLE(LBMOL/HR)	64568.7	64568.7	.0
MASS(LB/HR)	.116562D+07	.116562D+07	-.299623D-14
ENTHALPY(BTU/HR)	-.769980D+10	-.769978D+10	-.256131D-05

*** INPUT DATA ***

PRESSURE DROP ,PSIA	1.00000
TYPE OF FLASH - TWO PHASE	
MAXIMUM NUMBER OF ITERATIONS IN FLASH	30
CONVERGENCE TOLERANCE FOR FLASH	0.100000-03

PHOSAM
U-O-S BLOCK SECTION

FRACTIONATIO (RADFRC): D4601A
INLETS - 4608 STAGE 1
4621 STAGE 1
4636 STAGE 9
OUTLETS - 4622 STAGE 1
4609 STAGE 10
PROPERTY OPTION SET SYSOP4W

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE DIFF.
CONVENTIONAL COMPONENTS (LBMOL/HR)			
AR	.940752D-06	.940753D-06	-.231419D-06
CL2	.216841D-08	.216844D-08	-.112416D-04
HCL	1.11528	1.11528	.864905D-06
H2	.263594D-03	.263594D-03	-.109868D-06
H2O	78345.5	78338.4	.896924D-04
H2S	.186725	.186726	-.610443D-05
NH3	525.254	525.027	.431966D-03
N2	.516427	.516427	-.104252D-06
O2	.0	.0	.0
CO	.766248D-04	.766249D-04	-.135224D-06
COS	.311958D-04	.311958D-04	-.499897D-06
CO2	.464954	.464955	-.341903D-05
HCN	.184765D-04	.184766D-04	-.221782D-05
CH4	.145475D-03	.145475D-03	-.197426D-06
C2H4	.470712D-04	.470713D-04	-.764456D-06
C2H6	.795335D-04	.795335D-04	-.294762D-06
HOAC	42.3565	42.3513	.121291D-03
C3H6	.545203D-03	.545203D-03	-.142346D-05
ACETONE	.723670	.723697	-.374532D-04
C3H8	.170912D-04	.170912D-04	-.274995D-06
THIOPHEN	.668333D-02	.668339D-02	-.930740D-05
1-C4H8	.470102D-03	.470103D-03	-.827854D-06
MEK	10.4028	10.4048	-.189067D-03
NC4H10	.615850D-05	.615850D-05	-.185806D-06
PYRIDINE	14.3395	14.3469	-.517794D-03
BENZENE	.510237	.510244	-.131859D-04
PHENOL	.692852	.692821	.449080D-04
N-C6H14	.593079D-03	.593079D-03	-.607232D-06
DIPE	8.58364	8.58392	-.322660D-04
TOLUENE	.610636	.610652	-.250804D-04
O-CRESOL	.978385D-02	.978413D-02	-.282929D-04
NAPHTHAL	.299724D-04	.299730D-04	-.202488D-04
NC10H22	.304535D-04	.304544D-04	-.288435D-04
H3PO4	.206285	.206306	-.100453D-03
TOTAL BALANCE			
MOLE(LBMOL/HR)	78951.5	78944.2	.918198D-04
MASS(LB/HR)	.142595D+07	.142582D+07	.911696D-04
ENTHALPY(BTU/HR)	-.940286D+10	-.920548D+10	-.209915D-01

PHOSAM
U-O-S BLOCK SECTION

FRACTIONATIO (RADFRC): D4601A (CONTINUED)

*** INPUT DATA ***

**** INPUT PARAMETERS ****

NUMBER OF THEORETICAL STAGES	10
* ALGORITHM OPTIONS *	
MAXIMUM OUTSIDE LOOPS	25
MAXIMUM INSIDE LOOPS PER OUTSIDE LOOP	10
MAXIMUM ITERATIONS FOR FEED FLASH	30
NONIDEAL OPTION	OFF
NUMBER OF INTERNAL DESIGN SPECS	1
BOUNDED WEGSTEIN MODULUS ON OUTSIDE LOOP NUMBER	1
ENTHALPY BALANCE OPTION CODE	MOLAR
INSIDE LOOP ITERATION METHOD	BROYDEN
KB UPDATING OPTION CODE	1
KB WEIGHTING OPTION CODE	Y/(1+K)
DESIGN SPECS METHOD OPTION CODE	1
* CONVERGENCE METHOD VARIABLES *	
FEED FLASH CONVERGENCE TOLERANCE	1.000000-06
OUTSIDE LOOP CONVERGENCE TOLERANCE	0.100000-03
MINIMUM INSIDE LOOP CONV TOLERANCE	0.300000-05
INITIAL INSIDE LOOP CONV TOLERANCE	0.0100000
INSIDE LOOP CONV TOL REDUCTION FACTOR	0.30000
INSIDE LOOP RMS ERR FOR JACOBIAN UPDATE	1.000000-06
COMPONENT MASS BALANCE CONV TOLERANCE	0.100000-06
SIMPLE MODEL SLOPE PARAMETER UPDATE TOLERANCE	0.050000
QMIN FOR BOUNDED WEGSTEIN IN OUTSIDE LOOP	0.0
QMAX FOR BOUNDED WEGSTEIN IN OUTSIDE LOOP	0.50000
BOUNDED WEGSTEIN SLOPE TOLERANCE	0.050000
QMIN FOR BOUNDED WEGSTEIN IN INSIDE LOOP	0.0
QMAX FOR BOUNDED WEGSTEIN IN INSIDE LOOP	0.50000
MIDDLE LOOP CONVERGENCE TOLERANCE	0.20000
MANIPULATED VARIABLE FACTOR	0.100000-04
FACTOR 1 FOR PERFORMANCE SPEC CONV ALG	0.100000
FACTOR 2 FOR PERFORMANCE SPEC CONV ALG	0.20000

**** COL-SPECS ****

VAPOR DISTILLATE / TOTAL DISTILLATE (RDV)		1.00000
CONDENSER DUTY	BTU/HR	0.0
REBOILER DUTY	BTU/HR	0.216000+09

**** PROFILES ****

PHOSAM
U-O-S BLOCK SECTION

FRACTIONATIO (RADFRC): D4601A (CONTINUED)

TEMP-EST	STAGE	1	TEMP, F	220.000
		10		230.000
P-SPEC	STAGE	1	PRES, PSIA	20.0000
		10		25.0000

*** RESULTS ***

TOP TRAY TEMPERATURE	F	228.546
BOTTOM TRAY TEMPERATURE	F	242.239
TOP TRAY LIQUID FLOW	LBMOL/HR	68,636.8
BOTTOM TRAY LIQUID FLOW	LBMOL/HR	64,127.8
TOP TRAY VAPOR FLOW	LBMOL/HR	14,816.4
BOTTOM TRAY VAPOR FLOW	LBMOL/HR	10,990.9
CONDENSER DUTY	BTU/HR	1,691.29
REBOILER DUTY	BTU/HR	0.196519+09

**** MANIPULATED VARIABLES ****

REBOILER DUTY	BTU/HR	0.196520+09

**** PROFILES ****

	TEMPERATURE	PRESSURE	FEED RATE LBMOL/HR		PRODUCT RATE LBMOL/HR	
STG	F	PSIA	LIQUID	VAPOR	LIQUID	VAPOR
1	228.55	20.000	.68398+05	3692.8038		.14816+05
2	230.64	20.556				
3	232.44	21.111				
4	234.07	21.667				
5	235.59	22.222				
6	237.03	22.778				
7	238.40	23.333				
8	239.72	23.889		1208.2890		
9	240.99	24.444	5652.4463			
10	242.24	25.000			.64128+05	

	TOTAL LIQUID FLOW			TOTAL VAPOR FLOW		
STG	LBMOL/HR	LB/HR	CUFT/HR	LBMOL/HR	LB/HR	CUFT/HR
1	68637.	.12385D+07	25056.	14816.	.26887D+06	.54104D+07
2	68763.	.12408D+07	25119.	11370.	.20531D+06	.40511D+07
3	68876.	.12428D+07	25177.	11496.	.20758D+06	.39977D+07
4	68983.	.12447D+07	25233.	11609.	.20961D+06	.39418D+07
5	69085.	.12466D+07	25287.	11716.	.21152D+06	.38863D+07
6	69184.	.12483D+07	25340.	11818.	.21335D+06	.38316D+07

7	69281.	.12500D+07	25393.	11917.	.21511D+06	.37782D+07
8	69374.	.12517D+07	25444.	12013.	.21681D+06	.37262D+07
9	75119.	.13552D+07	27567.	10899.	.19665D+06	.33089D+07
10	64128.	.11569D+07	23550.	10991.	.19827D+06	.32677D+07

FRACTIONATIO (RADFRC): D4601A (CONTINUED)

**** X-PROFILE ****

STAGE	AR	CL2	HCL	H2	H2O	H2S
1	.13786D-14	.67459D-16	.16211D-04	.30955D-12	.99537	.97481D-08
2	.18540D-18	.19023D-18	.16183D-04	.33403D-16	.99670	.46222D-10
3	.25345D-22	.53975D-21	.16158D-04	.36687D-20	.99761	.22084D-12
4	.35242D-26	.15440D-23	.16134D-04	.41044D-24	.99821	.10649D-14
5	.49850D-30	.44572D-26	.16112D-04	.46781D-28	.99862	.51870D-17
6	.71723D-34	.12993D-28	.16090D-04	.54320D-32	.99890	.25529D-19
7	.10495D-37	.38259D-31	.16069D-04	.64246D-36	.99908	.12699D-21
8	.15614D-41	.11380D-33	.16037D-04	.77379D-40	.99921	.63843D-24
9	.26228D-45	.37977D-36	.14840D-04	.10538D-43	.99931	.36024D-26
10	.48381D-49	.13795D-38	.17308D-04	.15784D-47	.99934	.22084D-28

**** X-PROFILE ****

STAGE	NH3	N2	CO	COS	CO2	HCN
1	.38993D-02	.37982D-09	.77295D-13	.26002D-12	.60727D-08	.30733D-12
2	.25871D-02	.25738D-13	.71625D-17	.20195D-15	.71879D-11	.47229D-15
3	.17013D-02	.17787D-17	.67537D-21	.16159D-18	.85579D-14	.74239D-18
4	.11074D-02	.12541D-21	.64852D-25	.13318D-21	.10269D-16	.11943D-20
5	.71093D-03	.90198D-26	.63428D-29	.11299D-24	.12429D-19	.19660D-23
6	.44695D-03	.66156D-30	.63183D-33	.98618D-28	.15185D-22	.33111D-26
7	.27154D-03	.49470D-34	.64095D-37	.88492D-31	.18730D-25	.57036D-29
8	.15516D-03	.37701D-38	.66198D-41	.81582D-34	.23328D-28	.10044D-31
9	.86463D-04	.32513D-42	.77294D-45	.85766D-37	.32582D-31	.20066D-34
10	.40937D-04	.30862D-46	.99245D-49	.99918D-40	.49598D-34	.44183D-37

**** X-PROFILE ****

STAGE	CH4	C2H4	C2H6	HOAC	C3H6	ACETONE
1	.18985D-12	.16751D-12	.10447D-12	.57186D-03	.25425D-11	.35334D-06
2	.22684D-16	.54404D-16	.12515D-16	.57140D-03	.10790D-14	.15857D-07
3	.27506D-20	.17882D-19	.15169D-20	.57093D-03	.46224D-18	.72387D-09
4	.33892D-24	.59566D-23	.18637D-24	.57045D-03	.20026D-21	.33615D-10
5	.42457D-28	.20122D-26	.23227D-28	.56996D-03	.87797D-25	.15875D-11
6	.54083D-32	.68950D-30	.29378D-32	.56940D-03	.38970D-28	.76208D-13
7	.70056D-36	.23969D-33	.37716D-36	.56827D-03	.17515D-31	.37177D-14
8	.92264D-40	.84518D-37	.49147D-40	.56229D-03	.79713D-35	.18420D-15
9	.13719D-43	.33572D-40	.72181D-44	.54255D-03	.40793D-38	.10263D-16
10	.22406D-47	.14612D-43	.11628D-47	.56946D-03	.22835D-41	.59792D-18

**** X-PROFILE ****

STAGE	C3H8	THIOPHEN	1-C4H8	MEK	NC4H10	PYRIDINE
1	.13965D-13	.64416D-09	.10890D-11	.65065D-05	.32696D-14	.12916D-03
2	.10367D-17	.57600D-11	.22980D-15	.36501D-06	.15844D-18	.11121D-03
3	.77617D-22	.52861D-13	.49010D-19	.20399D-07	.77757D-23	.95946D-04
4	.58742D-26	.49791D-15	.10582D-22	.11380D-08	.38721D-27	.82895D-04
5	.44986D-30	.48118D-17	.23151D-26	.63431D-10	.19582D-31	.71615D-04
6	.34884D-34	.47686D-19	.51337D-30	.35352D-11	.10061D-35	.61752D-04

7	.27400D-38	.48438D-21	.11541D-33	.19709D-12	.52534D-40	.53017D-04
8	.21800D-42	.50399D-23	.26304D-37	.10992D-13	.27872D-44	.45171D-04
9	.19510D-46	.59614D-25	.67482D-41	.67903D-15	.16685D-48	.34525D-04
10	.19120D-50	.77155D-27	.18967D-44	.43078D-16	.10970D-52	.20229D-04

FRACTIONATIO (RADFRC): D4601A (CONTINUED)

**** X-PROFILE ****

STAGE	BENZENE	PHENOL	N-C6H14	DIPE	TOLUENE	O-CRESOL
1	.26016D-07	.90431D-05	.59293D-12	.27681D-06	.17803D-07	.12336D-06
2	.11991D-09	.90980D-05	.53835D-16	.80460D-09	.46743D-10	.12273D-06
3	.55481D-12	.91438D-05	.49267D-20	.23392D-11	.12282D-12	.12202D-06
4	.25825D-14	.91817D-05	.45527D-24	.68123D-14	.32374D-15	.12121D-06
5	.12106D-16	.92084D-05	.42518D-28	.19887D-16	.85727D-18	.12017D-06
6	.57199D-19	.92080D-05	.40151D-32	.58221D-19	.22824D-20	.11852D-06
7	.27247D-21	.91268D-05	.38351D-36	.17099D-21	.61128D-23	.11530D-06
8	.13088D-23	.87903D-05	.37048D-40	.50384D-24	.16472D-25	.10797D-06
9	.70397D-26	.81517D-05	.40192D-44	.16542D-26	.49601D-28	.96962D-07
10	.41076D-28	.73039D-05	.47681D-48	.58730D-29	.16207D-30	.82678D-07

**** X-PROFILE ****

STAGE	NAPHTHAL	NC10H22	H3PO4
1	.24775D-11	.13081D-11	.77705D-06
2	.18355D-13	.52528D-14	.77562D-06
3	.13558D-15	.21747D-16	.77433D-06
4	.10016D-17	.92603D-19	.77311D-06
5	.74132D-20	.40480D-21	.77193D-06
6	.55035D-22	.18138D-23	.77080D-06
7	.41014D-24	.83211D-26	.76971D-06
8	.30689D-26	.39044D-28	.77182D-06
9	.25606D-28	.20787D-30	.27474D-05
10	.23034D-30	.12160D-32	.32161D-05

**** Y-PROFILE ****

STAGE	AR	CL2	HCL	H2	H2O	H2S
1	.63494D-10	.14635D-12	.36303D-06	.17791D-07	.96197	.12603D-04
2	.83222D-14	.40724D-15	.36895D-06	.18687D-11	.97549	.58847D-07
3	.11090D-17	.11378D-17	.37411D-06	.19980D-15	.98371	.27647D-09
4	.15037D-21	.32023D-20	.37925D-06	.21766D-19	.98919	.13102D-11
5	.20751D-25	.90909D-23	.38437D-06	.24167D-23	.99284	.62703D-14
6	.29140D-29	.26055D-25	.38947D-06	.27346D-27	.99527	.30321D-16
7	.41638D-33	.75430D-28	.39454D-06	.31535D-31	.99689	.14820D-18
8	.60524D-37	.22063D-30	.39922D-06	.37050D-35	.99798	.73233D-21
9	.99389D-41	.72435D-33	.37429D-06	.49253D-39	.99866	.40636D-23
10	.17923D-44	.25876D-35	.44274D-06	.72015D-43	.99913	.24492D-25

**** Y-PROFILE ****

STAGE	NH3	N2	CO	COS	CO2	HCN
1	.35258D-01	.34855D-04	.51716D-08	.21055D-08	.31381D-04	.12470D-08
2	.23312D-01	.22929D-08	.46661D-12	.15697D-11	.36660D-07	.18553D-11
3	.15249D-01	.15395D-12	.42842D-16	.12080D-14	.42994D-10	.28250D-14
4	.98704D-02	.10553D-16	.40069D-20	.95873D-18	.50774D-13	.44046D-17
5	.62994D-02	.73842D-21	.38185D-24	.78417D-21	.60461D-16	.70318D-20
6	.39367D-02	.52726D-25	.37077D-28	.66050D-24	.72655D-19	.11492D-22

7	.23774D-02	.38406D-29	.36680D-32	.57251D-27	.88152D-22	.19222D-25
8	.13503D-02	.28529D-33	.36963D-36	.51032D-30	.10801D-24	.32892D-28
9	.74789D-03	.23998D-37	.42137D-40	.51929D-33	.14849D-27	.63930D-31
10	.35209D-03	.22219D-41	.52822D-44	.58560D-36	.22240D-30	.13689D-33

FRACTIONATIO (RADFRC): D4601A (CONTINUED)

		**** Y-PROFILE		****		
STAGE	CH4	C2H4	C2H6	HOAC	C3H6	ACETONE
1	.98185D-08	.31770D-08	.53679D-08	.39371D-03	.36797D-07	.48844D-04
2	.11461D-11	.10112D-11	.63066D-12	.39378D-03	.15349D-10	.21331D-05
3	.13568D-15	.32541D-15	.74857D-16	.39297D-03	.64537D-14	.94848D-07
4	.16319D-19	.10609D-18	.89999D-20	.39192D-03	.27425D-17	.42947D-08
5	.19955D-23	.35072D-22	.10973D-23	.39073D-03	.11791D-20	.19793D-09
6	.24819D-27	.11762D-25	.13578D-27	.38942D-03	.51322D-24	.92796D-11
7	.31397D-31	.40028D-29	.17055D-31	.38768D-03	.22623D-27	.44241D-12
8	.40401D-35	.13823D-32	.21751D-35	.38263D-03	.10101D-30	.21437D-13
9	.58728D-39	.53798D-36	.31283D-39	.36828D-03	.50739D-34	.11690D-14
10	.93751D-43	.22937D-39	.49326D-43	.38559D-03	.27867D-37	.66654D-16

		**** Y-PROFILE		****		
STAGE	C3H8	THIOPHEN	1-C4H8	MEK	NC4H10	PYRIDINE
1	.11535D-08	.45108D-06	.31729D-07	.70225D-03	.41565D-09	.88076D-03
2	.84305D-13	.38887D-08	.65739D-11	.39278D-04	.19738D-13	.74387D-03
3	.62007D-17	.34453D-10	.13745D-14	.21833D-05	.94768D-18	.62970D-03
4	.46050D-21	.31362D-12	.29077D-18	.12103D-06	.46133D-22	.53411D-03
5	.34587D-25	.29317D-14	.62307D-22	.67004D-08	.22799D-26	.45327D-03
6	.26297D-29	.28128D-16	.13533D-25	.37079D-09	.11447D-30	.38413D-03
7	.20252D-33	.27683D-18	.29803D-29	.20523D-10	.58408D-35	.32427D-03
8	.15801D-37	.27933D-20	.66558D-33	.11364D-11	.30296D-39	.27179D-03
9	.13876D-41	.32076D-22	.16743D-36	.69714D-13	.17741D-43	.20448D-03
10	.13333D-45	.40294D-24	.46110D-40	.43896D-14	.11403D-47	.11794D-03

		**** Y-PROFILE		****		
STAGE	BENZENE	PHENOL	N-C6H14	DIPE	TOLUENE	O-CRESOL
1	.34438D-04	.15148D-04	.40029D-07	.57935D-03	.41215D-04	.30251D-06
2	.15705D-06	.15501D-04	.35794D-11	.16711D-05	.10747D-06	.29723D-06
3	.71724D-09	.15758D-04	.32201D-15	.48126D-08	.27959D-09	.29155D-06
4	.32917D-11	.15965D-04	.29230D-19	.13878D-10	.72868D-12	.28570D-06
5	.15205D-13	.16126D-04	.26806D-23	.40110D-13	.19062D-14	.27943D-06
6	.70769D-16	.16222D-04	.24854D-27	.11625D-15	.50112D-17	.27194D-06
7	.33206D-18	.16162D-04	.23309D-31	.33799D-18	.13250D-19	.26111D-06
8	.15713D-20	.15638D-04	.22116D-35	.98610D-21	.35252D-22	.24140D-06
9	.83304D-23	.14565D-04	.23582D-39	.32070D-23	.10485D-24	.21414D-06
10	.47874D-25	.13098D-04	.27467D-43	.11271D-25	.33806D-27	.18031D-06

		**** Y-PROFILE	****
STAGE	NAPHTHAL	NC10H22	H3PO4
1	.20230D-08	.20554D-08	.42751D-08
2	.14956D-10	.78966D-11	.42752D-08
3	.10979D-12	.31420D-13	.41926D-08
4	.80441D-15	.12902D-15	.40537D-08
5	.58974D-17	.54524D-18	.38843D-08
6	.43335D-19	.23663D-20	.37016D-08

7	.31950D-21	.10530D-22	.35164D-08
8	.23652D-23	.47987D-25	.33491D-08
9	.19533D-25	.24852D-27	.11312D-07
10	.17366D-27	.14136D-29	.12566D-07

PHOSAM
U-O-S BLOCK SECTION

PUMP (PUMP): G4605
INLET = 4609 OUTLET = 4610
PROPERTY OPTION SET SYSOP4W

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE DIFF.
CONVENTIONAL COMPONENTS (LBMOL/HR)			
AR	.310260D-44	.310260D-44	.0
CL2	.884657D-34	.884657D-34	.0
HCL	1.10990	1.10990	.0
H2	.101221D-42	.101221D-42	.0
H2O	64085.6	64085.6	.0
H2S	.141622D-23	.141622D-23	.0
NH3	2.62519	2.62519	.0
N2	.197910D-41	.197910D-41	.0
O2	.0	.0	.0
CO	.636439D-44	.636439D-44	.0
COS	.640753D-35	.640753D-35	.0
CO2	.318061D-29	.318061D-29	.0
HCN	.283334D-32	.283334D-32	.0
CH4	.143684D-42	.143684D-42	.0
C2H4	.937017D-39	.937017D-39	.0
C2H6	.745661D-43	.745661D-43	.0
HOAC	36.5180	36.5180	.0
C3H6	.146437D-36	.146437D-36	.0
ACETONE	.383433D-13	.383433D-13	.0
C3H8	.122611D-45	.122611D-45	.0
THIOPHEN	.494776D-22	.494776D-22	.0
1-C4H8	.121629D-39	.121629D-39	.0
MEK	.276251D-11	.276251D-11	.0
NC4H10	.703481D-48	.703481D-48	.0
PYRIDINE	1.29723	1.29723	.0
BENZENE	.263409D-23	.263409D-23	.0
PHENOL	.468384	.468384	.0
N-C6H14	.305769D-43	.305769D-43	.0
DIPE	.376626D-24	.376626D-24	.0
TOLUENE	.103934D-25	.103934D-25	.0
O-CRESOL	.530195D-02	.530195D-02	.0
NAPHTHAL	.147711D-25	.147711D-25	.0
NC10H22	.779796D-28	.779796D-28	.0
H3PO4	.206243	.206243	-.134577D-15
TOTAL BALANCE			
MOLE(LBMOL/HR)	64127.8	64127.8	.0
MASS(LB/HR)	.115695D+07	.115695D+07	.0
ENTHALPY(BTU/HR)	-.772746D+10	-.772698D+10	-.620359D-04

*** INPUT DATA ***

TYPE OF PUMP: 1=CENTRIFUGAL PUMP;

2, SLURRY PUMP; 3, POSITIVE DISPLACEMENT PUMP	1
REQUIRED EXIT PRESSURE ,PSIA	80.0000
PUMP EFFICIENCY ,	0.50000
DRIVER EFFICIENCY ,	1.00000
SOLID FLOW RATE ,LB/HR	MISSING

PUMP (PUMP): G4605 (CONTINUED)

*** RESULTS ***

TYPE OF PUMP, (CAL)	1
VOLUMETRIC FLOW RATE CUFT/HR	23,550.4
DELTA PRESSURE PSIA	55.0000
FLUID POWER REQUIREMENTHP	94.2018
BRAKE POWER REQUIREMENTHP	188.404
ELECTRICITY REQUIREMENT HP	188.404
PUMP EFFICIENCY (CAL)	0.50000

PHOSAM

U-O-S BLOCK SECTION

GENERAL-HEAT (HEATER): E4607
INPUT STREAM: 4610
OUTPUT STREAM: 4611 Q4601
PROPERTY OPTION SET SYSOP4W

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE DIFF.
CONVENTIONAL COMPONENTS (LBMOL/HR)			
AR	.310260D-44	.310260D-44	.0
CL2	.884657D-34	.884657D-34	.0
HCL	1.10990	1.10990	.0
H2	.101221D-42	.101221D-42	.0
H2O	64085.6	64085.6	.0
H2S	.141622D-23	.141622D-23	.0
NH3	2.62519	2.62519	.0
N2	.197910D-41	.197910D-41	.0
O2	.0	.0	.0
CO	.636439D-44	.636439D-44	.0
COS	.640753D-35	.640753D-35	.0
CO2	.318061D-29	.318061D-29	.0
HCN	.283334D-32	.283334D-32	.0
CH4	.143684D-42	.143684D-42	.0
C2H4	.937017D-39	.937017D-39	.0
C2H6	.745661D-43	.745661D-43	.0
HOAC	36.5180	36.5180	.0
C3H6	.146437D-36	.146437D-36	.0
ACETONE	.383433D-13	.383433D-13	.0
C3H8	.122611D-45	.122611D-45	.0
THIOPHEN	.494776D-22	.494776D-22	.0
1-C4H8	.121629D-39	.121629D-39	.0
MEK	.276251D-11	.276251D-11	.0
NC4H10	.703481D-48	.703481D-48	.0
PYRIDINE	1.29723	1.29723	.0
BENZENE	.263409D-23	.263409D-23	.0
PHENOL	.468384	.468384	.0
N-C6H14	.305769D-43	.305769D-43	.0
DIPE	.376626D-24	.376626D-24	.0
TOLUENE	.103934D-25	.103934D-25	.0
O-CRESOL	.530195D-02	.530195D-02	.0
NAPHTHAL	.147711D-25	.147711D-25	.0
NC10H22	.779796D-28	.779796D-28	.0
H3PO4	.206243	.206243	.0
TOTAL BALANCE			
MOLE(LBMOL/HR)	64127.8	64127.8	.0
MASS(LB/HR)	.115695D+07	.115695D+07	.0
ENTHALPY(BTU/HR)	-.772698D+10	-.772698D+10	-.246843D-15

*** INPUT DATA ***

TWO PHASE TP FLASH

SPECIFIED TEMPERATURE	F	160.00
PRESSURE DROP	PSIA	-10.000
MAXIMUM ITERATION NO.		30
CONVERGENCE TOLERANCE		.10000D-03

TP FLASH, NO INITIAL GUESSES ARE REQUIRED.

GENERAL-HEAT (HEATER): E4607 (CONTINUED)

*** RESULTS ***

OUTPUT TEMPERATURE	F	160.00
OUTPUT PRESSURE	PSIA	70.000
HEAT DUTY	BTU/HR	-.10425D+09
VAPOR FRACTION		.0

V-L PHASE EQUILIBRIUM :

COMP	F(I)	X(I)	Y(I)	K(I)
HCL	.17308D-04	.17308D-04	.16541D-06	.62555D-03
H2O	.99934	.99934	.99845	.65403D-01
NH3	.40937D-04	.40937D-04	.54436D-03	.87042
HOAC	.56946D-03	.56946D-03	.53592D-03	.61610D-01
PYRIDINE	.20229D-04	.20229D-04	.46010D-03	1.4891
PHENOL	.73039D-05	.73039D-05	.10824D-04	.97020D-01
O-CRESOL	.82678D-07	.82678D-07	.57958D-06	.45896
H3PO4	.32161D-05	.32161D-05	.17253D-05	.35120D-01

PHOSAM
U-O-S BLOCK SECTION

FRACTIONATIO (RADFRC): D4601B
INLETS - 4629 STAGE 1
4622 STAGE 13
4612 STAGE 3
4640 STAGE 13
OUTLETS - 4619 STAGE 1
4623 STAGE 12
PROPERTY OPTION SET SYSOP4W

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE DIFF.
CONVENTIONAL COMPONENTS (LBMOL/HR)			
AR	.940753D-06	.940753D-06	.334952D-11
CL2	.216844D-08	.216844D-08	.333683D-11
HCL	.546969D-02	.546969D-02	.212841D-11
H2	.263594D-03	.263594D-03	.334954D-11
H2O	28198.1	28198.1	.801184D-13
H2S	.186726	.186726	.334878D-11
NH3	1471.80	1471.80	-.585504D-12
N2	.516427	.516427	.334869D-11
O2	.0	.0	.0
CO	.766249D-04	.766249D-04	.334932D-11
COS	.311958D-04	.311958D-04	.334786D-11
CO2	.464955	.464955	.334929D-11
HCN	.184766D-04	.184766D-04	.335007D-11
CH4	.145475D-03	.145475D-03	.334928D-11
C2H4	.470713D-04	.470713D-04	.334867D-11
C2H6	.795335D-04	.795335D-04	.334913D-11
HOAC	8.75947	8.75947	.986055D-12
C3H6	.545203D-03	.545203D-03	.335023D-11
ACETONE	.723697	.723697	.334798D-11
C3H8	.170912D-04	.170912D-04	.334587D-11
THIOPHEN	.668339D-02	.668339D-02	.116081D-08
1-C4H8	.470103D-03	.470103D-03	.334991D-11
MEK	10.4048	10.4048	.333944D-11
NC4H10	.615850D-05	.615850D-05	.334886D-11
PYRIDINE	13.0840	13.0840	.303530D-11
BENZENE	.510244	.510244	.334888D-11
PHENOL	.224437	.224437	.396645D-10
N-C6H14	.593079D-03	.593079D-03	.334952D-11
DIPE	8.58392	8.58392	.334927D-11
TOLUENE	.610652	.610652	.334870D-11
O-CRESOL	.448380D-02	.448380D-02	.313611D-11
NAPHTHAL	.299730D-04	.299730D-04	.334981D-11
NC10H22	.304544D-04	.304544D-04	.334949D-11
H3PO4	1444.00	1444.00	-.108022D-11
TOTAL BALANCE			
MOLE(LBMOL/HR)	31158.0	31158.0	.583796D-16
MASS(LB/HR)	677957.	677957.	-.169869D-12
ENTHALPY(BTU/HR)	-.362995D+10	-.373222D+10	.274018D-01

PHOSAM
U-O-S BLOCK SECTION

FRACTIONATIO (RADFRC): D4601B (CONTINUED)

*** INPUT DATA ***

**** INPUT PARAMETERS ****

NUMBER OF THEORETICAL STAGES	12
* ALGORITHM OPTIONS *	
MAXIMUM OUTSIDE LOOPS	70
MAXIMUM INSIDE LOOPS PER OUTSIDE LOOP	10
MAXIMUM ITERATIONS FOR FEED FLASH	50
NONIDEAL OPTION	OFF
NUMBER OF INTERNAL DESIGN SPECS	0
BOUNDED WEGSTEIN MODULUS ON OUTSIDE LOOP NUMBER	1
ENTHALPY BALANCE OPTION CODE	MOLAR
INSIDE LOOP ITERATION METHOD	BROYDEN
KB UPDATING OPTION CODE	1
KB WEIGHTING OPTION CODE	Y/(1+K)
* CONVERGENCE METHOD VARIABLES *	
FEED FLASH CONVERGENCE TOLERANCE	1.000000-06
OUTSIDE LOOP CONVERGENCE TOLERANCE	0.00013000
MINIMUM INSIDE LOOP CONV TOLERANCE	0.300000-05
INITIAL INSIDE LOOP CONV TOLERANCE	0.00100000
INSIDE LOOP CONV TOL REDUCTION FACTOR	0.30000
INSIDE LOOP RMS ERR FOR JACOBIAN UPDATE	1.000000-06
COMPONENT MASS BALANCE CONV TOLERANCE	0.100000-06
SIMPLE MODEL SLOPE PARAMETER UPDATE TOLERANCE	0.050000
QMIN FOR BOUNDED WEGSTEIN IN OUTSIDE LOOP	0.0
QMAX FOR BOUNDED WEGSTEIN IN OUTSIDE LOOP	0.50000
BOUNDED WEGSTEIN SLOPE TOLERANCE	0.050000
QMIN FOR BOUNDED WEGSTEIN IN INSIDE LOOP	0.0
QMAX FOR BOUNDED WEGSTEIN IN INSIDE LOOP	0.50000

**** COL-SPECS ****

VAPOR DISTILLATE / TOTAL DISTILLATE (RDV)		1.00000
CONDENSER DUTY	BTU/HR	0.0
REBOILER DUTY	BTU/HR	0.0

**** HEATERS ****

STAGE HEATERS	STAGE	5	RATE, BTU/HR	-0.102270+09

**** PROFILES ****

FRACTIONATIO (RADFRC): D4601B (CONTINUED)

TEMP-EST	STAGE	1	TEMP, F	212.140
		2		212.140
		3		212.140
		4		212.140
		5		212.140
		6		212.140
		7		212.140
		8		212.140
		9		212.140
		10		212.140
		11		212.140
		12		212.140
P-SPEC	STAGE	1	PRES, PSIA	15.0000
		12		18.0000

X-EST STAGE	AR	CL2	HCL	H2	H2O	H2S
1	MISSING	MISSING	MISSING	MISSING	0.8531	MISSING
2	MISSING	MISSING	MISSING	MISSING	0.8531	MISSING
3	MISSING	MISSING	MISSING	MISSING	0.8531	MISSING
4	MISSING	MISSING	MISSING	MISSING	0.8531	MISSING
5	MISSING	MISSING	MISSING	MISSING	0.8531	MISSING
6	MISSING	MISSING	MISSING	MISSING	0.8531	MISSING
7	MISSING	MISSING	MISSING	MISSING	0.8531	MISSING
8	MISSING	MISSING	MISSING	MISSING	0.8531	MISSING
9	MISSING	MISSING	MISSING	MISSING	0.8531	MISSING
10	MISSING	MISSING	MISSING	MISSING	0.8531	MISSING
11	MISSING	MISSING	MISSING	MISSING	0.8531	MISSING
12	MISSING	MISSING	MISSING	MISSING	0.8531	MISSING

X-EST STAGE	NH3	N2	CO	COS	CO2	HCN
1	0.0792	MISSING	MISSING	MISSING	.57420-09	MISSING
2	0.0792	MISSING	MISSING	MISSING	.57420-09	MISSING
3	0.0792	MISSING	MISSING	MISSING	.57420-09	MISSING
4	0.0792	MISSING	MISSING	MISSING	.57420-09	MISSING
5	0.0792	MISSING	MISSING	MISSING	.57420-09	MISSING
6	0.0792	MISSING	MISSING	MISSING	.57420-09	MISSING
7	0.0792	MISSING	MISSING	MISSING	.57420-09	MISSING
8	0.0792	MISSING	MISSING	MISSING	.57420-09	MISSING
9	0.0792	MISSING	MISSING	MISSING	.57420-09	MISSING
10	0.0792	MISSING	MISSING	MISSING	.57420-09	MISSING
11	0.0792	MISSING	MISSING	MISSING	.57420-09	MISSING
12	0.0792	MISSING	MISSING	MISSING	.57420-09	MISSING

FRACTIONATIO (RADFRC): D4601B (CONTINUED)

X-EST STAGE	CH4	C2H4	C2H6	HOAC	C3H6	ACETONE
1	MISSING	MISSING	MISSING	.10366-03	MISSING	.37130-08
2	MISSING	MISSING	MISSING	.10366-03	MISSING	.37130-08
3	MISSING	MISSING	MISSING	.10366-03	MISSING	.37130-08
4	MISSING	MISSING	MISSING	.10366-03	MISSING	.37130-08
5	MISSING	MISSING	MISSING	.10366-03	MISSING	.37130-08
6	MISSING	MISSING	MISSING	.10366-03	MISSING	.37130-08
7	MISSING	MISSING	MISSING	.10366-03	MISSING	.37130-08
8	MISSING	MISSING	MISSING	.10366-03	MISSING	.37130-08
9	MISSING	MISSING	MISSING	.10366-03	MISSING	.37130-08
10	MISSING	MISSING	MISSING	.10366-03	MISSING	.37130-08
11	MISSING	MISSING	MISSING	.10366-03	MISSING	.37130-08
12	MISSING	MISSING	MISSING	.10366-03	MISSING	.37130-08

X-EST STAGE	C3H8	THIOPHEN	1-C4H8	MEK	NC4H10	PYRIDINE
1	MISSING	MISSING	MISSING	.46986-06	MISSING	.58244-05
2	MISSING	MISSING	MISSING	.46986-06	MISSING	.58244-05
3	MISSING	MISSING	MISSING	.46986-06	MISSING	.58244-05
4	MISSING	MISSING	MISSING	.46986-06	MISSING	.58244-05
5	MISSING	MISSING	MISSING	.46986-06	MISSING	.58244-05
6	MISSING	MISSING	MISSING	.46986-06	MISSING	.58244-05
7	MISSING	MISSING	MISSING	.46986-06	MISSING	.58244-05
8	MISSING	MISSING	MISSING	.46986-06	MISSING	.58244-05
9	MISSING	MISSING	MISSING	.46986-06	MISSING	.58244-05
10	MISSING	MISSING	MISSING	.46986-06	MISSING	.58244-05
11	MISSING	MISSING	MISSING	.46986-06	MISSING	.58244-05
12	MISSING	MISSING	MISSING	.46986-06	MISSING	.58244-05

X-EST STAGE	BENZENE	PHENOL	N-C6H14	DIPE	TOLUENE	O-CRESOL
1	.25574-09	MISSING	MISSING	.14475-09	.26633-10	.47299-08
2	.25574-09	MISSING	MISSING	.14475-09	.26633-10	.47299-08
3	.25574-09	MISSING	MISSING	.14475-09	.26633-10	.47299-08
4	.25574-09	MISSING	MISSING	.14475-09	.26633-10	.47299-08
5	.25574-09	MISSING	MISSING	.14475-09	.26633-10	.47299-08
6	.25574-09	MISSING	MISSING	.14475-09	.26633-10	.47299-08
7	.25574-09	MISSING	MISSING	.14475-09	.26633-10	.47299-08
8	.25574-09	MISSING	MISSING	.14475-09	.26633-10	.47299-08
9	.25574-09	MISSING	MISSING	.14475-09	.26633-10	.47299-08
10	.25574-09	MISSING	MISSING	.14475-09	.26633-10	.47299-08
11	.25574-09	MISSING	MISSING	.14475-09	.26633-10	.47299-08
12	.25574-09	MISSING	MISSING	.14475-09	.26633-10	.47299-08

FRACTIONATIO (RADFRC): D4601B (CONTINUED)

X-EST STAGE	NAPHTHAL	NC10H22	H3PO4
1	MISSING	MISSING	0.0675
2	MISSING	MISSING	0.0675
3	MISSING	MISSING	0.0675
4	MISSING	MISSING	0.0675
5	MISSING	MISSING	0.0675
6	MISSING	MISSING	0.0675
7	MISSING	MISSING	0.0675
8	MISSING	MISSING	0.0675
9	MISSING	MISSING	0.0675
10	MISSING	MISSING	0.0675
11	MISSING	MISSING	0.0675
12	MISSING	MISSING	0.0675

Y-EST STAGE	AR	CL2	HCL	H2	H2O	H2S
1	MISSING	MISSING	MISSING	MISSING	0.9468	MISSING
2	MISSING	MISSING	MISSING	MISSING	0.9468	MISSING
3	MISSING	MISSING	MISSING	MISSING	0.9468	MISSING
4	MISSING	MISSING	MISSING	MISSING	0.9468	MISSING
5	MISSING	MISSING	MISSING	MISSING	0.9468	MISSING
6	MISSING	MISSING	MISSING	MISSING	0.9468	MISSING
7	MISSING	MISSING	MISSING	MISSING	0.9468	MISSING
8	MISSING	MISSING	MISSING	MISSING	0.9468	MISSING
9	MISSING	MISSING	MISSING	MISSING	0.9468	MISSING
10	MISSING	MISSING	MISSING	MISSING	0.9468	MISSING
11	MISSING	MISSING	MISSING	MISSING	0.9468	MISSING
12	MISSING	MISSING	MISSING	MISSING	0.9468	MISSING

Y-EST STAGE	NH3	N2	CO	COS	CO2	HCN
1	0.0512	MISSING	MISSING	MISSING	.41396-04	MISSING
2	0.0512	MISSING	MISSING	MISSING	.41396-04	MISSING
3	0.0512	MISSING	MISSING	MISSING	.41396-04	MISSING
4	0.0512	MISSING	MISSING	MISSING	.41396-04	MISSING
5	0.0512	MISSING	MISSING	MISSING	.41396-04	MISSING
6	0.0512	MISSING	MISSING	MISSING	.41396-04	MISSING
7	0.0512	MISSING	MISSING	MISSING	.41396-04	MISSING
8	0.0512	MISSING	MISSING	MISSING	.41396-04	MISSING
9	0.0512	MISSING	MISSING	MISSING	.41396-04	MISSING
10	0.0512	MISSING	MISSING	MISSING	.41396-04	MISSING
11	0.0512	MISSING	MISSING	MISSING	.41396-04	MISSING
12	0.0512	MISSING	MISSING	MISSING	.41396-04	MISSING

PHOSAM
U-O-S BLOCK SECTION

FRACTIONATIO (RADFRC): D4601B (CONTINUED)

Y-EST STAGE	CH4	C2H4	C2H6	HOAC	C3H6	ACETONE
1	MISSING	MISSING	MISSING	.28078-03	MISSING	.41583-04
2	MISSING	MISSING	MISSING	.28078-03	MISSING	.41583-04
3	MISSING	MISSING	MISSING	.28078-03	MISSING	.41583-04
4	MISSING	MISSING	MISSING	.28078-03	MISSING	.41583-04
5	MISSING	MISSING	MISSING	.28078-03	MISSING	.41583-04
6	MISSING	MISSING	MISSING	.28078-03	MISSING	.41583-04
7	MISSING	MISSING	MISSING	.28078-03	MISSING	.41583-04
8	MISSING	MISSING	MISSING	.28078-03	MISSING	.41583-04
9	MISSING	MISSING	MISSING	.28078-03	MISSING	.41583-04
10	MISSING	MISSING	MISSING	.28078-03	MISSING	.41583-04
11	MISSING	MISSING	MISSING	.28078-03	MISSING	.41583-04
12	MISSING	MISSING	MISSING	.28078-03	MISSING	.41583-04

Y-EST STAGE	C3H8	THIOPHEN	1-C4H8	MEK	NC4H10	PYRIDINE
1	MISSING	MISSING	MISSING	.44011-03	MISSING	.17851-03
2	MISSING	MISSING	MISSING	.44011-03	MISSING	.17851-03
3	MISSING	MISSING	MISSING	.44011-03	MISSING	.17851-03
4	MISSING	MISSING	MISSING	.44011-03	MISSING	.17851-03
5	MISSING	MISSING	MISSING	.44011-03	MISSING	.17851-03
6	MISSING	MISSING	MISSING	.44011-03	MISSING	.17851-03
7	MISSING	MISSING	MISSING	.44011-03	MISSING	.17851-03
8	MISSING	MISSING	MISSING	.44011-03	MISSING	.17851-03
9	MISSING	MISSING	MISSING	.44011-03	MISSING	.17851-03
10	MISSING	MISSING	MISSING	.44011-03	MISSING	.17851-03
11	MISSING	MISSING	MISSING	.44011-03	MISSING	.17851-03
12	MISSING	MISSING	MISSING	.44011-03	MISSING	.17851-03

Y-EST STAGE	BENZENE	PHENOL	N-C6H14	DIPE	TOLUENE	O-CRESOL
1	.42802-04	MISSING	MISSING	.73682-03	.52721-04	.19713-06
2	.42802-04	MISSING	MISSING	.73682-03	.52721-04	.19713-06
3	.42802-04	MISSING	MISSING	.73682-03	.52721-04	.19713-06
4	.42802-04	MISSING	MISSING	.73682-03	.52721-04	.19713-06
5	.42802-04	MISSING	MISSING	.73682-03	.52721-04	.19713-06
6	.42802-04	MISSING	MISSING	.73682-03	.52721-04	.19713-06
7	.42802-04	MISSING	MISSING	.73682-03	.52721-04	.19713-06
8	.42802-04	MISSING	MISSING	.73682-03	.52721-04	.19713-06
9	.42802-04	MISSING	MISSING	.73682-03	.52721-04	.19713-06
10	.42802-04	MISSING	MISSING	.73682-03	.52721-04	.19713-06
11	.42802-04	MISSING	MISSING	.73682-03	.52721-04	.19713-06
12	.42802-04	MISSING	MISSING	.73682-03	.52721-04	.19713-06

FRACTIONATIO (RADFRC): D4601B (CONTINUED)

Y-EST STAGE	NAPHTHAL	NC10H22	H3PO4
1	MISSING	MISSING	.14553-05
2	MISSING	MISSING	.14553-05
3	MISSING	MISSING	.14553-05
4	MISSING	MISSING	.14553-05
5	MISSING	MISSING	.14553-05
6	MISSING	MISSING	.14553-05
7	MISSING	MISSING	.14553-05
8	MISSING	MISSING	.14553-05
9	MISSING	MISSING	.14553-05
10	MISSING	MISSING	.14553-05
11	MISSING	MISSING	.14553-05
12	MISSING	MISSING	.14553-05

*** RESULTS ***

TOP TRAY TEMPERATURE	F	221.163
BOTTOM TRAY TEMPERATURE	F	227.325
TOP TRAY LIQUID FLOW	LBMOL/HR	17,727.4
BOTTOM TRAY LIQUID FLOW	LBMOL/HR	23,560.0
TOP TRAY VAPOR FLOW	LBMOL/HR	7,597.96
BOTTOM TRAY VAPOR FLOW	LBMOL/HR	14,787.2
CONDENSER DUTY	BTU/HR	20.0378
REBOILER DUTY	BTU/HR	-11.7112

**** PROFILES ****

STG	TEMPERATURE F	PRESSURE PSIA	FEED RATE LBMOL/HR LIQUID	FEED RATE LBMOL/HR VAPOR	PRODUCT RATE LBMOL/HR LIQUID	PRODUCT RATE LBMOL/HR VAPOR
1	221.16	15.000	.16340+05			7597.9638
2	222.06	15.273				
3	222.80	15.545	0.4124			
4	223.09	15.818				
5	221.08	16.091				
6	222.00	16.364				
7	222.85	16.636				
8	223.69	16.909				
9	224.54	17.182				
10	225.40	17.455				
11	226.32	17.727				
12	227.33	18.000	1.0000	.14816+05	.23560+05	

PHOSAM
U-O-S BLOCK SECTION

FRACTIONATIO (RADFRC): D4601B (CONTINUED)

	TOTAL LIQUID FLOW			TOTAL VAPOR FLOW		
STG	LBMOL/HR	LB/HR	CUFT/HR	LBMOL/HR	LB/HR	CUFT/HR
1	17727.	.43413D+06	9480.2	7598.0	.13906D+06	.36689D+07
2	17742.	.43439D+06	9490.5	8985.2	.16415D+06	.42664D+07
3	17751.	.43453D+06	9500.2	8999.7	.16440D+06	.42023D+07
4	17741.	.43420D+06	9507.6	9008.0	.16452D+06	.41348D+07
5	23412.	.53624D+06	11589.	8998.5	.16419D+06	.40476D+07
6	23432.	.53653D+06	11601.	14670.	.26624D+06	.64969D+07
7	23450.	.53683D+06	11612.	14690.	.26653D+06	.64061D+07
8	23469.	.53715D+06	11623.	14708.	.26683D+06	.63175D+07
9	23487.	.53749D+06	11634.	14726.	.26714D+06	.62319D+07
10	23508.	.53786D+06	11644.	14745.	.26748D+06	.61495D+07
11	23530.	.53829D+06	11655.	14765.	.26785D+06	.60705D+07
12	23560.	.53890D+06	11667.	14787.	.26828D+06	.59956D+07

	**** X-PROFILE ****					
STAGE	AR	CL2	HCL	H2	H2O	H2S
1	.43038D-14	.47041D-15	.56546D-07	.52289D-12	.86279	.64051D-09
2	.37186D-14	.40537D-15	.58862D-07	.45380D-12	.86228	.55611D-09
3	.37741D-14	.40806D-15	.58523D-07	.46383D-12	.86014	.56601D-09
4	.37654D-14	.40198D-15	.54871D-07	.47076D-12	.85205	.56394D-09
5	.30106D-14	.35678D-15	.88567D-07	.36493D-12	.87711	.10577D-08
6	.18875D-14	.22248D-15	.66904D-07	.22961D-12	.87717	.66486D-09
7	.19263D-14	.22552D-15	.61435D-07	.23506D-12	.87727	.68013D-09
8	.19662D-14	.22901D-15	.60281D-07	.24062D-12	.87749	.69594D-09
9	.20074D-14	.23266D-15	.60369D-07	.24626D-12	.87792	.71231D-09
10	.20509D-14	.23661D-15	.60977D-07	.25202D-12	.87873	.72967D-09
11	.20983D-14	.24109D-15	.62073D-07	.25796D-12	.88023	.74874D-09
12	.21526D-14	.24655D-15	.63991D-07	.26416D-12	.88299	.77123D-09

	**** X-PROFILE ****					
STAGE	NH3	N2	CO	COS	CO2	HCN
1	.55457D-01	.43190D-09	.71833D-13	.13772D-11	.69178D-09	.18373D-14
2	.56026D-01	.37445D-09	.62293D-13	.11871D-11	.60092D-09	.16093D-14
3	.58188D-01	.38153D-09	.63588D-13	.11990D-11	.61253D-09	.16439D-14
4	.66250D-01	.38287D-09	.64304D-13	.11827D-11	.61308D-09	.16165D-14
5	.60860D-01	.27563D-09	.46297D-13	.93932D-12	.94307D-09	.42333D-14
6	.60906D-01	.17338D-09	.29113D-13	.58751D-12	.59305D-09	.26828D-14
7	.60882D-01	.17750D-09	.29794D-13	.59826D-12	.60697D-09	.27668D-14
8	.60732D-01	.18173D-09	.30489D-13	.60954D-12	.62131D-09	.28548D-14
9	.60363D-01	.18607D-09	.31195D-13	.62130D-12	.63609D-09	.29475D-14
10	.59608D-01	.19061D-09	.31920D-13	.63393D-12	.65163D-09	.30483D-14
11	.58170D-01	.19548D-09	.32674D-13	.64810D-12	.66843D-09	.31625D-14
12	.55480D-01	.20088D-09	.33469D-13	.66503D-12	.68770D-09	.33034D-14

FRACTIONATIO (RADFRC): D4601B (CONTINUED)

		**** X-PROFILE		****		
STAGE	CH4	C2H4	C2H6	HOAC	C3H6	ACETONE
1	.63095D-12	.41378D-12	.68860D-12	.22993D-03	.88710D-14	.14216D-07
2	.54580D-12	.35744D-12	.59499D-12	.24859D-03	.77266D-14	.12267D-07
3	.55523D-12	.36251D-12	.60319D-12	.25915D-03	.79898D-14	.12386D-07
4	.55769D-12	.36082D-12	.59873D-12	.24708D-03	.84303D-14	.12124D-07
5	.42722D-12	.27221D-12	.44132D-12	.29163D-03	.28503D-14	.73220D-08
6	.26805D-12	.17064D-12	.27678D-12	.25825D-03	.17948D-14	.45897D-08
7	.27375D-12	.17415D-12	.28262D-12	.23378D-03	.18396D-14	.46861D-08
8	.27959D-12	.17777D-12	.28865D-12	.21620D-03	.18843D-14	.47870D-08
9	.28556D-12	.18150D-12	.29490D-12	.20414D-03	.19275D-14	.48930D-08
10	.29175D-12	.18544D-12	.30152D-12	.19691D-03	.19673D-14	.50079D-08
11	.29830D-12	.18973D-12	.30880D-12	.19453D-03	.20005D-14	.51381D-08
12	.30546D-12	.19463D-12	.31720D-12	.19829D-03	.20193D-14	.52950D-08

		**** X-PROFILE		****		
STAGE	C3H8	THIOPHEN	1-C4H8	MEK	NC4H10	PYRIDINE
1	.12792D-11	.35927D-08	.89436D-14	.21961D-05	.18877D-16	.69874D-04
2	.10984D-11	.31085D-08	.77590D-14	.18688D-05	.16407D-16	.65395D-04
3	.10975D-11	.31065D-08	.79663D-14	.18434D-05	.16916D-16	.64390D-04
4	.10470D-11	.29860D-08	.82440D-14	.17252D-05	.17723D-16	.60290D-04
5	.95170D-12	.23545D-08	.27514D-14	.13805D-05	.48491D-17	.57792D-04
6	.59391D-12	.14681D-08	.17271D-14	.85146D-06	.30473D-17	.36606D-04
7	.60335D-12	.14864D-08	.17656D-14	.85558D-06	.31185D-17	.35644D-04
8	.61375D-12	.15107D-08	.18044D-14	.86174D-06	.31898D-17	.36011D-04
9	.62513D-12	.15371D-08	.18424D-14	.86939D-06	.32586D-17	.36529D-04
10	.63833D-12	.15672D-08	.18784D-14	.87964D-06	.33220D-17	.37179D-04
11	.65481D-12	.16038D-08	.19104D-14	.89455D-06	.33744D-17	.38059D-04
12	.67745D-12	.16526D-08	.19332D-14	.91811D-06	.34031D-17	.39375D-04

		**** X-PROFILE		****		
STAGE	BENZENE	PHENOL	N-C6H14	DIPE	TOLUENE	O-CRESOL
1	.79858D-09	.23758D-05	.10750D-15	.52014D-09	.99260D-10	.21143D-07
2	.69402D-09	.23944D-05	.96051D-16	.44523D-09	.86667D-10	.19573D-07
3	.70955D-09	.23402D-05	.10097D-15	.44543D-09	.88999D-10	.19280D-07
4	.71631D-09	.22049D-05	.10500D-15	.42851D-09	.90143D-10	.18097D-07
5	.29919D-09	.19042D-05	.19073D-16	.16669D-09	.28362D-10	.13650D-07
6	.18866D-09	.11765D-05	.12375D-16	.10361D-09	.17971D-10	.84584D-08
7	.19368D-09	.10806D-05	.13048D-16	.10504D-09	.18536D-10	.83239D-08
8	.19883D-09	.10572D-05	.13751D-16	.10657D-09	.19118D-10	.84174D-08
9	.20408D-09	.10432D-05	.14481D-16	.10823D-09	.19713D-10	.85355D-08
10	.20945D-09	.10323D-05	.15237D-16	.11008D-09	.20322D-10	.86807D-08
11	.21497D-09	.10245D-05	.16015D-16	.11227D-09	.20946D-10	.88744D-08
12	.22059D-09	.10220D-05	.16793D-16	.11501D-09	.21574D-10	.91582D-08

PHOSAM
U-O-S BLOCK SECTION

FRACTIONATIO (RADFRC): D4601B (CONTINUED)

**** X-PROFILE ****

STAGE	NAPHTHAL	NC10H22	H3PO4
1	.21977D-14	.57425D-25	.81445D-01
2	.19112D-14	.53787D-25	.81378D-01
3	.19598D-14	.60017D-25	.81349D-01
4	.19972D-14	.69392D-25	.81391D-01
5	.43236D-15	.14430D-26	.61676D-01
6	.27256D-15	.97847D-27	.61624D-01
7	.27989D-15	.10753D-26	.61576D-01
8	.28741D-15	.11794D-26	.61528D-01
9	.29495D-15	.12891D-26	.61479D-01
10	.30242D-15	.14017D-26	.61426D-01
11	.30963D-15	.15115D-26	.61368D-01
12	.31593D-15	.16024D-26	.61288D-01

**** Y-PROFILE ****

STAGE	AR	CL2	HCL	H2	H2O	H2S
1	.12381D-09	.28463D-12	.52146D-06	.34692D-07	.97326	.24573D-04
2	.10470D-09	.24162D-12	.54240D-06	.29337D-07	.97336	.20781D-04
3	.10453D-09	.24110D-12	.54618D-06	.29289D-07	.97217	.20747D-04
4	.10444D-09	.24088D-12	.54507D-06	.29263D-07	.96786	.20728D-04
5	.10455D-09	.24112D-12	.53838D-06	.29293D-07	.95203	.20750D-04
6	.64130D-10	.14799D-12	.40524D-06	.17969D-07	.95338	.12729D-04
7	.64042D-10	.14758D-12	.37025D-06	.17944D-07	.95337	.12711D-04
8	.63963D-10	.14740D-12	.36116D-06	.17922D-07	.95343	.12696D-04
9	.63884D-10	.14722D-12	.35895D-06	.17900D-07	.95368	.12680D-04
10	.63802D-10	.14704D-12	.35871D-06	.17877D-07	.95427	.12664D-04
11	.63715D-10	.14685D-12	.35927D-06	.17853D-07	.95546	.12647D-04
12	.63619D-10	.14663D-12	.36056D-06	.17826D-07	.95773	.12628D-04

**** Y-PROFILE ****

STAGE	NH3	N2	CO	COS	CO2	HCN
1	.21677D-01	.67969D-04	.10085D-07	.41038D-08	.61193D-04	.24318D-08
2	.22082D-01	.57476D-04	.85279D-08	.34729D-08	.51746D-04	.20563D-08
3	.23258D-01	.57383D-04	.85142D-08	.34669D-08	.51663D-04	.20530D-08
4	.27550D-01	.57330D-04	.85064D-08	.34638D-08	.51615D-04	.20511D-08
5	.43412D-01	.57390D-04	.85153D-08	.34674D-08	.51670D-04	.20533D-08
6	.43639D-01	.35204D-04	.52233D-08	.21270D-08	.31695D-04	.12595D-08
7	.43735D-01	.35156D-04	.52163D-08	.21236D-08	.31652D-04	.12578D-08
8	.43718D-01	.35113D-04	.52099D-08	.21210D-08	.31613D-04	.12563D-08
9	.43501D-01	.35069D-04	.52034D-08	.21183D-08	.31574D-04	.12547D-08
10	.42935D-01	.35024D-04	.51967D-08	.21156D-08	.31533D-04	.12531D-08
11	.41758D-01	.34977D-04	.51897D-08	.21128D-08	.31490D-04	.12514D-08
12	.39496D-01	.34924D-04	.51819D-08	.21096D-08	.31443D-04	.12495D-08

FRACTIONATIO (RADFRC): D4601B (CONTINUED)

**** Y-PROFILE ****

STAGE	CH4	C2H4	C2H6	HOAC	C3H6	ACETONE
1	.19146D-07	.61946D-08	.10467D-07	.53800D-03	.71757D-07	.95232D-04
2	.16191D-07	.52391D-08	.88521D-08	.58292D-03	.60678D-07	.80557D-04
3	.16165D-07	.52305D-08	.88377D-08	.61912D-03	.60580D-07	.80424D-04
4	.16150D-07	.52257D-08	.88296D-08	.63961D-03	.60524D-07	.80350D-04
5	.16167D-07	.52312D-08	.88388D-08	.61621D-03	.60588D-07	.80434D-04
6	.99168D-08	.32088D-08	.54218D-08	.54461D-03	.37165D-07	.49336D-04
7	.99033D-08	.32044D-08	.54142D-08	.49103D-03	.37115D-07	.49265D-04
8	.98911D-08	.32004D-08	.54076D-08	.45173D-03	.37069D-07	.49205D-04
9	.98788D-08	.31965D-08	.54009D-08	.42343D-03	.37023D-07	.49143D-04
10	.98661D-08	.31924D-08	.53939D-08	.40396D-03	.36976D-07	.49081D-04
11	.98527D-08	.31880D-08	.53866D-08	.39217D-03	.36926D-07	.49014D-04
12	.98379D-08	.31832D-08	.53785D-08	.38810D-03	.36870D-07	.48941D-04

**** Y-PROFILE ****

STAGE	C3H8	THIOPHEN	1-C4H8	MEK	NC4H10	PYRIDINE
1	.22473D-08	.87450D-06	.61872D-07	.13666D-02	.81055D-09	.15999D-02
2	.19029D-08	.74658D-06	.52320D-07	.11599D-02	.68540D-09	.14870D-02
3	.18995D-08	.74442D-06	.52235D-07	.11574D-02	.68430D-09	.14759D-02
4	.18977D-08	.74374D-06	.52187D-07	.11563D-02	.68367D-09	.14726D-02
5	.18996D-08	.74428D-06	.52242D-07	.11573D-02	.68439D-09	.14660D-02
6	.11655D-08	.45669D-06	.32046D-07	.71000D-03	.41981D-09	.91856D-03
7	.11634D-08	.45467D-06	.32003D-07	.70820D-03	.41924D-09	.88361D-03
8	.11619D-08	.45414D-06	.31963D-07	.70734D-03	.41873D-09	.88103D-03
9	.11605D-08	.45361D-06	.31923D-07	.70647D-03	.41821D-09	.88056D-03
10	.11590D-08	.45308D-06	.31882D-07	.70557D-03	.41767D-09	.88031D-03
11	.11575D-08	.45251D-06	.31839D-07	.70463D-03	.41710D-09	.88020D-03
12	.11558D-08	.45189D-06	.31791D-07	.70360D-03	.41648D-09	.88033D-03

**** Y-PROFILE ****

STAGE	BENZENE	PHENOL	N-C6H14	DIPE	TOLUENE	O-CRESOL
1	.67155D-04	.26370D-04	.78058D-07	.11298D-02	.80370D-04	.56173D-06
2	.56788D-04	.26986D-04	.66006D-07	.95534D-03	.67962D-04	.51654D-06
3	.56696D-04	.26983D-04	.65900D-07	.95380D-03	.67852D-04	.51265D-06
4	.56644D-04	.26854D-04	.65839D-07	.95292D-03	.67790D-04	.51162D-06
5	.56704D-04	.26613D-04	.65908D-07	.95392D-03	.67861D-04	.50980D-06
6	.34782D-04	.16697D-04	.40429D-07	.58514D-03	.41626D-04	.31261D-06
7	.34735D-04	.15516D-04	.40374D-07	.58436D-03	.41571D-04	.30393D-06
8	.34692D-04	.15346D-04	.40325D-07	.58364D-03	.41519D-04	.30335D-06
9	.34649D-04	.15291D-04	.40274D-07	.58291D-03	.41468D-04	.30314D-06
10	.34605D-04	.15250D-04	.40223D-07	.58216D-03	.41415D-04	.30295D-06
11	.34558D-04	.15213D-04	.40168D-07	.58137D-03	.41358D-04	.30278D-06
12	.34506D-04	.15180D-04	.40108D-07	.58050D-03	.41296D-04	.30264D-06

FRACTIONATIO (RADFRC): D4601B (CONTINUED)

		**** Y-PROFILE	****
STAGE	NAPHTHAL	NC10H22	H3PO4
1	.39449D-08	.40082D-08	.70192D-05
2	.33358D-08	.33894D-08	.69698D-05
3	.33304D-08	.33839D-08	.66151D-05
4	.33274D-08	.33808D-08	.53092D-05
5	.33309D-08	.33844D-08	.19243D-05
6	.20432D-08	.20760D-08	.19441D-05
7	.20404D-08	.20732D-08	.19644D-05
8	.20379D-08	.20706D-08	.19927D-05
9	.20354D-08	.20681D-08	.20360D-05
10	.20328D-08	.20654D-08	.21073D-05
11	.20300D-08	.20626D-08	.22312D-05
12	.20270D-08	.20595D-08	.24609D-05

PHOSAM
U-O-S BLOCK SECTION

FLASH:2-OUTL (FLASH2): E4610
INPUT STREAM(S): 4619
OUTPUT STREAM(S): 4620 4621 Q4605
PROPERTY OPTION SET SYSOP4W

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE DIFF.
CONVENTIONAL COMPONENTS (LBMOL/HR)			
AR	.940702D-06	.940704D-06	-.211073D-05
CL2	.216263D-08	.216263D-08	-.202141D-05
HCL	.396207D-02	.396207D-02	.210684D-07
H2	.263588D-03	.263589D-03	-.211159D-05
H2O	7394.77	7394.77	.764539D-08
H2S	.186708	.186708	-.196889D-05
NH3	164.703	164.703	-.134365D-06
N2	.516422	.516423	-.211269D-05
O2	.0	.0	.0
CO	.766241D-04	.766242D-04	-.211192D-05
COS	.311802D-04	.311802D-04	-.209837D-05
CO2	.464939	.464940	-.207424D-05
HCN	.184765D-04	.184765D-04	-.207706D-05
CH4	.145468D-03	.145468D-03	-.211101D-05
C2H4	.470667D-04	.470668D-04	-.210451D-05
C2H6	.795261D-04	.795262D-04	-.211071D-05
HOAC	4.08773	4.08773	.998435D-08
C3H6	.545203D-03	.545204D-03	-.210050D-05
ACETONE	.723572	.723573	-.133115D-05
C3H8	.170752D-04	.170753D-04	-.211193D-05
THIOPHEN	.664445D-02	.664446D-02	-.192695D-05
1-C4H8	.470103D-03	.470104D-03	-.210749D-05
MEK	10.3832	10.3832	-.973331D-06
NC4H10	.615850D-05	.615852D-05	-.211290D-05
PYRIDINE	12.1564	12.1564	-.127732D-06
BENZENE	.510239	.510240	-.195314D-05
PHENOL	.200360	.200360	.651439D-09
N-C6H14	.593079D-03	.593080D-03	-.211111D-05
DIPE	8.58392	8.58393	-.199910D-05
TOLUENE	.610651	.610652	-.201080D-05
O-CRESOL	.426803D-02	.426803D-02	-.278522D-07
NAPHTHAL	.299730D-04	.299730D-04	-.181907D-05
NC10H22	.304544D-04	.304544D-04	-.202346D-05
H3PO4	.533315D-01	.533315D-01	.212300D-07
TOTAL BALANCE			
MOLE(LBMOL/HR)	7597.96	7597.96	.0
MASS(LB/HR)	139059.	139059.	-.165006D-07
ENTHALPY(BTU/HR)	-.766217D+09	-.766217D+09	-.777908D-16

FLASH:2-OUTL (FLASH2): E4610 (CONTINUED)

*** INPUT DATA ***

TWO PHASE PV FLASH

SPECIFIED PRESSURE	PSIA	15.000
VAPOR FRACTION		.10000D-01
MAXIMUM ITERATION NO.		30
CONVERGENCE TOLERANCE		.10000D-03
LIQUID ENTRAINMENT		.0

SOLID SPLIT FRACTIONS:

SUBSTREAM NO. = 1 MIXED SUBSTREAM, NO SOLID SPLITS.

FLASH:2-OUTL (FLASH2): E4610 (CONTINUED)

*** RESULTS ***

OUTPUT TEMPERATURE	F	194.16
OUTPUT PRESSURE	PSIA	15.000
HEAT DUTY	BTU/HR	-.13837D+09
VAPOR FRACTION		.10000D-01

V-L PHASE EQUILIBRIUM :

COMP	F(I)	X(I)	Y(I)	K(I)
AR	.12381D-09	.21834D-12	.12359D-07	56606.
CL2	.28463D-12	.12525D-13	.27223D-10	2173.5
HCL	.52146D-06	.52666D-06	.70750D-08	.13434D-01
H2	.34692D-07	.47116D-10	.34645D-05	73532.
H2O	.97326	.97678	.62487	.63973
H2S	.24573D-04	.16917D-05	.22899D-02	1353.6
NH3	.21677D-01	.20300D-01	.15805	7.7857
N2	.67969D-04	.56762D-07	.67912D-02	.11964D+06
CO	.10085D-07	.12077D-10	.10073D-05	83404.
COS	.41038D-08	.31218D-10	.40729D-06	13046.
CO2	.61193D-04	.11638D-05	.60041D-02	5159.1
HCN	.24318D-08	.43012D-10	.23892D-06	5554.7
CH4	.19146D-07	.31253D-10	.19115D-05	61161.
C2H4	.61946D-08	.29146D-10	.61658D-06	21155.
C2H6	.10467D-07	.18547D-10	.10448D-05	56335.
HOAC	.53800D-03	.54054D-03	.28650D-03	.53003
C3H6	.71757D-07	.47363D-09	.71288D-05	15051.
ACETONE	.95232D-04	.35279D-04	.60306D-02	170.94
C3H8	.22473D-08	.26831D-11	.22447D-06	83661.
THIOPHEN	.87450D-06	.77549D-07	.79773D-04	1028.7
1-C4H8	.61872D-07	.20373D-09	.61671D-05	30271.
MEK	.13666D-02	.73751D-03	.63644D-01	86.296
NC4H10	.81055D-09	.59846D-12	.80996D-07	.13534D+06
PYRIDINE	.15999D-02	.15033D-02	.11168D-01	7.4292
BENZENE	.67155D-04	.51232D-05	.62083D-02	1211.8
PHENOL	.26370D-04	.26378D-04	.25566D-04	.96921
N-C6H14	.78058D-07	.12347D-09	.77936D-05	63122.
DIPE	.11298D-02	.61638D-04	.10687	1733.9
TOLUENE	.80370D-04	.39400D-05	.76470D-02	1940.9
O-CRESOL	.56173D-06	.55433D-06	.12943D-05	2.3348
NAPHTHAL	.39449D-08	.55110D-09	.33993D-06	616.82
NC10H22	.40082D-08	.17249D-09	.38375D-06	2224.7
H3PO4	.70192D-05	.70897D-05	.42124D-07	.59416D-02

PHOSAM

U-O-S BLOCK SECTION

PUMP (PUMP): G4602
INLET = 4623 OUTLET = 4624
PROPERTY OPTION SET SYSOP4W

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE DIFF.
CONVENTIONAL COMPONENTS (LBMOL/HR)			
AR	.507146D-10	.507146D-10	.0
CL2	.580871D-11	.580871D-11	.0
HCL	.150762D-02	.150762D-02	.0
H2	.622354D-08	.622354D-08	.0
H2O	20803.3	20803.3	.0
H2S	.181702D-04	.181702D-04	.0
NH3	1307.10	1307.10	.0
N2	.473262D-05	.473262D-05	.0
O2	.0	.0	.0
CO	.788524D-09	.788524D-09	.0
COS	.156681D-07	.156681D-07	.0
CO2	.162023D-04	.162023D-04	.0
HCN	.778272D-10	.778272D-10	.0
CH4	.719664D-08	.719664D-08	.0
C2H4	.458554D-08	.458554D-08	.0
C2H6	.747328D-08	.747328D-08	.0
HOAC	4.67173	4.67173	.0
C3H6	.475753D-10	.475753D-10	.0
ACETONE	.124750D-03	.124750D-03	.0
C3H8	.159608D-07	.159608D-07	.0
THIOPHEN	.389362D-04	.389362D-04	.0
1-C4H8	.455472D-10	.455472D-10	.0
MEK	.216306D-01	.216306D-01	.0
NC4H10	.801776D-13	.801776D-13	.0
PYRIDINE	.927686	.927686	.0
BENZENE	.519703D-05	.519703D-05	.0
PHENOL	.240776D-01	.240776D-01	.0
N-C6H14	.395655D-12	.395655D-12	.0
DIPE	.270970D-05	.270970D-05	.0
TOLUENE	.508291D-06	.508291D-06	.0
O-CRESOL	.215768D-03	.215768D-03	.0
NAPHTHAL	.744332D-11	.744332D-11	.0
NC10H22	.377523D-22	.377523D-22	.0
H3PO4	1443.95	1443.95	.0
TOTAL BALANCE			
MOLE(LBMOL/HR)	23560.0	23560.0	.0
MASS(LB/HR)	538897.	538897.	.0
ENTHALPY(BTU/HR)	-.296601D+10	-.296505D+10	-.323203D-03

*** INPUT DATA ***

TYPE OF PUMP: 1=CENTRIFUGAL PUMP;

2, SLURRY PUMP; 3, POSITIVE DISPLACEMENT PUMP	1
REQUIRED EXIT PRESSURE ,PSIA	240.000
PUMP EFFICIENCY	0.50000
DRIVER EFFICIENCY ,	1.00000
SOLID FLOW RATE ,LB/HR	MISSING

PUMP (PUMP): G4602 (CONTINUED)

*** RESULTS ***

TYPE OF PUMP, (CAL)	1
VOLUMETRIC FLOW RATE CUFT/HR	11,667.5
DELTA PRESSURE PSIA	222.000
FLUID POWER REQUIREMENTHP	188.377
BRAKE POWER REQUIREMENTHP	376.753
ELECTRICITY REQUIREMENT HP	376.753
PUMP EFFICIENCY (CAL)	0.50000

PHOSAM
U-O-S BLOCK SECTION

FRACTIONATIO (RADFRC): D4602
INLETS - 4625 STAGE 1
OUTLETS - 4630 STAGE 1
4626 STAGE 8
QD4602R STAGE 8
PROPERTY OPTION SET SYSOP4W

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE DIFF.
CONVENTIONAL COMPONENTS (LBMOL/HR)			
AR	.507146D-10	.507183D-10	-.715905D-04
CL2	.580871D-11	.0	1.00000
HCL	.150762D-02	.150690D-02	.474947D-03
H2	.622354D-08	.622419D-08	-.104997D-03
H2O	20803.3	20800.9	.115967D-03
H2S	.181702D-04	.181660D-04	.229188D-03
NH3	1307.10	1307.38	-.212791D-03
N2	.473262D-05	.473314D-05	-.108572D-03
O2	.0	.0	.0
CO	.788524D-09	.788623D-09	-.125601D-03
COS	.156681D-07	.156691D-07	-.589549D-04
CO2	.162023D-04	.162008D-04	.940100D-04
HCN	.778272D-10	.778018D-10	.326234D-03
CH4	.719664D-08	.719733D-08	-.953493D-04
C2H4	.458554D-08	.458598D-08	-.955384D-04
C2H6	.747328D-08	.747393D-08	-.873467D-04
HOAC	4.67173	4.67066	.229043D-03
C3H6	.475753D-10	.475973D-10	-.461185D-03
ACETONE	.124750D-03	.124764D-03	-.105738D-03
C3H8	.159608D-07	.159602D-07	.369463D-04
THIOPHEN	.389362D-04	.389364D-04	-.501420D-05
1-C4H8	.455472D-10	.455668D-10	-.431536D-03
MEK	.216306D-01	.216345D-01	-.184173D-03
NC4H10	.801776D-13	.0	1.00000
PYRIDINE	.927686	.928182	-.534453D-03
BENZENE	.519703D-05	.519814D-05	-.212689D-03
PHENOL	.240776D-01	.240743D-01	.136021D-03
N-C6H14	.395655D-12	.0	1.00000
DIPE	.270970D-05	.271094D-05	-.457175D-03
TOLUENE	.508291D-06	.508580D-06	-.569660D-03
O-CRESOL	.215768D-03	.215781D-03	-.635362D-04
NAPHTHAL	.744332D-11	.0	1.00000
NC10H22	.377523D-22	.0	.0
H3PO4	1443.95	1443.95	.121361D-07
TOTAL BALANCE			
MOLE(LBMOL/HR)	23560.0	23557.9	.906146D-04
MASS(LB/HR)	538897.	538859.	.719056D-04
ENTHALPY(BTU/HR)	-.289003D+10	-.288976D+10	-.948909D-04

FRACTIONATIO (RADFRC): D4602 (CONTINUED)

*** INPUT DATA ***

**** INPUT PARAMETERS ****

NUMBER OF THEORETICAL STAGES	8
* ALGORITHM OPTIONS *	
MAXIMUM OUTSIDE LOOPS	25
MAXIMUM INSIDE LOOPS PER OUTSIDE LOOP	10
MAXIMUM ITERATIONS FOR FEED FLASH	30
NONIDEAL OPTION	OFF
NUMBER OF INTERNAL DESIGN SPECS	1
BOUNDED WEGSTEIN MODULUS ON OUTSIDE LOOP NUMBER	1
ENTHALPY BALANCE OPTION CODE	MOLAR
INSIDE LOOP ITERATION METHOD	BROYDEN
KB UPDATING OPTION CODE	1
KB WEIGHTING OPTION CODE	Y/(1+K)
DESIGN SPECS METHOD OPTION CODE	1
* CONVERGENCE METHOD VARIABLES *	
FEED FLASH CONVERGENCE TOLERANCE	1.000000-06
OUTSIDE LOOP CONVERGENCE TOLERANCE	0.100000-03
MINIMUM INSIDE LOOP CONV TOLERANCE	0.300000-05
INITIAL INSIDE LOOP CONV TOLERANCE	0.0100000
INSIDE LOOP CONV TOL REDUCTION FACTOR	0.30000
INSIDE LOOP RMS ERR FOR JACOBIAN UPDATE	1.000000-06
COMPONENT MASS BALANCE CONV TOLERANCE	0.100000-06
SIMPLE MODEL SLOPE PARAMETER UPDATE TOLERANCE	0.050000
QMIN FOR BOUNDED WEGSTEIN IN OUTSIDE LOOP	0.0
QMAX FOR BOUNDED WEGSTEIN IN OUTSIDE LOOP	0.50000
BOUNDED WEGSTEIN SLOPE TOLERANCE	0.050000
QMIN FOR BOUNDED WEGSTEIN IN INSIDE LOOP	0.0
QMAX FOR BOUNDED WEGSTEIN IN INSIDE LOOP	0.50000
MIDDLE LOOP CONVERGENCE TOLERANCE	0.20000
MANIPULATED VARIABLE FACTOR	0.100000-04
FACTOR 1 FOR PERFORMANCE SPEC CONV ALG	0.100000
FACTOR 2 FOR PERFORMANCE SPEC CONV ALG	0.20000

**** COL-SPECS ****

VAPOR DISTILLATE / TOTAL DISTILLATE (RDV)		1.00000
CONDENSER DUTY	BTU/HR	0.0
REBOILER DUTY	BTU/HR	0.518000+08

**** PROFILES ****

FRACTIONATIO (RADFRC): D4602 (CONTINUED)

TEMP-EST	STAGE	1	TEMP, F	380.000
		8		385.000
P-SPEC	STAGE	1	PRES, PSIA	200.000
		8		210.000

*** RESULTS ***

TOP TRAY TEMPERATURE	F	387.257
BOTTOM TRAY TEMPERATURE	F	399.171
TOP TRAY LIQUID FLOW	LBMOL/HR	23,978.5
BOTTOM TRAY LIQUID FLOW	LBMOL/HR	16,340.2
TOP TRAY VAPOR FLOW	LBMOL/HR	7,217.71
BOTTOM TRAY VAPOR FLOW	LBMOL/HR	7,754.08
CONDENSER DUTY	BTU/HR	10.4116
REBOILER DUTY	BTU/HR	0.123663+09

**** MANIPULATED VARIABLES ****

REBOILER DUTY	BTU/HR	0.123663+09

**** PROFILES ****

STG	TEMPERATURE F	PRESSURE PSIA	FEED RATE LBMOL/HR LIQUID	FEED RATE LBMOL/HR VAPOR	PRODUCT RATE LBMOL/HR LIQUID	PRODUCT RATE LBMOL/HR VAPOR
1	387.26	200.00	.23560+05			7217.7115
2	387.85	201.43				
3	388.44	202.86				
4	389.04	204.29				
5	389.66	205.71				
6	390.37	207.14				
7	391.36	208.57				
8	399.17	210.00			.16340+05	

STG	TOTAL LIQUID FLOW LBMOL/HR	LB/HR	CUFT/HR	TOTAL VAPOR FLOW LBMOL/HR	LB/HR	CUFT/HR
1	23979.	.54641D+06	13079.	7217.7	.12982D+06	.30670D+06
2	23998.	.54674D+06	13093.	7638.4	.13737D+06	.32238D+06
3	24017.	.54708D+06	13107.	7657.7	.13770D+06	.32102D+06
4	24037.	.54743D+06	13121.	7677.1	.13804D+06	.31969D+06
5	24058.	.54782D+06	13136.	7696.9	.13839D+06	.31841D+06
6	24083.	.54830D+06	13151.	7718.1	.13878D+06	.31723D+06
7	24094.	.54862D+06	13159.	7743.1	.13926D+06	.31635D+06
8	16340.	.40904D+06	10001.	7754.1	.13958D+06	.31793D+06

FRACTIONATIO (RADFRC): D4602 (CONTINUED)

		**** X-PROFILE		****		
STAGE	AR	HCL	H2	H2O	H2S	NH3
1	.73493D-17	.55670D-07	.61987D-15	.88413	.47059D-11	.55422D-01
2	.24382D-19	.46306D-07	.14151D-17	.88417	.27939D-13	.55436D-01
3	.81589D-22	.37965D-07	.32626D-20	.88424	.16748D-15	.55420D-01
4	.27542D-24	.30547D-07	.75963D-23	.88441	.10139D-17	.55311D-01
5	.93826D-27	.23976D-07	.17863D-25	.88486	.62015D-20	.54918D-01
6	.32297D-29	.18212D-07	.42441D-28	.88618	.38392D-22	.53659D-01
7	.11286D-31	.13259D-07	.10210D-30	.89005	.24137D-24	.49792D-01
8	.50664D-34	.55635D-08	.32469D-33	.85336	.87843D-27	.58102D-01

		**** X-PROFILE		****		
STAGE	N2	CO	COS	CO2	HCN	CH4
1	.20097D-12	.35750D-16	.14056D-13	.18167D-11	.27151D-17	.10702D-14
2	.19568D-15	.37157D-19	.28818D-15	.46704D-14	.21797D-20	.36440D-17
3	.19248D-18	.39009D-22	.59492D-17	.12128D-16	.17736D-23	.12518D-19
4	.19129D-21	.41366D-25	.12369D-18	.31816D-19	.14631D-26	.43386D-22
5	.19211D-24	.44313D-28	.25913D-20	.84346D-22	.12248D-29	.15175D-24
6	.19517D-27	.47977D-31	.54801D-22	.22627D-24	.10435D-32	.53604D-27
7	.20141D-30	.52634D-34	.11766D-23	.61608D-27	.91069D-36	.19189D-29
8	.29739D-33	.82618D-37	.30746D-25	.12251D-29	.35144D-39	.91059D-32

		**** X-PROFILE		****		
STAGE	C2H4	C2H6	HOAC	C3H6	ACETONE	C3H8
1	.11791D-14	.20078D-14	.19884D-03	.40095D-19	.63187D-10	.19267D-13
2	.69382D-17	.12347D-16	.19865D-03	.77551D-24	.73199D-12	.53130D-15
3	.41166D-19	.76572D-19	.19838D-03	.15171D-28	.85460D-14	.14746D-16
4	.24630D-21	.47899D-21	.19802D-03	.30005D-33	.10057D-15	.41205D-18
5	.14867D-23	.30235D-23	.19777D-03	.59907D-38	.11939D-17	.11607D-19
6	.90644D-26	.19289D-25	.19883D-03	.12024D-42	.14327D-19	.33080D-21
7	.56098D-28	.12505D-27	.20643D-03	.24050D-47	.17516D-21	.96425D-23
8	.45820D-30	.10861D-29	.17908D-03	.16238D-51	.32914D-23	.30458D-24

		**** X-PROFILE		****		
STAGE	THIOPHEN	1-C4H8	MEK	PYRIDINE	BENZENE	PHENOL
1	.25247D-09	.31376D-19	.17116D-07	.31144D-04	.42585D-12	.70341D-07
2	.37348D-10	.49565D-24	.30819D-09	.23563D-04	.80006D-15	.46442D-08
3	.55538D-11	.79127D-29	.55656D-11	.17604D-04	.15186D-17	.30529D-09
4	.83043D-12	.12761D-33	.10083D-12	.12909D-04	.29123D-20	.19980D-10
5	.12495D-12	.20763D-38	.18342D-14	.92076D-05	.56421D-23	.13017D-11
6	.18943D-13	.33960D-43	.33596D-16	.63002D-05	.11044D-25	.84331D-13
7	.28880D-14	.55445D-48	.62523D-18	.40407D-05	.21902D-28	.54099D-14
8	.47343D-15	.32326D-52	.16181D-19	.21014D-05	.97920D-31	.50533D-15

FRACTIONATIO (RADFRC): D4602 (CONTINUED)

**** X-PROFILE ****

STAGE	DIPE	TOLUENE	O-CRESOL	H3PO4
1	.19960D-14	.80022D-14	.56925D-08	.60219D-01
2	.33621D-19	.28937D-17	.34026D-08	.60170D-01
3	.57083D-24	.10594D-20	.20233D-08	.60122D-01
4	.97682D-29	.39264D-24	.11904D-08	.60072D-01
5	.16844D-33	.14731D-27	.68669D-09	.60020D-01
6	.29255D-38	.55928D-31	.38207D-09	.59958D-01
7	.51286D-43	.21548D-34	.19852D-09	.59949D-01
8	.30403D-47	.24675D-37	.99127D-10	.88359D-01

**** Y-PROFILE ****

STAGE	AR	HCL	H2	H2O	H2S	NH3
1	.70269D-14	.19618D-06	.86235D-12	.95001	.25169D-08	.49597D-01
2	.23071D-16	.16286D-06	.19459D-14	.94996	.14773D-10	.49688D-01
3	.76407D-19	.13324D-06	.44347D-17	.94992	.87555D-13	.49746D-01
4	.25524D-21	.10693D-06	.10207D-19	.94998	.52396D-15	.49710D-01
5	.86012D-24	.83587D-07	.23723D-22	.95032	.31663D-17	.49384D-01
6	.29247D-26	.62956D-07	.55681D-25	.95154	.19331D-19	.48176D-01
7	.10045D-28	.44903D-07	.13200D-27	.95544	.11941D-21	.44282D-01
8	.34961D-31	.29475D-07	.31658D-30	.96737	.74816D-24	.32281D-01

**** Y-PROFILE ****

STAGE	N2	CO	COS	CO2	HCN	CH4
1	.65577D-09	.10926D-12	.21709D-11	.22446D-08	.10779D-13	.99718D-12
2	.63090D-12	.11223D-15	.44126D-13	.57029D-11	.85234D-17	.33595D-14
3	.61323D-15	.11644D-18	.90310D-15	.14636D-13	.68309D-20	.11420D-16
4	.60217D-18	.12204D-21	.18612D-16	.37942D-16	.55486D-23	.39161D-19
5	.59738D-21	.12918D-24	.38628D-18	.99358D-19	.45692D-26	.13549D-21
6	.59884D-24	.13813D-27	.80775D-20	.26292D-21	.38178D-29	.47301D-24
7	.60704D-27	.14922D-30	.17038D-21	.70377D-24	.32456D-32	.16672D-26
8	.62523D-30	.16338D-33	.35911D-23	.19118D-26	.28290D-35	.59434D-29

**** Y-PROFILE ****

STAGE	C2H4	C2H6	HOAC	C3H6	ACETONE	C3H8
1	.63538D-12	.10355D-11	.24170D-03	.65945D-14	.17286D-07	.22113D-11
2	.37015D-14	.63030D-14	.24113D-03	.12587D-18	.19836D-09	.60484D-13
3	.21743D-16	.38693D-16	.24042D-03	.24303D-23	.22939D-11	.16650D-14
4	.12878D-18	.23955D-18	.23947D-03	.47463D-28	.26735D-13	.46130D-16
5	.76918D-21	.14959D-20	.23825D-03	.93704D-33	.31409D-15	.12868D-17
6	.46341D-23	.94248D-23	.23734D-03	.18674D-37	.37216D-17	.36180D-19
7	.28192D-25	.59990D-25	.24050D-03	.37399D-42	.44554D-19	.10282D-20
8	.17335D-27	.38627D-27	.26406D-03	.74728D-47	.53735D-21	.29320D-22

PHOSAM

U-O-S BLOCK SECTION

FRACTIONATIO (RADFRC): D4602 (CONTINUED)

		**** Y-PROFILE		****		
STAGE	THIOPHEN	1-C4H8	MEK	PYRIDINE	BENZENE	PHENOL
1	.53946D-08	.63132D-14	.29974D-05	.12384D-03	.72019D-09	.33355D-05
2	.79257D-09	.98497D-19	.53730D-07	.93274D-04	.13368D-11	.22082D-06
3	.11704D-09	.15533D-23	.96582D-09	.69359D-04	.25073D-14	.14554D-07
4	.17374D-10	.24754D-28	.17411D-10	.50599D-04	.47509D-17	.95506D-09
5	.25924D-11	.39851D-33	.31489D-12	.35851D-04	.90948D-20	.62396D-10
6	.38847D-12	.64720D-38	.57175D-14	.24252D-04	.17587D-22	.40564D-11
7	.57919D-13	.10563D-42	.10446D-15	.15161D-04	.34348D-25	.26123D-12
8	.79762D-14	.17228D-47	.19087D-17	.81273D-05	.67849D-28	.15745D-13

		**** Y-PROFILE		****
STAGE	DIPE	TOLUENE	O-CRESOL	H3PO4
1	.37560D-09	.70463D-10	.29672D-07	.21192D-04
2	.62658D-14	.25121D-13	.17658D-07	.21314D-04
3	.10536D-18	.90682D-17	.10452D-07	.21450D-04
4	.17858D-23	.33142D-20	.61186D-08	.21631D-04
5	.30506D-28	.12262D-23	.35071D-08	.21950D-04
6	.52506D-33	.45917D-27	.19306D-08	.22699D-04
7	.90991D-38	.17395D-30	.97917D-09	.24964D-04
8	.15935D-42	.66903D-34	.40798D-09	.81866D-04

PHOSAM
U-O-S BLOCK SECTION

GENERAL-HEAT (HEATER): E4603
INPUT STREAM: 4624
OUTPUT STREAM: 4625 Q4603
PROPERTY OPTION SET SYSOP4W

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE DIFF.
CONVENTIONAL COMPONENTS (LBMOL/HR)			
AR	.507146D-10	.507146D-10	.0
CL2	.580871D-11	.580871D-11	.0
HCL	.150762D-02	.150762D-02	.0
H2	.622354D-08	.622354D-08	.0
H2O	20803.3	20803.3	.0
H2S	.181702D-04	.181702D-04	.0
NH3	1307.10	1307.10	.0
N2	.473262D-05	.473262D-05	.0
O2	.0	.0	.0
CO	.788524D-09	.788524D-09	.0
COS	.156681D-07	.156681D-07	.0
CO2	.162023D-04	.162023D-04	.0
HCN	.778272D-10	.778272D-10	.0
CH4	.719664D-08	.719664D-08	.0
C2H4	.458554D-08	.458554D-08	.0
C2H6	.747328D-08	.747328D-08	.0
HOAC	4.67173	4.67173	.0
C3H6	.475753D-10	.475753D-10	.0
ACETONE	.124750D-03	.124750D-03	.0
C3H8	.159608D-07	.159608D-07	.0
THIOPHEN	.389362D-04	.389362D-04	.0
1-C4H8	.455472D-10	.455472D-10	.0
MEK	.216306D-01	.216306D-01	.0
NC4H10	.801776D-13	.801776D-13	.0
PYRIDINE	.927686	.927686	.0
BENZENE	.519703D-05	.519703D-05	.0
PHENOL	.240776D-01	.240776D-01	.0
N-C6H14	.395655D-12	.395655D-12	.0
DIPE	.270970D-05	.270970D-05	.0
TOLUENE	.508291D-06	.508291D-06	.0
O-CRESOL	.215768D-03	.215768D-03	.0
NAPHTHAL	.744332D-11	.744332D-11	.0
NC10H22	.377523D-22	.377523D-22	.0
H3PO4	1443.95	1443.95	.0
TOTAL BALANCE			
MOLE(LBMOL/HR)	23560.0	23560.0	.0
MASS(LB/HR)	538897.	538897.	.0
ENTHALPY(BTU/HR)	-.296505D+10	-.296505D+10	-.261331D-15

*** INPUT DATA ***

TWO PHASE TP FLASH

SPECIFIED TEMPERATURE	F	375.00
PRESSURE DROP	PSIA	-10.000
MAXIMUM ITERATION NO.		30
CONVERGENCE TOLERANCE		.10000D-03

TP FLASH, NO INITIAL GUESSES ARE REQUIRED.

GENERAL-HEAT (HEATER): E4603 (CONTINUED)

*** RESULTS ***

OUTPUT TEMPERATURE	F	375.00
OUTPUT PRESSURE	PSIA	230.00
HEAT DUTY	BTU/HR	.75018D+08
VAPOR FRACTION		.0

V-L PHASE EQUILIBRIUM :

COMP	F(I)	X(I)	Y(I)	K(I)
AR	.21526D-14	.21526D-14	.24736D-11	879.44
HCL	.63991D-07	.63991D-07	.23959D-06	2.8654
H2	.26416D-12	.26416D-12	.45138D-09	1307.7
H2O	.88299	.88299	.95145	.82463
H2S	.77123D-09	.77123D-09	.51859D-06	514.60
NH3	.55480D-01	.55480D-01	.47813D-01	.65954
N2	.20088D-09	.20088D-09	.81586D-06	3108.3
CO	.33469D-13	.33469D-13	.12713D-09	2907.0
COS	.66503D-12	.66503D-12	.12307D-09	141.63
CO2	.68770D-09	.68770D-09	.10693D-05	1189.9
HCN	.33034D-14	.33034D-14	.18413D-10	4265.8
CH4	.30546D-12	.30546D-12	.34588D-09	866.55
C2H4	.19463D-12	.19463D-12	.12763D-09	501.84
C2H6	.31720D-12	.31720D-12	.19999D-09	482.52
HOAC	.19829D-03	.19829D-03	.26204D-03	1.0114
C3H6	.20193D-14	.20193D-14	.43916D-09	.16643D+06
ACETONE	.52950D-08	.52950D-08	.18449D-05	266.64
C3H8	.67745D-12	.67745D-12	.92227D-10	104.19
THIOPHEN	.16526D-08	.16526D-08	.42249D-07	19.565
1-C4H8	.19332D-14	.19332D-14	.51256D-09	.20290D+06
MEK	.91811D-06	.91811D-06	.18615D-03	155.17
PYRIDINE	.39375D-04	.39375D-04	.18193D-03	3.5360
BENZENE	.22059D-09	.22059D-09	.49765D-06	1726.5
PHENOL	.10220D-05	.10220D-05	.48255D-04	36.136
DIPE	.11501D-09	.11501D-09	.28398D-04	.18896D+06
TOLUENE	.21574D-10	.21574D-10	.26934D-06	9554.3
O-CRESOL	.91582D-08	.91582D-08	.56652D-07	4.7340
H3PO4	.61288D-01	.61288D-01	.22104D-04	.27601D-03

PHOSAM
U-O-S BLOCK SECTION

GENERAL-HEAT (HEATER): E4603A
INPUT STREAM: 4630 Q4603
OUTPUT STREAM: 4631 QE4603
PROPERTY OPTION SET SYSOP4W

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE DIFF.
CONVENTIONAL COMPONENTS (LBMOL/HR)			
AR	.507183D-10	.507183D-10	.0
CL2	.0	.0	.0
HCL	.141600D-02	.141600D-02	.0
H2	.622419D-08	.622419D-08	.0
H2O	6856.90	6856.90	.0
H2S	.181660D-04	.181660D-04	.0
NH3	357.977	357.977	.0
N2	.473314D-05	.473314D-05	.0
O2	.0	.0	.0
CO	.788623D-09	.788623D-09	.0
COS	.156691D-07	.156691D-07	.0
CO2	.162008D-04	.162008D-04	.0
HCN	.778018D-10	.778018D-10	.0
CH4	.719733D-08	.719733D-08	.0
C2H4	.458598D-08	.458598D-08	.0
C2H6	.747393D-08	.747393D-08	.0
HOAC	1.74450	1.74450	.0
C3H6	.475973D-10	.475973D-10	.0
ACETONE	.124764D-03	.124764D-03	.0
C3H8	.159602D-07	.159602D-07	.0
THIOPHEN	.389364D-04	.389364D-04	.0
1-C4H8	.455668D-10	.455668D-10	.0
MEK	.216345D-01	.216345D-01	.0
NC4H10	.0	.0	.0
PYRIDINE	.893846	.893846	.0
BENZENE	.519814D-05	.519814D-05	.0
PHENOL	.240743D-01	.240743D-01	.0
N-C6H14	.0	.0	.0
DIPE	.271094D-05	.271094D-05	.0
TOLUENE	.508580D-06	.508580D-06	.0
O-CRESOL	.214162D-03	.214162D-03	.0
NAPHTHAL	.0	.0	.0
NC10H22	.0	.0	.0
H3PO4	.152957	.152957	.0
TOTAL BALANCE			
MOLE(LBMOL/HR)	7217.71	7217.71	.0
MASS(LB/HR)	129818.	129818.	.0
ENTHALPY(BTU/HR)	-.779583D+09	-.704564D+09	-.962286D-01

*** INPUT DATA ***

TWO PHASE PV FLASH

PRESSURE DROP	PSIA	-3.0000
VAPOR FRACTION		.0
MAXIMUM ITERATION NO.		30
CONVERGENCE TOLERANCE		.10000D-03

PHOSAM

U-O-S BLOCK SECTION

GENERAL-HEAT (HEATER): E4603A (CONTINUED)

*** RESULTS ***

OUTPUT TEMPERATURE	F	362.05
OUTPUT PRESSURE	PSIA	197.00
HEAT DUTY	BTU/HR	-.11497D+09
VAPOR FRACTION		.0

V-L PHASE EQUILIBRIUM :

COMP	F(I)	X(I)	Y(I)	K(I)
AR	.70269D-14	.70269D-14	.22983D-10	3270.8
HCL	.19618D-06	.19618D-06	.19229D-07	.98016D-01
H2	.86235D-12	.86235D-12	.31202D-08	3618.4
H2O	.95001	.95001	.76501	.80526
H2S	.25169D-08	.25169D-08	.44757D-06	177.83
NH3	.49597D-01	.49597D-01	.23456	4.7294
N2	.65577D-09	.65577D-09	.33358D-05	5087.0
CO	.10926D-12	.10926D-12	.42981D-09	3933.9
COS	.21709D-11	.21709D-11	.62922D-09	289.85
CO2	.22446D-08	.22446D-08	.15101D-05	672.78
HCN	.10779D-13	.10779D-13	.22483D-11	208.58
CH4	.99718D-12	.99718D-12	.33861D-08	3395.8
C2H4	.63538D-12	.63538D-12	.10094D-08	1588.8
C2H6	.10355D-11	.10355D-11	.38061D-08	3675.7
HOAC	.24170D-03	.24170D-03	.12538D-03	.51875
C3H6	.65945D-14	.65945D-14	.82075D-11	1244.6
ACETONE	.17286D-07	.17286D-07	.26175D-06	15.143
C3H8	.22113D-11	.22113D-11	.14525D-07	6568.6
THIOPHEN	.53946D-08	.53946D-08	.18616D-06	34.510
1-C4H8	.63132D-14	.63132D-14	.13071D-10	2070.4
MEK	.29974D-05	.29974D-05	.10489D-03	34.993
PYRIDINE	.12384D-03	.12384D-03	.18444D-03	1.4893
BENZENE	.72019D-09	.72019D-09	.12791D-06	177.61
PHENOL	.33355D-05	.33355D-05	.53112D-05	1.5924
DIPE	.37560D-09	.37560D-09	.15343D-06	408.52
TOLUENE	.70463D-10	.70463D-10	.23185D-07	329.05
O-CRESOL	.29672D-07	.29672D-07	.20280D-07	.68349
H3PO4	.21192D-04	.21192D-04	.23270D-09	.10981D-04

PHOSAM
U-O-S BLOCK SECTION

GENERAL-HEAT (HEATER): E4601
INPUT STREAM: 4626
OUTPUT STREAM: 4629 Q4602
PROPERTY OPTION SET SYSOP4W

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE DIFF.
CONVENTIONAL COMPONENTS (LBMOL/HR)			
AR	.827857D-30	.827857D-30	.0
CL2	.0	.0	.0
HCL	.909090D-04	.909090D-04	.0
H2	.530554D-29	.530554D-29	.0
H2O	13944.0	13944.0	.0
H2S	.143537D-22	.143537D-22	.0
NH3	949.401	949.401	.0
N2	.485943D-29	.485943D-29	.0
O2	.0	.0	.0
CO	.134999D-32	.134999D-32	.0
COS	.502399D-21	.502399D-21	.0
CO2	.200179D-25	.200179D-25	.0
HCN	.574259D-35	.574259D-35	.0
CH4	.148791D-27	.148791D-27	.0
C2H4	.748699D-26	.748699D-26	.0
C2H6	.177477D-25	.177477D-25	.0
HOAC	2.92617	2.92617	.0
C3H6	.265339D-47	.265339D-47	.0
ACETONE	.537824D-19	.537824D-19	.0
C3H8	.497683D-20	.497683D-20	.0
THIOPHEN	.773591D-11	.773591D-11	.0
1-C4H8	.528215D-48	.528215D-48	.0
MEK	.264406D-15	.264406D-15	.0
NC4H10	.0	.0	.0
PYRIDINE	.343368D-01	.343368D-01	.0
BENZENE	.160003D-26	.160003D-26	.0
PHENOL	.825717D-11	.825717D-11	.0
N-C6H14	.0	.0	.0
DIPE	.496789D-43	.496789D-43	.0
TOLUENE	.403195D-33	.403195D-33	.0
O-CRESOL	.161976D-05	.161976D-05	.0
NAPHTHAL	.0	.0	.0
NC10H22	.0	.0	.0
H3PO4	1443.79	1443.79	.0
TOTAL BALANCE			
MOLE(LBMOL/HR)	16340.2	16340.2	.0
MASS(LB/HR)	409041.	409041.	.0
ENTHALPY(BTU/HR)	-.206153D+10	-.206153D+10	-.867385D-16

*** INPUT DATA ***

TWO PHASE TP FLASH

SPECIFIED TEMPERATURE	F	150.00
PRESSURE DROP	PSIA	-10.000
MAXIMUM ITERATION NO.		30
CONVERGENCE TOLERANCE		.10000D-03

TP FLASH, NO INITIAL GUESSES ARE REQUIRED.

GENERAL-HEAT (HEATER): E4601 (CONTINUED)

*** RESULTS ***

OUTPUT TEMPERATURE	F	150.00
OUTPUT PRESSURE	PSIA	200.00
HEAT DUTY	BTU/HR	-.90199D+08
VAPOR FRACTION		.0

V-L PHASE EQUILIBRIUM :

COMP	F(I)	X(I)	Y(I)	K(I)
HCL	.55635D-08	.55635D-08	.11027D-06	.35265
H2O	.85336	.85336	.98495	.20537D-01
NH3	.58102D-01	.58102D-01	.13854D-01	.42425D-02
HOAC	.17908D-03	.17908D-03	.96452D-03	.95833D-01
PYRIDINE	.21014D-05	.21014D-05	.22165D-03	1.8768
O-CRESOL	.99127D-10	.99127D-10	.13651D-07	2.4503
H3PO4	.88359D-01	.88359D-01	.95299D-05	.19191D-05

PHOSAM
U-O-S BLOCK SECTION

PUMP (PUMP): G4603
INLET = 4631 OUTLET = 4632
PROPERTY OPTION SET SYSOP4W

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE DIFF.
CONVENTIONAL COMPONENTS (LBMOL/HR)			
AR	.507183D-10	.507183D-10	.0
CL2	.0	.0	.0
HCL	.141600D-02	.141600D-02	.0
H2	.622419D-08	.622419D-08	.0
H2O	6856.90	6856.90	.0
H2S	.181660D-04	.181660D-04	.0
NH3	357.977	357.977	.0
N2	.473314D-05	.473314D-05	.0
O2	.0	.0	.0
CO	.788623D-09	.788623D-09	.0
COS	.156691D-07	.156691D-07	.0
CO2	.162008D-04	.162008D-04	.0
HCN	.778018D-10	.778018D-10	.0
CH4	.719733D-08	.719733D-08	.0
C2H4	.458598D-08	.458598D-08	.0
C2H6	.747393D-08	.747393D-08	.0
HOAC	1.74450	1.74450	.0
C3H6	.475973D-10	.475973D-10	.0
ACETONE	.124764D-03	.124764D-03	.0
C3H8	.159602D-07	.159602D-07	.0
THIOPHEN	.389364D-04	.389364D-04	.0
1-C4H8	.455668D-10	.455668D-10	.0
MEK	.216345D-01	.216345D-01	.0
NC4H10	.0	.0	.0
PYRIDINE	.893846	.893846	.0
BENZENE	.519814D-05	.519814D-05	.0
PHENOL	.240743D-01	.240743D-01	.0
N-C6H14	.0	.0	.0
DIPE	.271094D-05	.271094D-05	.0
TOLUENE	.508580D-06	.508580D-06	.0
O-CRESOL	.214162D-03	.214162D-03	.0
NAPHTHAL	.0	.0	.0
NC10H22	.0	.0	.0
H3PO4	.152957	.152957	.0
TOTAL BALANCE			
MOLE(LBMOL/HR)	7217.71	7217.71	.0
MASS(LB/HR)	129818.	129818.	.0
ENTHALPY(BTU/HR)	-.819534D+09	-.819422D+09	-.135979D-03

*** INPUT DATA ***

TYPE OF PUMP: 1=CENTRIFUGAL PUMP;

2, SLURRY PUMP; 3, POSITIVE DISPLACEMENT PUMP	1
REQUIRED EXIT PRESSURE ,PSIA	300.000
PUMP EFFICIENCY ,	0.50000
DRIVER EFFICIENCY ,	1.00000
SOLID FLOW RATE ,LB/HR	MISSING

PHOSAM

U-O-S BLOCK SECTION

PUMP (PUMP): G4603 (CONTINUED)

*** RESULTS ***

TYPE OF PUMP, (CAL)	1
VOLUMETRIC FLOW RATE CUFT/HR	2,923.35
DELTA PRESSURE PSIA	103.000
FLUID POWER REQUIREMENTHP	21.8986
BRAKE POWER REQUIREMENTHP	43.7972
ELECTRICITY REQUIREMENT HP	43.7972
PUMP EFFICIENCY (CAL)	0.50000

PHOSAM

U-O-S BLOCK SECTION

FRACTIONATIO (RADFRC): D4603

INLETS	- 4632	STAGE	6
	4633	STAGE	2
OUTLETS	- 4635	STAGE	1
	4636	STAGE	12
	QD4603R	STAGE	12
	QD4603C	STAGE	1

PROPERTY OPTION SET SYSOP4W

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE DIFF.
CONVENTIONAL COMPONENTS (LBMOL/HR)			
AR	.507183D-10	.507183D-10	.189851D-13
CL2	.0	.0	.0
HCL	.141600D-02	.141600D-02	.279474D-14
H2	.622419D-08	.622419D-08	.190044D-13
H2O	6857.90	6857.90	.0
H2S	.181660D-04	.181660D-04	.173454D-13
NH3	357.977	357.977	.222307D-14
N2	.473314D-05	.473314D-05	.190590D-13
O2	.0	.0	.0
CO	.788623D-09	.788623D-09	.189456D-13
COS	.156691D-07	.156691D-07	.141479D-13
CO2	.162008D-04	.162008D-04	.167307D-13
HCN	.778018D-10	.778018D-10	.460992D-14
CH4	.719733D-08	.719733D-08	.190782D-13
C2H4	.458598D-08	.458598D-08	.189390D-13
C2H6	.747393D-08	.747393D-08	.181508D-13
HOAC	1.74450	1.74450	.203653D-14
C3H6	.475973D-10	.475973D-10	.163605D-13
ACETONE	.124764D-03	.124764D-03	-.110662D-12
C3H8	.159602D-07	.159602D-07	.139935D-13
THIOPHEN	.389364D-04	.389364D-04	-.342412D-12
1-C4H8	.455668D-10	.455668D-10	.893474D-14
MEK	.216345D-01	.216345D-01	-.108528D-12
NC4H10	.0	.0	.0
PYRIDINE	.893846	.893846	-.163643D-13
BENZENE	.519814D-05	.519814D-05	-.333924D-12
PHENOL	.240743D-01	.240743D-01	-.264546D-11
N-C6H14	.0	.0	.0
DIPE	.271094D-05	.271094D-05	.710824D-14
TOLUENE	.508580D-06	.508580D-06	-.315271D-12
O-CRESOL	.214162D-03	.214162D-03	.632818D-16
NAPHTHAL	.0	.0	.0
NC10H22	.0	.0	.0
H3PO4	.152957	.152957	.371993D-14
TOTAL BALANCE			
MOLE(LBMOL/HR)	7218.71	7218.71	.0
MASS(LB/HR)	129836.	129836.	-.224158D-14
ENTHALPY(BTU/HR)	-.819546D+09	-.819546D+09	.219119D-08

PHOSAM

U-O-S BLOCK SECTION

FRACTIONATIO (RADFRC): D4603 (CONTINUED)

*** INPUT DATA ***

**** INPUT PARAMETERS ****

NUMBER OF THEORETICAL STAGES	12
* ALGORITHM OPTIONS *	
MAXIMUM OUTSIDE LOOPS	40
MAXIMUM INSIDE LOOPS PER OUTSIDE LOOP	10
MAXIMUM ITERATIONS FOR FEED FLASH	30
NONIDEAL OPTION	OFF
NUMBER OF INTERNAL DESIGN SPECS	1
BOUNDED WEGSTEIN MODULUS ON OUTSIDE LOOP NUMBER	1
ENTHALPY BALANCE OPTION CODE	MOLAR
INSIDE LOOP ITERATION METHOD	BROYDEN
KB UPDATING OPTION CODE	1
KB WEIGHTING OPTION CODE	Y/(1+K)
DESIGN SPECS METHOD OPTION CODE	1
* CONVERGENCE METHOD VARIABLES *	
FEED FLASH CONVERGENCE TOLERANCE	1.000000-06
OUTSIDE LOOP CONVERGENCE TOLERANCE	0.100000-03
MINIMUM INSIDE LOOP CONV TOLERANCE	0.300000-05
INITIAL INSIDE LOOP CONV TOLERANCE	0.0100000
INSIDE LOOP CONV TOL REDUCTION FACTOR	0.30000
INSIDE LOOP RMS ERR FOR JACOBIAN UPDATE	1.000000-06
COMPONENT MASS BALANCE CONV TOLERANCE	0.100000-06
SIMPLE MODEL SLOPE PARAMETER UPDATE TOLERANCE	0.050000
QMIN FOR BOUNDED WEGSTEIN IN OUTSIDE LOOP	0.0
QMAX FOR BOUNDED WEGSTEIN IN OUTSIDE LOOP	0.50000
BOUNDED WEGSTEIN SLOPE TOLERANCE	0.050000
QMIN FOR BOUNDED WEGSTEIN IN INSIDE LOOP	0.0
QMAX FOR BOUNDED WEGSTEIN IN INSIDE LOOP	0.50000
MIDDLE LOOP CONVERGENCE TOLERANCE	0.20000
MANIPULATED VARIABLE FACTOR	0.100000-04
FACTOR 1 FOR PERFORMANCE SPEC CONV ALG	0.100000
FACTOR 2 FOR PERFORMANCE SPEC CONV ALG	0.20000

**** COL-SPECS ****

VAPOR DISTILLATE / TOTAL DISTILLATE (RDV)		0.0
REFLUX RATIO		40.0000
DISTILLATE RATE	LBMOL/HR	357.976

**** PROFILES ****

FRACTIONATIO (RADFRC): D4603 (CONTINUED)

TEMP-EST	STAGE	1	TEMP, F	102.400
		2		102.480
		3		104.260
		4		199.490
		5		343.390
		6		374.090
		7		384.680
		8		388.490
		9		389.930
		10		390.530
		11		390.810
		12		390.990
P-SPEC	STAGE	1	PRES, PSIA	220.000
		12		223.000

X-EST STAGE	AR	HCL	H2	H2O	H2S	NH3
1	MISSING	MISSING	MISSING	.45649-07	MISSING	1.0000
2	MISSING	MISSING	MISSING	.33514-04	MISSING	0.9999
3	MISSING	MISSING	MISSING	0.0227	MISSING	0.9772
4	MISSING	MISSING	MISSING	0.5437	MISSING	0.4562
5	MISSING	MISSING	MISSING	0.8724	MISSING	0.1275
6	MISSING	MISSING	MISSING	0.9557	MISSING	0.0442
7	MISSING	MISSING	MISSING	0.9834	MISSING	0.0165
8	MISSING	MISSING	MISSING	0.9939	MISSING	0.0060
9	MISSING	MISSING	MISSING	0.9977	MISSING	0.0022
10	MISSING	MISSING	MISSING	0.9991	MISSING	.81201-03
11	MISSING	MISSING	MISSING	0.9997	MISSING	.28544-03
12	MISSING	MISSING	MISSING	0.9999	MISSING	.91111-04

X-EST STAGE	N2	CO	COS	CO2	HCN	CH4
1	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
2	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
3	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
4	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
5	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
6	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
7	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
8	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
9	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
10	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
11	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
12	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING

PHOSAM

U-O-S BLOCK SECTION

FRACTIONATIO (RADFRC): D4603 (CONTINUED)

X-EST STAGE	C2H4	C2H6	HOAC	C3H6	ACETONE	C3H8
1	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
2	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
3	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
4	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
5	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
6	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
7	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
8	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
9	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
10	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
11	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
12	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING

X-EST STAGE	THIOPHEN	1-C4H8	MEK	PYRIDINE	BENZENE	PHENOL
1	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
2	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
3	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
4	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
5	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
6	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
7	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
8	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
9	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
10	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
11	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
12	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING

X-EST STAGE	DIPE	TOLUENE	O-CRESOL	H3PO4
1	MISSING	MISSING	MISSING	0.0
2	MISSING	MISSING	MISSING	0.0
3	MISSING	MISSING	MISSING	.40281-34
4	MISSING	MISSING	MISSING	.15461-16
5	MISSING	MISSING	MISSING	.48413-10
6	MISSING	MISSING	MISSING	.36601-05
7	MISSING	MISSING	MISSING	.36439-05
8	MISSING	MISSING	MISSING	.36381-05
9	MISSING	MISSING	MISSING	.36356-05
10	MISSING	MISSING	MISSING	.36345-05
11	MISSING	MISSING	MISSING	.36339-05
12	MISSING	MISSING	MISSING	.85563-05

FRACTIONATIO (RADFRC): D4603 (CONTINUED)

Y-EST STAGE	AR	HCL	H2	H2O	H2S	NH3
1	MISSING	MISSING	MISSING	.62028-10	MISSING	1.0000
2	MISSING	MISSING	MISSING	.45649-07	MISSING	1.0000
3	MISSING	MISSING	MISSING	.31917-04	MISSING	0.9999
4	MISSING	MISSING	MISSING	0.0214	MISSING	0.9785
5	MISSING	MISSING	MISSING	0.4960	MISSING	0.5039
6	MISSING	MISSING	MISSING	0.7962	MISSING	0.2037
7	MISSING	MISSING	MISSING	0.9227	MISSING	0.0772
8	MISSING	MISSING	MISSING	0.9713	MISSING	0.0286
9	MISSING	MISSING	MISSING	0.9894	MISSING	0.0105
10	MISSING	MISSING	MISSING	0.9961	MISSING	0.0038
11	MISSING	MISSING	MISSING	0.9986	MISSING	0.0013
12	MISSING	MISSING	MISSING	0.9995	MISSING	.42889-03

Y-EST STAGE	N2	CO	COS	CO2	HCN	CH4
1	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
2	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
3	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
4	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
5	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
6	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
7	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
8	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
9	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
10	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
11	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
12	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING

Y-EST STAGE	C2H4	C2H6	HOAC	C3H6	ACETONE	C3H8
1	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
2	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
3	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
4	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
5	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
6	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
7	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
8	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
9	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
10	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
11	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
12	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING

PHOSAM

U-O-S BLOCK SECTION

FRACTIONATIO (RADFRC): D4603 (CONTINUED)

Y-EST STAGE	THIOPHEN	1-C4H8	MEK	PYRIDINE	BENZENE	PHENOL
1	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
2	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
3	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
4	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
5	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
6	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
7	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
8	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
9	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
10	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
11	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
12	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING

Y-EST STAGE	DIPE	TOLUENE	O-CRESOL	H3PO4
1	MISSING	MISSING	MISSING	0.0
2	MISSING	MISSING	MISSING	0.0
3	MISSING	MISSING	MISSING	0.0
4	MISSING	MISSING	MISSING	.38071-34
5	MISSING	MISSING	MISSING	.14104-16
6	MISSING	MISSING	MISSING	.44182-10
7	MISSING	MISSING	MISSING	.11616-09
8	MISSING	MISSING	MISSING	.16410-09
9	MISSING	MISSING	MISSING	.18602-09
10	MISSING	MISSING	MISSING	.19459-09
11	MISSING	MISSING	MISSING	.19766-09
12	MISSING	MISSING	MISSING	.46781-09

*** RESULTS ***

TOP TRAY TEMPERATURE	F	102.407
BOTTOM TRAY TEMPERATURE	F	391.023
TOP TRAY LIQUID FLOW	LBMOL/HR	35,797.6
BOTTOM TRAY LIQUID FLOW	LBMOL/HR	6,860.74
TOP TRAY VAPOR FLOW	LBMOL/HR	0.0
BOTTOM TRAY VAPOR FLOW	LBMOL/HR	19,760.6
CONDENSER DUTY	BTU/HR	-0.302983+09
REBOILER DUTY	BTU/HR	0.307224+09

**** MANIPULATED VARIABLES ****

REFLUX RATIO	100.0000

FRACTIONATIO (RADFRC): D4603 (CONTINUED)

**** PROFILES ****

STG	TEMPERATURE F	PRESSURE PSIA	FEED RATE LBMOL/HR LIQUID	FEED RATE LBMOL/HR VAPOR	PRODUCT RATE LBMOL/HR LIQUID	PRODUCT RATE LBMOL/HR VAPOR
1	102.41	220.00			357.9761	
2	103.94	220.27	1.0000			
3	189.44	220.55				
4	341.21	220.82				
5	378.95	221.09				
6	386.73	221.36	7217.7115			
7	389.46	221.64				
8	390.30	221.91				
9	390.62	222.18				
10	390.78	222.45				
11	390.91	222.73				
12	391.02	223.00			6860.7353	

STG	TOTAL LIQUID FLOW LBMOL/HR	LB/HR	CUFT/HR	TOTAL VAPOR FLOW LBMOL/HR	LB/HR	CUFT/HR
1	35798.	.60982D+06	19000.	.0	.0	.0
2	31624.	.54652D+06	16636.	36156.	.61592D+06	.87390D+06
3	18994.	.35425D+06	8314.7	31981.	.55260D+06	.92954D+06
4	18873.	.33881D+06	7750.2	19351.	.36033D+06	.69861D+06
5	19154.	.34533D+06	7824.3	19230.	.34489D+06	.72568D+06
6	26570.	.47925D+06	10836.	19511.	.35141D+06	.74253D+06
7	26600.	.47987D+06	10841.	19709.	.35551D+06	.75165D+06
8	26610.	.48001D+06	10843.	19740.	.35613D+06	.75263D+06
9	26615.	.48004D+06	10844.	19750.	.35628D+06	.75234D+06
10	26618.	.48004D+06	10845.	19754.	.35630D+06	.75170D+06
11	26621.	.48006D+06	10847.	19758.	.35630D+06	.75097D+06
12	6860.7	.12374D+06	2796.3	19761.	.35632D+06	.75021D+06

**** X-PROFILE ****

STAGE	AR	HCL	H2	H2O	H2S	NH3
1	.14168D-12	.19385D-08	.17387D-10	.22292D-04	.50746D-07	.99990
2	.22921D-15	.48589D-09	.52563D-13	.15460D-01	.25012D-07	.98090
3	.71446D-18	.43968D-09	.83539D-16	.49062	.10490D-08	.49418
4	.13421D-17	.59538D-09	.11032D-15	.86978	.30660D-10	.12921
5	.94085D-18	.59978D-08	.10235D-15	.96802	.58513D-11	.31261D-01
6	.91949D-18	.57596D-07	.97644D-16	.98902	.54112D-11	.10432D-01
7	.43613D-21	.57518D-07	.39797D-19	.99654	.41424D-13	.29829D-02
8	.20661D-24	.57497D-07	.16168D-22	.99872	.31555D-15	.85192D-03
9	.97919D-28	.57545D-07	.65675D-26	.99938	.24014D-17	.24304D-03

10	.46452D-31	.58318D-07	.26700D-29	.99958	.18279D-19	.69078D-04
11	.22068D-34	.68669D-07	.10870D-32	.99964	.13926D-21	.19366D-04
12	.10509D-37	.20629D-06	.44355D-36	.99958	.10597D-23	.51594D-05

FRACTIONATIO (RADFRC): D4603 (CONTINUED)

		**** X-PROFILE		****		
STAGE	N2	CO	COS	CO2	HCN	CH4
1	.13222D-07	.22030D-11	.43771D-10	.45257D-07	.21734D-12	.20106D-10
2	.10796D-10	.94929D-14	.19563D-10	.67411D-08	.98557D-12	.35993D-12
3	.15618D-13	.67470D-17	.22379D-12	.66690D-10	.36297D-13	.53303D-15
4	.27313D-13	.53135D-17	.42414D-14	.29671D-11	.24140D-15	.19849D-15
5	.58312D-13	.12282D-16	.33798D-14	.13517D-11	.23780D-16	.12512D-15
6	.56883D-13	.11760D-16	.33167D-14	.12679D-11	.21754D-16	.11868D-15
7	.17975D-16	.45852D-20	.18385D-16	.25566D-14	.15795D-18	.50666D-19
8	.56814D-20	.17854D-23	.10193D-18	.51269D-17	.11445D-20	.21538D-22
9	.17974D-23	.69549D-27	.56554D-21	.10270D-19	.82924D-23	.91507D-26
10	.56934D-27	.27122D-30	.31416D-23	.20576D-22	.60124D-25	.38904D-29
11	.18064D-30	.10593D-33	.17478D-25	.41265D-25	.43647D-27	.16562D-32
12	.57458D-34	.41476D-37	.97341D-28	.82821D-28	.31660D-29	.70681D-36

		**** X-PROFILE		****		
STAGE	C2H4	C2H6	HOAC	C3H6	ACETONE	C3H8
1	.12811D-10	.20878D-10	.57275D-08	.13296D-12	.34852D-06	.44585D-10
2	.97229D-12	.22176D-11	.13136D-05	.33401D-13	.32912D-05	.12627D-10
3	.23693D-14	.54268D-14	.14610D-04	.10373D-17	.35821D-07	.17102D-12
4	.22598D-15	.36342D-15	.31209D-04	.91481D-21	.54689D-10	.71194D-14
5	.16684D-15	.11672D-15	.58713D-04	.22184D-17	.49538D-09	.13710D-15
6	.15677D-15	.10883D-15	.10889D-03	.18150D-17	.49598D-09	.12889D-15
7	.13840D-18	.40657D-19	.10973D-03	.17781D-20	.48427D-10	.26493D-19
8	.12156D-21	.15081D-22	.11189D-03	.17302D-23	.47343D-11	.53928D-23
9	.10666D-24	.55846D-26	.11733D-03	.16809D-26	.46314D-12	.10949D-26
10	.93628D-28	.20685D-29	.13112D-03	.16331D-29	.45328D-13	.22225D-30
11	.82280D-31	.76701D-33	.16601D-03	.15881D-32	.44306D-14	.45158D-34
12	.72464D-34	.28519D-36	.25427D-03	.15477D-35	.42403D-15	.92033D-38

		**** X-PROFILE		****		
STAGE	THIOPHEN	1-C4H8	MEK	PYRIDINE	BENZENE	PHENOL
1	.10877D-06	.12729D-12	.60436D-04	.12375D-04	.14521D-07	.38901D-06
2	.36918D-05	.74933D-13	.11022D-02	.13736D-02	.28185D-06	.11575D-02
3	.72493D-06	.30190D-17	.99250D-04	.21113D-02	.56208D-09	.12972D-01
4	.24772D-07	.67766D-21	.37614D-06	.70498D-03	.65572D-13	.26635D-03
5	.88731D-09	.12860D-17	.44311D-07	.50359D-03	.16093D-11	.15229D-03
6	.95630D-10	.10440D-17	.31304D-07	.35784D-03	.13748D-11	.73933D-04
7	.42910D-11	.61264D-21	.11269D-08	.31745D-03	.92405D-14	.47101D-04
8	.19241D-12	.35671D-24	.40344D-10	.27817D-03	.61567D-16	.29488D-04
9	.86300D-14	.20726D-27	.14417D-11	.23979D-03	.40915D-18	.18182D-04
10	.38735D-15	.12041D-30	.51494D-13	.20226D-03	.27176D-20	.10975D-04
11	.17398D-16	.70019D-34	.18391D-14	.16555D-03	.18059D-22	.63946D-05
12	.77458D-18	.40827D-37	.65191D-16	.12964D-03	.12006D-24	.34887D-05

PHOSAM
U-O-S BLOCK SECTION

FRACTIONATIO (RADFRC): D4603 (CONTINUED)

**** X-PROFILE ****

STAGE	DIPE	TOLUENE	O-CRESOL	H3PO4
1	.75730D-08	.14207D-08	.45119D-11	.47551D-75
2	.15326D-07	.50740D-07	.16164D-07	.34589D-39
3	.19842D-11	.18856D-10	.49840D-07	.11750D-20
4	.61224D-16	.32776D-15	.78614D-08	.45230D-14
5	.38395D-12	.84393D-13	.11825D-07	.23086D-09
6	.31478D-12	.68889D-13	.16852D-07	57570D-05
7	.94331D-15	.23636D-15	.17118D-07	.57504D-05
8	.28110D-17	.80228D-18	.17620D-07	.57482D-05
9	.83602D-20	.27142D-20	.18588D-07	.57472D-05
10	.24850D-22	.91738D-23	.20464D-07	.57465D-05
11	.73890D-25	.31019D-25	.24112D-07	.57466D-05
12	.21999D-27	.10505D-27	.31215D-07	.22295D-04

**** Y-PROFILE ****

STAGE	AR	HCL	H2	H2O	H2S	NH3
1	.80921D-10	.79900D-08	.51190D-08	.30318D-07	.93874D-07	.99998
2	.14168D-12	.19385D-08	.17387D-10	.22292D-04	.50746D-07	.99990
3	.18125D-14	.50217D-09	.24660D-12	.15256D-01	.25301D-07	.98114
4	.26217D-14	.46743D-09	.32173D-12	.48152	.19684D-08	.50356
5	.26388D-14	.62042D-09	.32379D-12	.85359	.97479D-09	.14543
6	.26004D-14	.59236D-08	.31911D-12	.95026	.93682D-09	.49034D-01
7	.12396D-17	.58356D-08	.13163D-15	.98534	.72948D-11	.14062D-01
8	.58772D-21	.58096D-08	.53629D-19	.99548	.55821D-13	.40179D-02
9	.27839D-24	.58081D-08	.21785D-22	.99842	.42517D-15	.11461D-02
10	.13193D-27	.58858D-08	.88484D-26	.99930	.32354D-17	.32565D-03
11	.62582D-31	.69351D-08	.35972D-29	.99958	.24627D-19	.91274D-04
12	.29726D-34	.20887D-07	.14642D-32	.99965	.18724D-21	.24299D-04

**** Y-PROFILE ****

STAGE	N2	CO	COS	CO2	HCN	CH4
1	.14500D-04	.44160D-09	.84519D-10	.27252D-06	.40291D-13	.98138D-09
2	.13222D-07	.22030D-11	.43771D-10	.45257D-07	.21734D-12	.20106D-10
3	.15867D-09	.34046D-13	.19835D-10	.71725D-08	.97700D-12	.58096D-12
4	.24461D-09	.40761D-13	.10294D-11	.90267D-09	.39648D-13	.37246D-12
5	.24617D-09	.41016D-13	.81901D-12	.84541D-09	.42829D-14	.37448D-12
6	.24265D-09	.40432D-13	.80641D-12	.83168D-09	.40110D-14	.36901D-12
7	.76683D-13	.15854D-16	.44712D-14	.17093D-11	.29327D-16	.15999D-15
8	.24222D-16	.61788D-20	.24775D-16	.34452D-14	.21285D-18	.68275D-19
9	.76550D-20	.24056D-23	.13733D-18	.69079D-17	.15421D-20	.29020D-22
10	.24216D-23	.93703D-27	.76196D-21	.13836D-19	.11172D-22	.12329D-25
11	.76704D-27	.36540D-30	.42325D-23	.27721D-22	.81001D-25	.52413D-29
12	.24333D-30	.14270D-33	.23513D-25	.55563D-25	.58691D-27	.22309D-32

PHOSAM

U-O-S BLOCK SECTION

FRACTIONATIO (RADFRC): D4603 (CONTINUED)

		**** Y-PROFILE		****		
STAGE	C2H4	C2H6	HOAC	C3H6	ACETONE	C3H8
1	.14499D-09	.16696D-09	.22868D-10	.38517D-12	.28750D-07	.13702D-09
2	.12811D-10	.20878D-10	.57275D-08	.13296D-12	.34852D-06	.44585D-10
3	.11048D-11	.24265D-11	.12990D-05	.34517D-13	.32584D-05	.12985D-10
4	.23932D-12	.39156D-12	.14340D-04	.24607D-14	.41608D-07	.99265D-12
5	.23871D-12	.38903D-12	.30629D-04	.24752D-14	.65418D-08	.83697D-12
6	.23521D-12	.38318D-12	.57639D-04	.24417D-14	.68809D-08	.81815D-12
7	.21135D-15	.14671D-15	.58288D-04	.24468D-17	.66864D-09	.17376D-15
8	.18650D-18	.54788D-19	.59496D-04	.23960D-20	.65258D-10	.35701D-19
9	.16378D-21	.20319D-22	.62422D-04	.23313D-23	.63787D-11	.72662D-23
10	.14371D-24	.75241D-26	.69775D-04	.22647D-26	.62384D-12	.14752D-26
11	.12614D-27	.27867D-29	.88357D-04	.22001D-29	.60921D-13	.29943D-30
12	.11082D-30	.10332D-32	.13537D-03	.21389D-32	.58217D-14	.60834D-34

		**** Y-PROFILE		****		
STAGE	THIOPHEN	1-C4H8	MEK	PYRIDINE	BENZENE	PHENOL
1	.26650D-08	.15449D-12	.27648D-05	.96001D-07	.53736D-09	.11645D-09
2	.10877D-06	.12729D-12	.60436D-04	.12375D-04	.14521D-07	.38901D-06
3	.36518D-05	.75522D-13	.10906D-02	.13584D-02	.27886D-06	.11446D-02
4	.71357D-06	.23577D-14	.98538D-04	.20726D-02	.82034D-09	.12733D-01
5	.26337D-07	.23696D-14	.14942D-05	.69212D-03	.27039D-09	.26141D-03
6	.28667D-08	.23367D-14	.11523D-05	.49460D-03	.26800D-09	.14951D-03
7	.12892D-09	.14074D-17	.42201D-07	.43727D-03	.18534D-11	.98455D-04
8	.57823D-11	.82557D-21	.15186D-08	.38273D-03	.12452D-13	.62259D-04
9	.25925D-12	.48062D-24	.54358D-10	.32977D-03	.82954D-16	.38519D-04
10	.11627D-13	.27924D-27	.19424D-11	.27805D-03	.55125D-18	.23284D-04
11	.52158D-15	.16222D-30	.69352D-13	.22747D-03	.36612D-20	.13574D-04
12	.23169D-16	.94315D-34	.24549D-14	.17801D-03	.24287D-22	.74035D-05

		**** Y-PROFILE		****
STAGE	DIPE	TOLUENE	O-CRESOL	H3PO4
1	.26834D-08	.26219D-10	.10013D-14	.0
2	.75730D-08	.14207D-08	.45119D-11	.47551D-75
3	.15239D-07	.50190D-07	.15983D-07	.34203D-39
4	.14204D-09	.44790D-10	.48920D-07	.11533D-20
5	.14098D-09	.26448D-10	.77156D-08	.44390D-14
6	.13932D-09	.26149D-10	.11608D-07	.22664D-09
7	.42436D-12	.92869D-13	.11852D-07	.28932D-09
8	.12712D-14	.31851D-15	.12219D-07	.30963D-09
9	.37874D-17	.10810D-17	.12897D-07	.31527D-09
10	.11264D-19	.36568D-20	.14202D-07	.31651D-09
11	.33479D-22	.12359D-22	.16731D-07	.31661D-09
12	.99468D-25	.41752D-25	.21645D-07	.12295D-08

PHOSAM
U-O-S BLOCK SECTION

GENERAL-HEAT (HEATER): ECW
INPUT STREAM: 4680
OUTPUT STREAM: CWT QCW
PROPERTY OPTION SET SYSOP12

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE DIFF.
CONVENTIONAL COMPONENTS (LBMOL/HR)			
AR	.0	.0	.0
CL2	.0	.0	.0
HCL	.0	.0	.0
H2	.0	.0	.0
H2O	.203659D+07	.203659D+07	-.457295D-15
H2S	.0	.0	.0
NH3	.0	.0	.0
N2	.0	.0	.0
O2	.0	.0	.0
CO	.0	.0	.0
COS	.0	.0	.0
CO2	.0	.0	.0
HCN	.0	.0	.0
CH4	.0	.0	.0
C2H4	.0	.0	.0
C2H6	.0	.0	.0
HOAC	.0	.0	.0
C3H6	.0	.0	.0
ACETONE	.0	.0	.0
C3H8	.0	.0	.0
THIOPHEN	.0	.0	.0
1-C4H8	.0	.0	.0
MEK	.0	.0	.0
NC4H10	.0	.0	.0
PYRIDINE	.0	.0	.0
BENZENE	.0	.0	.0
PHENOL	.0	.0	.0
N-C6H14	.0	.0	.0
DIPE	.0	.0	.0
TOLUENE	.0	.0	.0
O-CRESOL	.0	.0	.0
NAPHTHAL	.0	.0	.0
NC10H22	.0	.0	.0
H3PO4	.0	.0	.0
TOTAL BALANCE			
MOLE(LBMOL/HR)	.203659D+07	.203659D+07	-.228648D-15
MASS(LB/HR)	.366892D+08	.366892D+08	-.203073D-15
ENTHALPY(BTU/HR)	-.250231D+12	-.250231D+12	-.243915D-15

*** INPUT DATA ***
ONE PHASE TP FLASH SPECIFIED PHASE IS LIQUID

SPECIFIED TEMPERATURE	F	100.00
PRESSURE DROP	PSIA	-2.0000
MAXIMUM ITERATION NO.		30
CONVERGENCE TOLERANCE		.10000D-03

TP FLASH, NO INITIAL GUESSES ARE REQUIRED.

GENERAL-HEAT (HEATER): ECW (CONTINUED)

*** RESULTS ***

OUTPUT TEMPERATURE	F	100.00
OUTPUT PRESSURE	PSIA	73.000
HEAT DUTY	BTU/HR	.65859D+09

PHOSAM
U-O-S BLOCK SECTION

FLOW-SPLITTE (FSPLIT): SPCW
INPUT STREAM - CWT
OUTPUT STREAMS - 4681
4682
4683
4684
PROPERTY OPTION SET SYSOP12

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE DIFF.
CONVENTIONAL COMPONENTS (LBMOL/HR)			
AR	.0	.0	.0
CL2	.0	.0	.0
HCL	.0	.0	.0
H2	.0	.0	.0
H2O	.203659D+07	.203659D+07	.0
H2S	.0	.0	.0
NH3	.0	.0	.0
N2	.0	.0	.0
O2	.0	.0	.0
CO	.0	.0	.0
COS	.0	.0	.0
CO2	.0	.0	.0
HCN	.0	.0	.0
CH4	.0	.0	.0
C2H4	.0	.0	.0
C2H6	.0	.0	.0
HOAC	.0	.0	.0
C3H6	.0	.0	.0
ACETONE	.0	.0	.0
C3H8	.0	.0	.0
THIOPHEN	.0	.0	.0
1-C4H8	.0	.0	.0
MEK	.0	.0	.0
NC4H10	.0	.0	.0
PYRIDINE	.0	.0	.0
BENZENE	.0	.0	.0
PHENOL	.0	.0	.0
N-C6H14	.0	.0	.0
DIPE	.0	.0	.0
TOLUENE	.0	.0	.0
O-CRESOL	.0	.0	.0
NAPHTHAL	.0	.0	.0
NC10H22	.0	.0	.0
H3PO4	.0	.0	.0
TOTAL BALANCE			
MOLE(LBMOL/HR)	.203659D+07	.203659D+07	.0
MASS(LB/HR)	.366892D+08	.366892D+08	.0
ENTHALPY(BTU/HR)	-.249572D+12	-.249572D+12	-.662509D-10

FLOW-SPLITTE (FSPLIT): SPCW (CONTINUED)

*** INPUT DATA ***

MOLE-FLOW (LBMOL/HR)	STRM=4681	FLOW=	316,253.	KEY= 0
MOLE-FLOW (LBMOL/HR)	STRM=4682	FLOW=	427,883.	KEY= 0
MOLE-FLOW (LBMOL/HR)	STRM=4683	FLOW=	355,525.	KEY= 0
MOLE-FLOW (LBMOL/HR)	STRM=4684	FLOW=	936,928.	KEY= 0

*** RESULTS ***

STREAM= 4681	SPLIT=	0.15529	KEY= 0
4682		0.21010	0
4683		0.17457	0
4684		0.46005	0

PHOSAM
STREAM SECTION

DESCRIPTION OF STREAM CLASS HEAT

STREAM CLASS : HEAT
STREAM ATTR : HEAT

DESCRIPTION OF STREAM CLASS CONVEN

STREAM CLASS : CONVEN
SUBSTREAMS : MIXED
SUBSTRM CLASS: MIXED

PHOSAM
STREAM SECTION

Q4601 Q4605 QD4602R Q4603 QE4603

STREAM ID		Q4601	Q4605	QD4602R	Q4603	QE4603
FROM :		E4607	E4610	D4602	E4603	E4603A
TO :		M4600			E4603A	
CLASS:		HEAT	HEAT	HEAT	HEAT	HEAT
STREAM ATTRIBUTES:						
HEAT						
Q	BTU/HR	.10425+09	.13837+09	-.12366+09	-.75018+08	.11497+09

PHOSAM
STREAM SECTION

Q4602 QD4603R QD4603C QCW

STREAM ID		Q4602	QD4603R	QD4603C	QCW
FROM :		E4601	D4603	D4603	ECW
TO :		M4600			
CLASS:		HEAT	HEAT	HEAT	HEAT
STREAM ATTRIBUTES:					
HEAT					
Q	BTU/HR	.90199+08	-.30722+09	.30298+09	-.65859+09

PHOSAM
STREAM SECTION

4608 4622 4609 4610 4611

STREAM ID		4608	4622	4609	4610	4611
FROM :		M4600	D4601A	D4601A	G4605	E4607
TO :		D4601A	D4601B	G4605	E4607	
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	LBMOL/HR	.93911-06	.94075-06	.31026-44	.31026-44	.31026-44
CL2	LBMOL/HR	.20742-08	.21684-08	.88466-34	.88466-34	.88466-34
HCL	LBMOL/HR	1.1099	0.0053	1.1098	1.1098	1.1098
H2	LBMOL/HR	.26324-03	.26359-03	.10122-42	.10122-42	.10122-42
H2O	LBMOL/HR	.64140+05	.14253+05	.64086+05	.64086+05	.64086+05
H2S	LBMOL/HR	0.1740	0.1867	.14162-23	.14162-23	.14162-23
NH3	LBMOL/HR	372.5242	522.4020	2.6251	2.6251	2.6251
N2	LBMOL/HR	0.5160	0.5164	.19791-41	.19791-41	.19791-41
O2	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
CO	LBMOL/HR	.76534-04	.76625-04	.63644-44	.63644-44	.63644-44
COS	LBMOL/HR	.30961-04	.31196-04	.64075-35	.64075-35	.64075-35
CO2	LBMOL/HR	0.4562	0.4649	.31806-29	.31806-29	.31806-29
HCN	LBMOL/HR	.18153-04	.18477-04	.28333-32	.28333-32	.28333-32
CH4	LBMOL/HR	.14524-03	.14548-03	.14368-42	.14368-42	.14368-42
C2H4	LBMOL/HR	.46852-04	.47071-04	.93702-39	.93702-39	.93702-39
C2H6	LBMOL/HR	.79394-04	.79534-04	.74566-43	.74566-43	.74566-43
HOAC	LBMOL/HR	36.5460	5.8332	36.5180	36.5180	36.5180
C3H6	LBMOL/HR	.54164-03	.54520-03	.14644-36	.14644-36	.14644-36
ACETONE	LBMOL/HR	0.4583	0.7236	.38343-13	.38343-13	.38343-13
C3H8	LBMOL/HR	.17071-04	.17091-04	.12261-45	.12261-45	.12261-45
THIOPHEN	LBMOL/HR	0.0061	0.0066	.49478-22	.49478-22	.49478-22
1-C4H8	LBMOL/HR	.46857-03	.47010-03	.12163-39	.12163-39	.12163-39
MEK	LBMOL/HR	4.8553	10.4048	.27625-11	.27625-11	.27625-11
NC4H10	LBMOL/HR	.61540-05	.61585-05	.70348-48	.70348-48	.70348-48
PYRIDINE	LBMOL/HR	2.1423	13.0497	1.2972	1.2972	1.2972
BENZENE	LBMOL/HR	0.4717	0.5102	.26341-23	.26341-23	.26341-23
PHENOL	LBMOL/HR	0.4705	0.2244	0.4683	0.4683	0.4683
N-C6H14	LBMOL/HR	.59215-03	.59308-03	.30577-43	.30577-43	.30577-43
DIPE	LBMOL/HR	8.1200	8.5839	.37663-24	.37663-24	.37663-24
TOLUENE	LBMOL/HR	0.5810	0.6106	.10393-25	.10393-25	.10393-25
O-CRESOL	LBMOL/HR	0.0054	0.0044	0.0053	0.0053	0.0053
NAPHTHAL	LBMOL/HR	.25827-04	.29973-04	.14771-25	.14771-25	.14771-25
NC10H22	LBMOL/HR	.29156-04	.30454-04	.77980-28	.77980-28	.77980-28
H3PO4	LBMOL/HR	0.0	.63342-04	0.2062	0.2062	0.2062
TOTAL	LBMOL/HR	.64569+05	.14816+05	.64128+05	.64128+05	.64128+05
TEMP	F	224.4271	228.5462	242.2388	242.4994	160.0000
PRES	PSIA	18.5000	20.0000	25.0000	80.0000	70.0000
ENTHALPY	BTU/LBMOL	-.11925+06	-.99756+05	-.12050+06	-.12049+06	-.12212+06
VFRAC		0.0614	1.0000	0.0	0.0	0.0
LFRAC		0.9385	0.0	1.0000	1.0000	1.0000

ENTROPY	BTU/LBMOL-R	-33.6885	-9.4968	-34.7670	-34.7617	-37.2230
DENSITY	LBMOL/CUFT	0.0413	0.0027	2.7229	2.7229	2.8369
AVG MW		18.0523	18.1470	18.0412	18.0412	18.0412

PHOSAM
STREAM SECTION

4619 4623 4620 4621 4624

STREAM ID		4619	4623	4620	4621	4624
FROM :		D4601B	D4601B	E4610	E4610	G4602
TO :		E4610	G4602		D4601A	E4603
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	LBMOL/HR	.94070-06	.50715-10	.93906-06	.16423-08	.50715-10
CL2	LBMOL/HR	.21626-08	.58087-11	.20684-08	.94214-10	.58087-11
HCL	LBMOL/HR	0.0039	0.0015	.53756-06	0.0039	0.0015
H2	LBMOL/HR	.26359-03	.62235-08	.26323-03	.35440-06	.62235-08
H2O	LBMOL/HR	7394.7661	.20803+05	47.4772	7347.2888	.20803+05
H2S	LBMOL/HR	0.1867	.18170-04	0.1739	0.0127	.18170-04
NH3	LBMOL/HR	164.7031	1307.0997	12.0085	152.6945	1307.0997
N2	LBMOL/HR	0.5164	.47326-05	0.5159	.42696-03	.47326-05
O2	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
CO	LBMOL/HR	.76624-04	.78852-09	.76533-04	.90843-07	.78852-09
COS	LBMOL/HR	.31180-04	.15668-07	.30945-04	.23482-06	.15668-07
CO2	LBMOL/HR	0.4649	.16202-04	0.4561	0.0087	.16202-04
HCN	LBMOL/HR	.18476-04	.77827-10	.18153-04	.32353-06	.77827-10
CH4	LBMOL/HR	.14547-03	.71966-08	.14523-03	.23509-06	.71966-08
C2H4	LBMOL/HR	.47067-04	.45855-08	.46848-04	.21923-06	.45855-08
C2H6	LBMOL/HR	.79526-04	.74733-08	.79387-04	.13951-06	.74733-08
HOAC	LBMOL/HR	4.0877	4.6717	0.0217	4.0659	4.6717
C3H6	LBMOL/HR	.54520-03	.47575-10	.54164-03	.35626-05	.47575-10
ACETONE	LBMOL/HR	0.7235	.12475-03	0.4582	0.2653	.12475-03
C3H8	LBMOL/HR	.17075-04	.15961-07	.17055-04	.20182-07	.15961-07
THIOPHEN	LBMOL/HR	0.0066	.38936-04	0.0060	.58333-03	.38936-04
1-C4H8	LBMOL/HR	.47010-03	.45547-10	.46857-03	.15324-05	.45547-10
MEK	LBMOL/HR	10.3831	0.0216	4.8356	5.5475	0.0216
NC4H10	LBMOL/HR	.61585-05	.80178-13	.61540-05	.45016-08	.80178-13
PYRIDINE	LBMOL/HR	12.1563	0.9276	0.8485	11.3077	0.9276
BENZENE	LBMOL/HR	0.5102	.51970-05	0.4717	0.0385	.51970-05
PHENOL	LBMOL/HR	0.2003	0.0240	0.0019	0.1984	0.0240
N-C6H14	LBMOL/HR	.59308-03	.39565-12	.59215-03	.92872-06	.39565-12
DIPE	LBMOL/HR	8.5839	.27097-05	8.1202	0.4636	.27097-05
TOLUENE	LBMOL/HR	0.6106	.50829-06	0.5810	0.0296	.50829-06
O-CRESOL	LBMOL/HR	0.0042	.21577-03	.98338-04	0.0041	.21577-03
NAPHTHAL	LBMOL/HR	.29973-04	.74433-11	.25828-04	.41454-05	.74433-11
NC10H22	LBMOL/HR	.30454-04	.37752-22	.29157-04	.12975-05	.37752-22
H3PO4	LBMOL/HR	0.0533	1443.9465	.32006-05	0.0533	1443.9465
TOTAL	LBMOL/HR	7597.9638	.23560+05	75.9796	7521.9842	.23560+05
TEMP	F	221.1627	227.3251	194.1621	194.1621	228.6113
PRES	PSIA	15.0000	18.0000	15.0000	15.0000	240.0000
ENTHALPY	BTU/LBMOL	-.10085+06	-.12589+06	-.88366+05	-.11937+06	-.12585+06
VFRAC		1.0000	0.0	1.0000	0.0	0.0
LFRAC		0.0	1.0000	0.0	1.0000	1.0000

ENTROPY	BTU/LBMOL-R	-9.0369	-63.0745	-28.3573	-36.2203	-63.0449
DENSITY	LBMOL/CUFT	0.0020	2.0192	0.0021	2.7554	2.0190
AVG MW		18.3021	22.8734	32.4418	18.1593	22.8734

PHOSAM
STREAM SECTION

4630 4626 4625 4631 4629

STREAM ID		4630	4626	4625	4631	4629
FROM :		D4602	D4602	E4603	E4603A	E4601
TO :		E4603A	E4601	D4602	G4603	D4601B
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	LBMOL/HR	.50718-10	.82786-30	.50715-10	.50718-10	.82786-30
CL2	LBMOL/HR	0.0	0.0	.58087-11	0.0	0.0
HCL	LBMOL/HR	0.0014	.90909-04	0.0015	0.0014	.90909-04
H2	LBMOL/HR	.62242-08	.53055-29	.62235-08	.62242-08	.53055-29
H2O	LBMOL/HR	6856.8955	.13944+05	.20803+05	6856.8955	.13944+05
H2S	LBMOL/HR	.18166-04	.14354-22	.18170-04	.18166-04	.14354-22
NH3	LBMOL/HR	357.9771	949.4006	1307.0997	357.9771	949.4006
N2	LBMOL/HR	.47331-05	.48594-29	.47326-05	.47331-05	.48594-29
O2	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
CO	LBMOL/HR	.78862-09	.13500-32	.78852-09	.78862-09	.13500-32
COS	LBMOL/HR	.15669-07	.50240-21	.15668-07	.15669-07	.50240-21
CO2	LBMOL/HR	.16201-04	.20018-25	.16202-04	.16201-04	.20018-25
HCN	LBMOL/HR	.77802-10	.57426-35	.77827-10	.77802-10	.57426-35
CH4	LBMOL/HR	.71973-08	.14879-27	.71966-08	.71973-08	.14879-27
C2H4	LBMOL/HR	.45860-08	.74870-26	.45855-08	.45860-08	.74870-26
C2H6	LBMOL/HR	.74739-08	.17748-25	.74733-08	.74739-08	.17748-25
HOAC	LBMOL/HR	1.7444	2.9261	4.6717	1.7444	2.9261
C3H6	LBMOL/HR	.47597-10	.26534-47	.47575-10	.47597-10	.26534-47
ACETONE	LBMOL/HR	.12476-03	.53782-19	.12475-03	.12476-03	.53782-19
C3H8	LBMOL/HR	.15960-07	.49768-20	.15961-07	.15960-07	.49768-20
THIOPHEN	LBMOL/HR	.38936-04	.77359-11	.38936-04	.38936-04	.77359-11
1-C4H8	LBMOL/HR	.45567-10	.52822-48	.45547-10	.45567-10	.52822-48
MEK	LBMOL/HR	0.0216	.26441-15	0.0216	0.0216	.26441-15
NC4H10	LBMOL/HR	0.0	0.0	.80178-13	0.0	0.0
PYRIDINE	LBMOL/HR	0.8938	0.0343	0.9276	0.8938	0.0343
BENZENE	LBMOL/HR	.51981-05	.16000-26	.51970-05	.51981-05	.16000-26
PHENOL	LBMOL/HR	0.0240	.82572-11	0.0240	0.0240	.82572-11
N-C6H14	LBMOL/HR	0.0	0.0	.39565-12	0.0	0.0
DIPE	LBMOL/HR	.27109-05	.49679-43	.27097-05	.27109-05	.49679-43
TOLUENE	LBMOL/HR	.50858-06	.40319-33	.50829-06	.50858-06	.40319-33
O-CRESOL	LBMOL/HR	.21416-03	.16198-05	.21577-03	.21416-03	.16198-05
NAPHTHAL	LBMOL/HR	0.0	0.0	.74433-11	0.0	0.0
NC10H22	LBMOL/HR	0.0	0.0	.37752-22	0.0	0.0
H3PO4	LBMOL/HR	0.1529	1443.7935	1443.9465	0.1529	1443.7935
TOTAL	LBMOL/HR	7217.7115	.16340+05	.23560+05	7217.7115	.16340+05
TEMP	F	387.2572	399.1708	375.0000	362.0458	150.0000
PRES	PSIA	200.0000	210.0000	230.0000	197.0000	200.0000
ENTHALPY	BTU/LBMOL	-.97616+05	-.12616+06	-.12267+06	-.11354+06	-.13168+06
VFRAC		1.0000	0.0	0.0	0.0	0.0
LFRAC		0.0	1.0000	1.0000	1.0000	1.0000

ENTROPY	BTU/LBMOL-R	-12.5486	-70.4047	-58.8534	-31.6430	-77.9763
DENSITY	LBMOL/CUFT	0.0235	1.6339	1.8437	2.4689	1.8796
AVG MW		17.9860	25.0328	22.8734	17.9860	25.0328

PHOSAM

STREAM SECTION

4632 4635 4636 1611 4602

STREAM ID		4632	4635	4636	1611	4602
FROM :		G4603	D4603	D4603		
TO :		D4603		D4601A	M4600	M4600
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	LBMOL/HR	.50718-10	.50718-10	.72100-34	.93911-06	0.0
CL2	LBMOL/HR	0.0	0.0	0.0	.20742-08	0.0
HCL	LBMOL/HR	0.0014	.69394-06	0.0014	1.1099	0.0
H2	LBMOL/HR	.62242-08	.62242-08	.30431-32	.26324-03	0.0
H2O	LBMOL/HR	6856.8955	0.0079	6857.8875	.61090+05	3050.3000
H2S	LBMOL/HR	.18166-04	.18166-04	.72704-20	0.1740	0.0
NH3	LBMOL/HR	357.9771	357.9417	0.0353	372.5242	0.0
N2	LBMOL/HR	.47331-05	.47331-05	.39421-30	0.5160	0.0
O2	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
CO	LBMOL/HR	.78862-09	.78862-09	.28455-33	.76534-04	0.0
COS	LBMOL/HR	.15669-07	.15669-07	.66783-24	.30961-04	0.0
CO2	LBMOL/HR	.16201-04	.16201-04	.56821-24	0.4562	0.0
HCN	LBMOL/HR	.77802-10	.77802-10	.21721-25	.18153-04	0.0
CH4	LBMOL/HR	.71973-08	.71973-08	.48493-32	.14524-03	0.0
C2H4	LBMOL/HR	.45860-08	.45860-08	.49715-30	.46852-04	0.0
C2H6	LBMOL/HR	.74739-08	.74739-08	.19566-32	.79394-04	0.0
HOAC	LBMOL/HR	1.7444	.20503-05	1.7444	36.5460	0.0
C3H6	LBMOL/HR	.47597-10	.47597-10	.10619-31	.54164-03	0.0
ACETONE	LBMOL/HR	.12476-03	.12476-03	.29091-11	0.4583	0.0
C3H8	LBMOL/HR	.15960-07	.15960-07	.63141-34	.17071-04	0.0
THIOPHEN	LBMOL/HR	.38936-04	.38936-04	.53142-14	0.0061	0.0
1-C4H8	LBMOL/HR	.45567-10	.45567-10	.28010-33	.46857-03	0.0
MEK	LBMOL/HR	0.0216	0.0216	.44726-12	4.8553	0.0
NC4H10	LBMOL/HR	0.0	0.0	0.0	.61540-05	0.0
PYRIDINE	LBMOL/HR	0.8938	0.0044	0.8894	2.1423	0.0
BENZENE	LBMOL/HR	.51981-05	.51981-05	.82373-21	0.4717	0.0
PHENOL	LBMOL/HR	0.0240	.13926-03	0.0239	0.4705	0.0
N-C6H14	LBMOL/HR	0.0	0.0	0.0	.59215-03	0.0
DIPE	LBMOL/HR	.27109-05	.27109-05	.15093-23	8.1200	0.0
TOLUENE	LBMOL/HR	.50858-06	.50858-06	.72075-24	0.5810	0.0
O-CRESOL	LBMOL/HR	.21416-03	.16151-08	.21416-03	0.0054	0.0
NAPHTHAL	LBMOL/HR	0.0	0.0	0.0	.25827-04	0.0
NC10H22	LBMOL/HR	0.0	0.0	0.0	.29156-04	0.0
H3PO4	LBMOL/HR	0.1529	0.0	0.1529	0.0	0.0
TOTAL	LBMOL/HR	7217.7115	357.9761	6860.7353	.61518+05	3050.3000
TEMP	F	362.6552	102.4066	391.0227	127.8000	100.000
PRES	PSIA	300.0000	220.0000	223.0000	18.5000	100.000
ENTHALPY	BTU/LBMOL	-.11353+06	-.28191+05	-.11737+06	-.12221+06	-.12325+06
VFRAC		0.0	0.0	0.0	0.0	0.0
LFRAC		1.0000	1.0000	1.0000	1.0000	1.0000

ENTROPY	BTU/LBMOL-R	-31.6336	-43.9906	-30.7914	-38.2738	-39.1951
DENSITY	LBMOL/CUFT	2.4688	1.8841	2.4535	2.8682	2.9128
AVG MW		17.9860	17.0351	18.0356	18.0542	18.0150

PHOSAM
STREAM SECTION

4612 4640 4633 CWT 4681

STREAM ID		4612	4640	4633	CWT	4681
FROM :					ECW	SPCW
TO :		D4601B	D4601B	D4603	SPCW	
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
CL2	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
HCL	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
H2	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
H2O	LBMOL/HR	0.2062	1.0000	1.0000	.20366+07	.31625+06
H2S	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
NH3	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
N2	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
O2	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
CO	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
COS	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
CO2	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
HCN	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
CH4	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
C2H4	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
C2H6	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
HOAC	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
C3H6	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
ACETONE	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
C3H8	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
THIOPHEN	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
1-C4H8	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
MEK	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
NC4H10	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
PYRIDINE	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
BENZENE	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
PHENOL	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
N-C6H14	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
DIPE	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
TOLUENE	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
O-CRESOL	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
NAPHTHAL	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
NC10H22	LBMOL/HR	0.0	0.0	0.0	0.0	0.0
H3PO4	LBMOL/HR	0.2062	0.0	0.0	0.0	0.0
TOTAL	LBMOL/HR	0.4124	1.0000	1.0000	.20366+07	.31625+06
TEMP	F	100.000	100.000	100.000	100.000	100.0000
PRES	PSIA	100.000	100.000	100.000	73.0000	73.0000
ENTHALPY	BTU/LBMOL	-.20188+06	-.12325+06	-.12325+06	-.12254+06	-.12254+06
VFRAC		0.0	0.0	0.0	0.0	0.0
LFRAC		1.0000	1.0000	1.0000	1.0000	1.0000

ENTROPY	BTU/LBMOL-R	-268.6610	-39.1951	-39.1951	-38.2177	-38.2177
DENSITY	LBMOL/CUFT	0.7569	2.9128	2.9128	3.4421	3.4421
AVG MW		58.0075	18.0150	18.0150	18.0150	18.0150

PHOSAM
STREAM SECTION

4682 4683 4684 4680

STREAM ID		4682	4683	4684	4680
FROM :		SPCW	SPCW	SPCW	
TO :					ECW
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL			
AR	LBMOL/HR	0.0	0.0	0.0	0.0
CL2	LBMOL/HR	0.0	0.0	0.0	0.0
HCL	LBMOL/HR	0.0	0.0	0.0	0.0
H2	LBMOL/HR	0.0	0.0	0.0	0.0
H2O	LBMOL/HR	.42788+06	.35553+06	.93693+06	.20366+07
H2S	LBMOL/HR	0.0	0.0	0.0	0.0
NH3	LBMOL/HR	0.0	0.0	0.0	0.0
N2	LBMOL/HR	0.0	0.0	0.0	0.0
O2	LBMOL/HR	0.0	0.0	0.0	0.0
CO	LBMOL/HR	0.0	0.0	0.0	0.0
COS	LBMOL/HR	0.0	0.0	0.0	0.0
CO2	LBMOL/HR	0.0	0.0	0.0	0.0
HCN	LBMOL/HR	0.0	0.0	0.0	0.0
CH4	LBMOL/HR	0.0	0.0	0.0	0.0
C2H4	LBMOL/HR	0.0	0.0	0.0	0.0
C2H6	LBMOL/HR	0.0	0.0	0.0	0.0
HOAC	LBMOL/HR	0.0	0.0	0.0	0.0
C3H6	LBMOL/HR	0.0	0.0	0.0	0.0
ACETONE	LBMOL/HR	0.0	0.0	0.0	0.0
C3H8	LBMOL/HR	0.0	0.0	0.0	0.0
THIOPHEN	LBMOL/HR	0.0	0.0	0.0	0.0
1-C4H8	LBMOL/HR	0.0	0.0	0.0	0.0
MEK	LBMOL/HR	0.0	0.0	0.0	0.0
NC4H10	LBMOL/HR	0.0	0.0	0.0	0.0
PYRIDINE	LBMOL/HR	0.0	0.0	0.0	0.0
BENZENE	LBMOL/HR	0.0	0.0	0.0	0.0
PHENOL	LBMOL/HR	0.0	0.0	0.0	0.0
N-C6H14	LBMOL/HR	0.0	0.0	0.0	0.0
DIPE	LBMOL/HR	0.0	0.0	0.0	0.0
TOLUENE	LBMOL/HR	0.0	0.0	0.0	0.0
O-CRESOL	LBMOL/HR	0.0	0.0	0.0	0.0
NAPHTHAL	LBMOL/HR	0.0	0.0	0.0	0.0
NC10H22	LBMOL/HR	0.0	0.0	0.0	0.0
H3PO4	LBMOL/HR	0.0	0.0	0.0	0.0
TOTAL	LBMOL/HR	.42788+06	.35553+06	.93693+06	.20366+07
TEMP	F	100.0000	100.0000	100.0000	82.0000
PRES	PSIA	73.0000	73.0000	73.0000	75.0000
ENTHALPY	BTU/LBMOL	-.12254+06	-.12254+06	-.12254+06	-.12287+06
VFRAC		0.0	0.0	0.0	0.0
LFRAC		1.0000	1.0000	1.0000	1.0000

ENTROPY	BTU/LBMOL-R	-38.2177	-38.2177	-38.2177	-38.8052
DENSITY	LBMOL/CUFT	3.4421	3.4421	3.4421	3.4534
AVG MW		18.0150	18.0150	18.0150	18.0150

PHOSAM
STREAM SECTION

Q4601 Q4605 QD4602R Q4603 QE4603

STREAM ID		Q4601	Q4605	QD4602R	Q4603	QE4603
FROM :		E4607	E4610	D4602	E4603	E4603A
TO :		M4600			E4603A	
CLASS:		HEAT	HEAT	HEAT	HEAT	HEAT
STREAM ATTRIBUTES:						
HEAT						
Q	BTU/HR	.10425+09	.13837+09	-.12366+09	-.75018+08	.11497+09

PHOSAM
STREAM SECTION

Q4602 QD4603R QD4603C QCW

STREAM ID		Q4602	QD4603R	QD4603C	QCW
FROM :		E4601	D4603	D4603	ECW
TO :		M4600			
CLASS:		HEAT	HEAT	HEAT	HEAT

STREAM ATTRIBUTES:
HEAT

Q	BTU/HR	.90199+08-.30722+09	.30298+09-.65859+09

PHOSAM
STREAM SECTION

4608 4622 4609 4610 4611

STREAM ID		4608	4622	4609	4610	4611
FROM :		M4600	D4601A	D4601A	G4605	E4607
TO :		D4601A	D4601B	G4605	E4607	
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	LB/HR	.37516-04	.37581-04	.12394-42	.12394-42	.12394-42
CL2	LB/HR	.14707-06	.15376-06	.62728-32	.62728-32	.62728-32
HCL	LB/HR	40.4680	0.1961	40.4679	40.4679	40.4679
H2	LB/HR	.53069-03	.53141-03	.20406-42	.20406-42	.20406-42
H2O	LB/HR	.11555+07	.25677+06	.11545+07	.11545+07	.11545+07
H2S	LB/HR	5.9299	6.3636	.48265-22	.48265-22	.48265-22
NH3	LB/HR	6344.4597	8897.0301	44.7096	44.7096	44.7096
N2	LB/HR	14.4547	14.4666	.55441-40	.55441-40	.55441-40
O2	LB/HR	0.0	0.0	0.0	0.0	0.0
CO	LB/HR	0.0021	0.0021	.17827-42	.17827-42	.17827-42
COS	LB/HR	0.0018	0.0018	.38490-33	.38490-33	.38490-33
CO2	LB/HR	20.0773	20.4626	.13998-27	.13998-27	.13998-27
HCN	LB/HR	.49060-03	.49935-03	.76574-31	.76574-31	.76574-31
CH4	LB/HR	0.0023	0.0023	.23051-41	.23051-41	.23051-41
C2H4	LB/HR	0.0013	0.0013	.26287-37	.26287-37	.26287-37
C2H6	LB/HR	0.0023	0.0023	.22422-41	.22422-41	.22422-41
HOAC	LB/HR	2194.6604	350.3012	2192.9803	2192.9803	2192.9803
C3H6	LB/HR	0.0227	0.0229	.61622-35	.61622-35	.61622-35
ACETONE	LB/HR	26.6180	42.0323	.22270-11	.22270-11	.22270-11
C3H8	LB/HR	.75278-03	.75367-03	.54068-44	.54068-44	.54068-44
THIOPHEN	LB/HR	0.5132	0.5623	.41628-20	.41628-20	.41628-20
1-C4H8	LB/HR	0.0262	0.0263	.68244-38	.68244-38	.68244-38
MEK	LB/HR	350.1011	750.2598	.19920-09	.19920-09	.19920-09
NC4H10	LB/HR	.35770-03	.35796-03	.40889-46	.40889-46	.40889-46
PYRIDINE	LB/HR	169.4602	1032.2582	102.6131	102.6131	102.6131
BENZENE	LB/HR	36.8463	39.8571	.20576-21	.20576-21	.20576-21
PHENOL	LB/HR	44.2801	21.1224	44.0810	44.0810	44.0810
N-C6H14	LB/HR	0.0510	0.0511	.26351-41	.26351-41	.26351-41
DIPE	LB/HR	829.6772	877.0792	.38482-22	.38482-22	.38482-22
TOLUENE	LB/HR	53.5339	56.2660	.95766-24	.95766-24	.95766-24
O-CRESOL	LB/HR	0.5839	0.4847	0.5733	0.5733	0.5733
NAPHTHAL	LB/HR	0.0033	0.0038	.18933-23	.18933-23	.18933-23
NC10H22	LB/HR	0.0041	0.0043	.11095-25	.11095-25	.11095-25
H3PO4	LB/HR	0.0	0.0062	20.2117	20.2117	20.2117
TOTAL	LB/HR	.11656+07	.26887+06	.11569+07	.11569+07	.11569+07
TEMP	F	224.4271	228.5462	242.2388	242.4994	160.0000
PRES	PSIA	18.5000	20.0000	25.0000	80.0000	70.0000
ENTHALPY	BTU/LB	-6605.7405	-5497.0681	-6679.1816	-6678.7673	-6768.8752
VFRAC		0.0614	1.0000	0.0	0.0	0.0
LFRAC		0.9385	0.0	1.0000	1.0000	1.0000

ENTROPY	BTU/LB-R	-1.8661	-0.5233	-1.9270	-1.9267	-2.0632
DENSITY	LB/CUFT	0.7457	0.0496	49.1263	49.1248	51.1827
AVG MW		18.0523	18.1470	18.0412	18.0412	18.0412

PHOSAM
STREAM SECTION

4619 4623 4620 4621 4624

STREAM ID		4619	4623	4620	4621	4624
FROM :		D4601B	D4601B	E4610	E4610	G4602
TO :		E4610	G4602		D4601A	E4603
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	LB/HR	.37579-04	.20259-08	.37514-04	.65608-07	.20259-08
CL2	LB/HR	.15334-06	.41187-09	.14666-06	.66803-08	.41187-09
HCL	LB/HR	0.1444	0.0549	.19600-04	0.1444	0.0549
H2	LB/HR	.53139-03	.12547-07	.53068-03	.71448-06	.12547-07
H2O	LB/HR	.13322+06	.37477+06	855.3031	.13236+06	.37477+06
H2S	LB/HR	6.3630	.61924-03	5.9293	0.4336	.61924-03
NH3	LB/HR	2805.0585	.22261+05	204.5175	2600.5414	.22261+05
N2	LB/HR	14.4665	.13257-03	14.4546	0.0119	.13257-03
O2	LB/HR	0.0	0.0	0.0	0.0	0.0
CO	LB/HR	0.0021	.22087-07	0.0021	.25445-05	.22087-07
COS	LB/HR	0.0018	.94119-06	0.0018	.14106-04	.94119-06
CO2	LB/HR	20.4619	.71306-03	20.0767	0.3852	.71306-03
HCN	LB/HR	.49935-03	.21034-08	.49060-03	.87438-05	.21034-08
CH4	LB/HR	0.0023	.11546-06	0.0023	.37715-05	.11546-06
C2H4	LB/HR	0.0013	.12864-06	0.0013	.61504-05	.12864-06
C2H6	LB/HR	0.0023	.22472-06	0.0023	.41951-05	.22472-06
HOAC	LB/HR	245.4765	280.5468	1.3072	244.1693	280.5468
C3H6	LB/HR	0.0229	.20020-08	0.0227	.14992-03	.20020-08
ACETONE	LB/HR	42.0250	0.0072	26.6124	15.4126	0.0072
C3H8	LB/HR	.75297-03	.70382-06	.75208-03	.88997-06	.70382-06
THIOPHEN	LB/HR	0.5590	0.0032	0.5099	0.0490	0.0032
1-C4H8	LB/HR	0.0263	.25556-08	0.0262	.85982-04	.25556-08
MEK	LB/HR	748.7001	1.5597	348.6839	400.0168	1.5597
NC4H10	LB/HR	.35796-03	.46602-11	.35770-03	.26165-06	.46602-11
PYRIDINE	LB/HR	961.5925	73.3818	67.1236	894.4689	73.3818
BENZENE	LB/HR	39.8567	.40596-03	36.8465	3.0102	.40596-03
PHENOL	LB/HR	18.8564	2.2660	0.1828	18.6736	2.2660
N-C6H14	LB/HR	0.0511	.34097-10	0.0510	.80035-04	.34097-10
DIPE	LB/HR	877.0789	.27687-03	829.7070	47.3736	.27687-03
TOLUENE	LB/HR	56.2660	.46834-04	53.5353	2.7307	.46834-04
O-CRESOL	LB/HR	0.4615	0.0233	0.0106	0.4509	0.0233
NAPHTHAL	LB/HR	0.0038	.95404-09	0.0033	.53133-03	.95404-09
NC10H22	LB/HR	0.0043	.53716-20	0.0041	.18461-03	.53716-20
H3PO4	LB/HR	5.2264	.14151+06	.31366-03	5.2261	.14151+06
TOTAL	LB/HR	.13906+06	.53890+06	2464.9213	.13659+06	.53890+06
TEMP	F	221.1627	227.3251	194.1621	194.1621	228.6113
PRES	PSIA	15.0000	18.0000	15.0000	15.0000	240.0000
ENTHALPY	BTU/LB	-5509.9958	-5503.8434	-2723.8182	-6573.2597	-5502.0645
VFRAC		1.0000	0.0	1.0000	0.0	0.0
LFRAC		0.0	1.0000	0.0	1.0000	1.0000

ENTROPY	BTU/LB-R	-0.4937	-2.7575	-0.8740	-1.9945	-2.7562
DENSITY	LB/CUFT	0.0379	46.1880	0.0702	50.0363	46.1821
AVG MW		18.3021	22.8734	32.4418	18.1593	22.8734

PHOSAM

STREAM SECTION

4630 4626 4625 4631 4629

STREAM ID		4630	4626	4625	4631	4629
FROM :		D4602	D4602	E4603	E4603A	E4601
TO :		E4603A	E4601	D4602	G4603	D4601B
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	LB/HR	.20261-08	.33071-28	.20259-08	.20261-08	.33071-28
CL2	LB/HR	0.0	0.0	.41187-09	0.0	0.0
HCL	LB/HR	0.0516	0.0033	0.0549	0.0516	0.0033
H2	LB/HR	.12548-07	.10696-28	.12547-07	.12548-07	.10696-28
H2O	LB/HR	.12353+06	.25120+06	.37477+06	.12353+06	.25120+06
H2S	LB/HR	.61910-03	.48918-21	.61924-03	.61910-03	.48918-21
NH3	LB/HR	6096.7095	.16169+05	.22261+05	6096.7095	.16169+05
N2	LB/HR	.13259-03	.13613-27	.13257-03	.13259-03	.13613-27
O2	LB/HR	0.0	0.0	0.0	0.0	0.0
CO	LB/HR	.22089-07	.37813-31	.22087-07	.22089-07	.37813-31
COS	LB/HR	.94124-06	.30179-19	.94119-06	.94124-06	.30179-19
CO2	LB/HR	.71300-03	.88099-24	.71306-03	.71300-03	.88099-24
HCN	LB/HR	.21027-08	.15520-33	.21034-08	.21027-08	.15520-33
CH4	LB/HR	.11547-06	.23871-26	.11546-06	.11547-06	.23871-26
C2H4	LB/HR	.12866-06	.21004-24	.12864-06	.12866-06	.21004-24
C2H6	LB/HR	.22474-06	.53367-24	.22472-06	.22474-06	.53367-24
HOAC	LB/HR	104.7604	175.7221	280.5468	104.7604	175.7221
C3H6	LB/HR	.20029-08	.11166-45	.20020-08	.20029-08	.11166-45
ACETONE	LB/HR	0.0072	.31237-17	0.0072	0.0072	.31237-17
C3H8	LB/HR	.70380-06	.21946-18	.70382-06	.70380-06	.21946-18
THIOPHEN	LB/HR	0.0032	.65087-09	0.0032	0.0032	.65087-09
1-C4H8	LB/HR	.25567-08	.29637-46	.25556-08	.25567-08	.29637-46
MEK	LB/HR	1.5600	.19066-13	1.5597	1.5600	.19066-13
NC4H10	LB/HR	0.0	0.0	.46602-11	0.0	0.0
PYRIDINE	LB/HR	70.7049	2.7161	73.3818	70.7049	2.7161
BENZENE	LB/HR	.40605-03	.12498-24	.40596-03	.40605-03	.12498-24
PHENOL	LB/HR	2.2657	.77711-09	2.2660	2.2657	.77711-09
N-C6H14	LB/HR	0.0	0.0	.34097-10	0.0	0.0
DIPE	LB/HR	.27700-03	.50760-41	.27687-03	.27700-03	.50760-41
TOLUENE	LB/HR	.46861-04	.37151-31	.46834-04	.46861-04	.37151-31
O-CRESOL	LB/HR	0.0231	.17516-03	0.0233	0.0231	.17516-03
NAPHTHAL	LB/HR	0.0	0.0	.95404-09	0.0	0.0
NC10H22	LB/HR	0.0	0.0	.53716-20	0.0	0.0
H3PO4	LB/HR	14.9897	.14149+06	.14151+06	14.9897	.14149+06
TOTAL	LB/HR	.12982+06	.40904+06	.53890+06	.12982+06	.40904+06
TEMP	F	387.2572	399.1708	375.0000	362.0458	150.0000
PRES	PSIA	200.0000	210.0000	230.0000	197.0000	200.0000
ENTHALPY	BTU/LB	-5427.3229	-5039.9109	-5362.8577	-6312.9419	-5260.4251
VFRAC		1.0000	0.0	0.0	0.0	0.0
LFRAC		0.0	1.0000	1.0000	1.0000	1.0000

ENTROPY	BTU/LB-R	-0.6976	-2.8124	-2.5730	-1.7593	-3.1149
DENSITY	LB/CUFT	0.4232	40.9014	42.1721	44.4072	47.0524
AVG MW		17.9860	25.0328	22.8734	17.9860	25.0328

PHOSAM
STREAM SECTION

4632 4635 4636 1611 4602

STREAM ID		4632	4635	4636	1611	4602
FROM :		G4603	D4603	D4603		
TO :		D4603		D4601A	M4600	M4600
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	LB/HR	.20261-08	.20261-08	.28803-32	.37516-04	0.0
CL2	LB/HR	0.0	0.0	0.0	.14707-06	0.0
HCL	LB/HR	0.0516	.25302-04	0.0516	40.4680	0.0
H2	LB/HR	.12548-07	.12548-07	.61348-32	.53069-03	0.0
H2O	LB/HR	.12353+06	0.1437	.12354+06	.11005+07	.54951+05
H2S	LB/HR	.61910-03	.61910-03	.24778-18	5.9299	0.0
NH3	LB/HR	6096.7095	6096.1067	0.6028	6344.4597	0.0
N2	LB/HR	.13259-03	.13259-03	.11043-28	14.4547	0.0
O2	LB/HR	0.0	0.0	0.0	0.0	0.0
CO	LB/HR	.22089-07	.22089-07	.79703-32	0.0021	0.0
COS	LB/HR	.94124-06	.94124-06	.40117-22	0.0018	0.0
CO2	LB/HR	.71300-03	.71300-03	.25007-22	20.0773	0.0
HCN	LB/HR	.21027-08	.21027-08	.58704-24	.49060-03	0.0
CH4	LB/HR	.11547-06	.11547-06	.77797-31	0.0023	0.0
C2H4	LB/HR	.12866-06	.12866-06	.13947-28	0.0013	0.0
C2H6	LB/HR	.22474-06	.22474-06	.58835-31	0.0023	0.0
HOAC	LB/HR	104.7604	.12313-03	104.7603	2194.6604	0.0
C3H6	LB/HR	.20029-08	.20029-08	.44684-30	0.0227	0.0
ACETONE	LB/HR	0.0072	0.0072	.16896-09	26.6180	0.0
C3H8	LB/HR	.70380-06	.70380-06	.27843-32	.75278-03	0.0
THIOPHEN	LB/HR	0.0032	0.0032	.44711-12	0.5132	0.0
1-C4H8	LB/HR	.25567-08	.25567-08	.15716-31	0.0262	0.0
MEK	LB/HR	1.5600	1.5600	.32250-10	350.1011	0.0
NC4H10	LB/HR	0.0	0.0	0.0	.35770-03	0.0
PYRIDINE	LB/HR	70.7049	0.3504	70.3545	169.4602	0.0
BENZENE	LB/HR	.40605-03	.40605-03	.64345-19	36.8463	0.0
PHENOL	LB/HR	2.2657	0.0131	2.2526	44.2801	0.0
N-C6H14	LB/HR	0.0	0.0	0.0	0.0510	0.0
DIPE	LB/HR	.27700-03	.27700-03	.15421-21	829.6772	0.0
TOLUENE	LB/HR	.46861-04	.46861-04	.66410-22	53.5339	0.0
O-CRESOL	LB/HR	0.0231	.17466-06	0.0231	0.5839	0.0
NAPHTHAL	LB/HR	0.0	0.0	0.0	0.0033	0.0
NC10H22	LB/HR	0.0	0.0	0.0	0.0041	0.0
H3PO4	LB/HR	14.9897	0.0	14.9897	0.0	0.0
TOTAL	LB/HR	.12982+06	6098.1868	.12374+06	.11107+07	.54951+05
TEMP	F	362.6552	102.4066	391.0227	127.8000	100.000
PRES	PSIA	300.0000	220.0000	223.0000	18.5000	100.000
ENTHALPY	BTU/LB	-6312.0834	-1654.8787	-6507.4057	-6769.1763	-6841.3329
VFRAC		0.0	0.0	0.0	0.0	0.0
LFRAC		1.0000	1.0000	1.0000	1.0000	1.0000

ENTROPY	BTU/LB-R	-1.7587	-2.5823	-1.7072	-2.1199	-2.1756
DENSITY	LB/CUFT	44.4055	32.0964	44.2505	51.7831	52.4749
AVG MW		17.9860	17.0351	18.0356	18.0542	18.0150

PHOSAM

STREAM SECTION

4612 4640 4633 CWT 4681

STREAM ID		4612	4640	4633	CWT	4681
FROM :					ECW	SPCW
TO :		D4601B	D4601B	D4603	SPCW	
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	LB/HR	0.0	0.0	0.0	0.0	0.0
CL2	LB/HR	0.0	0.0	0.0	0.0	0.0
HCL	LB/HR	0.0	0.0	0.0	0.0	0.0
H2	LB/HR	0.0	0.0	0.0	0.0	0.0
H2O	LB/HR	3.7154	18.0150	18.0150	.36689+08	.56973+07
H2S	LB/HR	0.0	0.0	0.0	0.0	0.0
NH3	LB/HR	0.0	0.0	0.0	0.0	0.0
N2	LB/HR	0.0	0.0	0.0	0.0	0.0
O2	LB/HR	0.0	0.0	0.0	0.0	0.0
CO	LB/HR	0.0	0.0	0.0	0.0	0.0
COS	LB/HR	0.0	0.0	0.0	0.0	0.0
CO2	LB/HR	0.0	0.0	0.0	0.0	0.0
HCN	LB/HR	0.0	0.0	0.0	0.0	0.0
CH4	LB/HR	0.0	0.0	0.0	0.0	0.0
C2H4	LB/HR	0.0	0.0	0.0	0.0	0.0
C2H6	LB/HR	0.0	0.0	0.0	0.0	0.0
HOAC	LB/HR	0.0	0.0	0.0	0.0	0.0
C3H6	LB/HR	0.0	0.0	0.0	0.0	0.0
ACETONE	LB/HR	0.0	0.0	0.0	0.0	0.0
C3H8	LB/HR	0.0	0.0	0.0	0.0	0.0
THIOPHEN	LB/HR	0.0	0.0	0.0	0.0	0.0
1-C4H8	LB/HR	0.0	0.0	0.0	0.0	0.0
MEK	LB/HR	0.0	0.0	0.0	0.0	0.0
NC4H10	LB/HR	0.0	0.0	0.0	0.0	0.0
PYRIDINE	LB/HR	0.0	0.0	0.0	0.0	0.0
BENZENE	LB/HR	0.0	0.0	0.0	0.0	0.0
PHENOL	LB/HR	0.0	0.0	0.0	0.0	0.0
N-C6H14	LB/HR	0.0	0.0	0.0	0.0	0.0
DIPE	LB/HR	0.0	0.0	0.0	0.0	0.0
TOLUENE	LB/HR	0.0	0.0	0.0	0.0	0.0
O-CRESOL	LB/HR	0.0	0.0	0.0	0.0	0.0
NAPHTHAL	LB/HR	0.0	0.0	0.0	0.0	0.0
NC10H22	LB/HR	0.0	0.0	0.0	0.0	0.0
H3PO4	LB/HR	20.2117	0.0	0.0	0.0	0.0
TOTAL	LB/HR	23.9272	18.0150	18.0150	.36689+08	.56973+07
TEMP	F	100.000	100.000	100.000	100.000	100.0000
PRES	PSIA	100.000	100.000	100.000	73.0000	73.0000
ENTHALPY	BTU/LB	-3480.3061	-6841.3329	-6841.3329	-6802.3384	-6802.3384
VFRAC		0.0	0.0	0.0	0.0	0.0
LFRAC		1.0000	1.0000	1.0000	1.0000	1.0000

ENTROPY	BTU/LB-R	-4.6314	-2.1756	-2.1756	-2.1214	-2.1214
DENSITY	LB/CUFT	43.9062	52.4749	52.4749	62.0096	62.0096
AVG MW		58.0075	18.0150	18.0150	18.0150	18.0150

PHOSAM
STREAM SECTION

4682 4683 4684 4680

STREAM ID		4682	4683	4684	4680
FROM :		SPCW	SPCW	SPCW	
TO :					ECW
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL			
AR	LB/HR	0.0	0.0	0.0	0.0
CL2	LB/HR	0.0	0.0	0.0	0.0
HCL	LB/HR	0.0	0.0	0.0	0.0
H2	LB/HR	0.0	0.0	0.0	0.0
H2O	LB/HR	.77083+07	.64048+07	.16879+08	.36689+08
H2S	LB/HR	0.0	0.0	0.0	0.0
NH3	LB/HR	0.0	0.0	0.0	0.0
N2	LB/HR	0.0	0.0	0.0	0.0
O2	LB/HR	0.0	0.0	0.0	0.0
CO	LB/HR	0.0	0.0	0.0	0.0
COS	LB/HR	0.0	0.0	0.0	0.0
CO2	LB/HR	0.0	0.0	0.0	0.0
HCN	LB/HR	0.0	0.0	0.0	0.0
CH4	LB/HR	0.0	0.0	0.0	0.0
C2H4	LB/HR	0.0	0.0	0.0	0.0
C2H6	LB/HR	0.0	0.0	0.0	0.0
HOAC	LB/HR	0.0	0.0	0.0	0.0
C3H6	LB/HR	0.0	0.0	0.0	0.0
ACETONE	LB/HR	0.0	0.0	0.0	0.0
C3H8	LB/HR	0.0	0.0	0.0	0.0
THIOPHEN	LB/HR	0.0	0.0	0.0	0.0
1-C4H8	LB/HR	0.0	0.0	0.0	0.0
MEK	LB/HR	0.0	0.0	0.0	0.0
NC4H10	LB/HR	0.0	0.0	0.0	0.0
PYRIDINE	LB/HR	0.0	0.0	0.0	0.0
BENZENE	LB/HR	0.0	0.0	0.0	0.0
PHENOL	LB/HR	0.0	0.0	0.0	0.0
N-C6H14	LB/HR	0.0	0.0	0.0	0.0
DIPE	LB/HR	0.0	0.0	0.0	0.0
TOLUENE	LB/HR	0.0	0.0	0.0	0.0
O-CRESOL	LB/HR	0.0	0.0	0.0	0.0
NAPHTHAL	LB/HR	0.0	0.0	0.0	0.0
NC10H22	LB/HR	0.0	0.0	0.0	0.0
H3PO4	LB/HR	0.0	0.0	0.0	0.0
TOTAL	LB/HR	.77083+07	.64048+07	.16879+08	.36689+08
TEMP	F	100.0000	100.0000	100.0000	82.0000
PRES	PSIA	73.0000	73.0000	73.0000	75.0000
ENTHALPY	BTU/LB	-6802.3384	-6802.3384	-6802.3384	-6820.2889
VFRAC		0.0	0.0	0.0	0.0
LFRAC		1.0000	1.0000	1.0000	1.0000

ENTROPY	BTU/LB-R	-2.1214	-2.1214	-2.1214	-2.1540
DENSITY	LB/CUFT	62.0096	62.0096	62.0096	62.2147
AVG MW		18.0150	18.0150	18.0150	18.0150

PHOSAM
STREAM SECTION

Q4601 Q4605 QD4602R Q4603 QE4603

STREAM ID		Q4601	Q4605	QD4602R	Q4603	QE4603
FROM :		E4607	E4610	D4602	E4603	E4603A
TO :		M4600			E4603A	
CLASS:		HEAT	HEAT	HEAT	HEAT	HEAT
STREAM ATTRIBUTES:						
HEAT						
Q	BTU/HR	.10425+09	.13837+09	-.12366+09	-.75018+08	.11497+09

PHOSAM

STREAM SECTION

Q4602 QD4603R QD4603C QCW

STREAM ID		Q4602	QD4603R	QD4603C	QCW
FROM :		E4601	D4603	D4603	ECW
TO :		M4600			
CLASS:		HEAT	HEAT	HEAT	HEAT
STREAM ATTRIBUTES:					
HEAT					
Q	BTU/HR	.90199+08	-.30722+09	.30298+09	-.65859+09

PHOSAM

STREAM SECTION

4608 4622 4609 4610 4611

STREAM ID		4608	4622	4609	4610	4611
FROM :		M4600	D4601A	D4601A	G4605	E4607
TO :		D4601A	D4601B	G4605	E4607	
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	MOLEFRAC	.14544-10	.63494-10	.48381-49	.48381-49	.48381-49
CL2	MOLEFRAC	.32124-13	.14635-12	.13795-38	.13795-38	.13795-38
HCL	MOLEFRAC	.17189-04	.36303-06	.17308-04	.17308-04	.17308-04
H2	MOLEFRAC	.40769-08	.17791-07	.15784-47	.15784-47	.15784-47
H2O	MOLEFRAC	0.9933	0.9619	0.9993	0.9993	0.9993
H2S	MOLEFRAC	.26948-05	.12603-04	.22084-28	.22084-28	.22084-28
NH3	MOLEFRAC	0.0057	0.0352	.40937-04	.40937-04	.40937-04
N2	MOLEFRAC	.79915-05	.34855-04	.30862-46	.30862-46	.30862-46
O2	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
CO	MOLEFRAC	.11853-08	.51716-08	.99245-49	.99245-49	.99245-49
COS	MOLEFRAC	.47950-09	.21055-08	.99918-40	.99918-40	.99918-40
CO2	MOLEFRAC	.70653-05	.31381-04	.49598-34	.49598-34	.49598-34
HCN	MOLEFRAC	.28114-09	.12470-08	.44183-37	.44183-37	.44183-37
CH4	MOLEFRAC	.22494-08	.98185-08	.22406-47	.22406-47	.22406-47
C2H4	MOLEFRAC	.72561-09	.31770-08	.14612-43	.14612-43	.14612-43
C2H6	MOLEFRAC	.12296-08	.53679-08	.11628-47	.11628-47	.11628-47
HOAC	MOLEFRAC	.56600-03	.39371-03	.56946-03	.56946-03	.56946-03
C3H6	MOLEFRAC	.83886-08	.36797-07	.22835-41	.22835-41	.22835-41
ACETONE	MOLEFRAC	.70979-05	.48844-04	.59792-18	.59792-18	.59792-18
C3H8	MOLEFRAC	.26438-09	.11535-08	.19120-50	.19120-50	.19120-50
THIOPHEN	MOLEFRAC	.94473-07	.45108-06	.77155-27	.77155-27	.77155-27
1-C4H8	MOLEFRAC	.72569-08	.31729-07	.18967-44	.18967-44	.18967-44
MEK	MOLEFRAC	.75196-04	.70225-03	.43078-16	.43078-16	.43078-16
NC4H10	MOLEFRAC	.95309-10	.41565-09	.10970-52	.10970-52	.10970-52
PYRIDINE	MOLEFRAC	.33179-04	.88076-03	.20229-04	.20229-04	.20229-04
BENZENE	MOLEFRAC	.73054-05	.34438-04	.41076-28	.41076-28	.41076-28
PHENOL	MOLEFRAC	.72868-05	.15148-04	.73039-05	.73039-05	.73039-05
N-C6H14	MOLEFRAC	.91708-08	.40029-07	.47681-48	.47681-48	.47681-48
DIPE	MOLEFRAC	.12576-03	.57935-03	.58730-29	.58730-29	.58730-29
TOLUENE	MOLEFRAC	.89982-05	.41215-04	.16207-30	.16207-30	.16207-30
O-CRESOL	MOLEFRAC	.83632-07	.30251-06	.82678-07	.82678-07	.82678-07
NAPHTHAL	MOLEFRAC	.39999-09	.20230-08	.23034-30	.23034-30	.23034-30
NC10H22	MOLEFRAC	.45155-09	.20554-08	.12160-32	.12160-32	.12160-32
H3PO4	MOLEFRAC	0.0	.42751-08	.32161-05	.32161-05	.32161-05
TOTAL	LBMOL/HR	.64569+05	.14816+05	.64128+05	.64128+05	.64128+05
TEMP	F	224.4271	228.5462	242.2388	242.4994	160.0000
PRES	PSIA	18.5000	20.0000	25.0000	80.0000	70.0000
ENTHALPY	BTU/LBMOL	-.11925+06	-.99756+05	-.12050+06	-.12049+06	-.12212+06
VFRAC		0.0614	1.0000	0.0	0.0	0.0
LFRAC		0.9385	0.0	1.0000	1.0000	1.0000

ENTROPY	BTU/LBMOL-R	-33.6885	-9.4968	-34.7670	-34.7617	-37.2230
DENSITY	LBMOL/CUFT	0.0413	0.0027	2.7229	2.7229	2.8369
AVG MW		18.0523	18.1470	18.0412	18.0412	18.0412

PHOSAM

STREAM SECTION

4619 4623 4620 4621 4624

STREAM ID		4619	4623	4620	4621	4624
FROM :		D4601B	D4601B	E4610	E4610	G4602
TO :		E4610	G4602		D4601A	E4603
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	MOLEFRAC	.12381-09	.21526-14	.12359-07	.21834-12	.21526-14
CL2	MOLEFRAC	.28463-12	.24655-15	.27223-10	.12525-13	.24655-15
HCL	MOLEFRAC	.52146-06	.63991-07	.70750-08	.52666-06	.63991-07
H2	MOLEFRAC	.34692-07	.26416-12	.34645-05	.47116-10	.26416-12
H2O	MOLEFRAC	0.9732	0.8829	0.6248	0.9767	0.8829
H2S	MOLEFRAC	.24573-04	.77123-09	0.0022	.16917-05	.77123-09
NH3	MOLEFRAC	0.0216	0.0554	0.1580	0.0202	0.0554
N2	MOLEFRAC	.67969-04	.20088-09	0.0067	.56762-07	.20088-09
O2	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
CO	MOLEFRAC	.10085-07	.33469-13	.10073-05	.12077-10	.33469-13
COS	MOLEFRAC	.41038-08	.66503-12	.40729-06	.31218-10	.66503-12
CO2	MOLEFRAC	.61193-04	.68770-09	0.0060	.11638-05	.68770-09
HCN	MOLEFRAC	.24318-08	.33034-14	.23892-06	.43012-10	.33034-14
CH4	MOLEFRAC	.19146-07	.30546-12	.19115-05	.31253-10	.30546-12
C2H4	MOLEFRAC	.61946-08	.19463-12	.61658-06	.29146-10	.19463-12
C2H6	MOLEFRAC	.10467-07	.31720-12	.10448-05	.18547-10	.31720-12
HOAC	MOLEFRAC	.53800-03	.19829-03	.28650-03	.54054-03	.19829-03
C3H6	MOLEFRAC	.71757-07	.20193-14	.71288-05	.47363-09	.20193-14
ACETONE	MOLEFRAC	.95232-04	.52950-08	0.0060	.35279-04	.52950-08
C3H8	MOLEFRAC	.22473-08	.67745-12	.22447-06	.26831-11	.67745-12
THIOPHEN	MOLEFRAC	.87450-06	.16526-08	.79773-04	.77549-07	.16526-08
1-C4H8	MOLEFRAC	.61872-07	.19332-14	.61671-05	.20373-09	.19332-14
MEK	MOLEFRAC	0.0013	.91811-06	0.0636	.73751-03	.91811-06
NC4H10	MOLEFRAC	.81055-09	.34031-17	.80996-07	.59846-12	.34031-17
PYRIDINE	MOLEFRAC	0.0015	.39375-04	0.0111	0.0015	.39375-04
BENZENE	MOLEFRAC	.67155-04	.22059-09	0.0062	.51232-05	.22059-09
PHENOL	MOLEFRAC	.26370-04	.10220-05	.25566-04	.26378-04	.10220-05
N-C6H14	MOLEFRAC	.78058-07	.16793-16	.77936-05	.12347-09	.16793-16
DIPE	MOLEFRAC	0.0011	.11501-09	0.1068	.61638-04	.11501-09
TOLUENE	MOLEFRAC	.80370-04	.21574-10	0.0076	.39400-05	.21574-10
O-CRESOL	MOLEFRAC	.56173-06	.91582-08	.12943-05	.55433-06	.91582-08
NAPHTHAL	MOLEFRAC	.39449-08	.31593-15	.33993-06	.55110-09	.31593-15
NC10H22	MOLEFRAC	.40082-08	.16024-26	.38375-06	.17249-09	.16024-26
H3PO4	MOLEFRAC	.70192-05	0.0612	.42124-07	.70897-05	0.0612
TOTAL	LBMOL/HR	7597.9638	.23560+05	75.9796	7521.9842	.23560+05
TEMP	F	221.1627	227.3251	194.1621	194.1621	228.6113
PRES	PSIA	15.0000	18.0000	15.0000	15.0000	240.0000
ENTHALPY	BTU/LBMOL	-.10085+06	-.12589+06	-.88366+05	-.11937+06	-.12585+06
VFRAC		1.0000	0.0	1.0000	0.0	0.0
LFRAC		0.0	1.0000	0.0	1.0000	1.0000

ENTROPY	BTU/LBMOL-R	-9.0369	-63.0745	-28.3573	-36.2203	-63.0449
DENSITY	LBMOL/CUFT	0.0020	2.0192	0.0021	2.7554	2.0190
AVG MW		18.3021	22.8734	32.4418	18.1593	22.8734

PHOSAM

STREAM SECTION

4630 4626 4625 4631 4629

STREAM ID		4630	4626	4625	4631	4629
FROM :		D4602	D4602	E4603	E4603A	E4601
TO :		E4603A	E4601	D4602	G4603	D4601B
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	MOLEFRAC	.70269-14	.50664-34	.21526-14	.70269-14	.50664-34
CL2	MOLEFRAC	0.0	0.0	.24655-15	0.0	0.0
HCL	MOLEFRAC	.19618-06	.55635-08	.63991-07	.19618-06	.55635-08
H2	MOLEFRAC	.86235-12	.32469-33	.26416-12	.86235-12	.32469-33
H2O	MOLEFRAC	0.9500	0.8533	0.8829	0.9500	0.8533
H2S	MOLEFRAC	.25169-08	.87843-27	.77123-09	.25169-08	.87843-27
NH3	MOLEFRAC	0.0495	0.0581	0.0554	0.0495	0.0581
N2	MOLEFRAC	.65577-09	.29739-33	.20088-09	.65577-09	.29739-33
O2	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
CO	MOLEFRAC	.10926-12	.82618-37	.33469-13	.10926-12	.82618-37
COS	MOLEFRAC	.21709-11	.30746-25	.66503-12	.21709-11	.30746-25
CO2	MOLEFRAC	.22446-08	.12251-29	.68770-09	.22446-08	.12251-29
HCN	MOLEFRAC	.10779-13	.35144-39	.33034-14	.10779-13	.35144-39
CH4	MOLEFRAC	.99718-12	.91059-32	.30546-12	.99718-12	.91059-32
C2H4	MOLEFRAC	.63538-12	.45820-30	.19463-12	.63538-12	.45820-30
C2H6	MOLEFRAC	.10355-11	.10861-29	.31720-12	.10355-11	.10861-29
HOAC	MOLEFRAC	.24170-03	.17908-03	.19829-03	.24170-03	.17908-03
C3H6	MOLEFRAC	.65945-14	.16238-51	.20193-14	.65945-14	.16238-51
ACETONE	MOLEFRAC	.17286-07	.32914-23	.52950-08	.17286-07	.32914-23
C3H8	MOLEFRAC	.22113-11	.30458-24	.67745-12	.22113-11	.30458-24
THIOPHEN	MOLEFRAC	.53946-08	.47343-15	.16526-08	.53946-08	.47343-15
1-C4H8	MOLEFRAC	.63132-14	.32326-52	.19332-14	.63132-14	.32326-52
MEK	MOLEFRAC	.29974-05	.16181-19	.91811-06	.29974-05	.16181-19
NC4H10	MOLEFRAC	0.0	0.0	.34031-17	0.0	0.0
PYRIDINE	MOLEFRAC	.12384-03	.21014-05	.39375-04	.12384-03	.21014-05
BENZENE	MOLEFRAC	.72019-09	.97920-31	.22059-09	.72019-09	.97920-31
PHENOL	MOLEFRAC	.33355-05	.50533-15	.10220-05	.33355-05	.50533-15
N-C6H14	MOLEFRAC	0.0	0.0	.16793-16	0.0	0.0
DIPE	MOLEFRAC	.37560-09	.30403-47	.11501-09	.37560-09	.30403-47
TOLUENE	MOLEFRAC	.70463-10	.24675-37	.21574-10	.70463-10	.24675-37
O-CRESOL	MOLEFRAC	.29672-07	.99127-10	.91582-08	.29672-07	.99127-10
NAPHTHAL	MOLEFRAC	0.0	0.0	.31593-15	0.0	0.0
NC10H22	MOLEFRAC	0.0	0.0	.16024-26	0.0	0.0
H3PO4	MOLEFRAC	.21192-04	0.0883	0.0612	.21192-04	0.0883
TOTAL	LBMOL/HR	7217.7115	.16340+05	.23560+05	7217.7115	.16340+05
TEMP	F	387.2572	399.1708	375.0000	362.0458	150.0000
PRES	PSIA	200.0000	210.0000	230.0000	197.0000	200.0000
ENTHALPY	BTU/LBMOL	-.97616+05	-.12616+06	-.12267+06	-.11354+06	-.13168+06
VFRAC		1.0000	0.0	0.0	0.0	0.0
LFRAC		0.0	1.0000	1.0000	1.0000	1.0000

ENTROPY	BTU/LBMOL-R	-12.5486	-70.4047	-58.8534	-31.6430	-77.9763
DENSITY	LBMOL/CUFT	0.0235	1.6339	1.8437	2.4689	1.8796
AVG MW		17.9860	25.0328	22.8734	17.9860	25.0328

PHOSAM

STREAM SECTION

4632 4635 4636 1611 4602

STREAM ID		4632	4635	4636	1611	4602
FROM :		G4603	D4603	D4603		
TO :		D4603		D4601A	M4600	M4600
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	MOLEFRAC	.70269-14	.14168-12	.10509-37	.15266-10	0.0
CL2	MOLEFRAC	0.0	0.0	0.0	.33717-13	0.0
HCL	MOLEFRAC	.19618-06	.19385-08	.20629-06	.18042-04	0.0
H2	MOLEFRAC	.86235-12	.17387-10	.44355-36	.42790-08	0.0
H2O	MOLEFRAC	0.9500	.22292-04	0.9995	0.9930	1.0000
H2S	MOLEFRAC	.25169-08	.50746-07	.10597-23	.28284-05	0.0
NH3	MOLEFRAC	0.0495	0.9999	.51594-05	0.0060	0.0
N2	MOLEFRAC	.65577-09	.13222-07	.57458-34	.83877-05	0.0
O2	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
CO	MOLEFRAC	.10926-12	.22030-11	.41476-37	.12441-08	0.0
COS	MOLEFRAC	.21709-11	.43771-10	.97341-28	.50328-09	0.0
CO2	MOLEFRAC	.22446-08	.45257-07	.82821-28	.74157-05	0.0
HCN	MOLEFRAC	.10779-13	.21734-12	.31660-29	.29508-09	0.0
CH4	MOLEFRAC	.99718-12	.20106-10	.70681-36	.23609-08	0.0
C2H4	MOLEFRAC	.63538-12	.12811-10	.72464-34	.76159-09	0.0
C2H6	MOLEFRAC	.10355-11	.20878-10	.28519-36	.12906-08	0.0
HOAC	MOLEFRAC	.24170-03	.57275-08	.25427-03	.59407-03	0.0
C3H6	MOLEFRAC	.65945-14	.13296-12	.15477-35	.88045-08	0.0
ACETONE	MOLEFRAC	.17286-07	.34852-06	.42403-15	.74498-05	0.0
C3H8	MOLEFRAC	.22113-11	.44585-10	.92033-38	.27749-09	0.0
THIOPHEN	MOLEFRAC	.53946-08	.10877-06	.77458-18	.99157-07	0.0
1-C4H8	MOLEFRAC	.63132-14	.12729-12	.40827-37	.76167-08	0.0
MEK	MOLEFRAC	.29974-05	.60436-04	.65191-16	.78924-04	0.0
NC4H10	MOLEFRAC	0.0	0.0	0.0	.10004-09	0.0
PYRIDINE	MOLEFRAC	.12384-03	.12375-04	.12964-03	.34824-04	0.0
BENZENE	MOLEFRAC	.72019-09	.14521-07	.12006-24	.76676-05	0.0
PHENOL	MOLEFRAC	.33355-05	.38901-06	.34887-05	.76481-05	0.0
N-C6H14	MOLEFRAC	0.0	0.0	0.0	.96256-08	0.0
DIPE	MOLEFRAC	.37560-09	.75730-08	.21999-27	.13199-03	0.0
TOLUENE	MOLEFRAC	.70463-10	.14207-08	.10505-27	.94443-05	0.0
O-CRESOL	MOLEFRAC	.29672-07	.45119-11	.31215-07	.87779-07	0.0
NAPHTHAL	MOLEFRAC	0.0	0.0	0.0	.41983-09	0.0
NC10H22	MOLEFRAC	0.0	0.0	0.0	.47394-09	0.0
H3PO4	MOLEFRAC	.21192-04	0.0	.22295-04	0.0	0.0
TOTAL	LBMOL/HR	7217.7115	357.9761	6860.7353	.61518+05	3050.3000
TEMP	F	362.6552	102.4066	391.0227	127.8000	100.000
PRES	PSIA	300.0000	220.0000	223.0000	18.5000	100.000
ENTHALPY	BTU/LBMOL	-.11353+06	-.28191+05	-.11737+06	-.12221+06	-.12325+06
VFRAC		0.0	0.0	0.0	0.0	0.0
LFRAC		1.0000	1.0000	1.0000	1.0000	1.0000

ENTROPY	BTU/LBMOL-R	-31.6336	-43.9906	-30.7914	-38.2738	-39.1951
DENSITY	LBMOL/CUFT	2.4688	1.8841	2.4535	2.8682	2.9128
AVG MW		17.9860	17.0351	18.0356	18.0542	18.0150

PHOSAM
STREAM SECTION

4612 4640 4633 CWT 4681

STREAM ID		4612	4640	4633	CWT	4681
FROM :					ECW	SPCW
TO :		D4601B	D4601B	D4603	SPCW	
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
CL2	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
HCL	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
H2	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
H2O	MOLEFRAC	0.5000	1.0000	1.0000	1.0000	1.0000
H2S	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
NH3	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
N2	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
O2	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
CO	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
COS	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
CO2	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
HCN	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
CH4	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
C2H4	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
C2H6	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
HOAC	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
C3H6	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
ACETONE	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
C3H8	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
THIOPHEN	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
1-C4H8	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
MEK	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
NC4H10	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
PYRIDINE	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
BENZENE	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
PHENOL	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
N-C6H14	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
DIPE	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
TOLUENE	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
O-CRESOL	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
NAPHTHAL	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
NC10H22	MOLEFRAC	0.0	0.0	0.0	0.0	0.0
H3PO4	MOLEFRAC	0.5000	0.0	0.0	0.0	0.0
TOTAL	LBMOL/HR	0.4124	1.0000	1.0000	.20366+07	.31625+06
TEMP	F	100.000	100.000	100.000	100.000	100.0000
PRES	PSIA	100.000	100.000	100.000	73.0000	73.0000
ENTHALPY	BTU/LBMOL	-.20188+06	-.12325+06	-.12325+06	-.12254+06	-.12254+06
VFRAC		0.0	0.0	0.0	0.0	0.0
LFRAC		1.0000	1.0000	1.0000	1.0000	1.0000

ENTROPY	BTU/LBMOL-R	-268.6610	-39.1951	-39.1951	-38.2177	-38.2177
DENSITY	LBMOL/CUFT	0.7569	2.9128	2.9128	3.4421	3.4421
AVG MW		58.0075	18.0150	18.0150	18.0150	18.0150

PHOSAM
STREAM SECTION

4682 4683 4684 4680

STREAM ID		4682	4683	4684	4680
FROM :		SPCW	SPCW	SPCW	
TO :					ECW
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL			
AR	MOLEFRAC	0.0	0.0	0.0	0.0
CL2	MOLEFRAC	0.0	0.0	0.0	0.0
HCL	MOLEFRAC	0.0	0.0	0.0	0.0
H2	MOLEFRAC	0.0	0.0	0.0	0.0
H2O	MOLEFRAC	1.0000	1.0000	1.0000	1.0000
H2S	MOLEFRAC	0.0	0.0	0.0	0.0
NH3	MOLEFRAC	0.0	0.0	0.0	0.0
N2	MOLEFRAC	0.0	0.0	0.0	0.0
O2	MOLEFRAC	0.0	0.0	0.0	0.0
CO	MOLEFRAC	0.0	0.0	0.0	0.0
COS	MOLEFRAC	0.0	0.0	0.0	0.0
CO2	MOLEFRAC	0.0	0.0	0.0	0.0
HCN	MOLEFRAC	0.0	0.0	0.0	0.0
CH4	MOLEFRAC	0.0	0.0	0.0	0.0
C2H4	MOLEFRAC	0.0	0.0	0.0	0.0
C2H6	MOLEFRAC	0.0	0.0	0.0	0.0
HOAC	MOLEFRAC	0.0	0.0	0.0	0.0
C3H6	MOLEFRAC	0.0	0.0	0.0	0.0
ACETONE	MOLEFRAC	0.0	0.0	0.0	0.0
C3H8	MOLEFRAC	0.0	0.0	0.0	0.0
THIOPHEN	MOLEFRAC	0.0	0.0	0.0	0.0
1-C4H8	MOLEFRAC	0.0	0.0	0.0	0.0
MEK	MOLEFRAC	0.0	0.0	0.0	0.0
NC4H10	MOLEFRAC	0.0	0.0	0.0	0.0
PYRIDINE	MOLEFRAC	0.0	0.0	0.0	0.0
BENZENE	MOLEFRAC	0.0	0.0	0.0	0.0
PHENOL	MOLEFRAC	0.0	0.0	0.0	0.0
N-C6H14	MOLEFRAC	0.0	0.0	0.0	0.0
DIPE	MOLEFRAC	0.0	0.0	0.0	0.0
TOLUENE	MOLEFRAC	0.0	0.0	0.0	0.0
O-CRESOL	MOLEFRAC	0.0	0.0	0.0	0.0
NAPHTHAL	MOLEFRAC	0.0	0.0	0.0	0.0
NC10H22	MOLEFRAC	0.0	0.0	0.0	0.0
H3PO4	MOLEFRAC	0.0	0.0	0.0	0.0
TOTAL	LBMOL/HR	.42788+06	.35553+06	.93693+06	.20366+07
TEMP	F	100.0000	100.0000	100.0000	82.0000
PRES	PSIA	73.0000	73.0000	73.0000	75.0000
ENTHALPY	BTU/LBMOL	-.12254+06	-.12254+06	-.12254+06	-.12287+06
VFRAC		0.0	0.0	0.0	0.0
LFRAC		1.0000	1.0000	1.0000	1.0000

ENTROPY	BTU/LBMOL-R	-38.2177	-38.2177	-38.2177	-38.8052
DENSITY	LBMOL/CUFT	3.4421	3.4421	3.4421	3.4534
AVG MW		18.0150	18.0150	18.0150	18.0150

PHOSAM
STREAM SECTION

Q4601 Q4605 QD4602R Q4603 QE4603

STREAM ID		Q4601	Q4605	QD4602R	Q4603	QE4603
FROM :		E4607	E4610	D4602	E4603	E4603A
TO :		M4600			E4603A	
CLASS:		HEAT	HEAT	HEAT	HEAT	HEAT
STREAM ATTRIBUTES:						
HEAT						
Q	BTU/HR	.10425+09	.13837+09	-.12366+09	-.75018+08	.11497+09

PHOSAM
STREAM SECTION

Q4602 QD4603R QD4603C QCW

STREAM ID		Q4602	QD4603R	QD4603C	QCW
FROM :		E4601	D4603	D4603	ECW
TO :		M4600			
CLASS:		HEAT	HEAT	HEAT	HEAT

STREAM ATTRIBUTES:
HEAT

Q	BTU/HR	.90199+08-	.30722+09	.30298+09-.65859+09

PHOSAM

STREAM SECTION

4608 4622 4609 4610 4611

STREAM ID		4608	4622	4609	4610	4611
FROM :		M4600	D4601A	D4601A	G4605	E4607
TO :		D4601A	D4601B	G4605	E4607	
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	MASSFRAC	.32185-10	.13977-09	.10713-48	.10713-48	.10713-48
CL2	MASSFRAC	.12618-12	.57185-12	.54218-38	.54218-38	.54218-38
HCL	MASSFRAC	.34718-04	.72940-06	.34978-04	.34978-04	.34978-04
H2	MASSFRAC	.45529-09	.19764-08	.17638-48	.17638-48	.17638-48
H2O	MASSFRAC	0.9913	0.9549	0.9978	0.9978	0.9978
H2S	MASSFRAC	.50874-05	.23668-04	.41717-28	.41717-28	.41717-28
NH3	MASSFRAC	0.0054	0.0330	.38644-04	.38644-04	.38644-04
N2	MASSFRAC	.12401-04	.53805-04	.47920-46	.47920-46	.47920-46
O2	MASSFRAC	0.0	0.0	0.0	0.0	0.0
CO	MASSFRAC	.18391-08	.79824-08	.15408-48	.15408-48	.15408-48
COS	MASSFRAC	.15956-08	.69696-08	.33269-39	.33269-39	.33269-39
CO2	MASSFRAC	.17225-04	.76105-04	.12099-33	.12099-33	.12099-33
HCN	MASSFRAC	.42089-09	.18572-08	.66186-37	.66186-37	.66186-37
CH4	MASSFRAC	.19990-08	.86801-08	.19924-47	.19924-47	.19924-47
C2H4	MASSFRAC	.11276-08	.49114-08	.22721-43	.22721-43	.22721-43
C2H6	MASSFRAC	.20482-08	.88948-08	.19380-47	.19380-47	.19380-47
HOAC	MASSFRAC	0.0018	0.0013	0.0018	0.0018	0.0018
C3H6	MASSFRAC	.19554-07	.85329-07	.53263-41	.53263-41	.53263-41
ACETONE	MASSFRAC	.22836-04	.15633-03	.19249-17	.19249-17	.19249-17
C3H8	MASSFRAC	.64582-09	.28031-08	.46733-50	.46733-50	.46733-50
THIOPHEN	MASSFRAC	.44031-06	.20914-05	.35981-26	.35981-26	.35981-26
1-C4H8	MASSFRAC	.22555-07	.98100-07	.58986-44	.58986-44	.58986-44
MEK	MASSFRAC	.30036-03	0.0027	.17217-15	.17217-15	.17217-15
NC4H10	MASSFRAC	.30687-09	.13313-08	.35342-52	.35342-52	.35342-52
PYRIDINE	MASSFRAC	.14538-03	0.0038	.88693-04	.88693-04	.88693-04
BENZENE	MASSFRAC	.31611-04	.14824-03	.17785-27	.17785-27	.17785-27
PHENOL	MASSFRAC	.37989-04	.78559-04	.38101-04	.38101-04	.38101-04
N-C6H14	MASSFRAC	.43780-07	.19009-06	.22776-47	.22776-47	.22776-47
DIPE	MASSFRAC	.71179-03	0.0032	.33262-28	.33262-28	.33262-28
TOLUENE	MASSFRAC	.45927-04	.20927-03	.82774-30	.82774-30	.82774-30
O-CRESOL	MASSFRAC	.50098-06	.18027-05	.49557-06	.49557-06	.49557-06
NAPHTHAL	MASSFRAC	.28400-08	.14288-07	.16364-29	.16364-29	.16364-29
NC10H22	MASSFRAC	.35590-08	.16116-07	.95902-32	.95902-32	.95902-32
H3PO4	MASSFRAC	0.0	.23087-07	.17470-04	.17470-04	.17470-04
TOTAL	LB/HR	.11656+07	.26887+06	.11569+07	.11569+07	.11569+07
TEMP	F	224.4271	228.5462	242.2388	242.4994	160.0000
PRES	PSIA	18.5000	20.0000	25.0000	80.0000	70.0000
ENTHALPY	BTU/LB	-6605.7405	-5497.0681	-6679.1816	-6678.7673	-6768.8752
VFRAC		0.0614	1.0000	0.0	0.0	0.0
LFRAC		0.9385	0.0	1.0000	1.0000	1.0000

ENTROPY	BTU/LB-R	-1.8661	-0.5233	-1.9270	-1.9267	-2.0632
DENSITY	LB/CUFT	0.7457	0.0496	49.1263	49.1248	51.1827
AVG MW		18.0523	18.1470	18.0412	18.0412	18.0412

PHOSAM
STREAM SECTION

4619 4623 4620 4621 4624

STREAM ID		4619	4623	4620	4621	4624
FROM :		D4601B	D4601B	E4610	E4610	G4602
TO :		E4610	G4602		D4601A	E4603
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	MASSFRAC	.27024-09	.37594-14	.15219-07	.48031-12	.37594-14
CL2	MASSFRAC	.11027-11	.76429-15	.59500-10	.48906-13	.76429-15
HCL	MASSFRAC	.10388-05	.10200-06	.79515-08	.10574-05	.10200-06
H2	MASSFRAC	.38213-08	.23282-13	.21529-06	.52307-11	.23282-13
H2O	MASSFRAC	0.9579	0.6954	0.3469	0.9690	0.6954
H2S	MASSFRAC	.45758-04	.11491-08	0.0024	.31749-05	.11491-08
NH3	MASSFRAC	0.0201	0.0413	0.0829	0.0190	0.0413
N2	MASSFRAC	.10403-03	.24601-09	0.0058	.87562-07	.24601-09
O2	MASSFRAC	0.0	0.0	0.0	0.0	0.0
CO	MASSFRAC	.15434-07	.40985-13	.86968-06	.18628-10	.40985-13
COS	MASSFRAC	.13469-07	.17465-11	.75414-06	.10327-09	.17465-11
CO2	MASSFRAC	.14715-03	.13232-08	0.0081	.28204-05	.13232-08
HCN	MASSFRAC	.35909-08	.39031-14	.19903-06	.64013-10	.39031-14
CH4	MASSFRAC	.16782-07	.21424-12	.94525-06	.27611-10	.21424-12
C2H4	MASSFRAC	.94953-08	.23871-12	.53319-06	.45027-10	.23871-12
C2H6	MASSFRAC	.17197-07	.41700-12	.96845-06	.30712-10	.41700-12
HOAC	MASSFRAC	0.0017	.52059-03	.53033-03	0.0017	.52059-03
C3H6	MASSFRAC	.16498-06	.37150-14	.92469-05	.10975-08	.37150-14
ACETONE	MASSFRAC	.30221-03	.13445-07	0.0107	.11284-03	.13445-07
C3H8	MASSFRAC	.54147-08	.13060-11	.30511-06	.65154-11	.13060-11
THIOPHEN	MASSFRAC	.40201-05	.60790-08	.20689-03	.35930-06	.60790-08
1-C4H8	MASSFRAC	.18968-06	.47422-14	.10666-04	.62947-09	.47422-14
MEK	MASSFRAC	0.0053	.28943-05	0.1414	0.0029	.28943-05
NC4H10	MASSFRAC	.25741-08	.86477-17	.14511-06	.19155-11	.86477-17
PYRIDINE	MASSFRAC	0.0069	.13617-03	0.0272	0.0065	.13617-03
BENZENE	MASSFRAC	.28662-03	.75332-09	0.0149	.22038-04	.75332-09
PHENOL	MASSFRAC	.13560-03	.42049-05	.74166-04	.13671-03	.42049-05
N-C6H14	MASSFRAC	.36754-06	.63271-16	.20703-04	.58593-09	.63271-16
DIPE	MASSFRAC	0.0063	.51377-09	0.3366	.34682-03	.51377-09
TOLUENE	MASSFRAC	.40462-03	.86908-10	0.0217	.19991-04	.86908-10
O-CRESOL	MASSFRAC	.33190-05	.43298-07	.43142-05	.33011-05	.43298-07
NAPHTHAL	MASSFRAC	.27627-07	.17704-14	.13430-05	.38898-08	.17704-14
NC10H22	MASSFRAC	.31161-07	.99678-26	.16831-05	.13515-08	.99678-26
H3PO4	MASSFRAC	.37585-04	0.2625	.12725-06	.38261-04	0.2625
TOTAL	LB/HR	.13906+06	.53890+06	2464.9213	.13659+06	.53890+06
TEMP	F	221.1627	227.3251	194.1621	194.1621	228.6113
PRES	PSIA	15.0000	18.0000	15.0000	15.0000	240.0000
ENTHALPY	BTU/LB	-5509.9958	-5503.8434	-2723.8182	-6573.2597	-5502.0645
VFRAC		1.0000	0.0	1.0000	0.0	0.0
LFRAC		0.0	1.0000	0.0	1.0000	1.0000

ENTROPY	BTU/LB-R	-0.4937	-2.7575	-0.8740	-1.9945	-2.7562
DENSITY	LB/CUFT	0.0379	46.1880	0.0702	50.0363	46.1821
AVG MW		18.3021	22.8734	32.4418	18.1593	22.8734

PHOSAM
STREAM SECTION

4630 4626 4625 4631 4629

STREAM ID		4630	4626	4625	4631	4629
FROM :		D4602	D4602	E4603	E4603A	E4601
TO :		E4603A	E4601	D4602	G4603	D4601B
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	MASSFRAC	.15607-13	.80851-34	.37594-14	.15607-13	.80851-34
CL2	MASSFRAC	0.0	0.0	.76429-15	0.0	0.0
HCL	MASSFRAC	.39770-06	.81034-08	.10200-06	.39770-06	.81034-08
H2	MASSFRAC	.96658-13	.26149-34	.23282-13	.96658-13	.26149-34
H2O	MASSFRAC	0.9515	0.6141	0.6954	0.9515	0.6141
H2S	MASSFRAC	.47690-08	.11959-26	.11491-08	.47690-08	.11959-26
NH3	MASSFRAC	0.0469	0.0395	0.0413	0.0469	0.0395
N2	MASSFRAC	.10213-08	.33280-33	.24601-09	.10213-08	.33280-33
O2	MASSFRAC	0.0	0.0	0.0	0.0	0.0
CO	MASSFRAC	.17016-12	.92443-37	.40985-13	.17016-12	.92443-37
COS	MASSFRAC	.72505-11	.73780-25	.17465-11	.72505-11	.73780-25
CO2	MASSFRAC	.54923-08	.21538-29	.13232-08	.54923-08	.21538-29
HCN	MASSFRAC	.16197-13	.37942-39	.39031-14	.16197-13	.37942-39
CH4	MASSFRAC	.88945-12	.58357-32	.21424-12	.88945-12	.58357-32
C2H4	MASSFRAC	.99104-12	.51349-30	.23871-12	.99104-12	.51349-30
C2H6	MASSFRAC	.17312-11	.13047-29	.41700-12	.17312-11	.13047-29
HOAC	MASSFRAC	.80698-03	.42960-03	.52059-03	.80698-03	.42960-03
C3H6	MASSFRAC	.15429-13	.27297-51	.37150-14	.15429-13	.27297-51
ACETONE	MASSFRAC	.55819-07	.76366-23	.13445-07	.55819-07	.76366-23
C3H8	MASSFRAC	.54214-11	.53653-24	.13060-11	.54214-11	.53653-24
THIOPHEN	MASSFRAC	.25235-07	.15912-14	.60790-08	.25235-07	.15912-14
1-C4H8	MASSFRAC	.19694-13	.72455-52	.47422-14	.19694-13	.72455-52
MEK	MASSFRAC	.12017-04	.46610-19	.28943-05	.12017-04	.46610-19
NC4H10	MASSFRAC	0.0	0.0	.86477-17	0.0	0.0
PYRIDINE	MASSFRAC	.54465-03	.66402-05	.13617-03	.54465-03	.66402-05
BENZENE	MASSFRAC	.31278-08	.30556-30	.75332-09	.31278-08	.30556-30
PHENOL	MASSFRAC	.17453-04	.18998-14	.42049-05	.17453-04	.18998-14
N-C6H14	MASSFRAC	0.0	0.0	.63271-16	0.0	0.0
DIPE	MASSFRAC	.21337-08	.12410-46	.51377-09	.21337-08	.12410-46
TOLUENE	MASSFRAC	.36098-09	.90824-37	.86908-10	.36098-09	.90824-37
O-CRESOL	MASSFRAC	.17840-06	.42822-09	.43298-07	.17840-06	.42822-09
NAPHTHAL	MASSFRAC	0.0	0.0	.17704-14	0.0	0.0
NC10H22	MASSFRAC	0.0	0.0	.99678-26	0.0	0.0
H3PO4	MASSFRAC	.11547-03	0.3459	0.2625	.11547-03	0.3459
TOTAL	LB/HR	.12982+06	.40904+06	.53890+06	.12982+06	.40904+06
TEMP	F	387.2572	399.1708	375.0000	362.0458	150.0000
PRES	PSIA	200.0000	210.0000	230.0000	197.0000	200.0000
ENTHALPY	BTU/LB	-5427.3229	-5039.9109	-5362.8577	-6312.9419	-5260.4251
VFRAC		1.0000	0.0	0.0	0.0	0.0
LFRAC		0.0	1.0000	1.0000	1.0000	1.0000

ENTROPY	BTU/LB-R	-0.6976	-2.8124	-2.5730	-1.7593	-3.1149
DENSITY	LB/CUFT	0.4232	40.9014	42.1721	44.4072	47.0524
AVG MW		17.9860	25.0328	22.8734	17.9860	25.0328

PHOSAM
STREAM SECTION

4632 4635 4636 1611 4602

STREAM ID		4632	4635	4636	1611	4602
FROM :		G4603	D4603	D4603		
TO :		D4603		D4601A	M4600	M4600
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	MASSFRAC	.15607-13	.33225-12	.23277-37	.33777-10	0.0
CL2	MASSFRAC	0.0	0.0	0.0	.13242-12	0.0
HCL	MASSFRAC	.39770-06	.41491-08	.41704-06	.36436-04	0.0
H2	MASSFRAC	.96658-13	.20577-11	.49579-37	.47781-09	0.0
H2O	MASSFRAC	0.9515	.23574-04	0.9984	0.9908	1.0000
H2S	MASSFRAC	.47690-08	.10152-06	.20024-23	.53391-05	0.0
NH3	MASSFRAC	0.0469	0.9996	.48720-05	0.0057	0.0
N2	MASSFRAC	.10213-08	.21742-07	.89245-34	.13014-04	0.0
O2	MASSFRAC	0.0	0.0	0.0	0.0	0.0
CO	MASSFRAC	.17016-12	.36223-11	.64413-37	.19301-08	0.0
COS	MASSFRAC	.72505-11	.15435-09	.32421-27	.16745-08	0.0
CO2	MASSFRAC	.54923-08	.11692-06	.20210-27	.18077-04	0.0
HCN	MASSFRAC	.16197-13	.34480-12	.47442-29	.44172-09	0.0
CH4	MASSFRAC	.88945-12	.18935-10	.62872-36	.20979-08	0.0
C2H4	MASSFRAC	.99104-12	.21097-10	.11272-33	.11834-08	0.0
C2H6	MASSFRAC	.17312-11	.36854-10	.47548-36	.21495-08	0.0
HOAC	MASSFRAC	.80698-03	.20191-07	.84663-03	0.0019	0.0
C3H6	MASSFRAC	.15429-13	.32845-12	.36112-35	.20522-07	0.0
ACETONE	MASSFRAC	.55819-07	.11883-05	.13655-14	.23966-04	0.0
C3H8	MASSFRAC	.54214-11	.11541-09	.22502-37	.67777-09	0.0
THIOPHEN	MASSFRAC	.25235-07	.53720-06	.36134-17	.46209-06	0.0
1-C4H8	MASSFRAC	.19694-13	.41925-12	.12701-36	.23671-07	0.0
MEK	MASSFRAC	.12017-04	.25581-03	.26063-15	.31522-03	0.0
NC4H10	MASSFRAC	0.0	0.0	0.0	.32205-09	0.0
PYRIDINE	MASSFRAC	.54465-03	.57461-04	.56858-03	.15258-03	0.0
BENZENE	MASSFRAC	.31278-08	.66585-07	.52001-24	.33175-04	0.0
PHENOL	MASSFRAC	.17453-04	.21491-05	.18205-04	.39868-04	0.0
N-C6H14	MASSFRAC	0.0	0.0	0.0	.45946-07	0.0
DIPE	MASSFRAC	.21337-08	.45423-07	.12463-26	.74701-03	0.0
TOLUENE	MASSFRAC	.36098-09	.76844-08	.53670-27	.48200-04	0.0
O-CRESOL	MASSFRAC	.17840-06	.28642-10	.18716-06	.52577-06	0.0
NAPHTHAL	MASSFRAC	0.0	0.0	0.0	.29805-08	0.0
NC10H22	MASSFRAC	0.0	0.0	0.0	.37351-08	0.0
H3PO4	MASSFRAC	.11547-03	0.0	.12114-03	0.0	0.0
TOTAL	LB/HR	.12982+06	6098.1868	.12374+06	.11107+07	.54951+05
TEMP	F	362.6552	102.4066	391.0227	127.8000	100.000
PRES	PSIA	300.0000	220.0000	223.0000	18.5000	100.000
ENTHALPY	BTU/LB	-6312.0834	-1654.8787	-6507.4057	-6769.1763	-6841.3329
VFRAC		0.0	0.0	0.0	0.0	0.0
LFRAC		1.0000	1.0000	1.0000	1.0000	1.0000

ENTROPY	BTU/LB-R	-1.7587	-2.5823	-1.7072	-2.1199	-2.1756
DENSITY	LB/CUFT	44.4055	32.0964	44.2505	51.7831	52.4749
AVG MW		17.9860	17.0351	18.0356	18.0542	18.0150

PHOSAM
STREAM SECTION

4612 4640 4633 CWT 4681

STREAM ID		4612	4640	4633	CWT	4681
FROM :					ECW	SPCW
TO :		D4601B	D4601B	D4603	SPCW	
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL				
AR	MASSFRAC	0.0	0.0	0.0	0.0	0.0
CL2	MASSFRAC	0.0	0.0	0.0	0.0	0.0
HCL	MASSFRAC	0.0	0.0	0.0	0.0	0.0
H2	MASSFRAC	0.0	0.0	0.0	0.0	0.0
H2O	MASSFRAC	0.1552	1.0000	1.0000	1.0000	1.0000
H2S	MASSFRAC	0.0	0.0	0.0	0.0	0.0
NH3	MASSFRAC	0.0	0.0	0.0	0.0	0.0
N2	MASSFRAC	0.0	0.0	0.0	0.0	0.0
O2	MASSFRAC	0.0	0.0	0.0	0.0	0.0
CO	MASSFRAC	0.0	0.0	0.0	0.0	0.0
COS	MASSFRAC	0.0	0.0	0.0	0.0	0.0
CO2	MASSFRAC	0.0	0.0	0.0	0.0	0.0
HCN	MASSFRAC	0.0	0.0	0.0	0.0	0.0
CH4	MASSFRAC	0.0	0.0	0.0	0.0	0.0
C2H4	MASSFRAC	0.0	0.0	0.0	0.0	0.0
C2H6	MASSFRAC	0.0	0.0	0.0	0.0	0.0
HOAC	MASSFRAC	0.0	0.0	0.0	0.0	0.0
C3H6	MASSFRAC	0.0	0.0	0.0	0.0	0.0
ACETONE	MASSFRAC	0.0	0.0	0.0	0.0	0.0
C3H8	MASSFRAC	0.0	0.0	0.0	0.0	0.0
THIOPHEN	MASSFRAC	0.0	0.0	0.0	0.0	0.0
1-C4H8	MASSFRAC	0.0	0.0	0.0	0.0	0.0
MEK	MASSFRAC	0.0	0.0	0.0	0.0	0.0
NC4H10	MASSFRAC	0.0	0.0	0.0	0.0	0.0
PYRIDINE	MASSFRAC	0.0	0.0	0.0	0.0	0.0
BENZENE	MASSFRAC	0.0	0.0	0.0	0.0	0.0
PHENOL	MASSFRAC	0.0	0.0	0.0	0.0	0.0
N-C6H14	MASSFRAC	0.0	0.0	0.0	0.0	0.0
DIPE	MASSFRAC	0.0	0.0	0.0	0.0	0.0
TOLUENE	MASSFRAC	0.0	0.0	0.0	0.0	0.0
O-CRESOL	MASSFRAC	0.0	0.0	0.0	0.0	0.0
NAPHTHAL	MASSFRAC	0.0	0.0	0.0	0.0	0.0
NC10H22	MASSFRAC	0.0	0.0	0.0	0.0	0.0
H3PO4	MASSFRAC	0.8447	0.0	0.0	0.0	0.0
TOTAL	LB/HR	23.9272	18.0150	18.0150	.36689+08	.56973+07
TEMP	F	100.000	100.000	100.000	100.000	100.0000
PRES	PSIA	100.000	100.000	100.000	73.0000	73.0000
ENTHALPY	BTU/LB	-3480.3061	-6841.3329	-6841.3329	-6802.3384	-6802.3384
VFRAC		0.0	0.0	0.0	0.0	0.0
LFRAC		1.0000	1.0000	1.0000	1.0000	1.0000

ENTROPY	BTU/LB-R	-4.6314	-2.1756	-2.1756	-2.1214	-2.1214
DENSITY	LB/CUFT	43.9062	52.4749	52.4749	62.0096	62.0096
AVG MW		58.0075	18.0150	18.0150	18.0150	18.0150

PHOSAM

STREAM SECTION

4682 4683 4684 4680

STREAM ID		4682	4683	4684	4680
FROM :		SPCW	SPCW	SPCW	
TO :					ECW
CLASS:		CONVEN	CONVEN	CONVEN	CONVEN
SUBSTREAM: MIXED		STRUCTURE: CONVENTIONAL			
AR	MASSFRAC	0.0	0.0	0.0	0.0
CL2	MASSFRAC	0.0	0.0	0.0	0.0
HCL	MASSFRAC	0.0	0.0	0.0	0.0
H2	MASSFRAC	0.0	0.0	0.0	0.0
H2O	MASSFRAC	1.0000	1.0000	1.0000	1.0000
H2S	MASSFRAC	0.0	0.0	0.0	0.0
NH3	MASSFRAC	0.0	0.0	0.0	0.0
N2	MASSFRAC	0.0	0.0	0.0	0.0
O2	MASSFRAC	0.0	0.0	0.0	0.0
CO	MASSFRAC	0.0	0.0	0.0	0.0
COS	MASSFRAC	0.0	0.0	0.0	0.0
CO2	MASSFRAC	0.0	0.0	0.0	0.0
HCN	MASSFRAC	0.0	0.0	0.0	0.0
CH4	MASSFRAC	0.0	0.0	0.0	0.0
C2H4	MASSFRAC	0.0	0.0	0.0	0.0
C2H6	MASSFRAC	0.0	0.0	0.0	0.0
HOAC	MASSFRAC	0.0	0.0	0.0	0.0
C3H6	MASSFRAC	0.0	0.0	0.0	0.0
ACETONE	MASSFRAC	0.0	0.0	0.0	0.0
C3H8	MASSFRAC	0.0	0.0	0.0	0.0
THIOPHEN	MASSFRAC	0.0	0.0	0.0	0.0
1-C4H8	MASSFRAC	0.0	0.0	0.0	0.0
MEK	MASSFRAC	0.0	0.0	0.0	0.0
NC4H10	MASSFRAC	0.0	0.0	0.0	0.0
PYRIDINE	MASSFRAC	0.0	0.0	0.0	0.0
BENZENE	MASSFRAC	0.0	0.0	0.0	0.0
PHENOL	MASSFRAC	0.0	0.0	0.0	0.0
N-C6H14	MASSFRAC	0.0	0.0	0.0	0.0
DIPE	MASSFRAC	0.0	0.0	0.0	0.0
TOLUENE	MASSFRAC	0.0	0.0	0.0	0.0
O-CRESOL	MASSFRAC	0.0	0.0	0.0	0.0
NAPHTHAL	MASSFRAC	0.0	0.0	0.0	0.0
NC10H22	MASSFRAC	0.0	0.0	0.0	0.0
H3PO4	MASSFRAC	0.0	0.0	0.0	0.0
TOTAL	LB/HR	.77083+07	.64048+07	.16879+08	.36689+08
TEMP	F	100.0000	100.0000	100.0000	82.0000
PRES	PSIA	73.0000	73.0000	73.0000	75.0000
ENTHALPY	BTU/LB	-6802.3384	-6802.3384	-6802.3384	-6820.2889
VFRAC		0.0	0.0	0.0	0.0
LFRAC		1.0000	1.0000	1.0000	1.0000

ENTROPY	BTU/LB-R	-2.1214	-2.1214	-2.1214	-2.1540
DENSITY	LB/CUFT	62.0096	62.0096	62.0096	62.2147
AVG MW		18.0150	18.0150	18.0150	18.0150

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