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POSTTEST RELAP4 ANALYSIS OF LOFT EXPERIMENT L1-3A

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October 1977

EG&G Idaho, Inc.

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EXPERIMENT L1-3A

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by

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and

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ABSTRACT

This report presents selected results of posttest RELAP4 modeling of LOFT loss-of-coolant experiment L1-3A, a double-ended isothermal cold leg break with lower plenum emergency core coolant injection. Comparisons are presented between the pretest prediction, the posttest analysis, and the experimental data. It is concluded that pressurizer modeling is important for accurately predicting system behavior during the initial portion of saturated blowdown. Using measured initial conditions rather than nominal specified initial conditions did not influence the system model results significantly. Using finer nodalization in the reactor vessel improved the prediction of the system pressure history by minimizing steam condensation effects. Unequal steam condensation between the downcomer and core volumes appear to cause the manometer oscillations observed in both the pretest and posttest RELAP4 analysis.

ACRONYMS

ECC	Emergency Core Coolant
ECCS	Emergency Core Cooling System
EOS	Experiment Operating Specification
ESF	Engineered Safety Features
HPIS	High-Pressure Injection System
LOCA	Loss-of-Coolant Accident
LOCE	Loss-of-Coolant Experiment
LOFT	Loss of Fluid Test
LPIS	Low-Pressure Injection System
LPWR	Large Pressurized Water Reactor

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POSTTEST RELAP4 ANALYSIS OF LOFT EXPERIMENT L1-3A

1.0 INTRODUCTION

The purpose of this report is to document some of the posttest RELAP4 analyses performed for nonnuclear Experiment L1-3A which was conducted in the Loss-of-Fluid Test (LOFT) facility. The various improvements made in modeling the LOFT system and how these improvements have increased the agreement between the calculations and the LOFT experimental data are discussed in this report.

Section 2.0 discusses the changes in RELAP4 calculated results for LOFT Experiment L1-3A due to the following changes in modeling:

(1) Effects of pressurizer modeling

(2) Effects of using measured instead of specified initial conditions on early blowdown behavior

(3) Effects of new reactor vessel nodalization during the emergency core coolant (ECC) injection phase

(4) Effects of changed ECC modeling

(5) Effects of code changes

(6) Overall effects of modeling changes in calculated transient response.

Section 2.0 also contains a description and justification of the modeling changes in the RELAP4 analysis of Experiment L1-3A.

Section 3.0 presents conclusions drawn from the information presented and discusses the need for further modeling improvements.

The appendices contain supplemental information about the RELAP4 analysis presented in this report.

LOFT Experiment L1-3A was a repeat of Experiment L1-3, which was the third in a series of five nonnuclear isothermal blowdown tests conducted by the LOFT Program. For these tests the LOFT system was configured to simulate a loss-of-coolant accident (LOCA) in a large pressurized water reactor (LPWR) resulting from a 200% double ended shear break in a cold leg of the primary coolant system. As outlined in Volume 2 of the experiment operating specification (EOS)[1,2], the specific objectives of Experiment L1-3A include, in addition to facility checkout, operator training, and procedure checkout:

(1) Comparison of break flow data with predictions

(2) Measurement of pump resistance and coastdown characteristics

(3) Determination of system performance with ECC injection into the lower plenum

(4) Determination of two-phase flow resistance for various system components

(5) Evaluation of scaling effects for various primary system components

(6) Evaluation of effects of intact loop resistance by comparison with corresponding results from Experiment L1-2.

The objectives of the LOFT Experimental Program are:

(1) To provide data required to evaluate the adequacy and improve the analytical methods currently used to predict the LOCA

response of LPWRs. The performance of engineered safety features (ESF) with particular emphasis on emergency core cooling systems (ECCS) and the quantitative margins of safety inherent in the performance of the ESF are of primary interest.

(2) To identify and investigate any unexpected event(s) or threshold(s) in the response of either the plant or the ESF and develop analytical techniques that adequately describe and account for such unexpected behavior.

Several series of experiments have been planned to meet the program objectives. The first series of experiments consists of five nonnuclear tests designated L1-1 through L1-5. For Tests L1-1 through L1-4, a core simulator is installed in the reactor vessel to provide a pressure drop representative of the LOFT nuclear core. The nuclear core will be installed for Test L1-5, but it will not be active during the test.

The major purposes of the nonnuclear test series are[4]:

(1) To determine that the equipment/systems function properly

(2) To demonstrate that the entire test facility can withstand the structural loads of blowdown

(3) To determine that the blowdown test procedures are adequate

(4) To provide experience to operators prior to nuclear tests

(5) To obtain isothermal loss-of-coolant experiment (LOCE) data for comparison with similar data from other experimental programs and to experimentally verify thermal-hydraulic system behavior prior to nuclear blowdown.

Prior to each LOFT experiment, the experiment is modeled and run on the computer using the RELAP4 computer code. This provides a prediction of LOFT system responses during a LOCE. Some of the more important reasons for doing an experiment prediction are to:

(1) Determine whether a test will meet its stated objectives

(2) Evaluate parameters that affect the safety of the facility during the intended test

(3) Provide input to the operating procedure for event times

(4) Provide information or possible instrument range adjustments

(5) Provide information to evaluate the capability of the modeling techniques employed in experiment prediction analysis.

From the data acquired from the experiment prediction analysis, an experiment prediction document is prepared. This document is issued approximately 1 month prior to the experiment, and it provides:

(1) Comprehensive pretest predictions for those test parameters which are related to the specific objectives of the particular LOCE, and which are illustrative of how these objectives are accomplished

(2) Detailed pretest predictions for each measurement transducer to be recorded during the LOCE with the exception of strain gages and accelerometers

(3) A description of the calculational techniques used in performing the pretest predictions.

After an experiment is performed, the data are compared with the predicted data in a quick-look report. The experimental data are then presented fully in an experiment data report. The experimental data are compared extensively to the predicted data, and parametric studies are undertaken to improve the modeling techniques. This is done not in the sense that code "tuning" is done but to better understand and model the actual physical processes that are observed in the experimental data. The posttest analysis reports document the more important analysis which is done after the test is performed.

A detailed description of the LOFT system can be found in Reference 3. The major components of the LOFT system are shown on Figure 1. Nomenclature for the LOFT instruments is listed in Table I, and locations of the experimental transducers are shown on Figures 2 through 4.

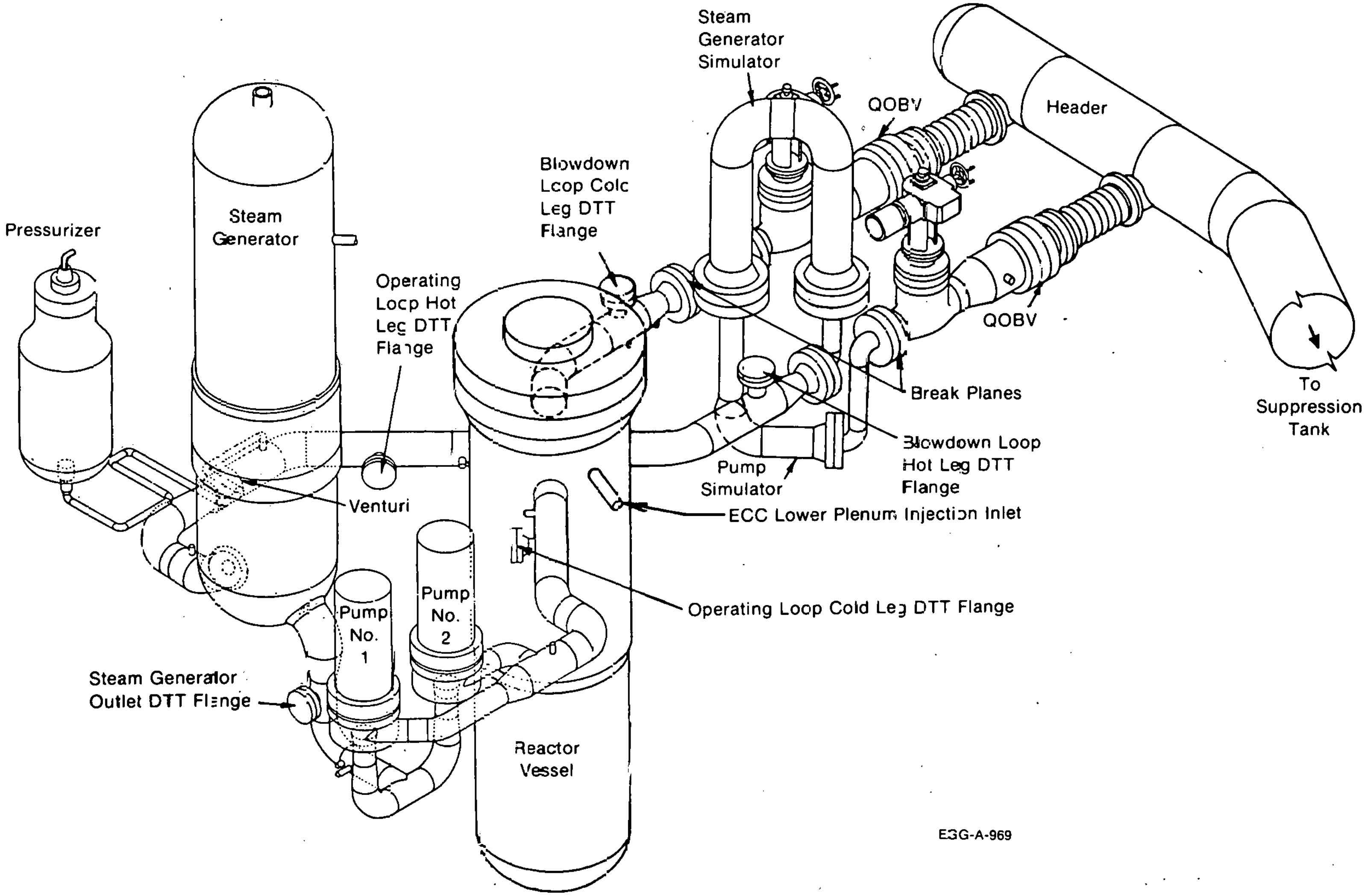

Fig. 1 LOFT major components.

TABLE I

NOMENCLATURE FOR LOFT INSTRUMENTATION

The designations for the different types of transducers are as follows:

1. TE - Temperature element
2. TT - Temperature transmitter
3. PE - Pressure transducer
4. PT - Pressure transmitter
5. PdE - Differential pressure element
6. PdT - Differential pressure transducer
7. LE - Coolant level transducer
8. LT - Level transmitter
9. FE - Coolant flow transducer
10. FT - Flow transmitter
11. AE - Accelerometer
12. DiE - Displacement transducer
13. ME - Momentum flux transducer
14. SE - Strain gage
15. RpE - Pump speed transducer
16. DE - Densitometer
17. LIT - Level indicating transmitter
18. CV - Control valve

The designations for the different systems, except for the core, are as follows:

1. PC - Primary coolant intact loop
2. BL - Blowdown loop
3. SG - Steam generator
4. RV - Reactor vessel
5. MTA - Test assembly
6. SV - Suppression tank
7. CS - Core simulator
8. UP - Upper plenum
9. LP - Lower plenum
10. ST - Downcomer stalk

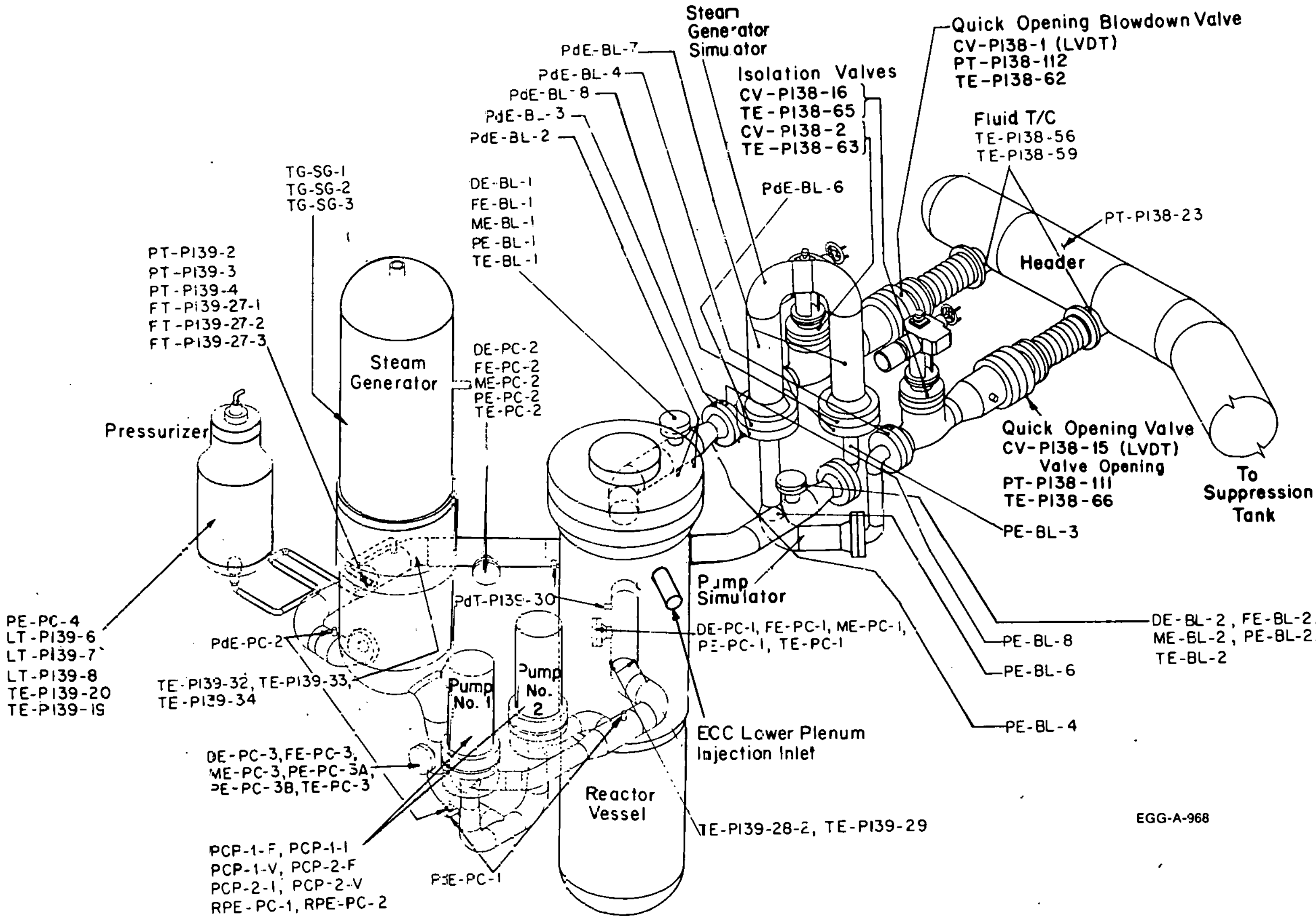

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Fig. 2 LCFT thermo-fluid measurements instrumentation.

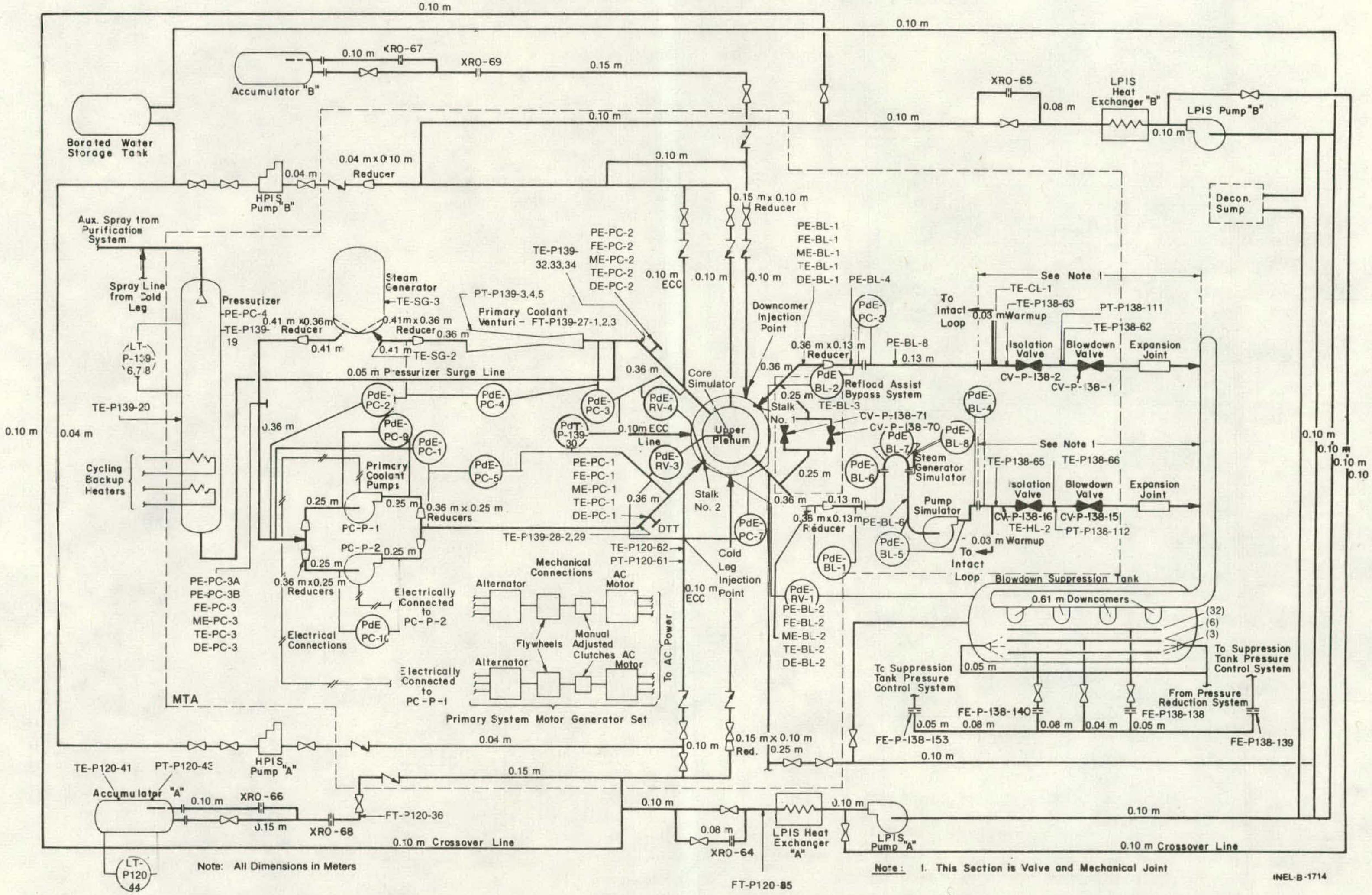


Fig. 3 LOFT piping and instrument diagram.

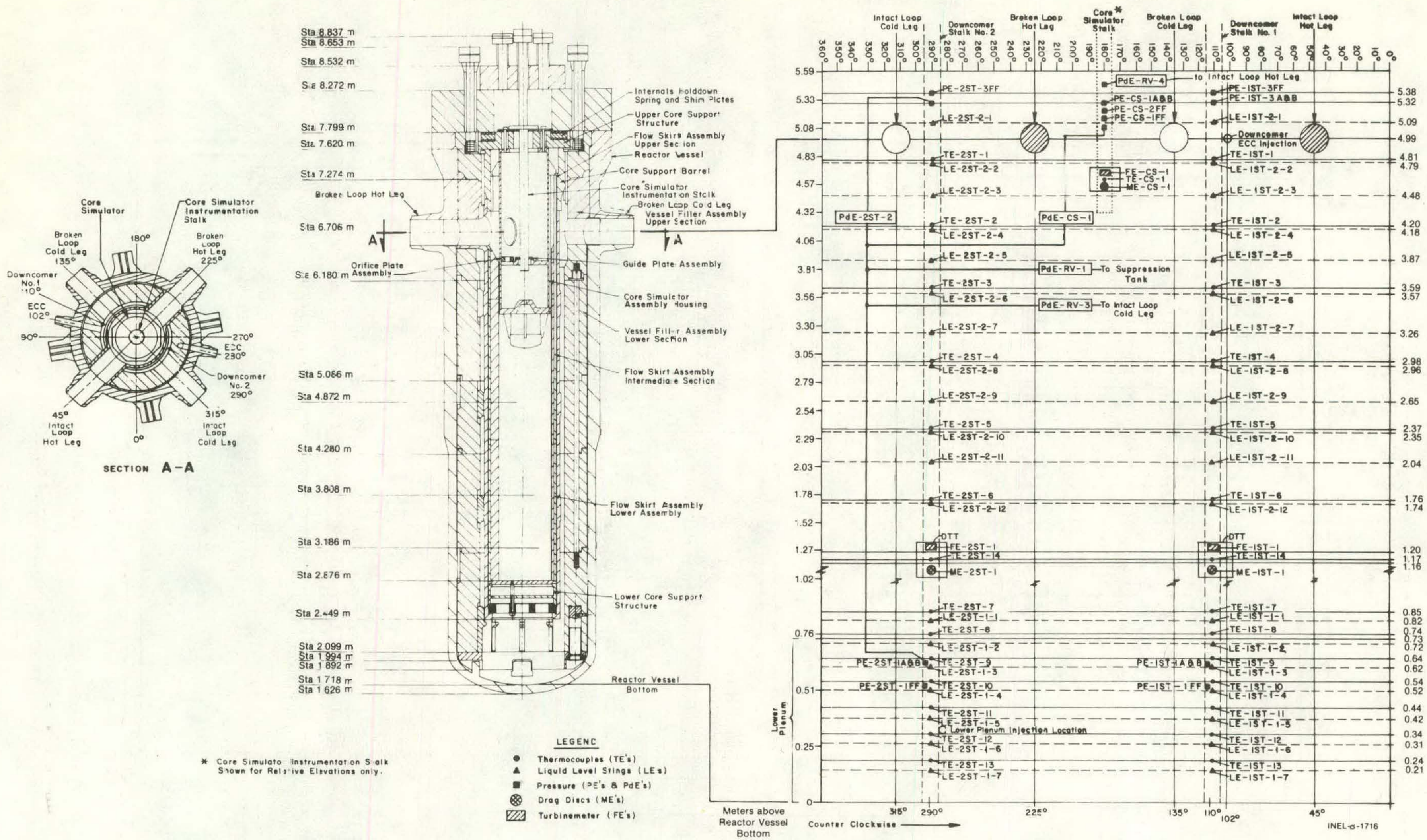


Fig. 4 LOFT reactor vessel instrumentation.

2.0 POSTTEST MODELING OF LOFT EXPERIMENT L1-3A WITH RELAP4/MOD5

2.1 Modeling the LOFT Pressurizer and the Effects of Pressurizer Modeling on Early Blowdown Behavior

This section of the report describes modeling of the LOFT pressurizer using the RELAP4 computer code[5], and how the system transient is affected by changed pressurizer modeling.

After reviewing the results of LOFT Experiment L1-3A[6], it was apparent that the pressurizer in the RELAP4 pretest prediction run tended to empty too fast[7]. This was evidenced by comparisons between the RELAP4 predicted and experimentally measured pressurizer pressure and liquid level in the pressurizer. As stated in Reference 6, the pressurizer and surge line are modeled as two volumes, with a single junction connecting the pressurizer to the surge line, and a single junction connecting the surge line to the intact loop hot leg piping.

After checking the inputs to the RELAP4 code, it was apparent that no serious input error was made in the geometric description of the pressurizer and the pressurizer surge line. Various parametric studies were run in which the pressurizer surge line was divided into two and three volumes with the total resistance of the junctions being correspondingly divided. It was found that modeling the surge line with more than one control volume had only a slight effect on the pressurizer outlet flow rate, and the computer running time increased considerably.

Investigation was then made on the effect of Fanning and single-phase form-loss coefficients on calculated pressurizer discharge flow rates. Since a choked flow condition was predicted to exist at the pressurizer surge line to intact loop piping junction, the effect of the critical flow contraction coefficient was also investigated. The result of these investigations led to a new RELAP4 pressurizer model. This new RELAP4 model had the following changes:

(1) A slight increase in single-phase form losses was made due to losses in the surge line nozzle, including the effects due to turning losses, losses in the surge line nozzle inlet screen, and losses due to expansions and contractions in the surge line nozzle.

(2) An increase in the form loss was made due to the pipe bends in the pressurizer surge line.

(3) An increase in the form loss was made due to the difference in Fanning losses between smooth piping and rough piping. RELAP4 uses the Karman-Nikuradase equation for calculating the Fanning friction factor for turbulent flow[5]. This relation is strictly applicable to smooth pipes and for long runs of small diameter pipe which leads to an understatement of Fanning losses.

(4) Separate two-phase multipliers were applied to the Fanning and form loss increases discussed above to account for two-phase effects[8].

(5) A contraction coefficient of 0.75 was applied to the pressurizer surge line outlet junction to account for the effect of the final bend on the critical flow rate. Reference 9 discusses critical compressible flow in elbows. Subsequent modeling studies have shown that applying the 0.75 contraction coefficient reduces the flow by only a few percent, not by 25% as was initially expected. Applying the contraction coefficient tends to increase the upstream pressure in such a way as to offset the contraction coefficient change.

(6) A 30% reduction in the bubble velocity in the bubble rise model in the pressurizer was implemented to account for the lower buoyancy effect due to the higher pressures in the pressurizer.

(7) A slight increase was made in the elevation of the junction between the pressurizer and the pressurizer surge line. This was done to establish the elevation of the pressurizer surge line nozzle above the bottom of the pressurizer.

After the new pressurizer model was developed and incorporated into the RELAP4 model of the LOFT system, a run was made (designated as L135-A23). This run was identical to the pretest prediction run (designated as L135-B5) except for the pressurizer model and the pressurizer initial liquid volume. An input listing and time zero output listing of this run are included in Appendix A. The input to the pretest prediction RELAP4 run may be found in Reference 7.

Figures 5 and 6 show comparisons between the RELAP4 predicted and the measured pressurizer pressure and pressurizer liquid levels. As can be seen from these figures, the pressurizer emptying rate in the new model is much closer, but slightly under the experimental data. The effect of changing the junction elevation of the pressurizer outlet junction can be seen in Figure 6, which shows a discontinuity in the pressurizer level versus time curve at approximately 0.1 metre.

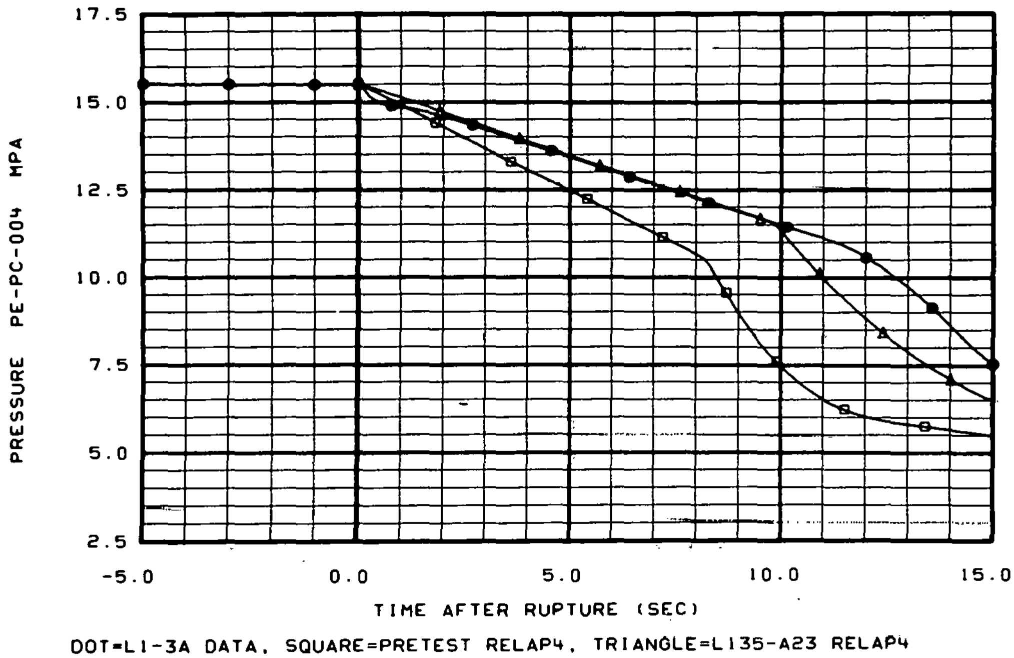


Fig. 5 Comparison of RELAP4 predicted and experimentally measured pressure in pressurizer.

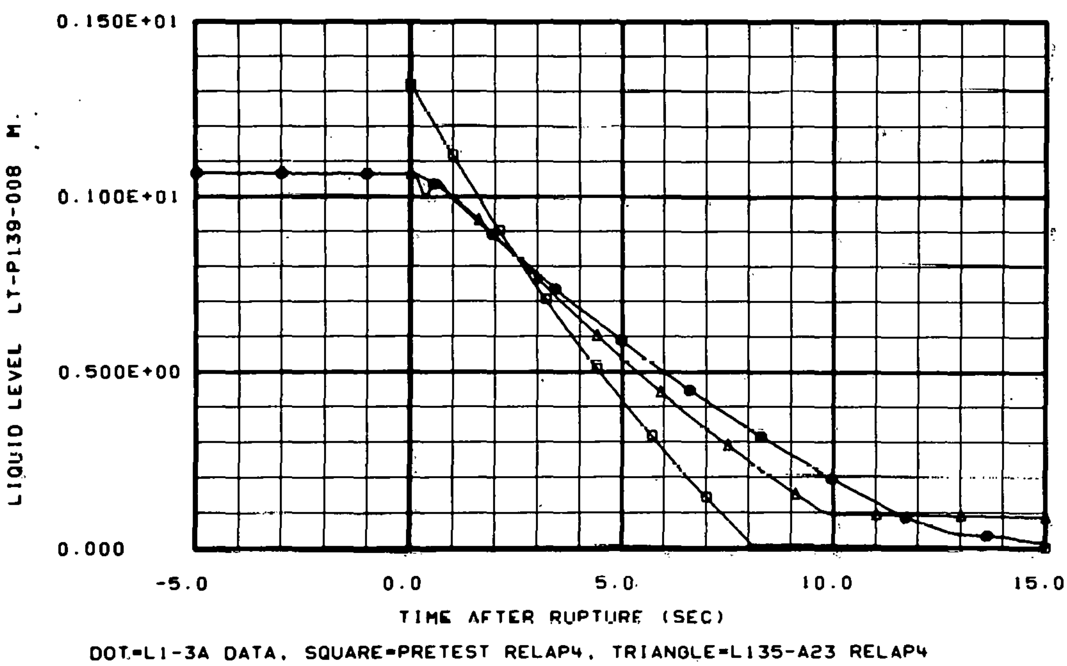


Fig. 6 Comparison of RELAP4 predicted and experimentally measured liquid level in pressurizer.

Figure 7 shows a comparison of the calculated and measured pressures in the intact loop. The differences in primary system pressures in the RELAP4 runs were an unexpected result. Careful analysis of the RELAP4 outputs revealed that the primary system pressures after the end of subcooled blowdown (~0.2 s) tend to be controlled by the saturation pressure of the control volume in the primary system which has the highest temperature. In the two RELAP4 runs, this proved to be the volumes in the intact loop hot leg. By reducing the pressurizer discharge flow of high enthalpy fluid, the energy input into the intact loop was decreased and the temperature in the intact loop was lowered.

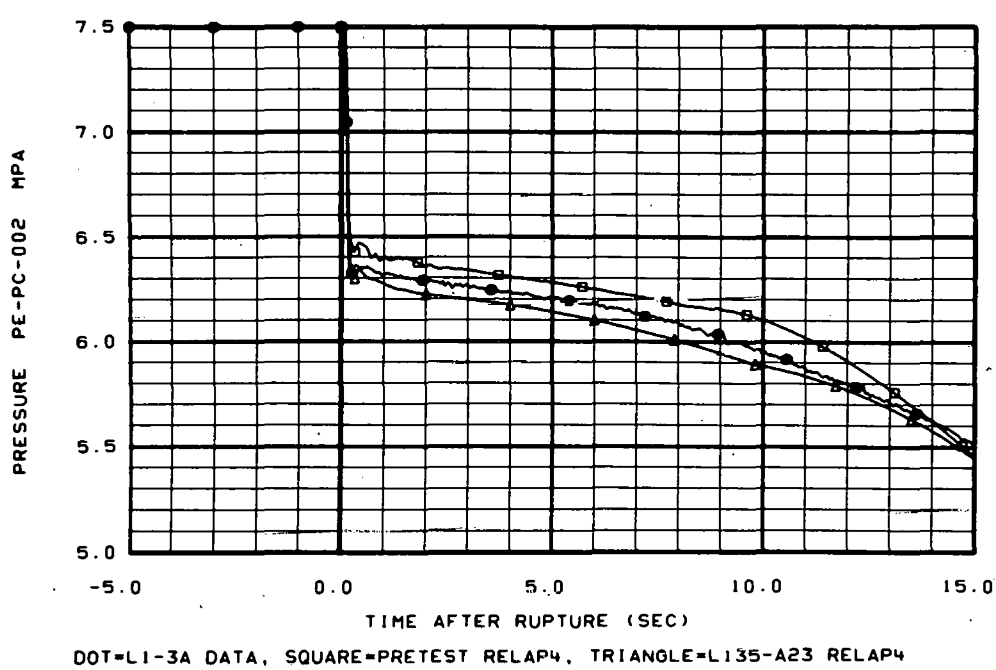


Fig. 7 Comparison of RELAP4 predicted and experimentally measured pressure in intact loop.

Figures 8, 9, and 10 show comparisons between calculated and measured densities in the intact loop. In essentially every case, changing the pressurizer model has allowed the fluid to begin to flash earlier. This allows for better comparisons between RELAP4 and the experimental data for the first 5 seconds of blowdown. In Figure 9, the agreement between RELAP4 and the experimental data has been markedly improved for the first 4 seconds of blowdown. Analysis of the RELAP4 output shows that a flow reversal takes place in the hot leg at approximately 4.5 seconds after rupture in the RELAP4 run with the new pressurizer model. When this occurs, the density of the fluid moving past the junction at which the density is computed takes a sudden change to a lower value. The experiment behaved in a similar fashion, except the density drop takes place at approximately 6 seconds after rupture.

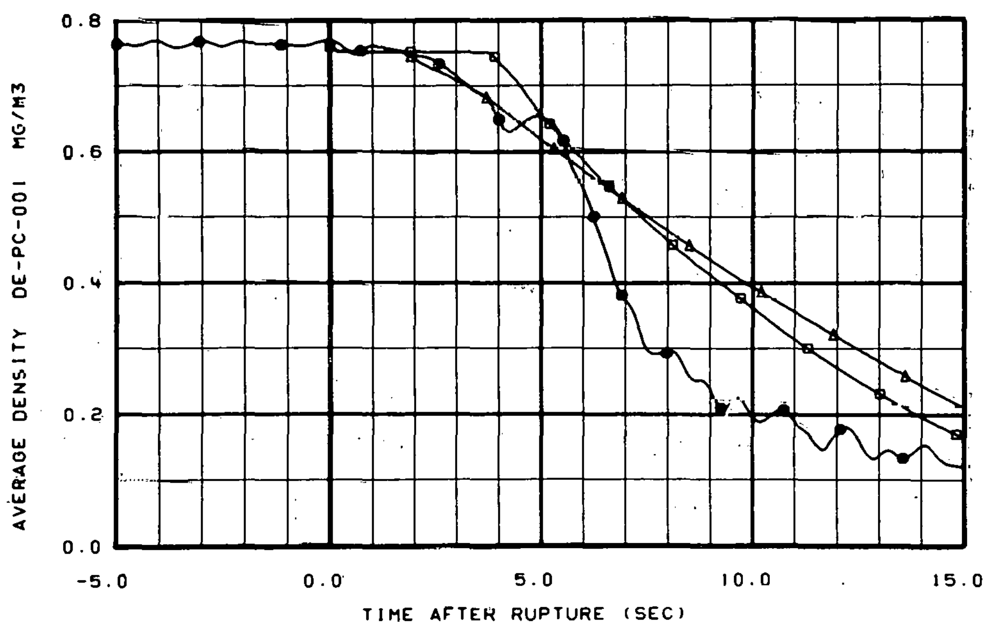


Fig. 8 Comparison of RELAP4 predicted and experimentally measured density in intact loop cold leg.

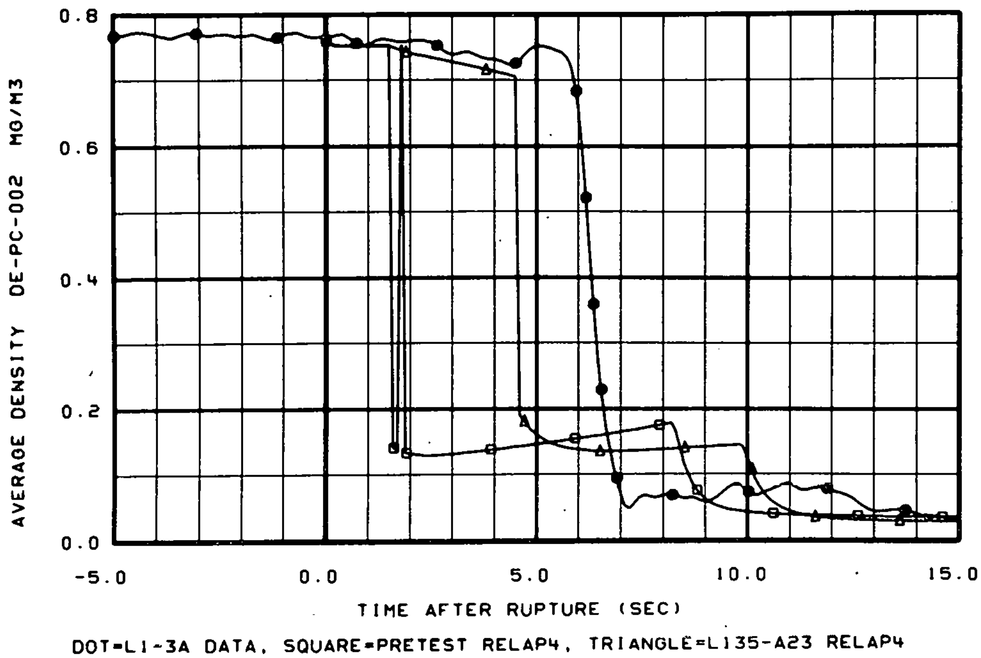


Fig. 9 Comparison of RELAP4 predicted and experimentally measured density in intact loop hot leg.

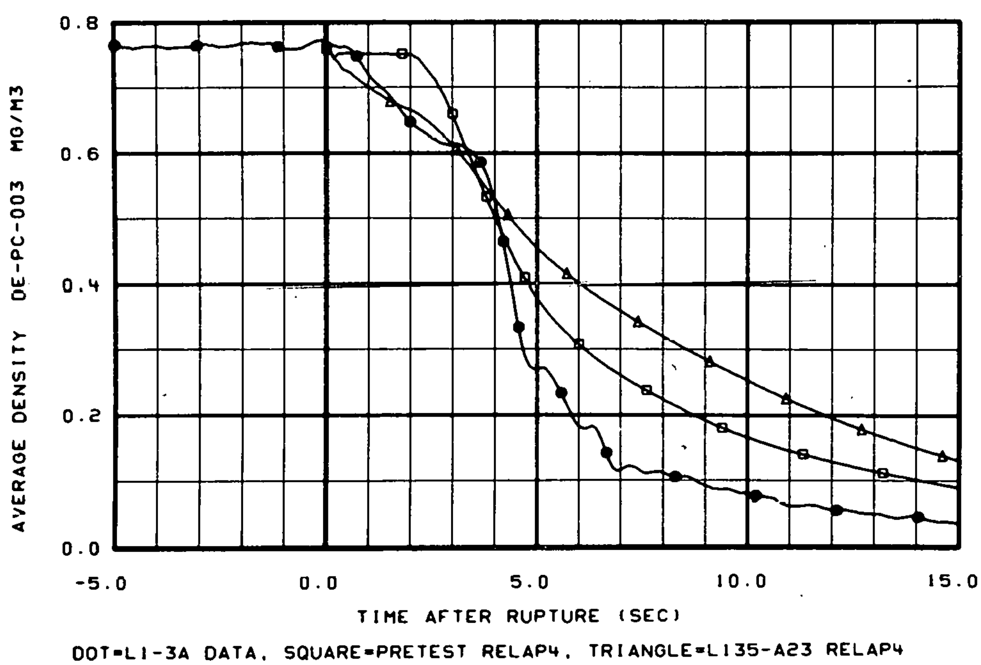


Fig. 10 Comparison of RELAP4 predicted and experimentally measured density in intact loop between steam generator outlet and pump inlet.

Figures 11 and 12 show comparisons of calculated and measured densities in the broken loop. Here again, an earlier flashing of fluid is shown in the RELAP4 run with the new pressurizer model.

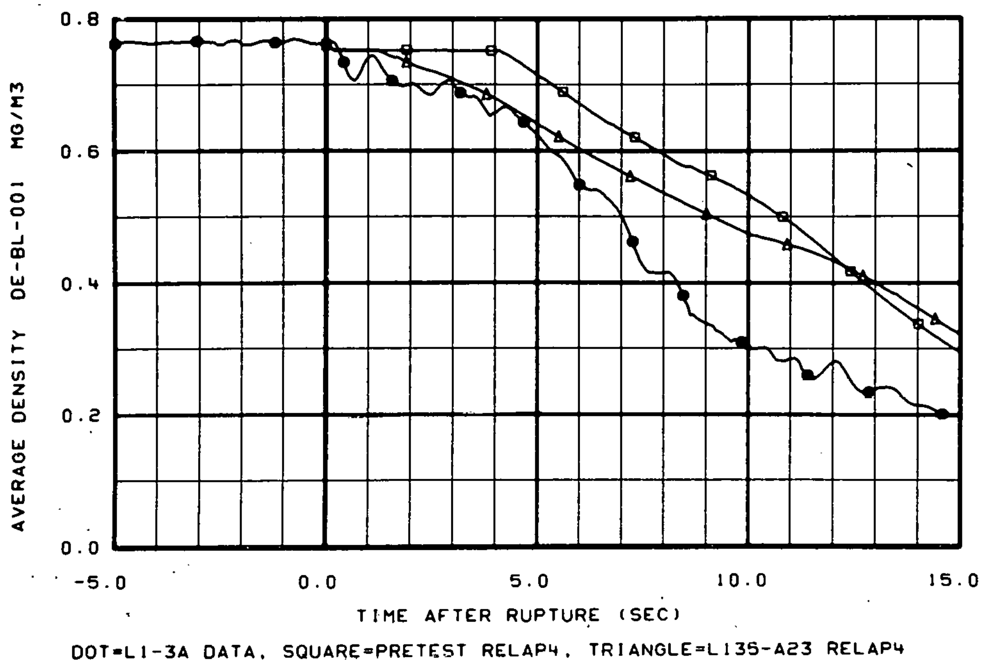


Fig. 11 Comparison of RELAP4 predicted and experimentally measured density in broken loop cold leg.

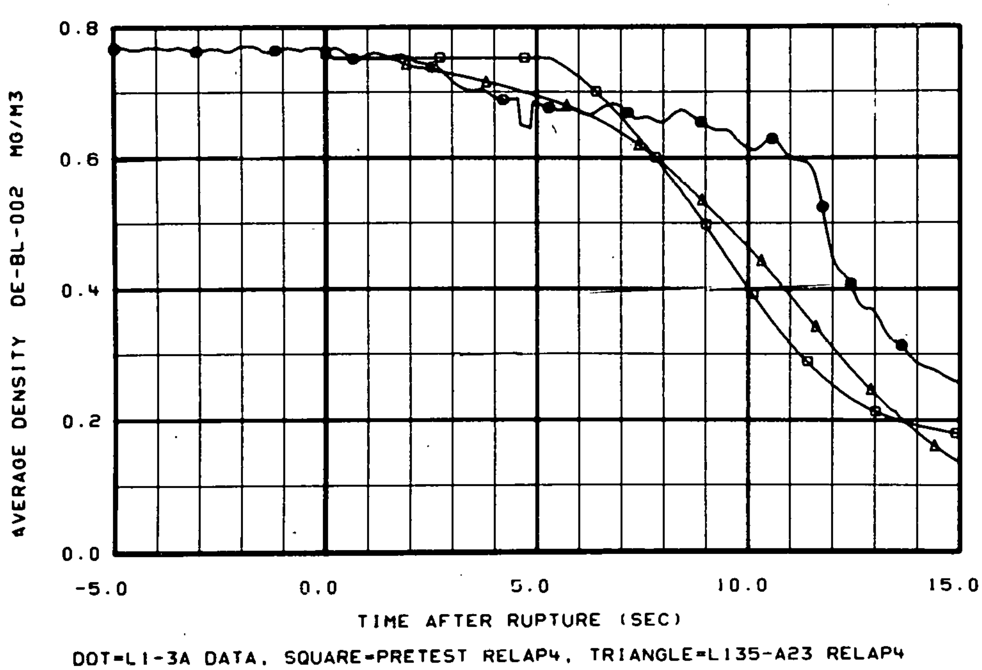
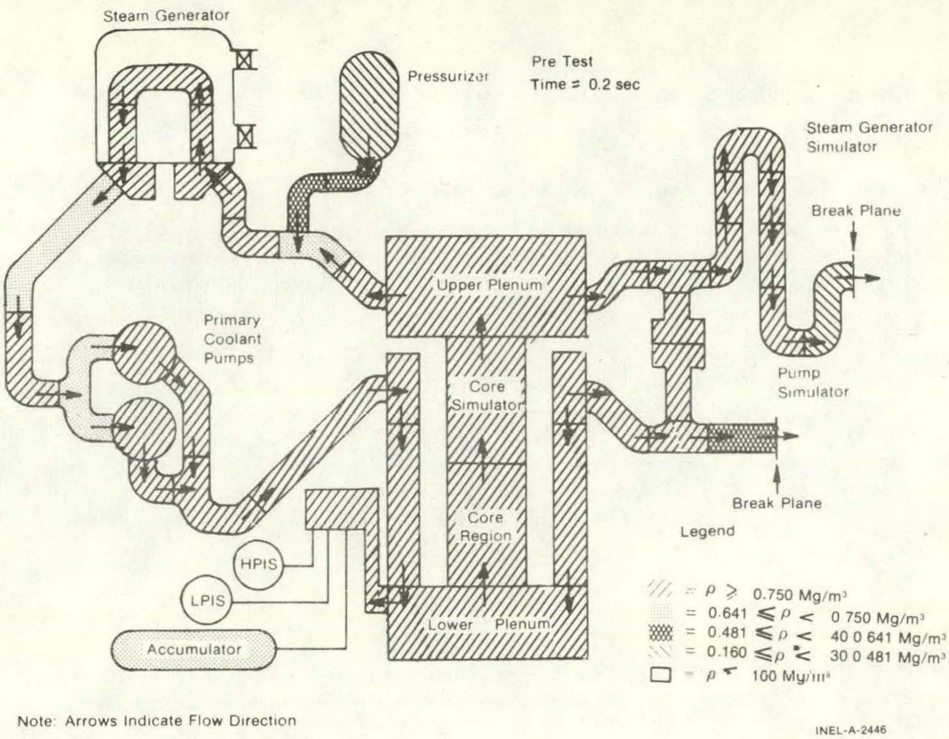


Fig. 12 Comparison of RELAP4 predicted and experimentally measured density in broken loop hot leg.

The behavior in space and time of the RELAP4 calculated density behavior can best be seen in Figures 13 through 17. In this series of figures, the RELAP4 model schematic for both the pretest RELAP4 run and the posttest RELAP4 run with the new pressurizer model (run L135-A23) has been shaded to indicate a range of densities which are calculated to exist in different RELAP4 control volumes. Arrows are used to indicate flow direction from one control volume to another.

Figure 13 shows the density distribution comparisons at t = 0.2 seconds after the break begins to open. Flashing has begun in the intact loop where the pressurizer surge line enters the hot leg; at the pump inlet, which is the lowest pressure point in the primary system; and in the control volumes just upstream of the break planes. All flow directions are still in the normal direction.



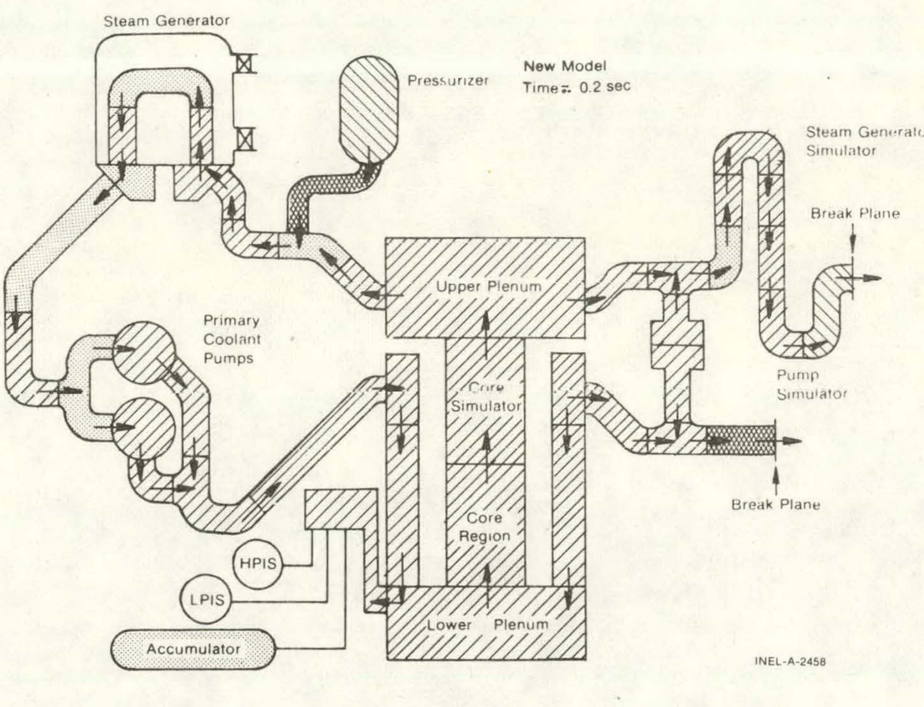


Fig. 13 RELAP4 model schematic for LOFT cold leg break configuration at t = 0.2 second.

Figure 14 shows the density distribution at 0.4 second into the transient. In the pretest prediction, the pump inlet fluid conditions have become subcooled once again, while the fluid at the pump inlet has begun to flash in the posttest run with the new pressurizer model. The same conditions exist past 0.8 second into the blowdown.

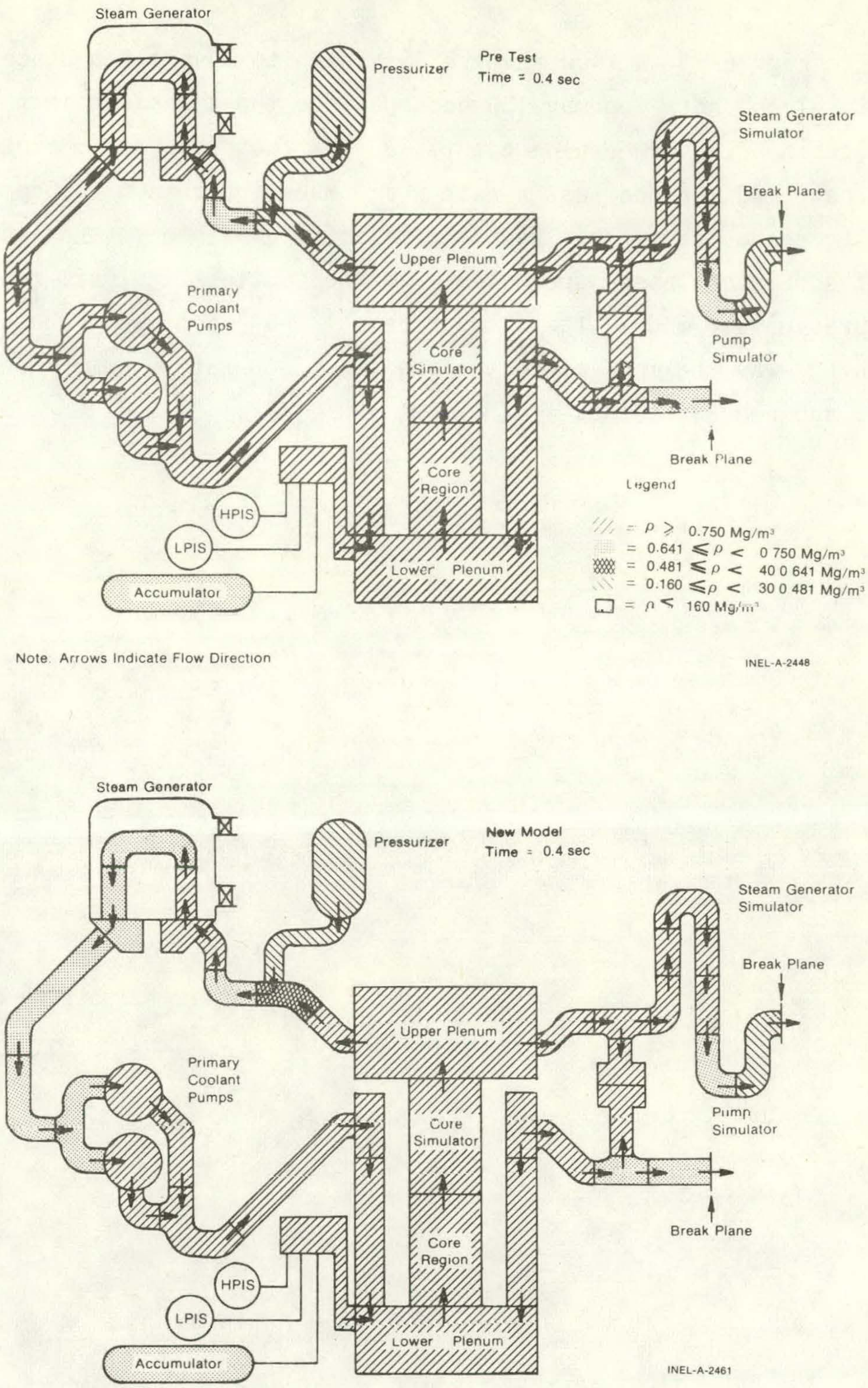


Fig. 14 RELAP4 model schematic for LOFT cold leg break configuration at t = 0.4 second.

In Figure 15, a flow reversal is shown to have taken place in the intact loop hot leg by 1.6 seconds into the transient in the pretest prediction RELAP4 run. The hot fluid from the pressurizer emptied into the hot leg at too fast a rate which made the intact loop hot leg act like a pressurizer. This kept the majority of fluid in the intact loop and the reactor vessel subcooled. In the posttest analysis run with the new pressurizer model, the flow reversal has not yet occurred, and flashing was taking place in the steam generator, pump inlet, broken loop, and reactor vessel.

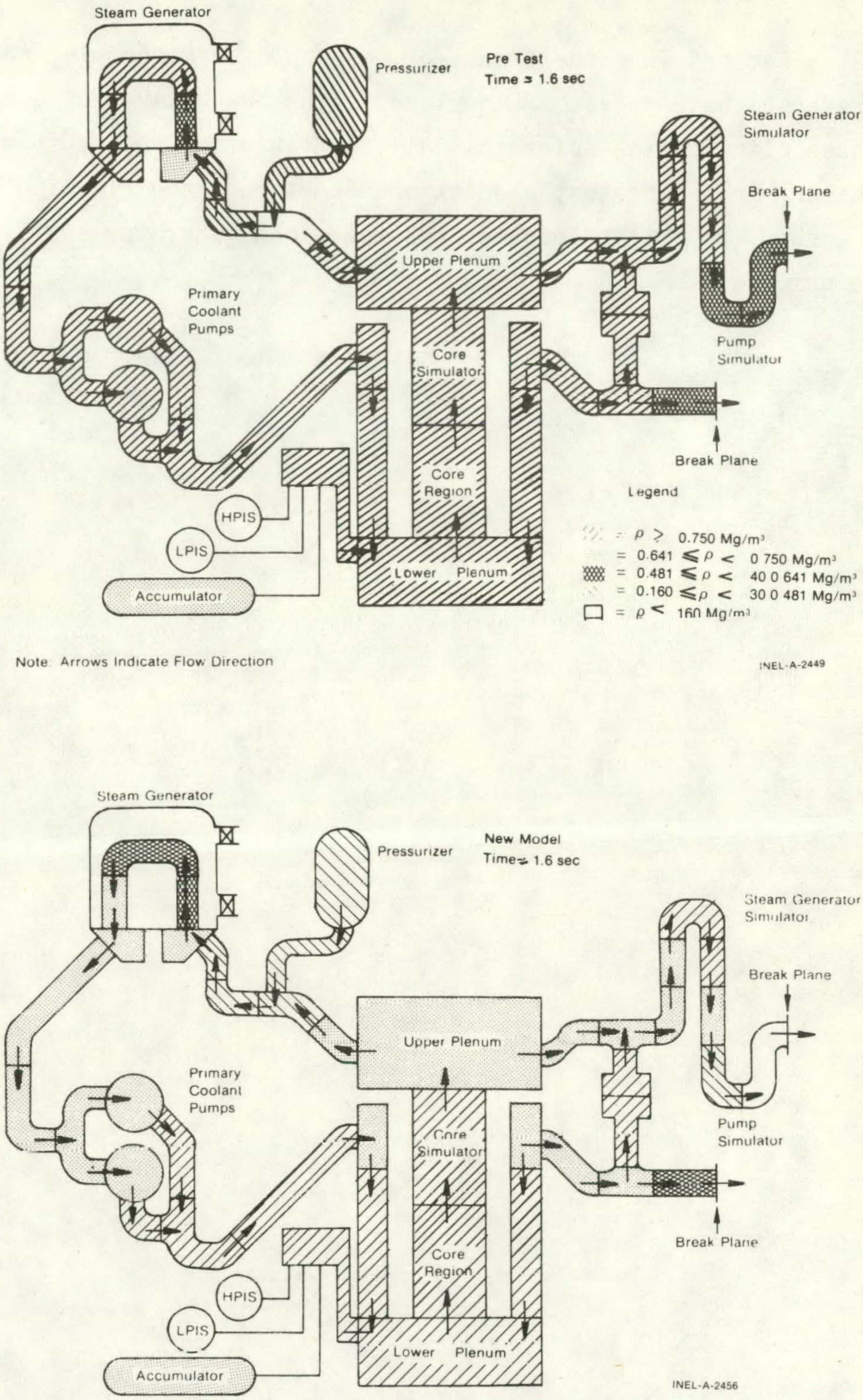
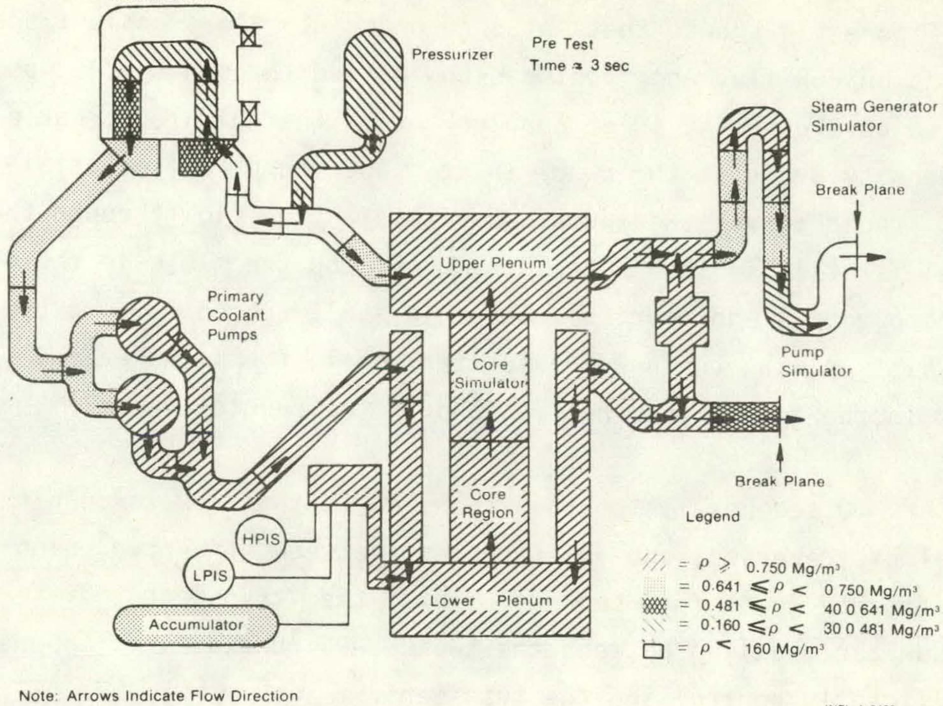


Fig. 15 RELAP4 model schematic for LOFT cold leg break configuration at t = 1.6 seconds.

At 3 seconds into the transient, as shown on Figure 16, the hot leg flow reversal has not yet taken place in the new RELAP4 run and flashing has taken place to the point that all the fluid in the system is now two-phase. In the pretest prediction RELAP4 run, the flashing front has moved around the intact loop through the steam generator and is now up to the pump inlet.



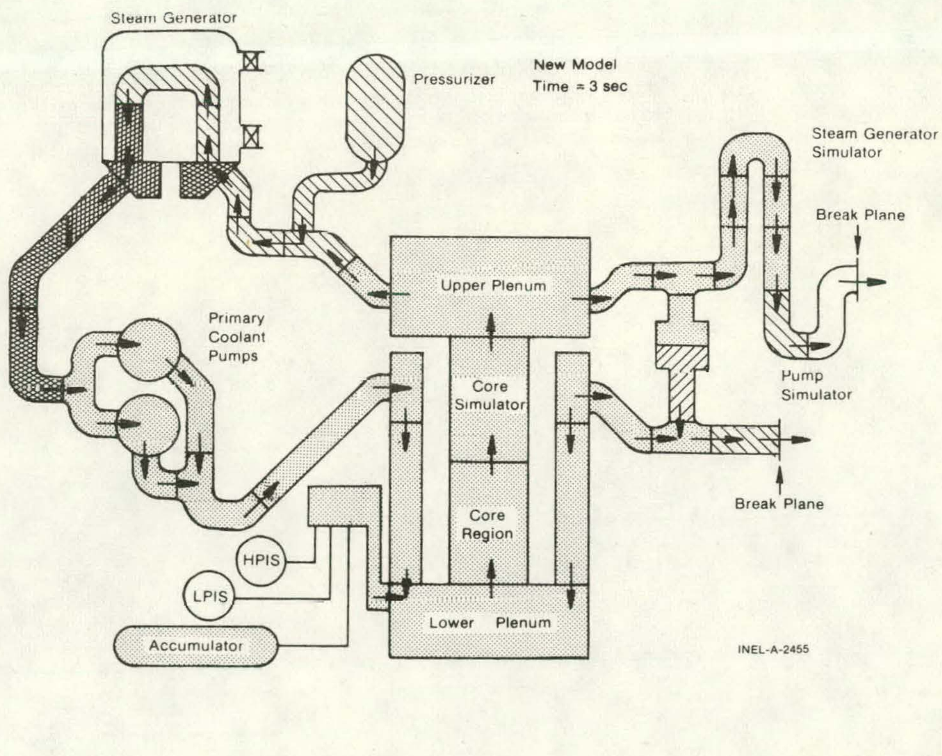


Fig. 16 RELAP4 model schematic for LOFT cold leg break configuration at t = 3 seconds.

Figure 17 shows that at 5 seconds into the transient the pretest prediction run flashing front has now passed through the pumps and is proceeding around the inlet annulus toward the cold leg break plane. As the density drops at the pump inlet, the pump differential pressure drops rapidly as the pumps cavitate. The flow through the reactor vessel is still in the normal direction, and the fluid in the downcomer, lower plenum, and core simulator is still subcooled. In the posttest analysis run with the new pressurizer model, the flow reversal has taken place in the intact loop hot leg and in the reactor vessel.

At 10 seconds into the transient, the flow through the reactor vessel has reversed, and differences between the two runs are not significant. At 10 seconds into the transient, differences in pressurizer modeling between the two RELAP4 runs do not appear to be significantly controlling the transient.

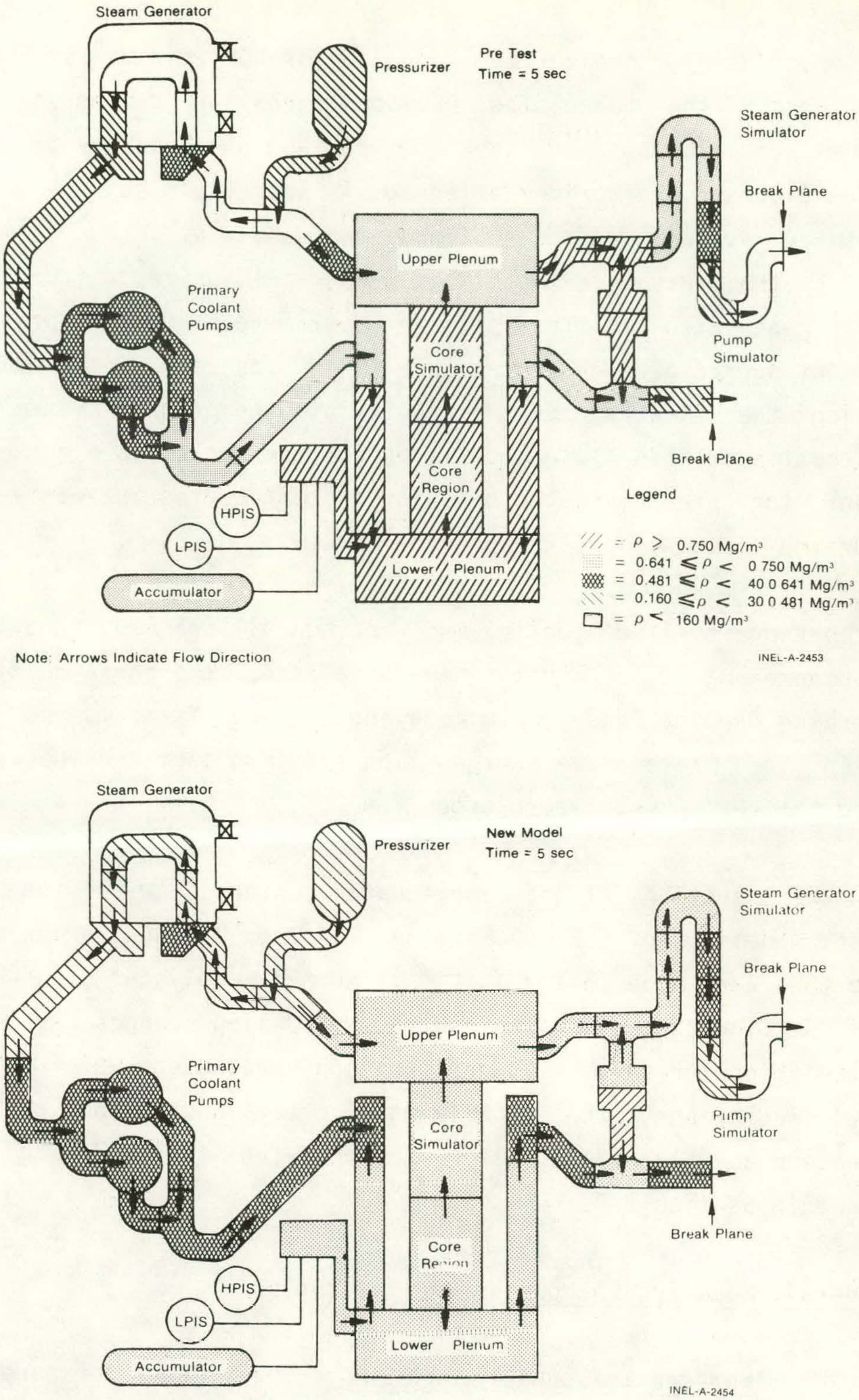


Fig. 17 RELAP4 model schematic for LOFT cold leg break configuration at t = 5 seconds.

In conclusion, pressurizer modeling of LOFT nonnuclear LOCEs was shown to affect the calculated blowdown behavior during the first 10 seconds of blowdown in subtle ways. Not only was the pressurizer discharge flow and pressurizer affected, as suspected, but in addition, the primary system pressures, flows, and densities were also markedly affected by the pressurizer modeling. The pressurizer liquid, being initially saturated at the primary system pressure, represents a significant source of high-temperature fluid for an isothermal LOCE. Predicting the flow rate of this fluid into the primary system and the flow direction of this fluid once it enters the intact loop hot leg is important for predicting the behavior of LOFT during the early portion of saturated blowdown for an isothermal LOCE.

Proper pressurizer modeling must include all the important pressure loss phenomenon in the pressurizer surge line. Two-phase multipliers, rough tubing Fanning losses, and modeling of the form losses in the bends in the pressurizer surge line are important considerations in modeling the LOFT pressurizer surge line.

The next sections of the report are concerned with the overall posttest modeling of LOFT LOCE L1-3A. Section 2.2 deals with modeling changes that were made in the posttest RELAP4 analysis of LOFT LOCE L1-3A. Section 2.3 discusses how these modeling changes have affected the calculational results. Comparisons are presented which show the pretest predictions, the experimental data, and a new RELAP4 run (designated as L135-A22), which incorporates the modeling changes discussed in Section 2.2.

2.2 Overall Modeling Changes and Justification

2.2.1 Improved Pressurizer Modeling. The pressurizer model, which is discussed in Section 2.1 of this report, was incorporated into the RELAP4 model of the LOFT system and run on the computer for the posttest analysis of LOCE L1-3A. This run, which also incorporates other modeling changes discussed in the following sections of this report, is referred to as the posttest analysis run (L135-A22).

2.2.2 Using Measured Experiment L1-3A Initial Conditions. In the posttest analysis run for LOCE L1-3A, the measured initial pressures, temperatures, flow rates, and liquid level in the pressurizer were used as the initial conditions of the RELAP4 posttest analysis run. This was done to eliminate the uncertainty in how the initial conditions affect the comparisons of calculated and measured blowdown behavior.

2.2.3 RELAP4 Nodalization. The RELAP4 nodalization scheme was changed between the pretest and posttest analysis. Figure 18 shows the RELAP4 schematic of the pretest prediction (Run L135-B5), while Figure 19 shows the schematic of the posttest analysis run (Run L135-A22). Comparison between the two figures reveals that the system model has been renodalized in three areas: the reactor vessel, the broken loop just downstream of the reflood assist bypass piping, and the accumulator.

The accumulator was treated as a fill junction in the posttest analysis run, hence the accumulator has no volume number. ECC modeling is discussed in Section 2.2.4.

A volume was added in the 28.4-cm ID piping (14-inch Schedule 160) in the broken loop hot and cold legs. This was done so that junctions would exist in the broken loop at the location of the drag disc turbine and densitometer instrument locations. Subsequent analysis revealed that this was unnecessary since the fluid conditions just downstream of these added junctions are essentially identical and are just as useful for data comparisons.

The significant difference between the pretest and posttest RELAP4 nodalization is due to the changes in reactor vessel nodalization. Analysis of the output of the pretest prediction run revealed that when ECC injection began, the lower plenum was only approximately half full. Futhermore, the pressure in the lower plenum tended to follow the saturation pressure of the temperature of the fluid in the lower plenum, until the lower plenum became liquid full. This caused the RELAP4 calculated primary system pressure to follow the lower plenum saturation

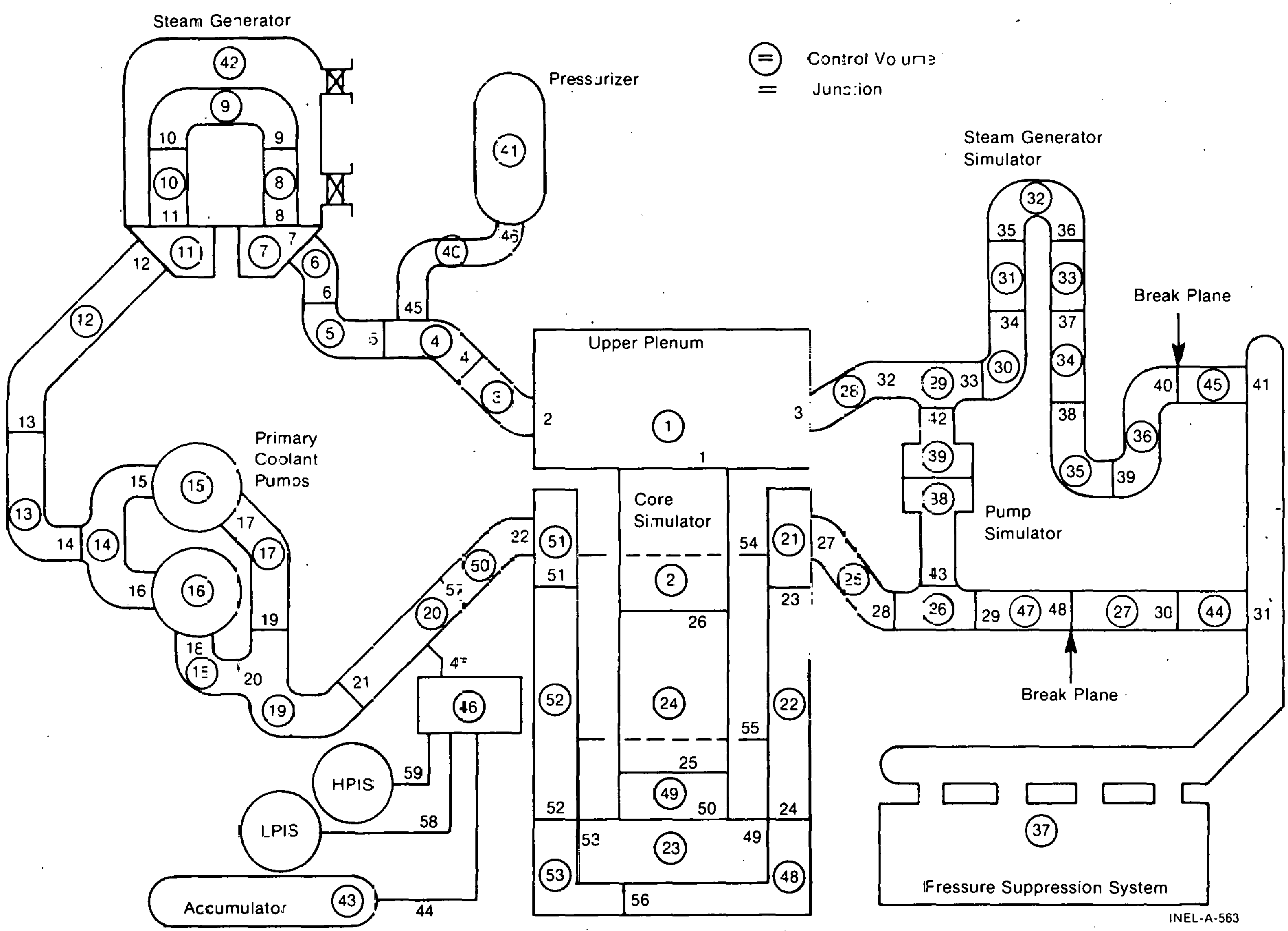


Fig. 18 RELAP4 model schematic for the pretest prediction of LOFT Experiment L1-3A.

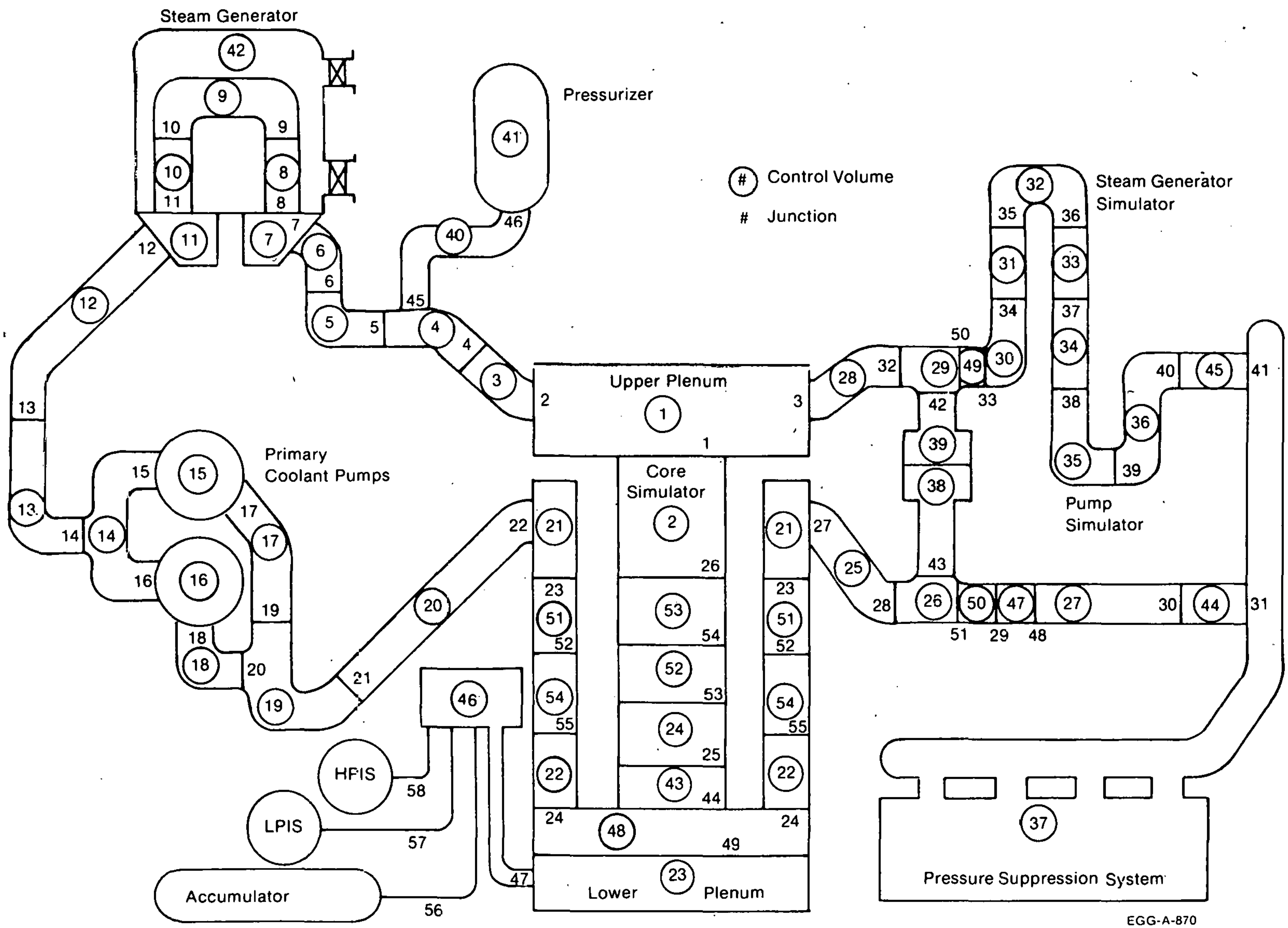


Fig. 19 RELAP4 model schematic for the posttest analysis of LOFT Experiment L1-3A.

pressure, which was below the experimental data for the ECC filling period. It was felt that by reducing the volume of the control volume in which ECC flow was being directed, the time period in which this phenomenon occured would be reduced. Therefore, the lower plenum was divided into more volumes, which allow quicker subcooling in the volume in the lower plenum in which ECC was directed.

As soon as the volumes in the lower plenum become liquid full, the fluid conditions in those volumes become subcooled. Thus the fluid conditions at the junctions between the lower plenum and the downcomer and the lower plenum and core volumes become subcooled when the lower plenum becomes liquid full. By dividing the downcomer and core volumes into three volumes each, it was again attempted to minimize the volumes in which steam condensation was occurring and thereby minimize the effect of steam condensation on the depressurization.

Dividing the downcomer and lower plenum into several vertically stacked volumes also provides a better means of (a) tracking temperatures measured at the lower plenum and downcomer temperature probes and (b) damping the large manometer-type oscillations that were observed in the calculated behavior of the downcomer - lower plenum - core regions.

2.2.4 <u>ECC Modeling</u>. In the RELAP4 posttest analysis, the measured ECC flows from the experimental data were input in the RELAP4 run as a function of time. This was done to eliminate the uncertainty of how overpredicting ECC flow rates affects system behavior during the refill and reflood portion of the transient.

Accurate calculation of accumulator flow depends strongly on calculating the pressure difference across the accumulator injection line. RELAP4 tended to overpredict (a) accumulator pressure as a function of accumulator liquid volume and (b) depressurization which occurs in the primary system when the subcooled ECC fluid begins to flow. Subsequent modeling activities revealed that RELAP4 tended to expand the accumulator nitrogen as if it were a constant temperature process. The experimental data suggested that the accumulator nitrogen expansion is more nearly an isentropic process. This led to the development of a polytropic nitrogen expansion model, which was used in the prediction analysis for LOFT Experiment L1-4[10]. This model was not available in time for the posttest analysis of LOFT LOCE L1-3A.

2.2.5 Code Changes. The posttest RELAP4 analysis was run on a special version of RELAP4/MOD5 (Update 2) which was identical to RELAP4/MOD5 (Update 2) except a steam generator secondary heat transfer model was added which accounts for natural convection heat transfer in the steam generator secondary side.

Detailed input and time zero output listings of the posttest analysis run may be found in Appendix B.

2.3 Data Comparisons

This section of the report discusses comparisons of the posttest analysis run with the experimental data and the pretest prediction for various time periods during the LOCE L1-3A blowdown.

2.3.1 Early Blowdown System Behavior. The effects of pressurizer modeling and initial condition differences on early blowdown behavior are discussed with this first series of graphs. Figures 20 through 23 show comparisions between calculated and measured fluid temperatures during early blowdown. In these short-term plots, it should be kept in mind that the uncertainty in the temperature measurements is approximately 2.5°C. The RELAP4 data, both pretest and posttest, are within the uncertainty of the measurement. The posttest initial conditions were found by taking an arithmetic average of different temperatures around the intact loop. The posttest analysis, in general, is in better agreement with the shape of the temperature curves, but tends to differ in magnitude slightly from transducer to transducer.

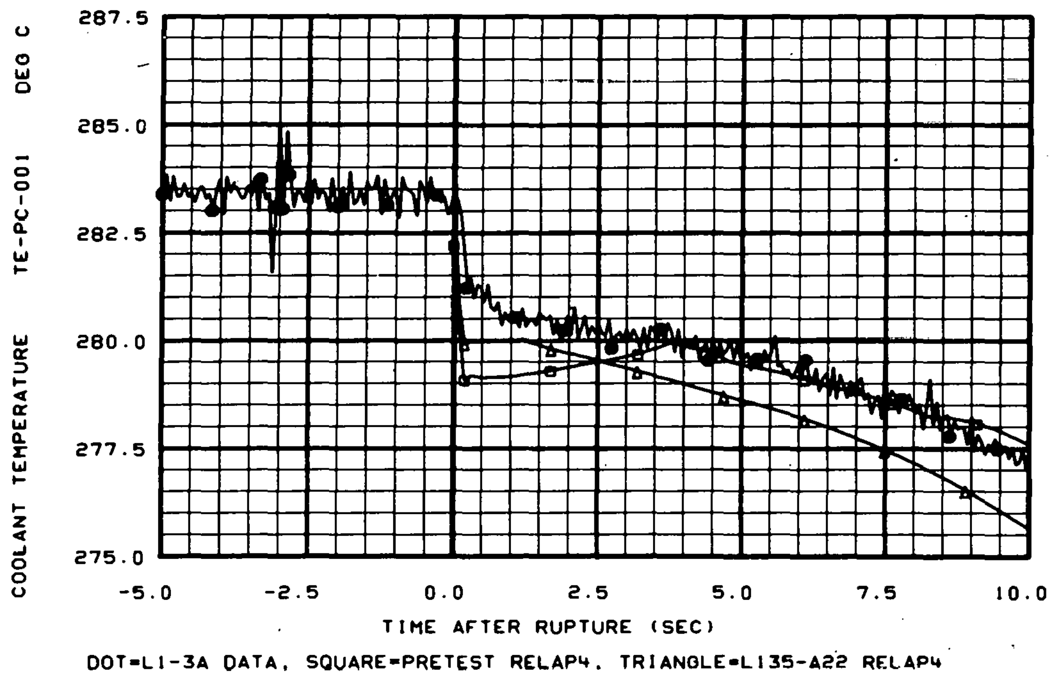


Fig. 20 Comparison of RELAP4 calculated and experimentally measured fluid temperature in intact loop cold leg.

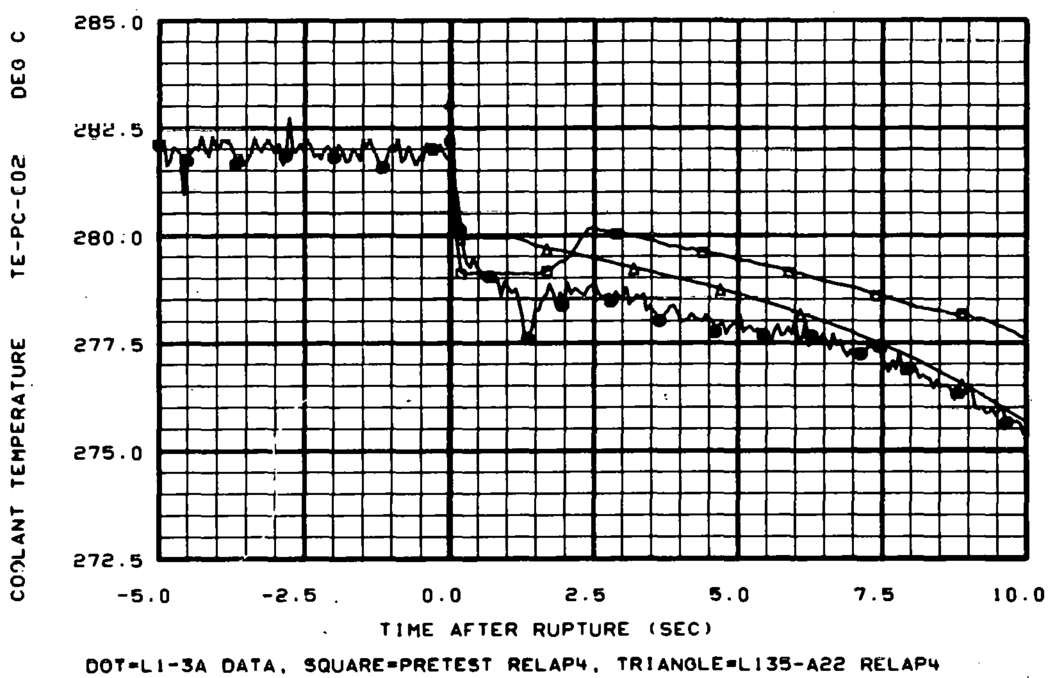


Fig. 21 Comparison of RELAP4 calculated and experimentally measured fluid temperature in intact loop hot leg.

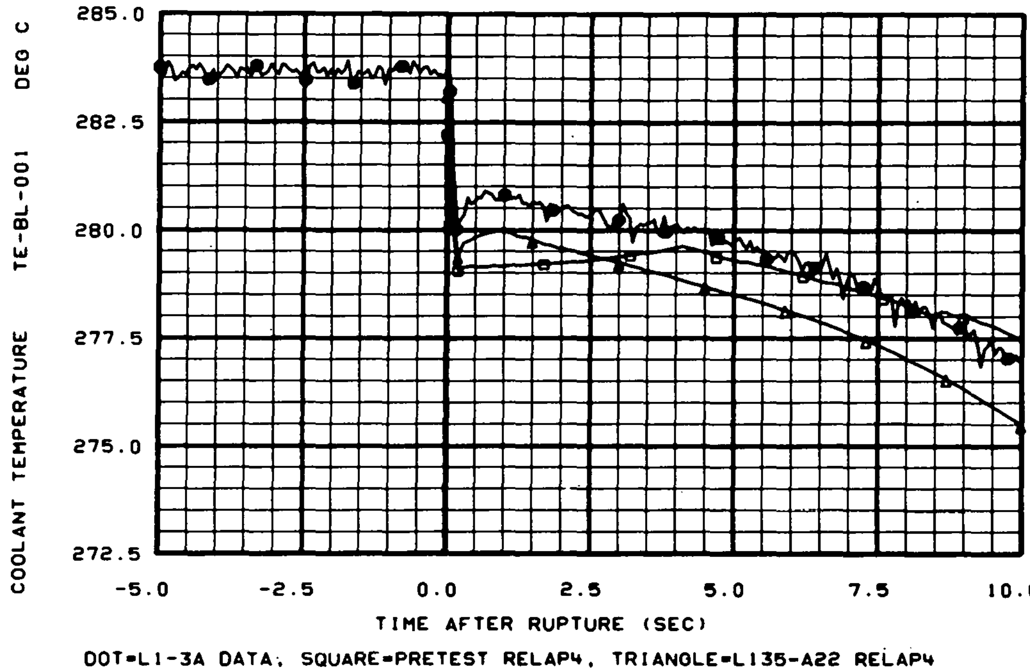


Fig. 22 Comparison of RELAP4 calculated and experimentally measured fluid temperature in broken loop cold leg.

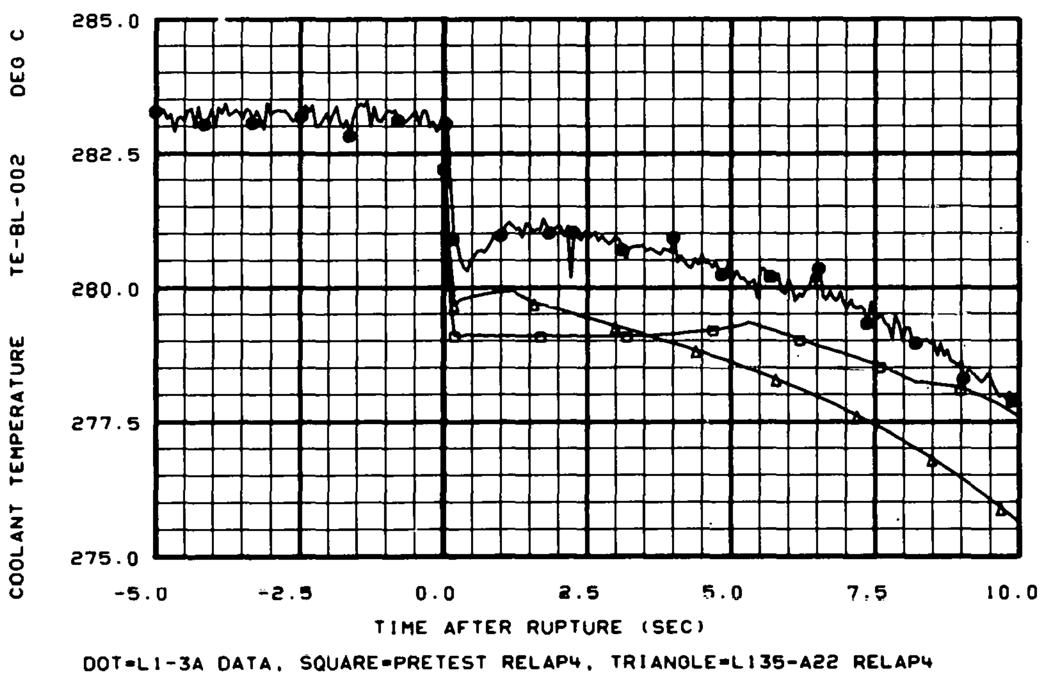


Fig. 23 Comparison of RELAP4 calculated and experimentally measured fluid temperature in broken loop hot leg.

The pressures in the intact and broken loops can be seen in Figures 24 and 25. The uncertainty in the measured pressure is approximately 0.26 MPa, and again the pretest and posttest RELAP4 runs are within the uncertainty of the measurements. The primary system pressure is slightly lower for the posttest analysis run primarily due to the effects of the pressurizer modeling. This makes for an overall better agreement with the data.

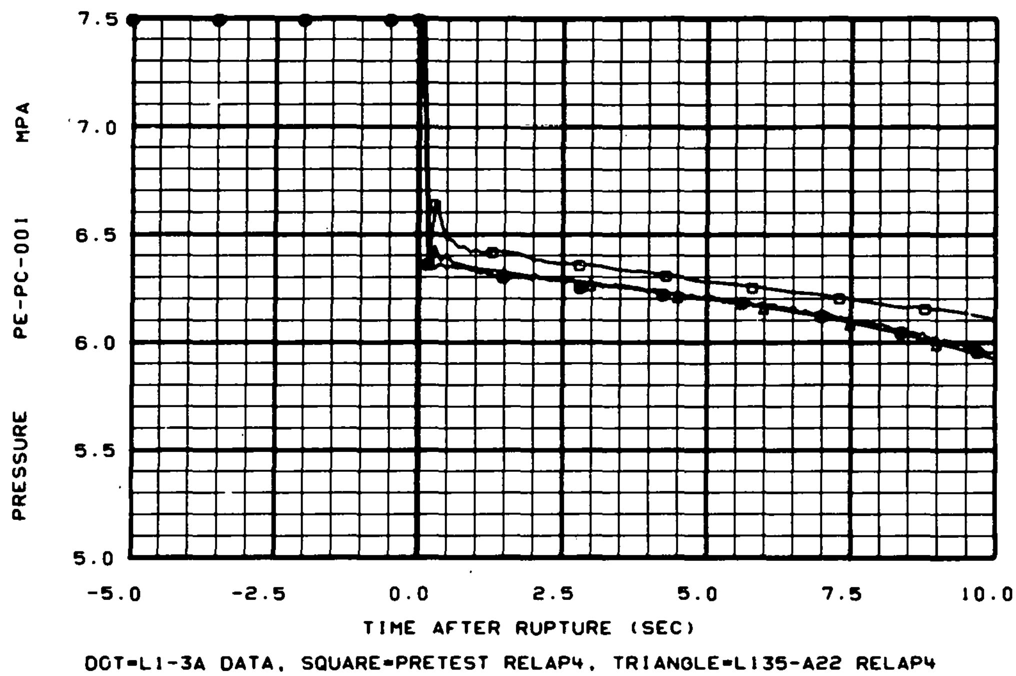


Fig. 24 Comparison of RELAP4 calculated and experimentally measured pressure in intact loop cold leg.

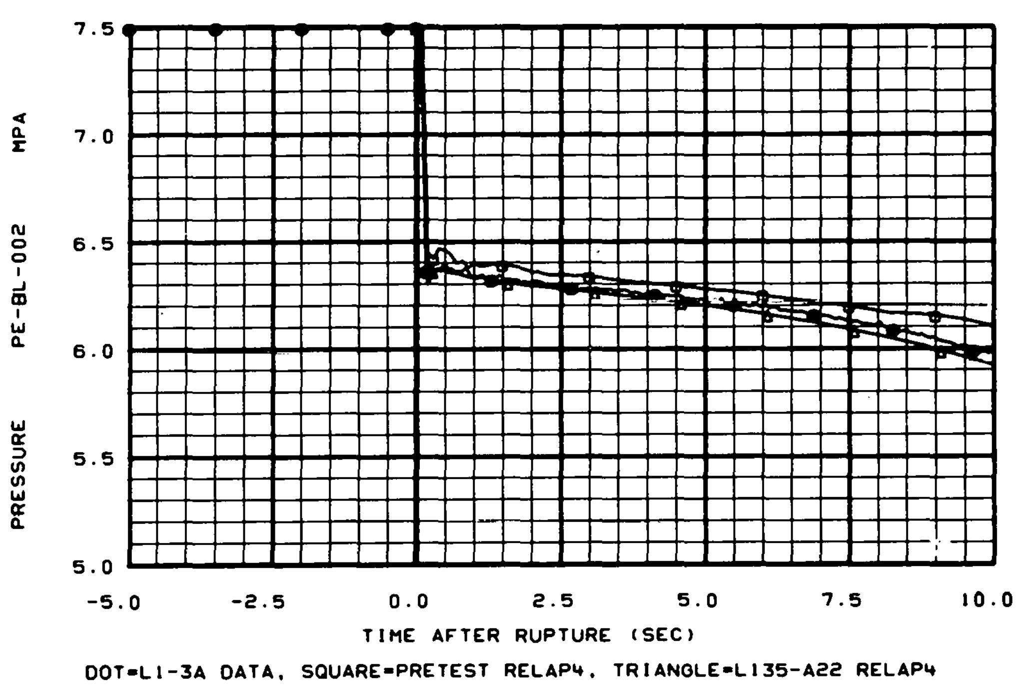


Fig. 25 Comparison of RELAP4 calculated and experimentally measured pressure in broken loop hot leg.

Figures 26 and 27 show the density behavior in the intact and broken loops during early blowdown. As discussed in Section 2.1, the early blowdown density behavior is improved with the new pressurizer model. In general, the fluid begins flashing sooner in the posttest analysis. In Figure 27, the time that the flow reversal takes place in the intact loop hot leg is better predicted in the posttest analysis run.

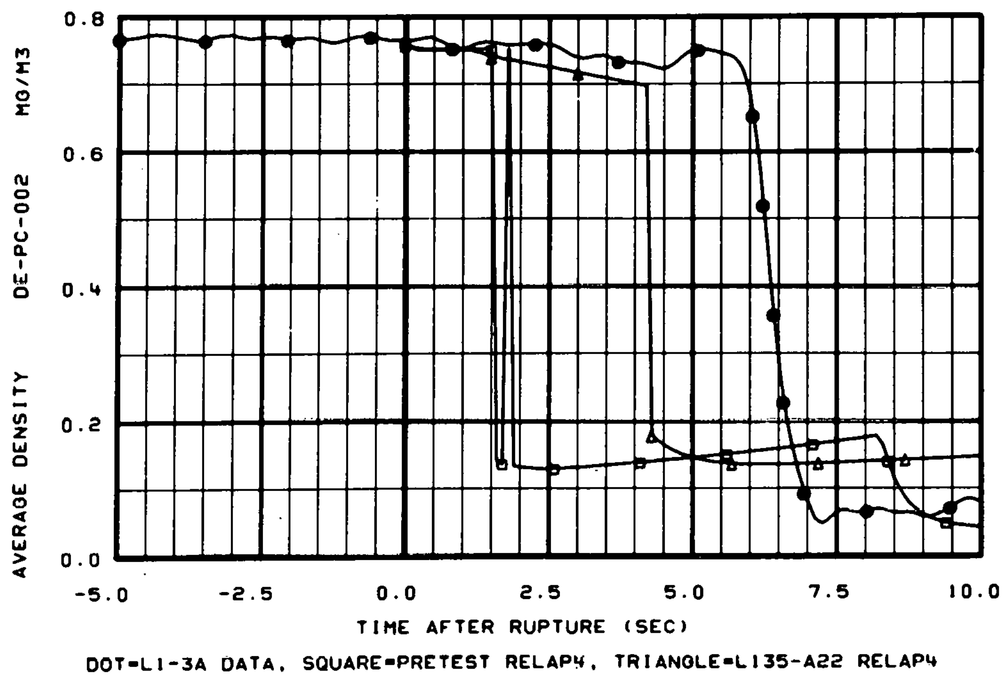


Fig. 26 Comparison of RELAP4 calculated and experimentally measured density in intact loop hot leg.

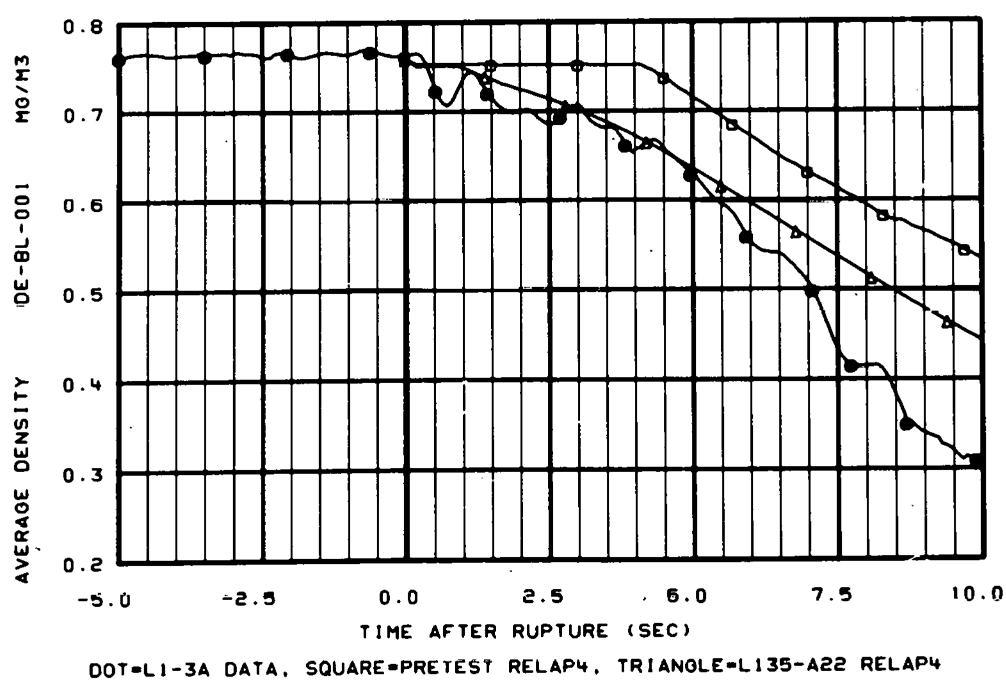


Fig. 27 Comparison of RELAP4 calculated and experimentally measured density in broken loop cold leg.

The next two figures (Figures 28 and 29) show comparisons between calculated and measured differential pressures around the intact loop. In Figure 28 the pump is shown to degrade faster in the posttest analysis run. This can be largely attributed to the faster flashing in the pump inlet, due primarily to the differences in the pressurizer modeling. The pressure across the steam generator is less in the posttest analysis run, while the differential pressure across the reactor vessel is largely unaffected.

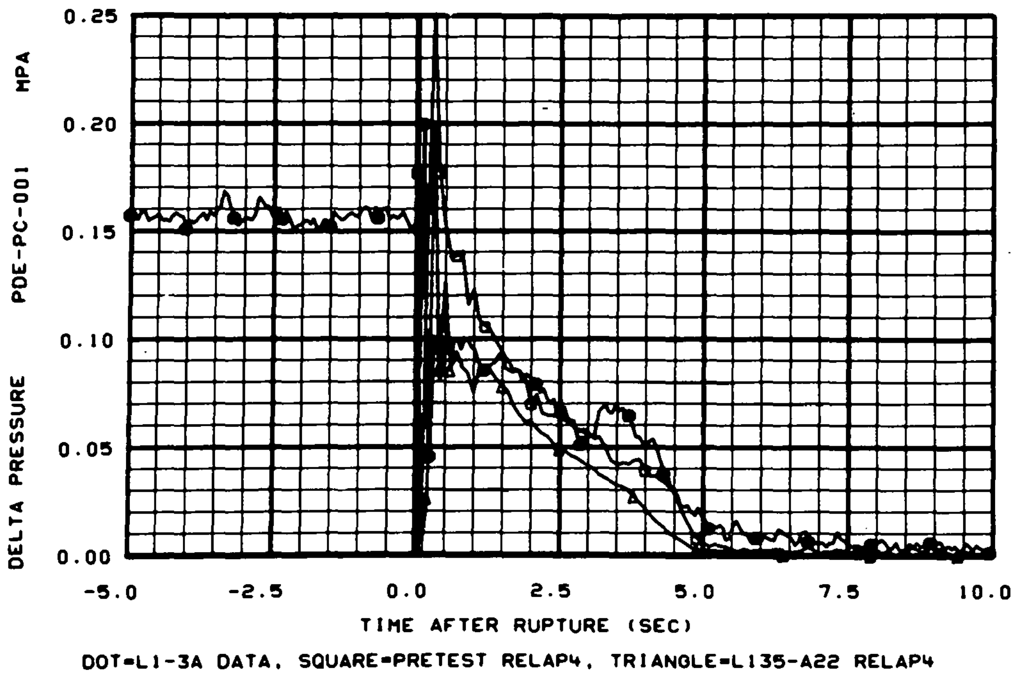


Fig. 28 Comparison of RELAP4 calculated and experimentally measured differential pressure across primary coolant pump.

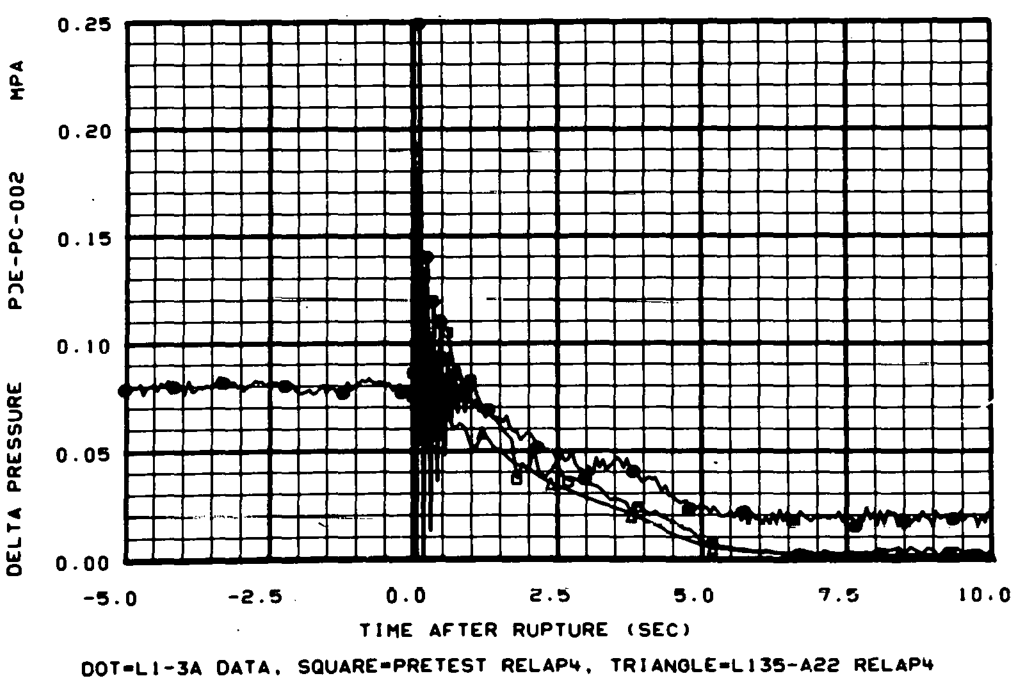


Fig. 29 Comparison of RELAP4 calculated and experimentally measured differential pressure across steam generator.

2.3.2 System Behavior After ECC Injection. In this next series of plots, the differences between the two RELAP4 runs and the experimental data are examined for the time period from just before ECC injection begins to the end of blowdown.

Figures 30 and 31 show the RELAP4 calculated and experimentally measured accumulator and low-pressure injection system (LPIS) flows. The posttest analysis is in good agreement since the ECC flows were input as a function of time and taken from the experimental data. The high-pressure injection system (HPIS) flow, which is not shown, is also in good agreement, both in the pretest and posttest RELAP4 runs. The overprediction of accumulator flow in the pretest prediction is due to the following factors:

(1) The primary system pressure is underpredicted, especially after ECC injection begins, due primarily to the excessive steam condensation predicted by RELAP4.

(2) The accumulator pressure is overpredicted as a function of accumulator nitrogen volume, due to the isothermal accumulator nitrogen expansion model in RELAP4/MOD5.

(3) The line resistance of the accumulator injection line was too low in the pretest RELAP4/MOD5 calculations. This was confirmed by accumulator blowdown tests done after the L1-3 pretest prediction was run.

The LPIS flow is overpredicted in the pretest prediction primarily due to the underprediction of primary system pressure.

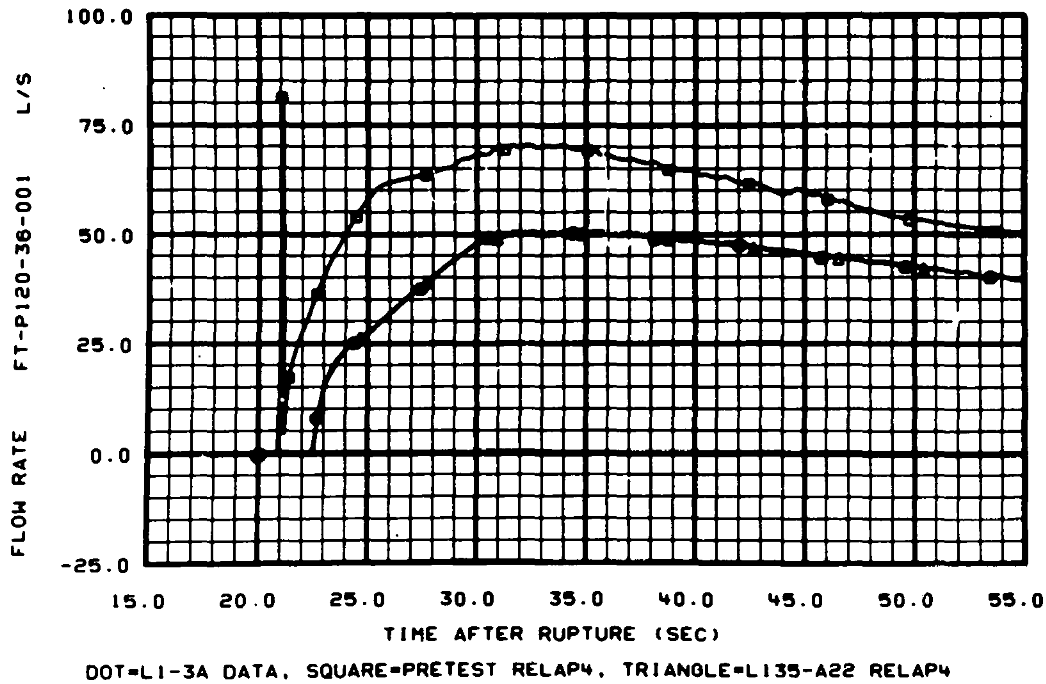


Fig. 30 Comparison of RELAP4 calculated and experimentally measured volumetric flow rate from accumulator.

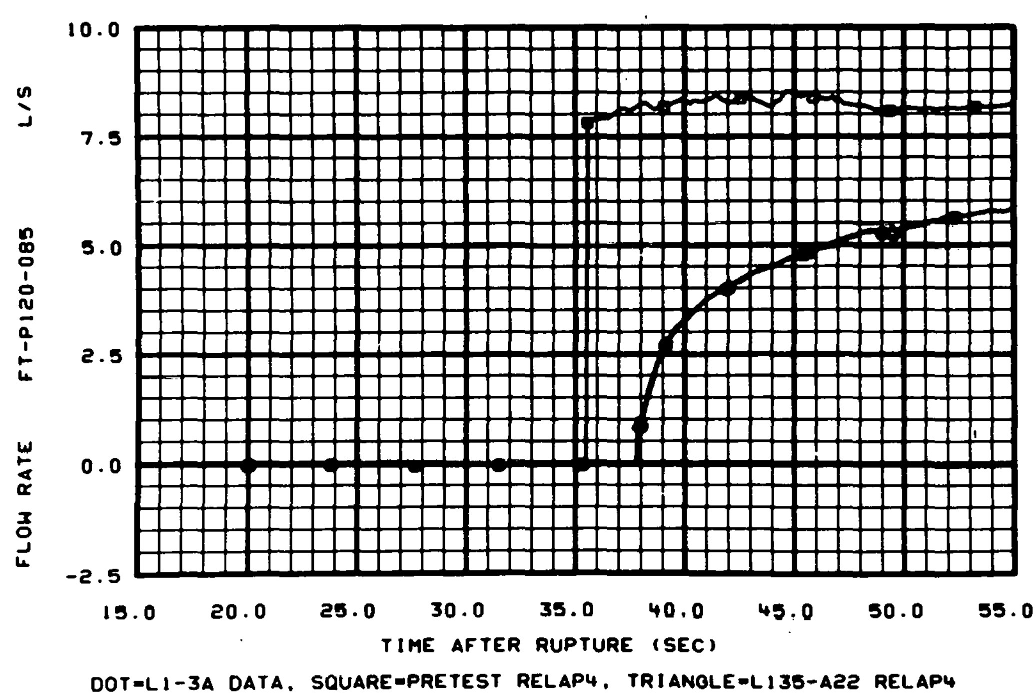


Fig. 31 Comparison of RELAP4 calculated and experimentally measured volumetric flow rate from LPIS.

Figures 32 through 34 show the calculated and measured pressures in the ECC injection line and in the reactor vessel core simulator. The spike in Figure 32 in the pretest prediction data is due to ECC condensation in the ECC injection line. This pressure spike causes the spike in the calculated accumulator flow seen in Figure 30. The pressure in the reactor vessel is shown in both Figures 33 and 34, with the data in Figure 33 coming from a high-range pressure transducer, and the data in Figure 34 coming from a more sensitive low-range pressure transducer.

Both RELAP4 calculations underpredict system pressure primarily due to the excessive steam condensation predicted by RELAP4 for lower plenum ECC injection experiments. The posttest analysis run is closer to the data than the pretest prediction run for two main reasons: (a) the finer nodalization in the reactor vessel tended to allow fluid in some of the control volumes in the reactor vessel to fill up, hence reducing the steam condensation in these volumes and (b) the ECC flow rates were in agreement with the data, instead of being overpredicted as in the pretest prediction run.

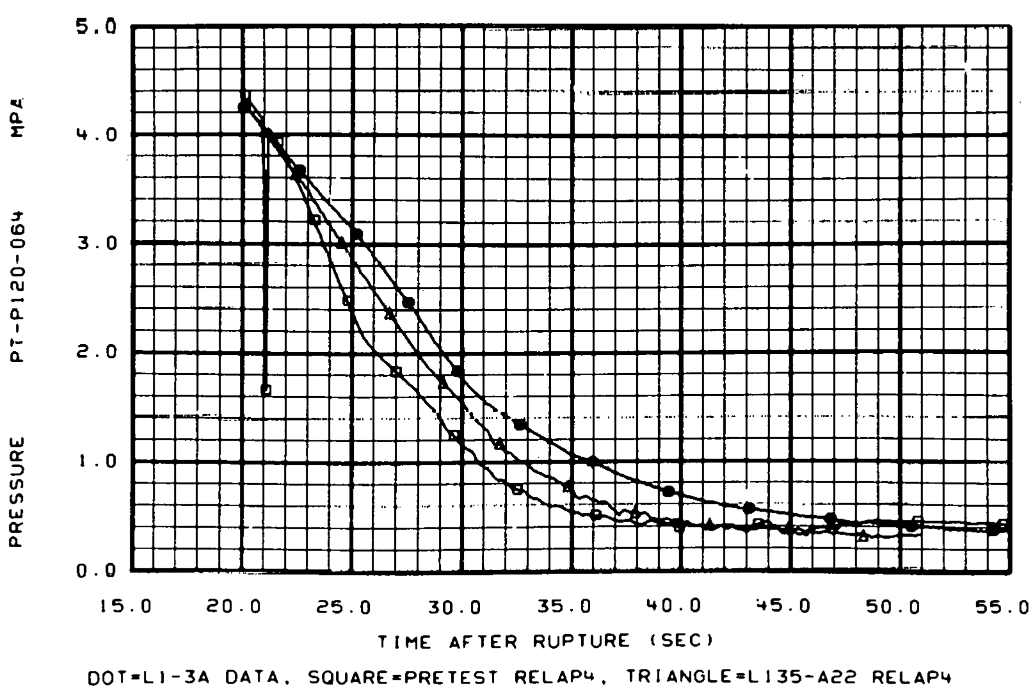


Fig. 32 Comparison of RELAP4 calculated and experimentally measured pressure in ECC injection line.

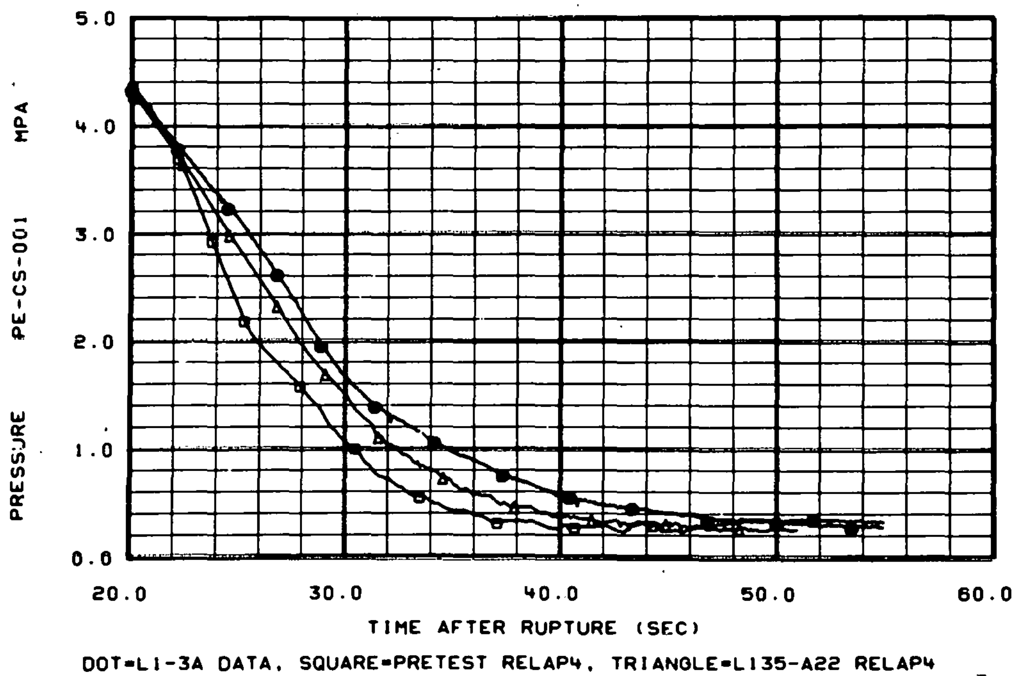


Fig. 33 Comparison of RELAP4 calculated and experimentally measured pressure in core simulator.

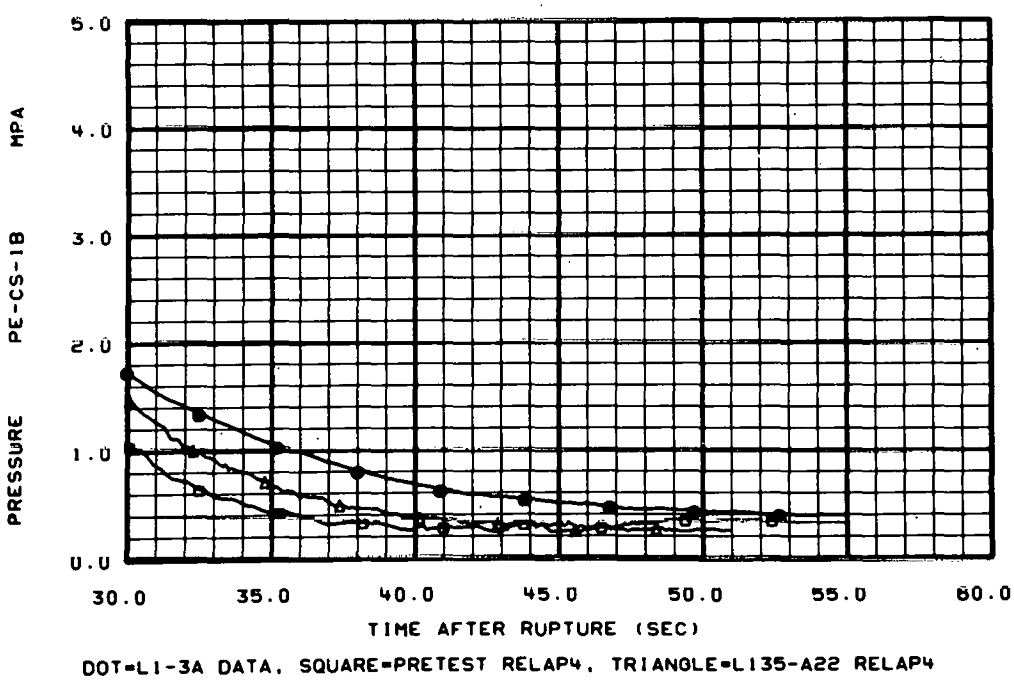


Fig. 34 Comparison of RELAP4 calculated and experimentally measured pressure in core simulator.

Figures 35 through 37 show the comparisons of calculated and measured fluid temperatures in the lower plenum, downcomer, and downcomer inlet annulus during the time period following ECC injection. Except for the lowest portion of the lower plenum, the posttest analysis tracks the fluid temperatures in the lower plenum better than the pretest prediction run. This can be attributed to the finer nodalization and the better prediction of primary system pressure response which allows for a better prediction of saturation temperature as a function of time. The data in Figure 38 show the core simulator fluid temperatures, and all the curves closely follow the saturation temperatures.

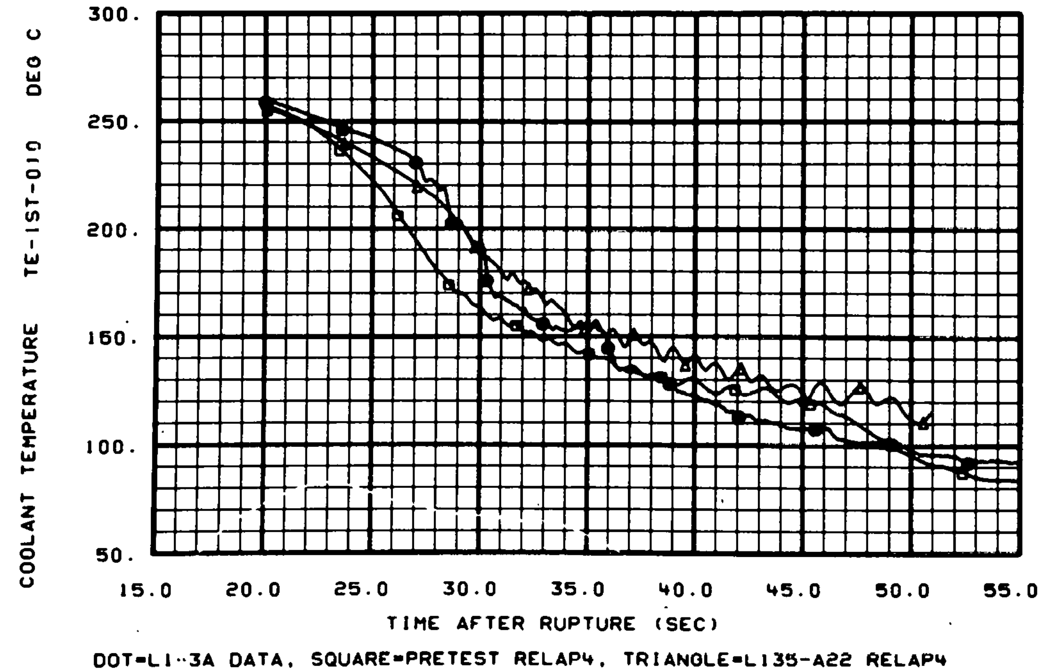


Fig. 35 Comparison of RELAP4 calculated and experimentally measured fluid temperature in lower plenum at 0.54 meters above reactor vessel bottom.

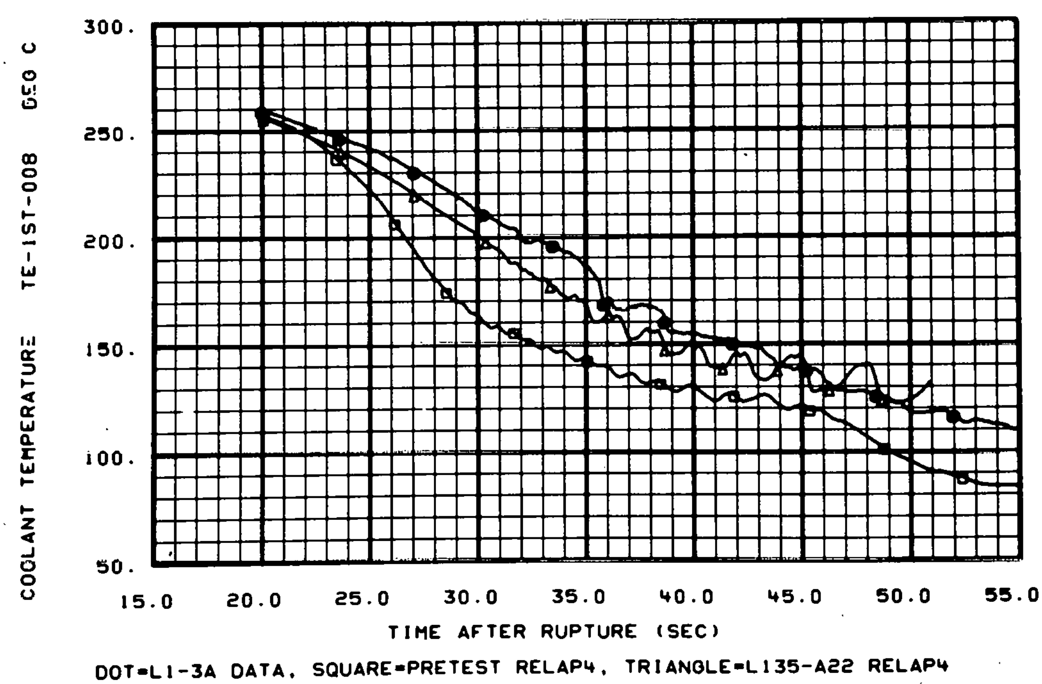


Fig. 36 Comparison of RELAP4 calculated and experimentally measured fluid temperaure in downcomer at 0.74 meters above reactor vessel bottom.

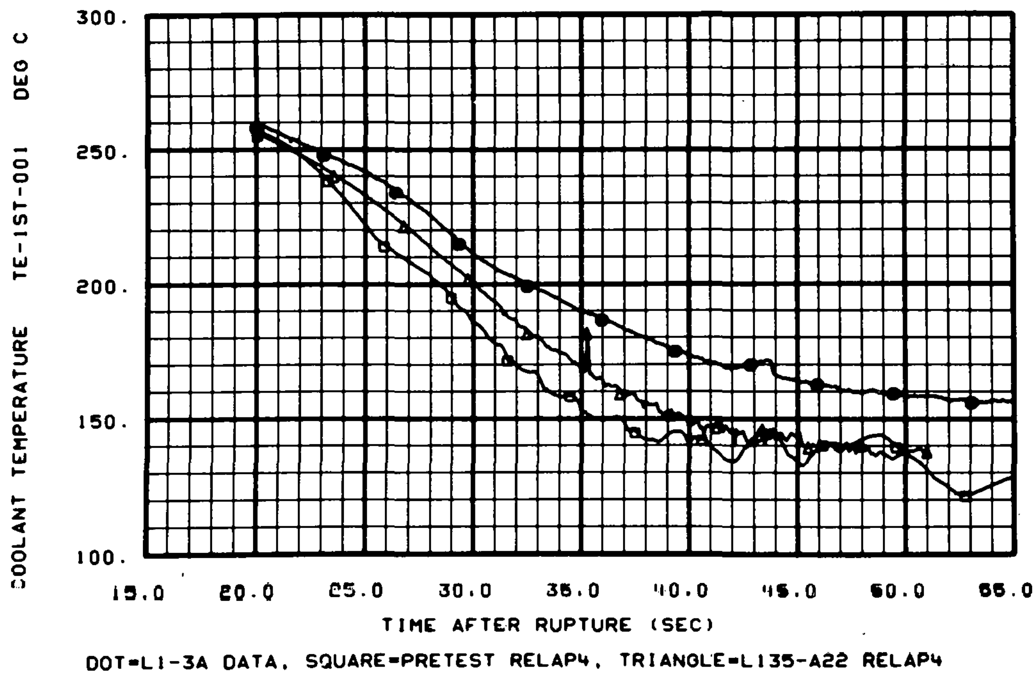


Fig. 37 Comparison of RELAP4 calculated and experimentally measured fluid temperature in downcomer inlet annulus at 4.81 meters above reactor vessel bottom.

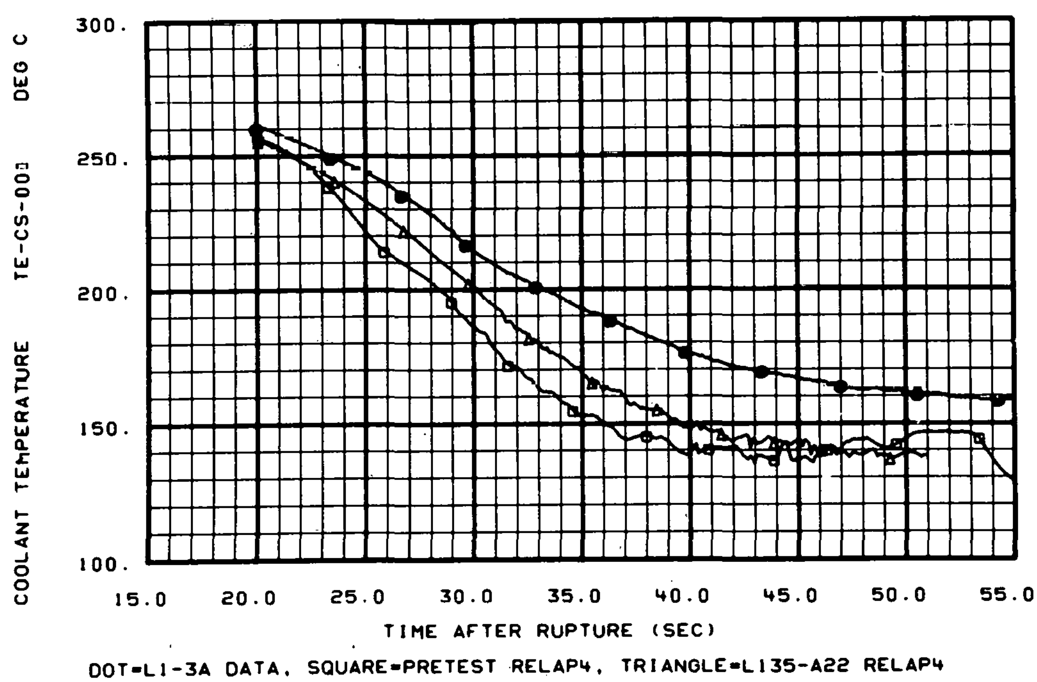


Fig. 38 Comparison of RELAP4 calculated and experimentally measured fluid temperature in core simulator.

Figure 39 shows comparisons between the calculated and measured momentum fluxes in the downcomer. Both the pretest and posttest analyses runs show large manometer-type oscillations beginning after the lower plenum fills which are not observed in the data.

To understand the nature of these oscillations, consider Figures 40 through 42. Figure 40 shows the average lower plenum void fraction from the posttest analysis run, while Figure 41 shows the average downcomer void fraction. Figure 42 shows the average liquid fraction (1-average void fraction) in the lower plenum, downcomer, and inlet annulus. As these graphs show, the oscillations tend to be diverging. Plots of void fraction in the core area tend to have the same oscillation frequency, but are out of phase with the oscillations in the downcomer, indicating a manometer-type oscillation.

The oscillations appear to be driven by unequal steam condensation, which is predicted to occur in the reactor vessel. When the lower plenum fills, the fluid conditions go from saturated to subcooled. Subcooled water thus begins to flow into the downcomer and lower core volumes after the lower plenum fills. Because of the larger flow area and lesser resistance, the flow rate into the core area is higher than the flow rate into the downcomer. Thus more steam is condensed in the core than is condensed in the downcomer. This causes even greater flow into the core region due to the faster depressurization in this volume. When the elevation head in the core area becomes great enough, the flow reverses, which causes subcooled water to flow into the downcomer. Because of the large flow of subcooled liquid in the downcomer, steam condensation begins over again in the downcomer instead of the core region. Thus unequal steam condensation is the mechanism which causes the undamped manometer-type oscillations which are observed in the RELAP4 calculations.

To test this hypothesis, an additional RELAP4 run was made in which the temperature of the ECC fluid was set at nearly saturation conditions during this period of the blowdown (226°C). The oscillations were no longer observed, and the reactor vessel pressure was substantially

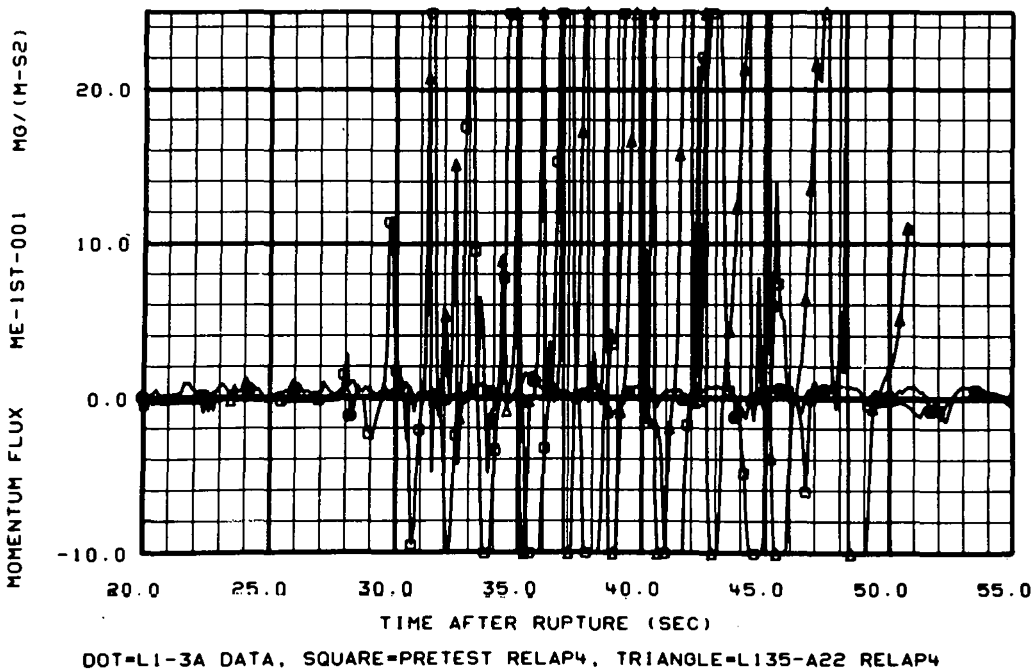


Fig. 39 Comparison of RELAP4 calculated and experimentally measured momentum flux in downcomer.

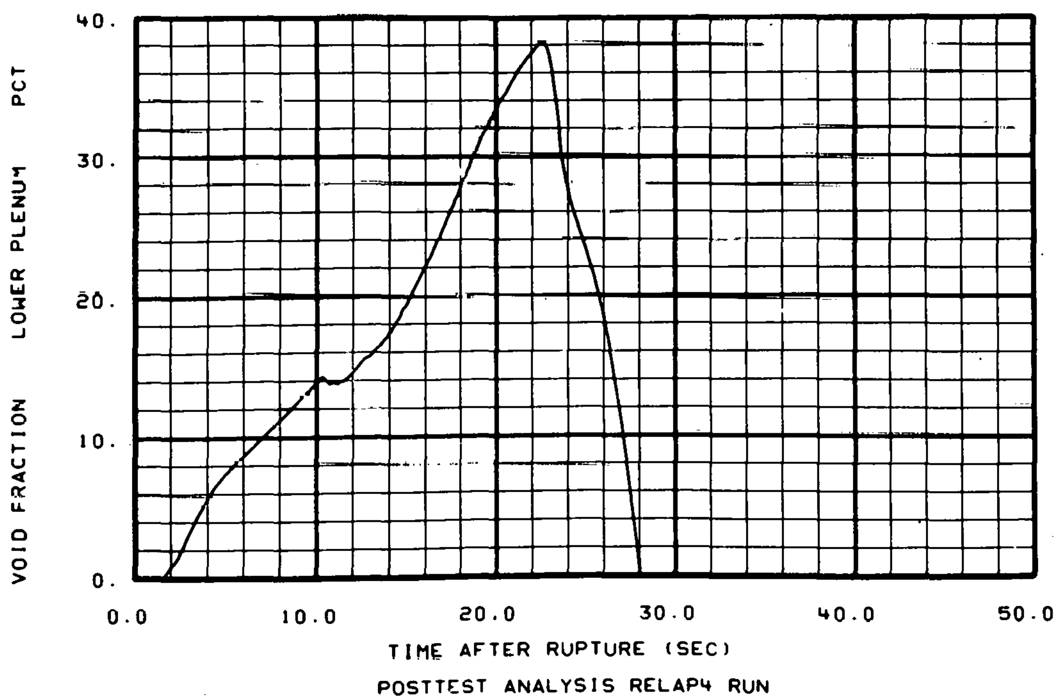


Fig. 40 Volume weighted average void fraction in lower plenum from posttest analysis run.

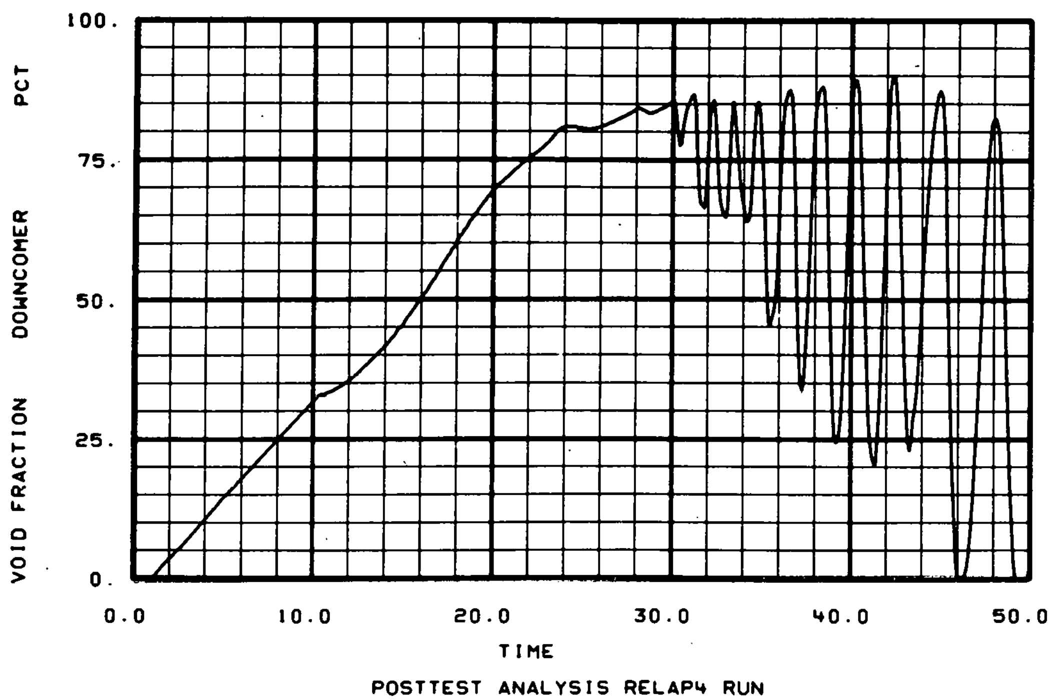


Fig. 41 Volume weighted average void fraction in downcomer from posttest analysis run.

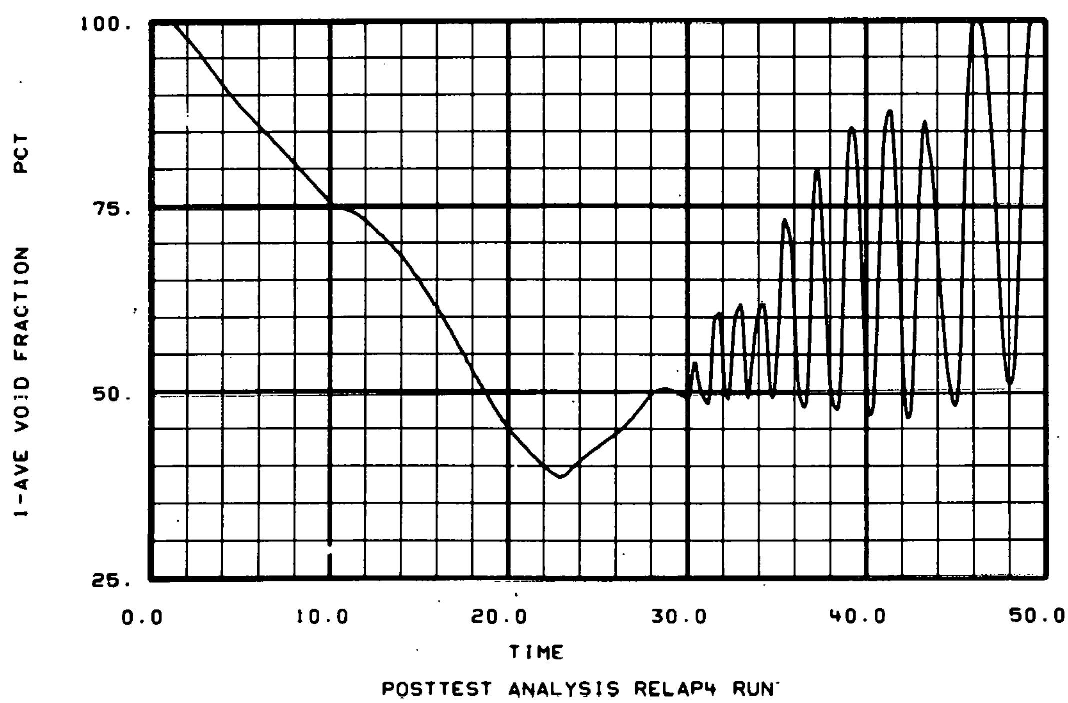


Fig. 42 Volume weighted liquid fraction in lower plenum, downcomer, and inlet annulus from posttest analysis run.

higher after ECC injection began. Because of the large oscillations observed in the posttest analysis run, it is believed that the finer reactor vessel nodalization was not fully effective in minimizing excessive steam condensation of the ECC fluid due to the homogenizing effect these oscillations had on the fluid conditions in the reactor vessel.

2.3.3 Overall System Behavior. In this section, curves which are representative of the overall system response are discussed in relation to the differences between the pretest and posttest RELAP4 runs.

Figures 43 through 47 show the calculated and measured densities in the intact and broken loops. The erratic density predictions in the cold legs (Figures 43 and 45) are attributable to the reactor vessel oscillations. The underprediction of density in the broken loop hot leg may be an indication of overprediction of hot leg break flow. Overpredicting broken loop cold leg density may be an indication of underpredicting cold leg break or not fully accounting for phase separation or slip effects in the downcomer.

The hump in the calculated density in the broken loop hot leg is attributable to fluid which collects in the inlet plenum of the steam generator and which later flows from the steam generator inlet plenum, through the intact loop hot leg, through the upper plenum, and out the broken loop hot leg. The experimental data suggest that RELAP4 is correctly predicting this subtle phenomenon.

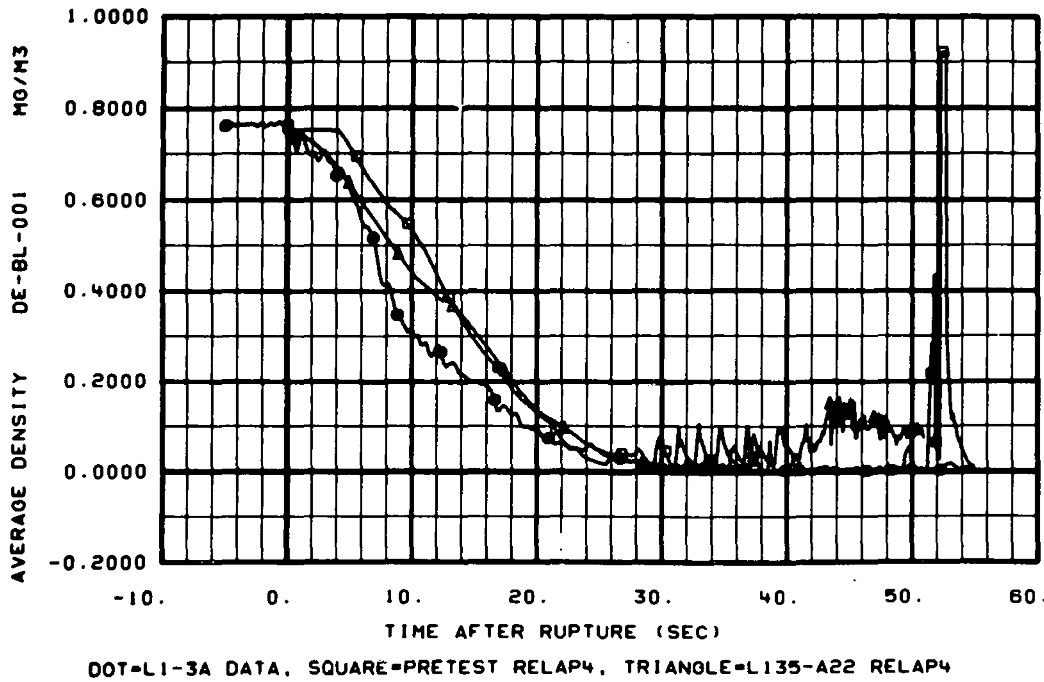


Fig. 43 Comparison of RELAP4 calculated and experimentally measured density in broken loop cold leg.

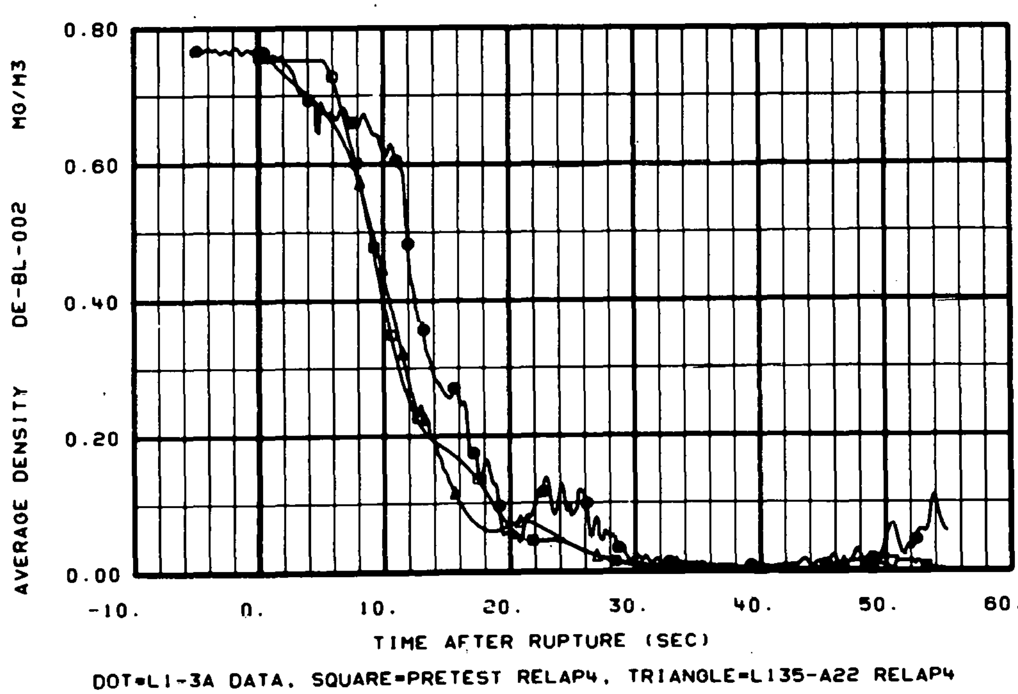


Fig. 44 Comparison of RELAP4 calculated and experimentally measured density in broken loop hot leg.

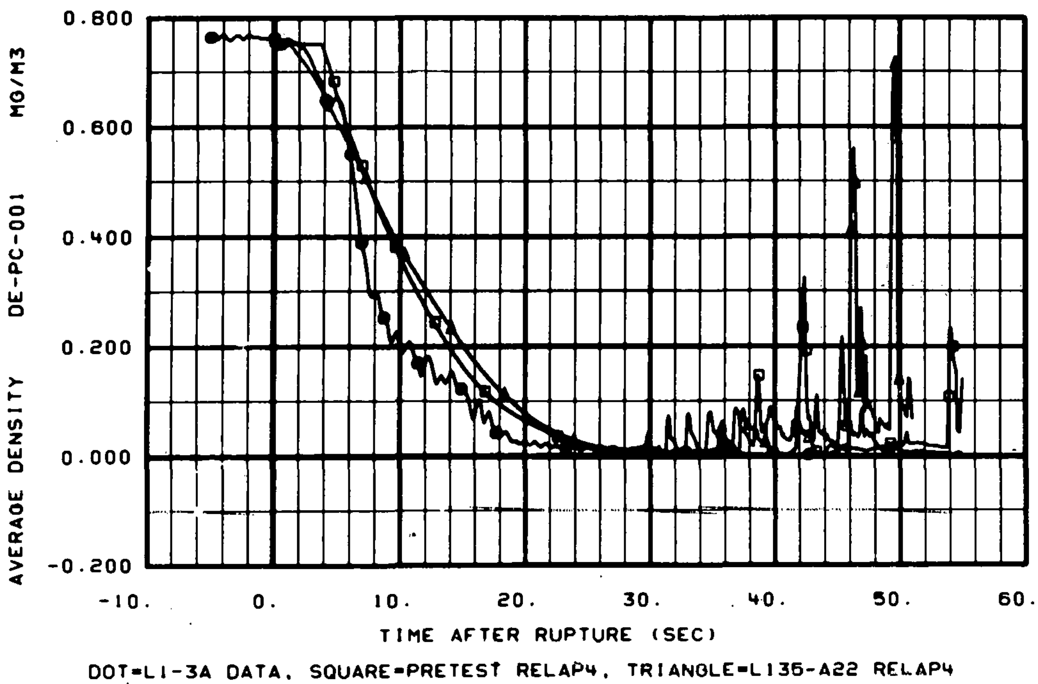


Fig. 45 Comparison of RELAP4 calculated and experimentally measured density in intact loop cold leg.

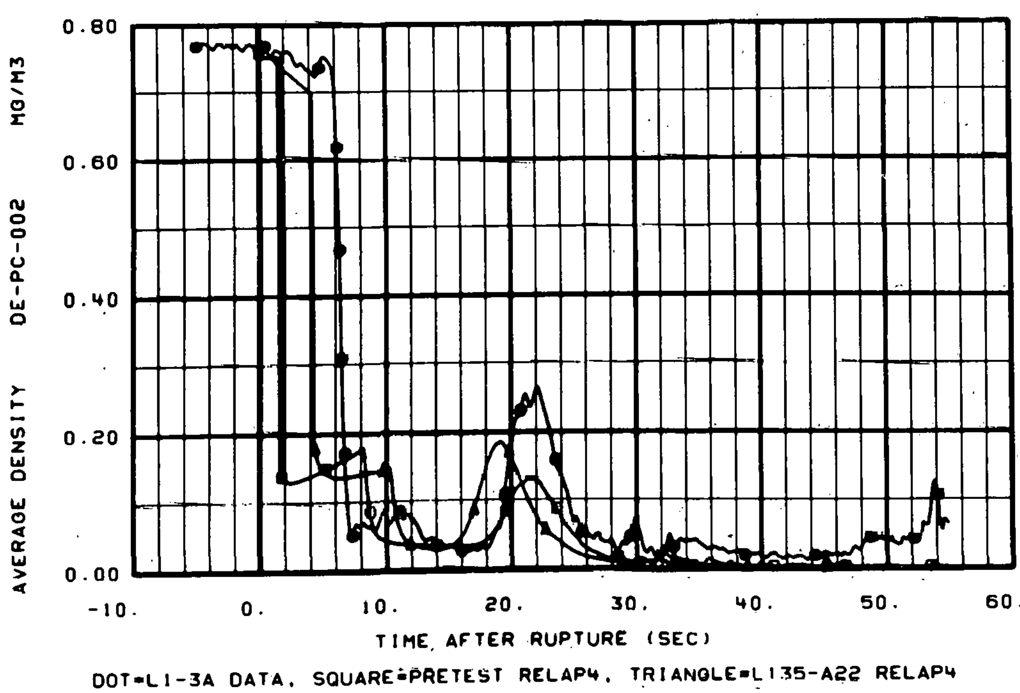


Fig. 46 Comparison of RELAP4 calculated and experimentally measured density in intact loop hot leg.

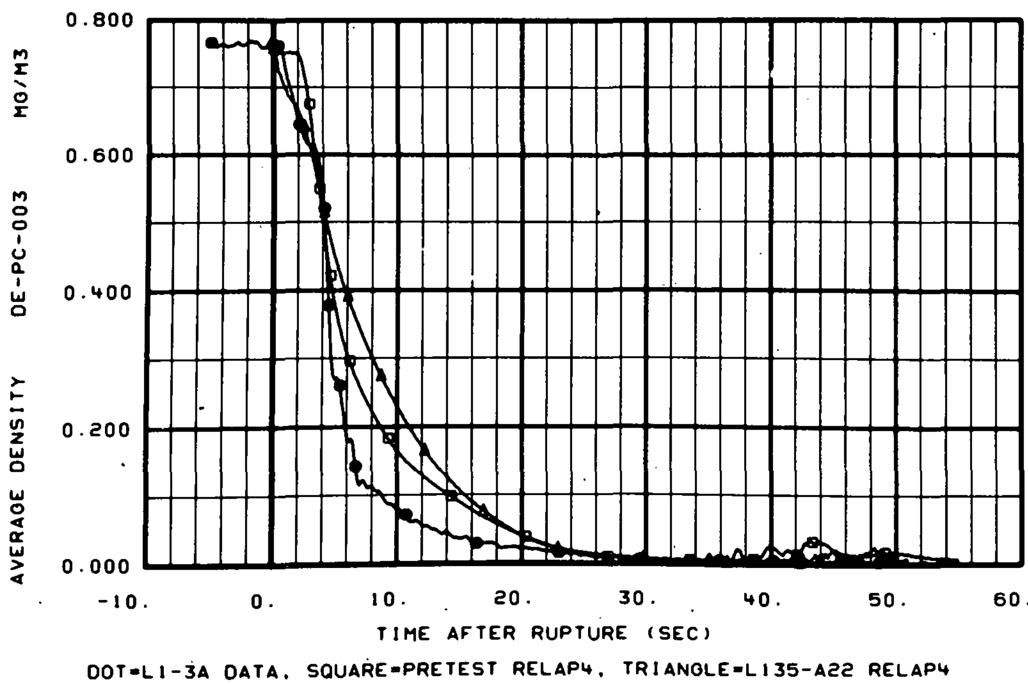


Fig. 47 Comparison of RELAP4 calculated and experimentally measured density in intact loop between steam generator outlet and pump inlet.

The next two figures (Figures 48 and 49) show the pressurizer liquid level and pressure. As discussed earlier, there is much better agreement in the parameters between the experimental data and the posttest analysis RELAP4 run. Figure 50 shows an expanded-scale plot of the comparisons of primary system pressure. Agreement is good until just after ECC injection begins.

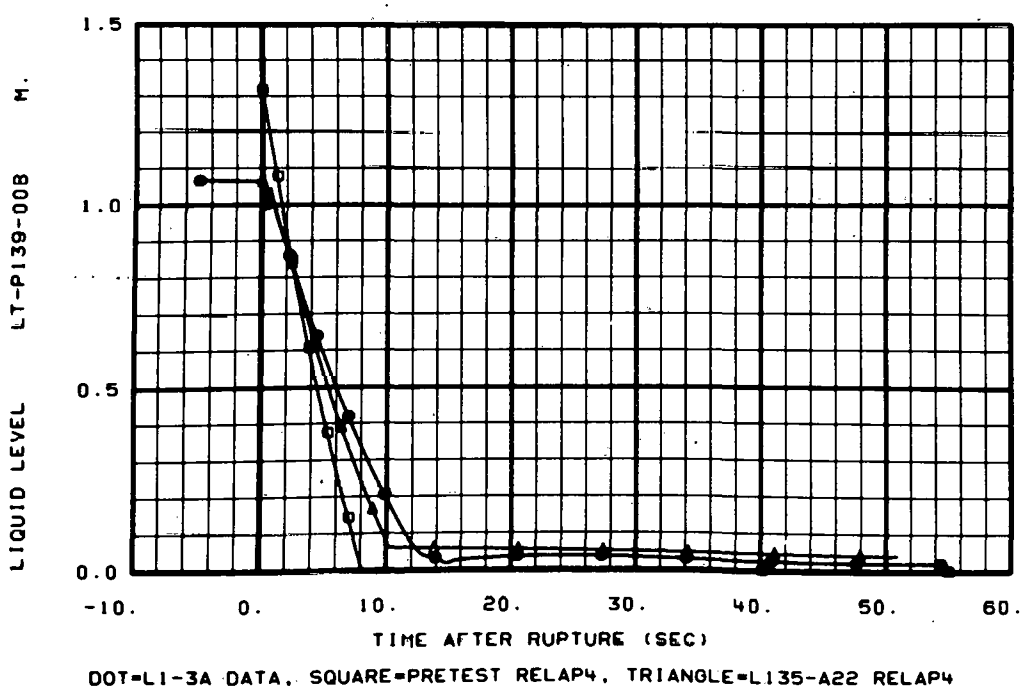


Fig. 48 Comparison of RELAP4 calculated and experimentally measured liquid level in pressurizer.

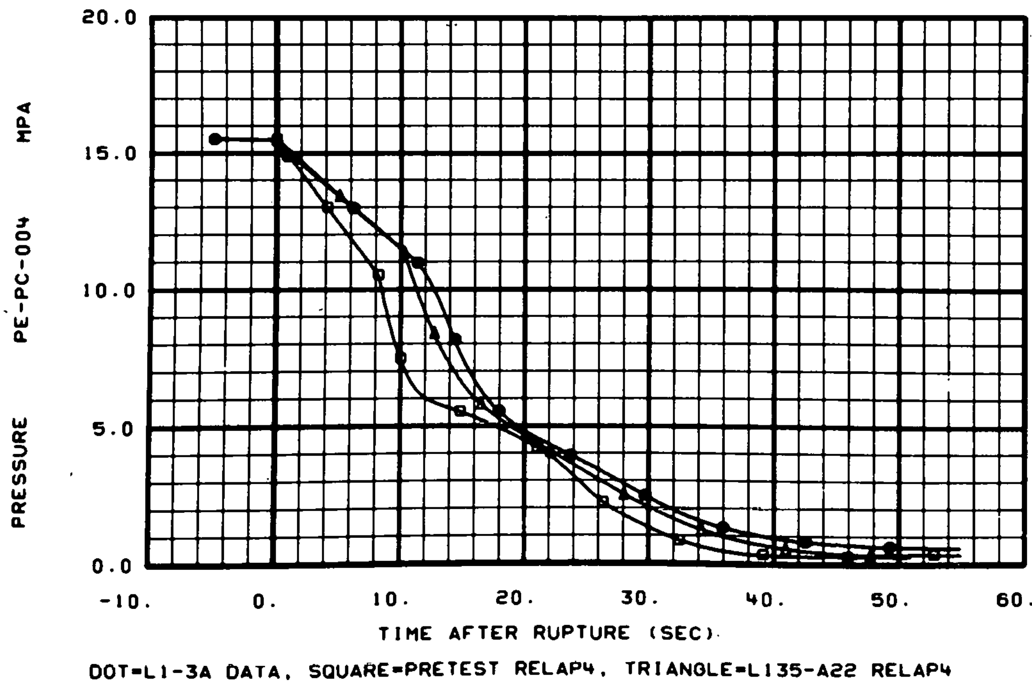


Fig. 49 Comparison of RELAP4 calculated and experimentally measured pressure in pressurizer.

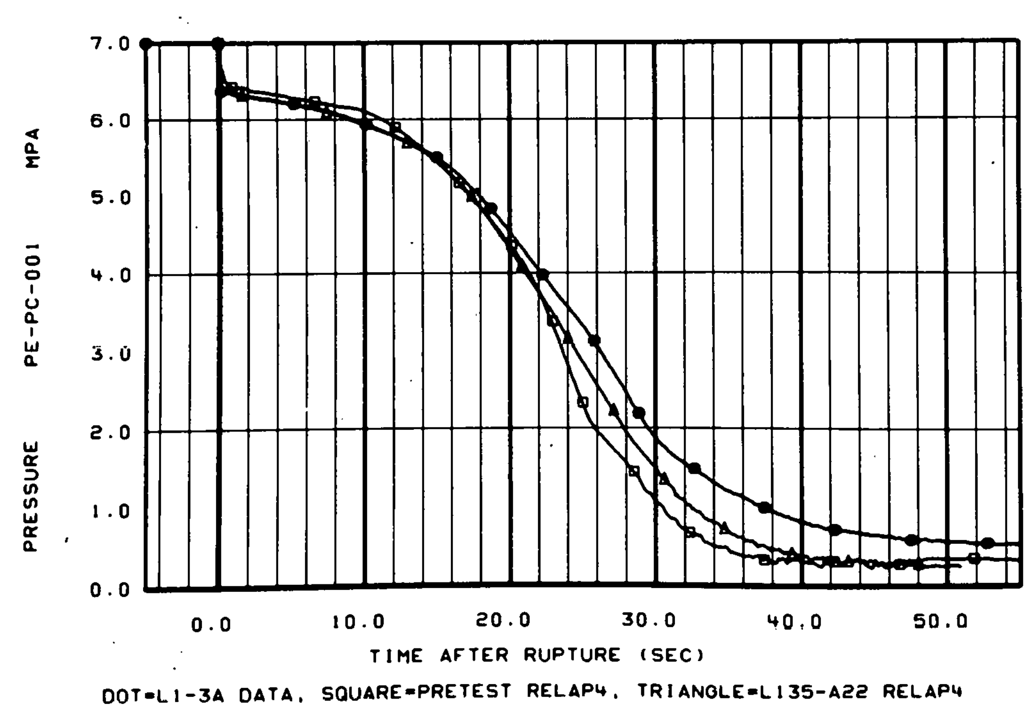


Fig. 50 Comparison of RELAP4 calculated and experimentally measured pressure in primary system.

Figures 51 and 52 show comparisons of the steam generator secondary pressure and temperature. The pretest RELAP4 run is in better agreement with the experimental data. The natural convection steam generator heat transfer model used in the posttest analysis calculation apparently overpredicts the heat transfer from the steam generator secondary. The steam generator secondary temperature transducer is located in the downcomer of the steam generator, and may not accurately reflect the true average steam generator secondary fluid temperature. Modeling the LOFT steam generator secondary is presently under review.

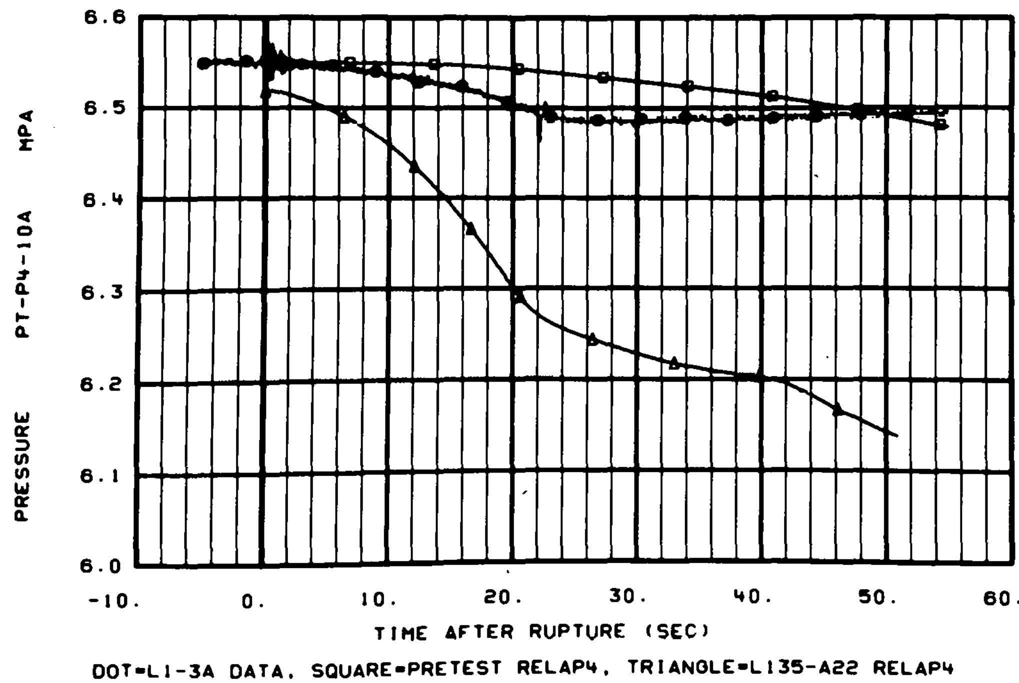


Fig. 51 Comparison of RELAP4 calculated and experimentally measured pressure in steam generator secondary side.

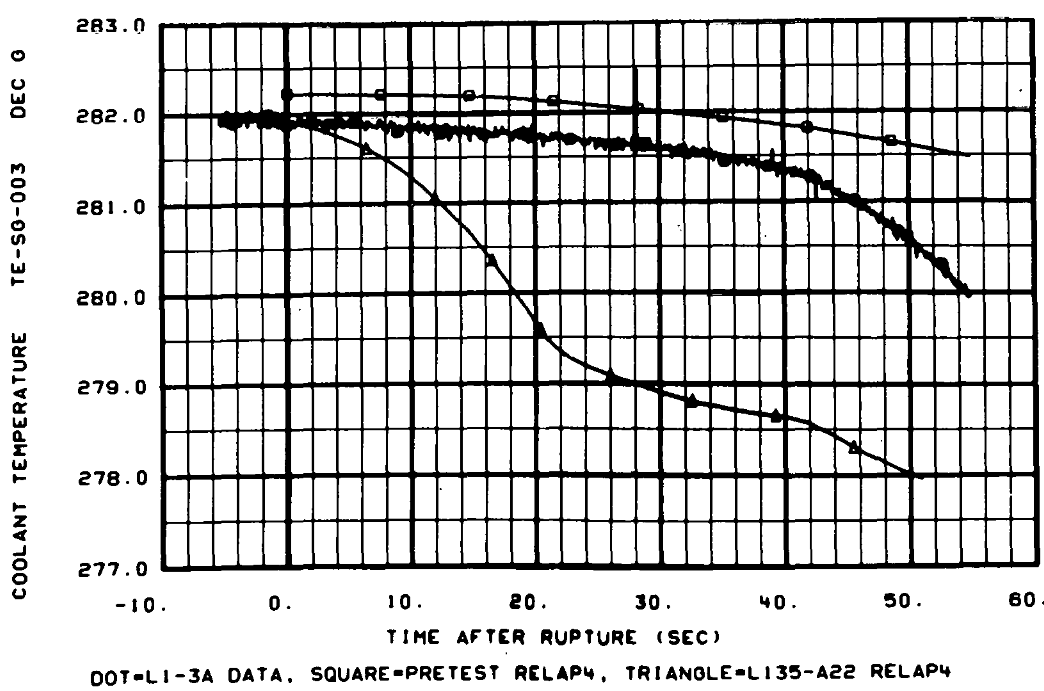


Fig. 52 Comparison of RELAP4 calculated and experimentally measured temperature in downcomer in steam generator secondary side.

Figures 53 through 55 show calculated and measured fluid temperatures in the broken and intact loops. The posttest analysis run indicated that superheated steam began to flow from the steam generator outlet at approximately 26 seconds into the blowdown, passed through the pumps, and arrived at Station PC-1 at approximately 28 seconds. The experimental data suggest that this phenomenon may be occurring, but at a later time than predicted by RELAP4. The overall fluid temperature differences are largely attributable to differences in saturation temperatures, due to the differences in system pressures.

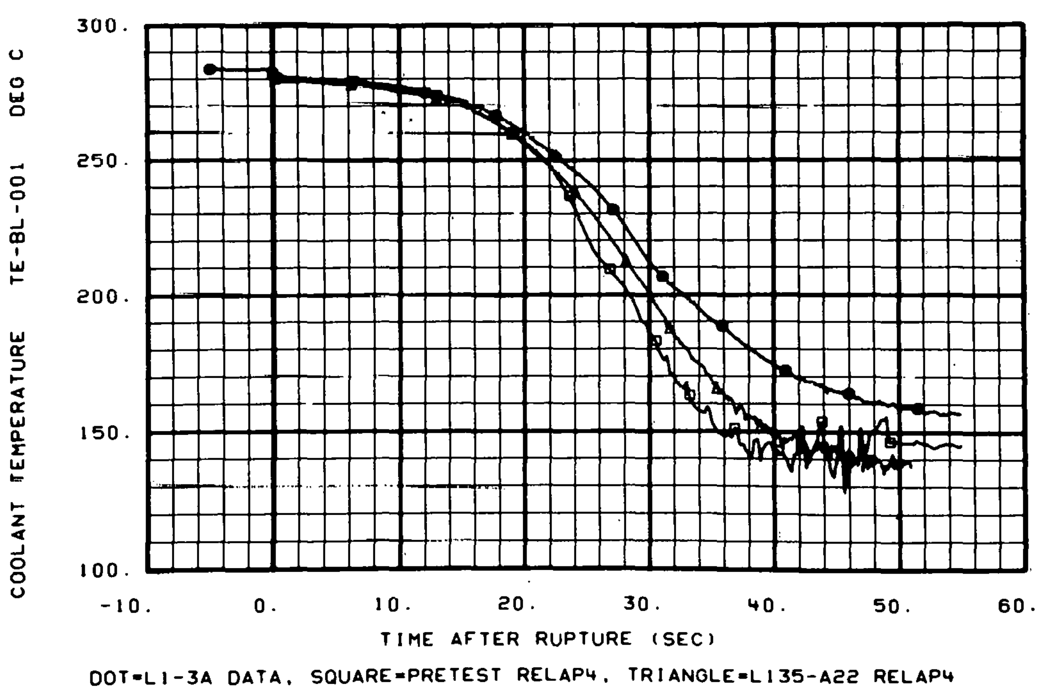


Fig. 53 Comparison of RELAP4 calculated and experimentally measured fluid temperature in broken loop cold leg.

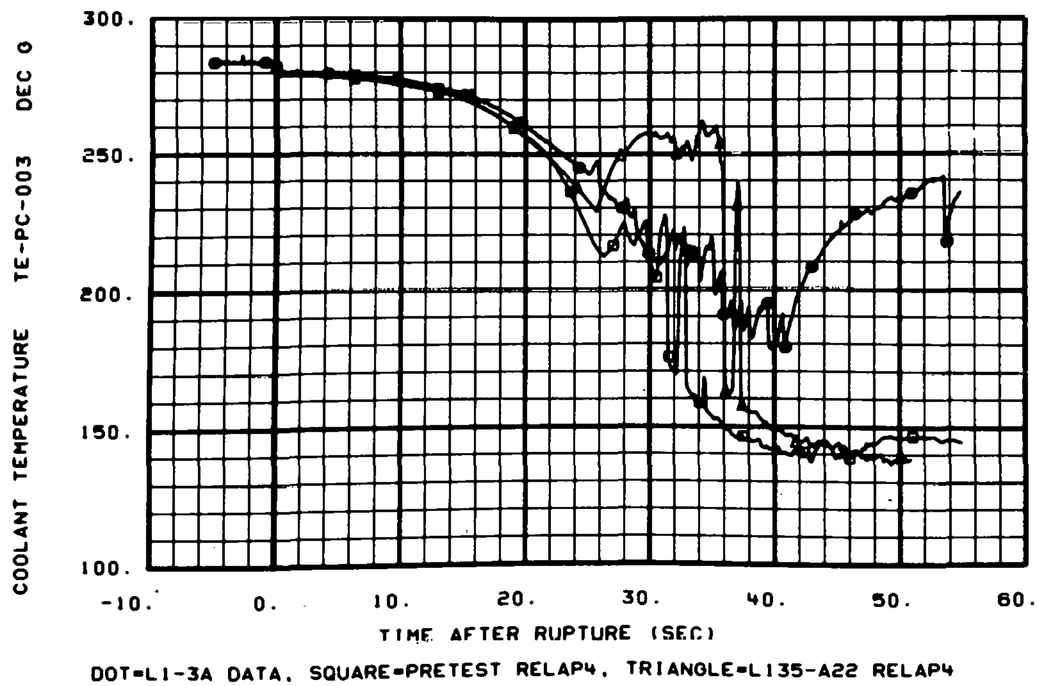


Fig. 54 Comparison of RELAP4 calculated and experimentally measured fluid temperature in intact loop between steam generator outlet and pump inlet.

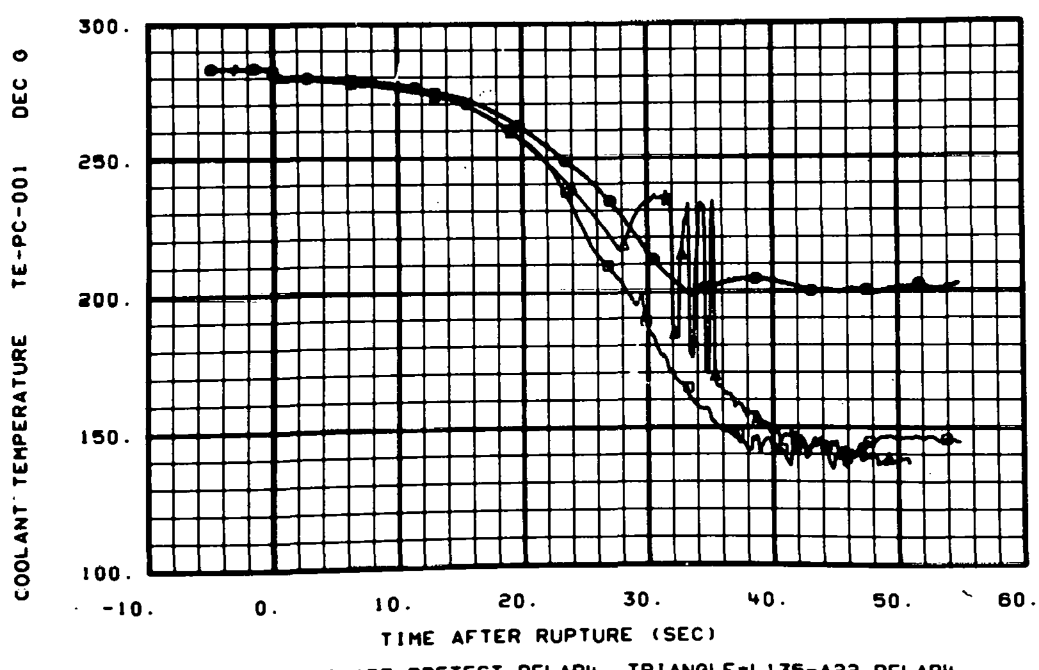


Fig. 55 Comparison of RELAP4 calculated and experimentally measured fluid temperature in intact loop cold leg.

Figures 56 and 57 show the primary coolant pump speed and differential pressure. The primary coolant pump in RELAP4 coasts down faster than the experimental data primarily because the effective inertia of the primary coolant pump in RELAP4 is too low at the higher speeds. A variable inertia pump model was developed for the LOFT Experiment L1-4 pretest prediction which accounts for the speed-dependent electrical losses of the LOFT pumps[10]. The pump differential pressure is well predicted by RELAP4 which indicates that once the pumps cavitate, the pump head is no longer a strong function of pump speed.

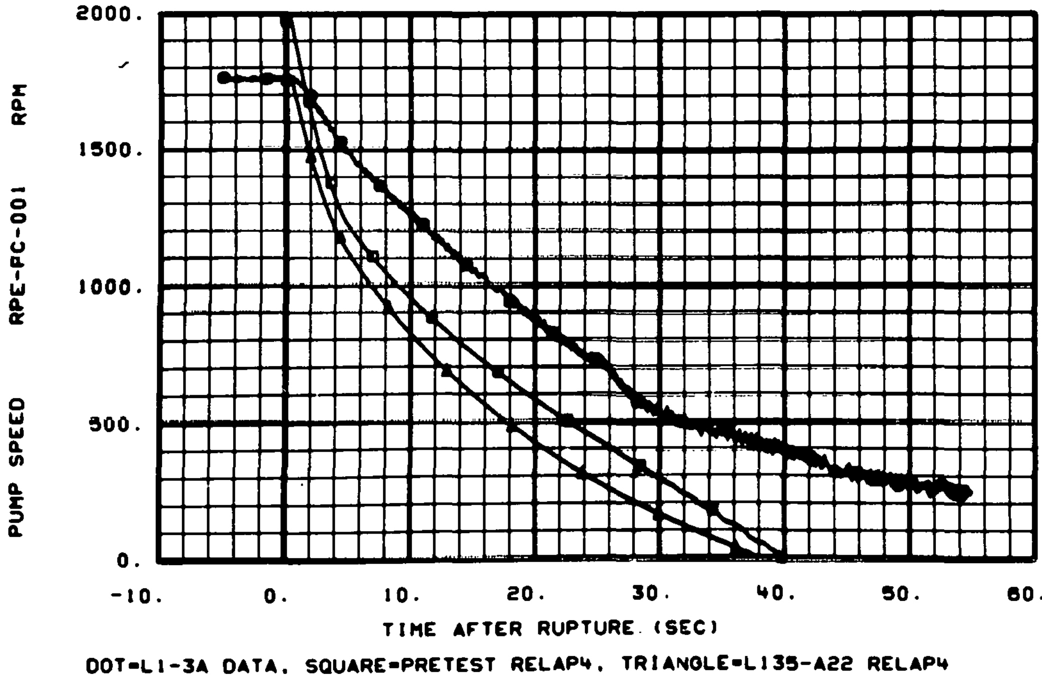


Fig. 56 Comparison of RELAP4 calculated and experimentally measured speed of primary coolant pump 1.

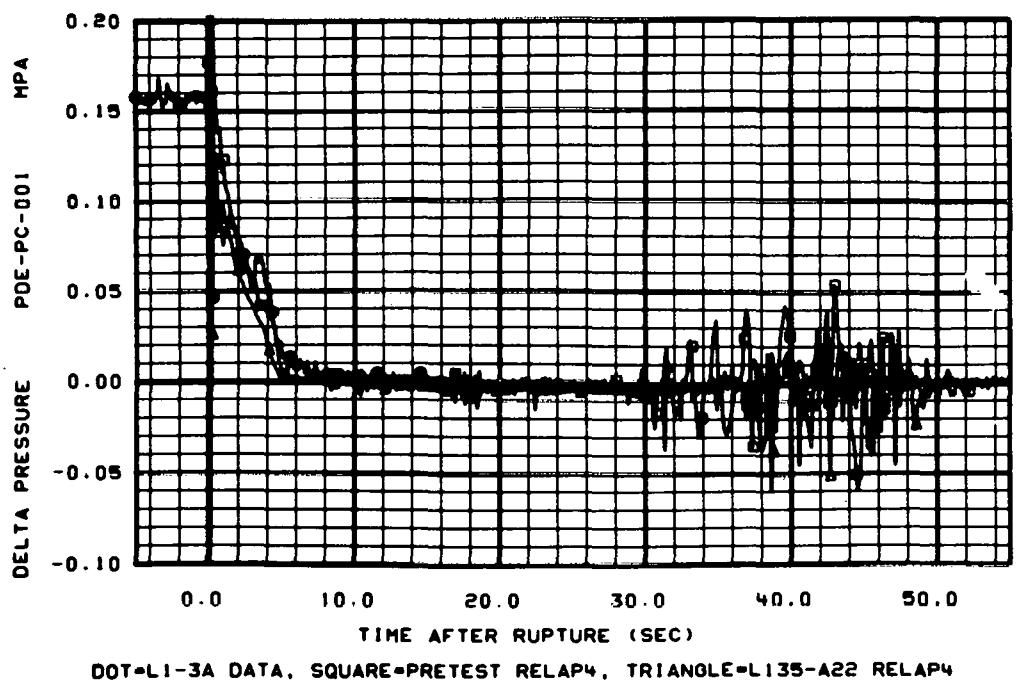


Fig. 57 Comparison of RELAP4 calculated and experimentally measured differential pressure across primary coolant pumps.

Figures 58 through 61 show velocities and momentum fluxes in the intact loop and reactor vessel. Agreement is generally good until 30 seconds into the blowdown, when the oscillations begin in the RELAP4 calculations.

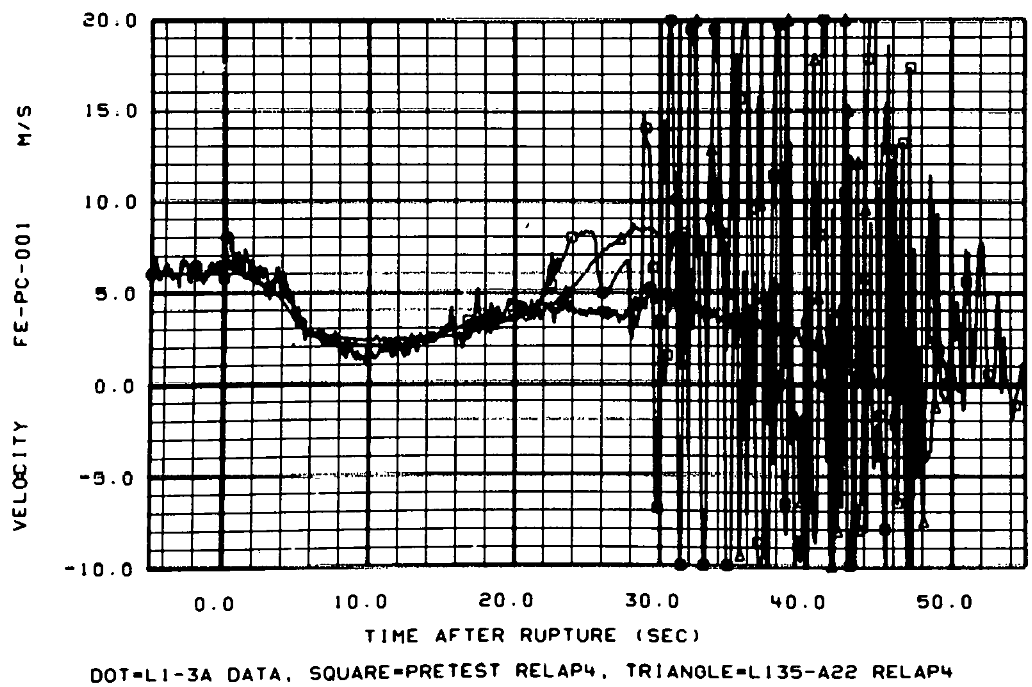


Fig. 58 Comparison of RELAP4 calculated and experimentally measured fluid velocity in intact loop cold leg.

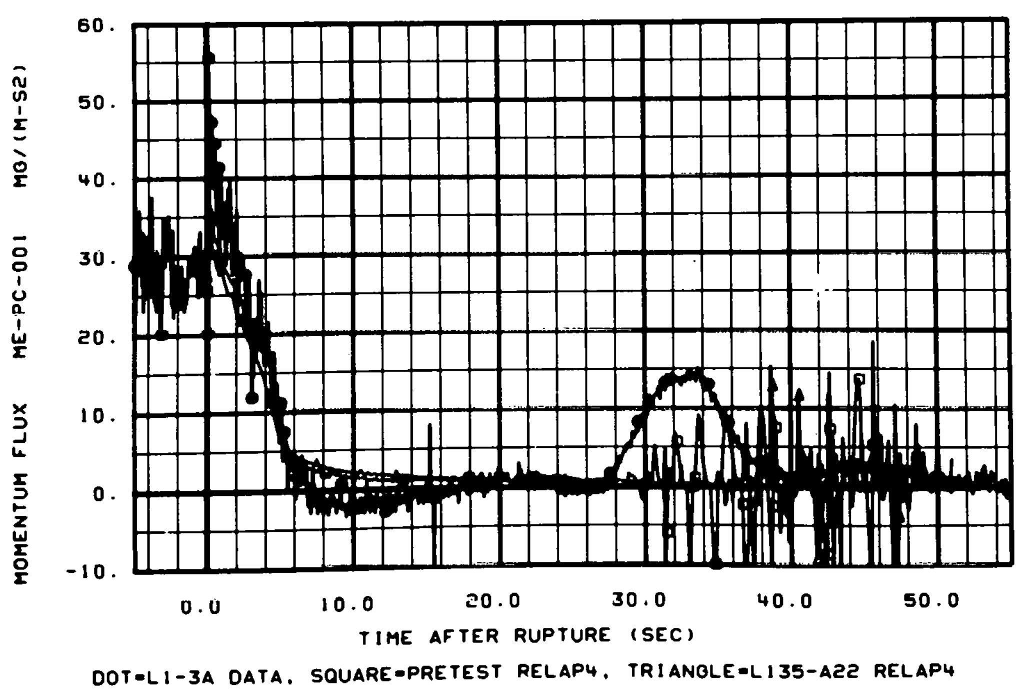


Fig. 59 Comparison of RELAP4 calculated and experimentally measured momentum flux in intact loop cold leg.

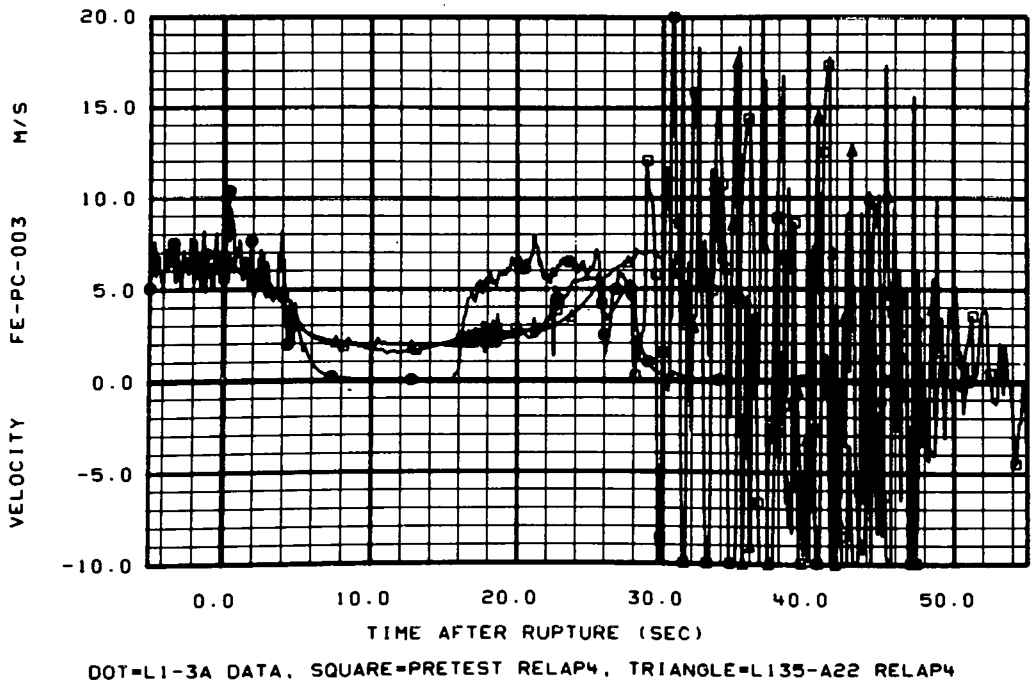


Fig. 60 Comparison of RELAP4 calculated and experimentally measured fluid velocity in intact loop between steam generator outlet and pump inlet.

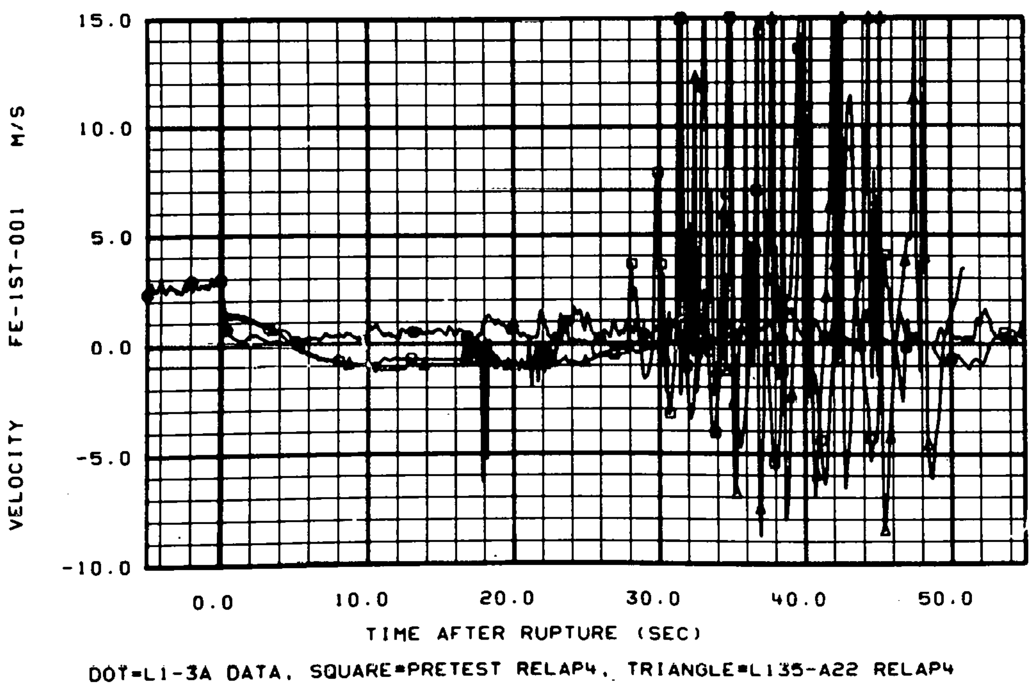


Fig. 61 Comparison of RELAP4 calculated and experimentally measured fluid velocity in reactor vessel downcomer.

The next four figures (Figures 62 through 65) concern the broken loop cold leg. Figure 62 shows the RELAP4 calculated and measured velocity in the broken loop cold leg. The agreement is generally good up to near the end of blowdown. As mentioned earlier, the turbine meter is expected to record higher than average velocities because of the stratified and annular flow regimes which are observed in the experimental data[6]. Figure 63 shows a comparison of the calculated and measured mass flows, as recorded from a pair of differential pressure-densitometer measurements. The experimental data show a small uncorrected offset at time zero which is probably attributable to an uncorrected offset in the differential pressure transducer. The data consistency checks also reveal that the experimentally measured mass flow rate for this transducer may be high by approximately 9%[6]. The differential pressure across the flow area reducer is underpredicted by RELAP4. The differential pressure across the cold leg break plane is somewhat overpredicted by RELAP4.

For LOFT Experiment L1-4, additional differential pressure and flow instrumentation has been installed to allow a better understanding of the flow phenomenon upstream of the cold leg break plane.

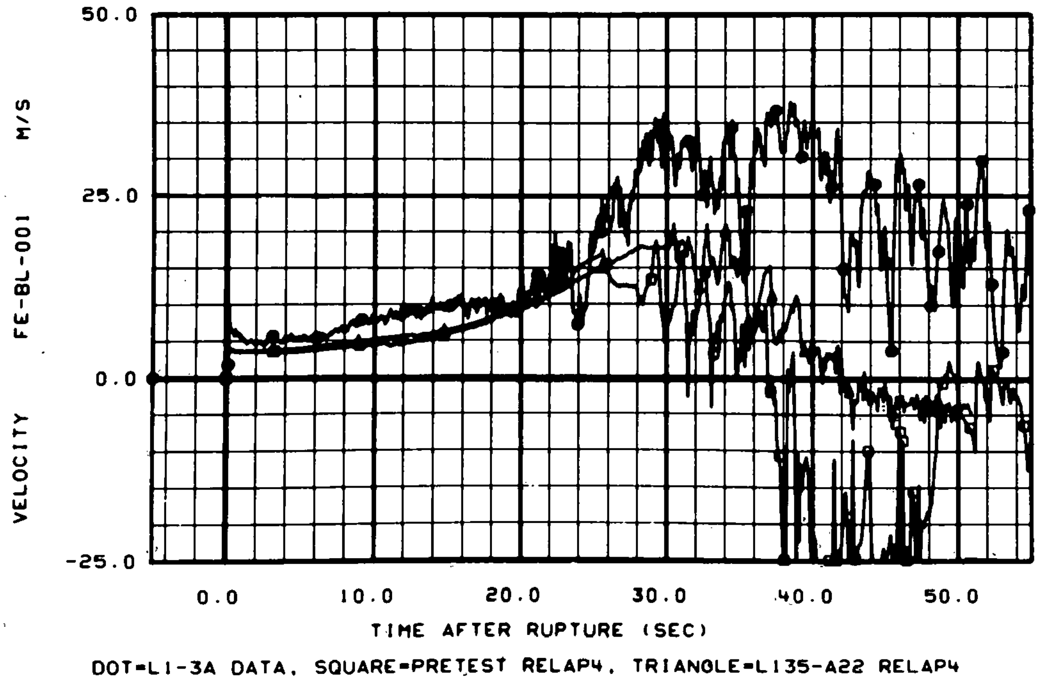


Fig. 62 Comparison of RELAP4 calculated and experimentally measured fluid velocity in broken loop cold leg.

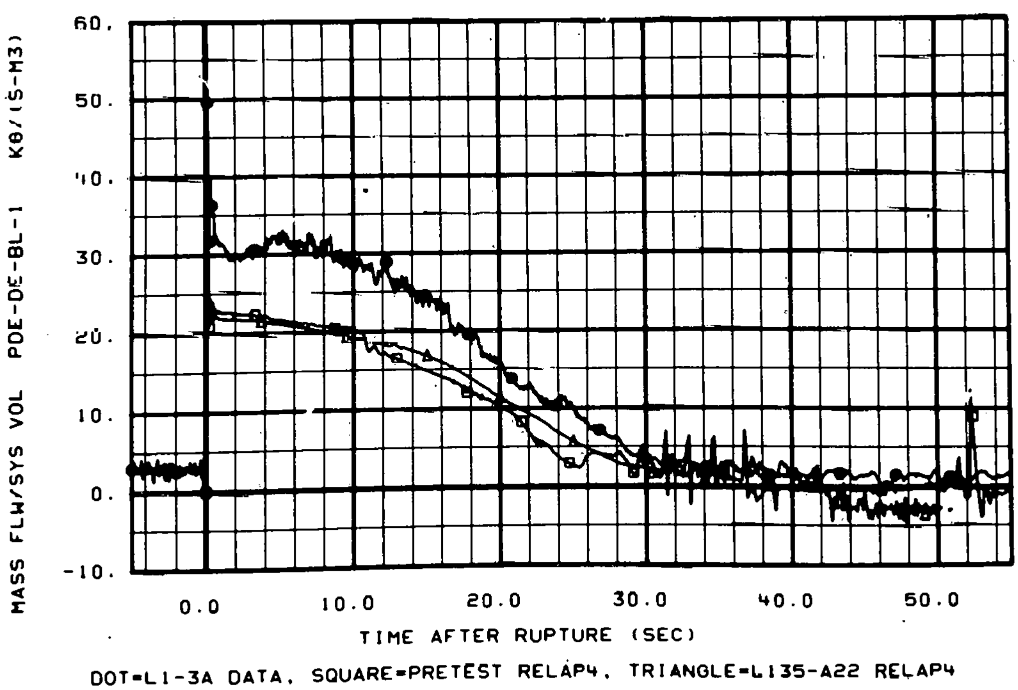


Fig. 63 Comparison of RELAP4 calculated and experimentally measured mass flow rate per system volume in broken loop cold leg.

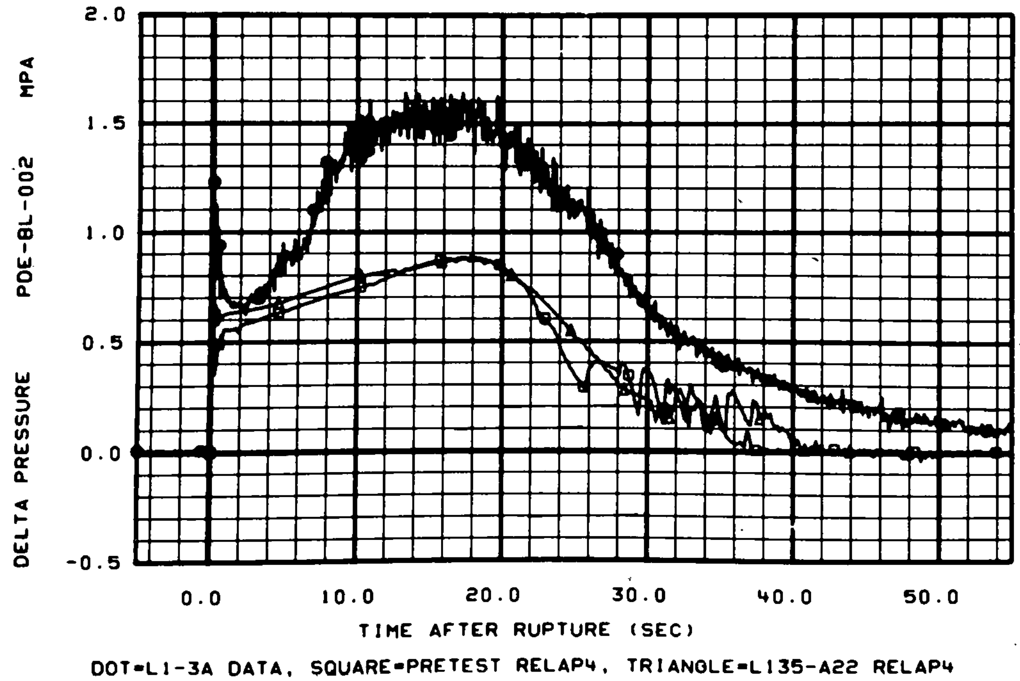


Fig. 64 Comparison of RELAP4 calculated and experimentally measured differential pressure across broken loop cold leg contraction.

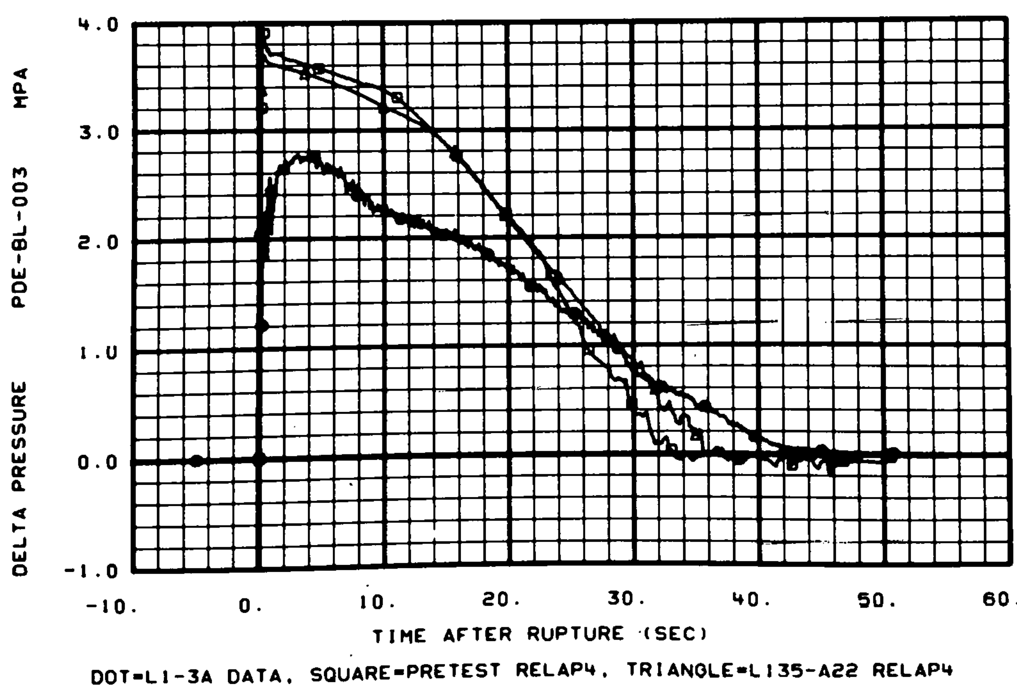


Fig. 65 Comparison of RELAP4 calculated and experimentally measured differential pressure across broken loop cold leg break plane.

Figure 66 indicates that the broken loop hot leg mass flow rate is overpredicted by RELAP4 for the first 10 seconds of blowdown. Subsequent modeling studies have shown that the RELAP4 calculated initial mass flow rate is strongly dependent upon the assumed initial temperature distribution in the broken loop hot leg. In both the pretest and posttest RELAP4 analyses, the initial temperature of the fluid in the broken loop hot leg was set at a lower value than indicated by pressure transducers in the broken loop hot leg at the onset of saturated blowdown.

Figures 67 and 68 show comparisons of differential pressures across the steam generator and pump simulators in the broken loop hot leg. Both the pretest and posttest RELAP4 runs are in good general agreement with the experimental data. One would expect the differential pressures to be overpredicted somewhat if the mass flow rate was being overpredicted.

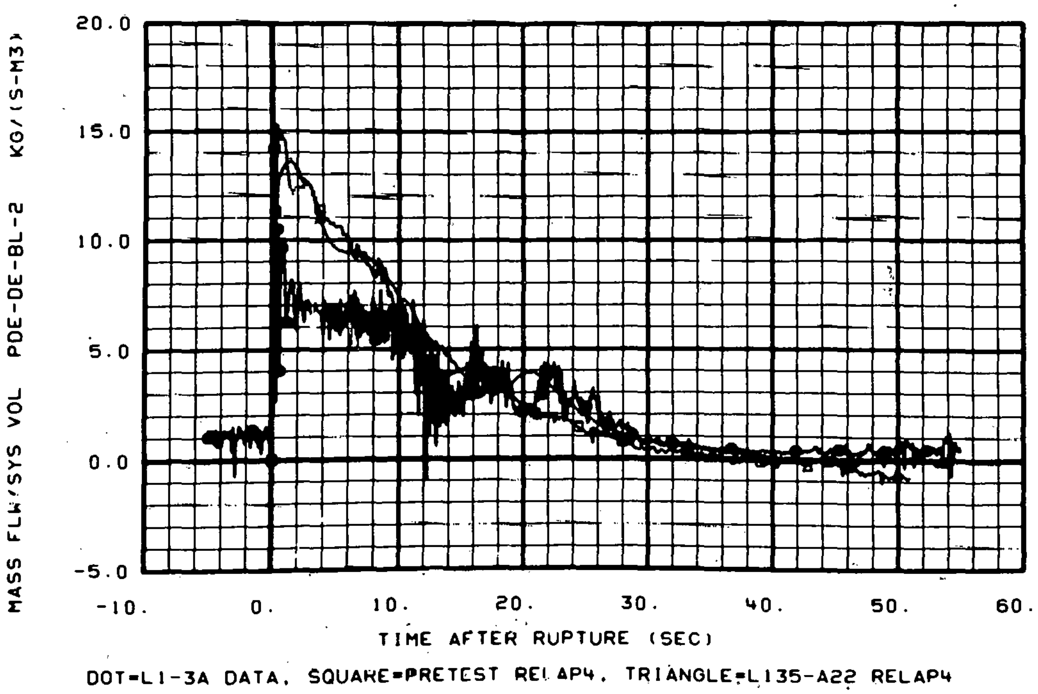


Fig. 66 Comparison of RELAP4 calculated and experimentally measured mass flow rate per system volume in broken loop hot leg.

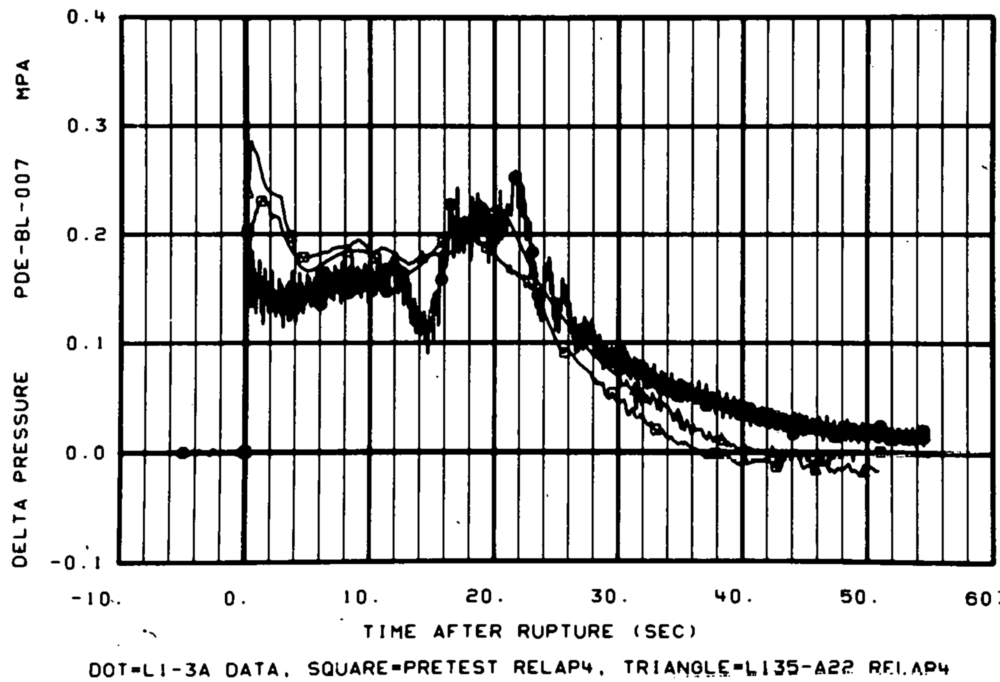


Fig. 67 Comparison of RELAP4 calculated and experimentally measured differential pressure across broken loop steam generator simulator.

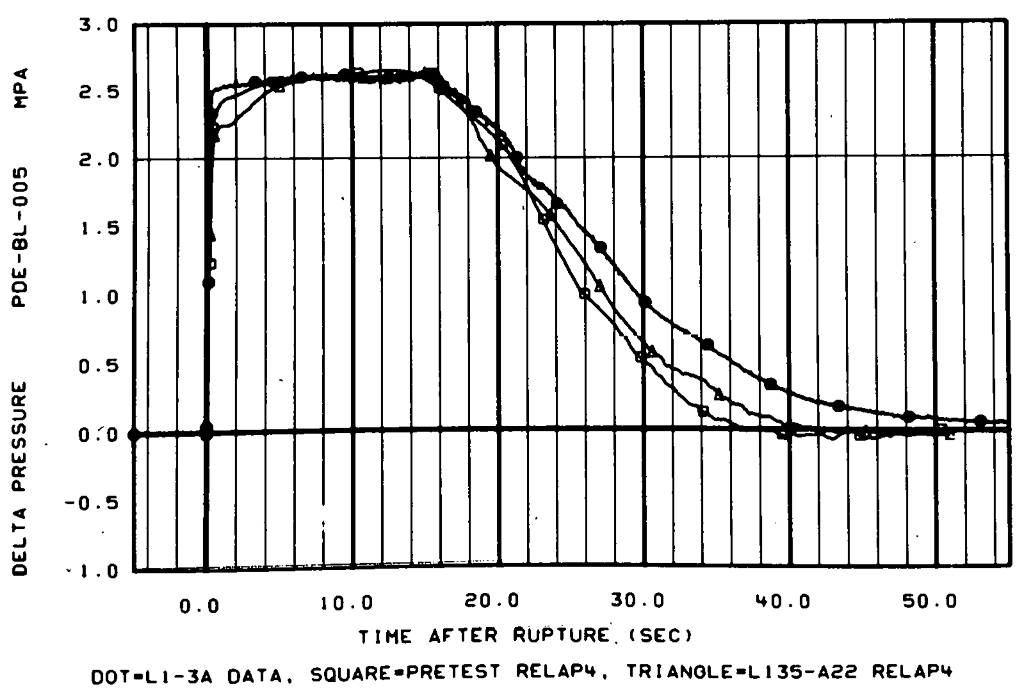


Fig. 68 Comparison of RELAP4 calculated and experimentally measured differential pressure across broken loop pump simulator.

3.0 CONCLUSIONS

Several conclusions can be drawn from the analytical studies that have gone into the preparation of this report. Modeling the pressurizer is important in predicting system behavior during early saturated blowdown for an isothermal LOCE. By more properly modeling the pressurizer, not only can pressurizer pressure and level be more accurately predicted, but early density, pressure, and flow behavior can be more accurately predicted as well. Proper modeling of the LOFT pressurizer must include all important pressure loss effects in the pressurizer surge line. This includes accounting for rough tubing Fanning friction losses, accounting for the form losses of the bends in the surge line tubing, and accounting for two-phase form losses.

The primary system pressure can be better predicted when ECC flows are not overpredicted, and nodalization in the reactor vessel should be such as to minimize steam condensation effects. ECC flows in the L1-3A pretest prediction were overpredicted due to (a) underprediction of primary system pressure after ECC injection began due to excessive steam condensation, (b) overprediction of accumulator nitrogen pressure due to the isothermal accumulator nitrogen pressure assumption, and (c) failure to account for the total resistance of the accumulator injection line.

Use of measured initial conditions as opposed to EOS nominal initial conditions had a negligible influence on calculated system response. Using finer nodalization in areas where steam condensation was expected to occur was responsible for a better overall prediction of the system pressure history. The manometer oscillations observed between the downcomer and core volumes in both the pretest and posttest calculations were apparently driven by unequal steam condensation. Injecting higher enthalpy fluid eliminated the oscillations, as well as the over depressurization observed in both the pretest and posttest analysis.

4.0 REFERENCES

1. T. K. Samuels, Appendix A to Volume 2, LOFT Experiment Operating Specification, Volume 2, Nonnuclear Test Series L1 Experiment 3, Aerojet Nuclear Company, EOS Volume 2, NNE L1-3, Revision 1 (April 1976).

2. T. K. Samuels, Conformed Copy of LOFT Experiment Operating Specification, Volume 2, Nonnuclear Test Series L1 Experiments 3 and 3A, NNE L1-3 and -3A, Aerojet Nuclear Company, EOS Volume 2, NNE L1-3 and -3A, Revision 2 (September 1976).

3. H. C. Robinson, LOFT System and Test Description (Loss-of-Coolant Experiments Using a Core Simulator), TREE-NUREG-1019 (November 1976).

4. J. K. Jacoby, Appendix A to Volume 1, LOFT Experiment Operating Specification, LOFT Nonnuclear Experiment Series L-1, Aerojet Nuclear Company, Revision 2 (August 1974).

5. G. L. Singer et al, RELAP4/MOD5 A Computer Program for Transient Thermal-Hydraulic Analysis of Nuclear Reactors and Related Systems-User's Manual, ANCR-NUREG-1335 (September 1976).

6. G. M. Millar, Experiment Data Report for LOFT Nonnuclear Test L1-3A, TREE-NUREG-1027 (December 1976).

7. J. R. White et al, Experiment Prediction for LOFT Experiment L1-3, Aerojet Nuclear Company, EP L1-3 (June 1976).

8. J. G. Collier, Convective Boiling and Condensation, London: McGraw-Hill Book Company, Inc., 1972.

9. Society of Automotive Engineers, SAE Aero-Space Applied Thermodynamics Manual, Section 1, Part B, "Thermodynamics and Compressible Flow" (1969).

10. James R. White et al, Experiment Prediction For LOFT Nonnuclear Experiment L1-4, TREE-NUREG-1086 (April 1977).

APPENDIX A

INPUT AND TIME = 0.0 LISTING FOR THE
NEW PRESSURIZER MODEL RELAP4 RUN
(RELAP4 RUN L135-A23)

OJRP TSB L135-A23 PRE-TEST PRED. WTH NEW PRES. MODEL

LISTING OF INPUT DATA FOR CASE 1

```
=LOFT L135-A23 PRE-TEST PREDICTIONS WITH NEW PRESSURIZER MODEL CONCO=.75
010001 -2 9 7 6 7 3 0 50 2 2 1 2 38 14 1 0 0 0
010002 0.0 1.0
020000 AP 41 AP 40 AP 4 JW 46 JW 45 JW 46 ML 41 AR 25 AR 28
030010 50 2 2 0 0.0002 0.00001 0.1
030020 20 10 1 0 0.0005 0.00005 0.8
030030 10 20 1 0 0.001 0.0001 2.0
030040 5 10 4 0 0.01 0.0005 7.0
030050 5 20 4 0 0.01 0.0005 20.0
030060 5 40 4 0 0.01 0.00005 32.0
030070 5 80 2 0 0.01 0.0005 56.0
040010 1 1 0 0 15.0 0 * END TRIP
040020 2 1 0 0 0.024 0 * BREAK TINE
040030 3 1 0 0 0.5 0.0 * PUMP TRIP
040040 4 1 0 0 22.0 0.0 * HPIS TRIP
040050 5 -5 43 0 0.01 0. *
040060 6 1 0 0 35.5 0.0 * LPIS
050011 0 0 2267.3067 540.0 -.1 16.28172 7.5 7.5
050012 0 2.512 1.788 -.973
050021 0 0 2271.1310 540.0 -1 46196 1.865 1.865
050022 0 2.491 1.314 -2.838 0
050031 0 0 2264.6577 540.0 -1. 7.95126
050032 0.9323333333 0.9323333333 0 0.6827037757 0.932333
050033 -.4661666670 *
050041 0 0 2263.94 540.0 -1. 4.550411903
050042 0.9323333333 0.9323333333 0 0.6827037757 0.932333
050043 -.4661666670 *
050051 0 0 2263.2811 540.0 -1. 3.189863350
050052 0.9323333333 0.9323333333 0 0.6827037757 0.932333
050053 -.4661666670 *
050061 0 0 2262.8310 540.0 -1. 2.878222427
050062 2.421562792 2.421562792 0 0.8955644145 1.067833
050063 -.5339166650 *
050071 1 0 2258.2827 540.0 -1. 11.18238868
050072 2.500000000 2.500000000 0 7.941248101 1.461496
050073 0.3121933630 *
050081 0 0 2255.8862 540.0 -1. 10.97689826
050082 6.750000000 6.750000000 0 1.626207149 0.0335
050083 2.812193363 *
050091 0 0 2253.7424 540.0 -1. 5.447793949
050092 2.005208333 2.005208333 0 1.626207149 0.0335
050093 9.562193363 *
050101 0 0 2254.4704 540.0 -1. 10.97689826
050102 6.750000000 6.750000000 0 1.626207149 0.0335
050103 2.812193363 *
050111 0 0 2255.6291 540.0 -1. 11.18238868
050112 2.500000000 2.500000000 0 7.941248101 1.461496
050113 0.3121933630 *
050121 0 0 2250.2685 540.0 -1. 2.057288380
050122 2.375082991 2.375082991 0 0.8955644145 1.067833
050123 -.4874368660 *
050131 0 0 2250.1205 540.0 -1. 4.437981240
050132 3.808666667 3.808666667 0 0.6827037757 0.932333
050133 -4.296103530 *
050141 0 0 2248.4234 540.0 -1. 4.493459374
050142 2.174500000 2.174500000 0 0.6827037757 0.932333
050143 -4.296103530 *
050151 0 0 2263.9779 540.0 -1. 3.785608924
050152 2.475770200 2.475770200 0 0.3940626203 0.39406
050153 -2.121603530 *
050161 0 0 [illegible] 540.0 -1. [illegible]
```

```
050161    0    0   22[illegible]            540.0                -1.  [illegible]
050162  2.475770200     2.475770200          0 0.3940626203      0.39406
050163 -2.121603530     *
050171    0    0   2278.4774            540.0                -1.  1.895801523
050172 0.7083333333     0.7083333333         0 0.3940626203      0.708333
050173 -.3541666670     *
050181    0    0   2280.9153            540.0                -1. 0.6933519742
050182 0.7083333333     0.7083333333         0 0.3940626203      0.708333
050183 -.3541666670     *
050191    0    0   2275.8257            540.0                -1.  6.288527277
050192 0.9323333333     0.9323333333         0 0.6827037757      0.932333
050193 -.4661666670     *
050201    0    0   2274.2100            540.0                -1.  3.228619939
050202 0.9323333333     0.9323333333         0 0.6827037757      0.932333
050203 -.4661666670     *
050211    0    0   2272.6113            540.0                -1.  7.4496
050212  3.435000000     3.435000000          0  1.961219534      0.583333
050213 -2.351666670     *
050221    0    0   2274.8609            540.0                -1.  17.0666
050222  11.61191666    11.61191666           0  1.527163094      0.33333
050223 -13.96358330     *
050231    1    0   2276.7259  540.0  -.1  23.142  4.15  4.15
050232    0  5.58   1.518   -16.4    0
050241    0    0   2273.7242  540.0  -.1  30.249  9.422  9.422
050242    0  3.265  2.313   -12.26   0
050251    0    0   2273.18              540.0                -1.  3.569594146
050252 0.9323333333     0.9323333333         0 0.6827037757      0.932333
050253 -.4661666670     *
050261    0    0   2273.18              535.0                -1.  2.16185
050262 0.9323333333     0.9323333333         0 0.6827037757      0.932333
050263 -.4661666670     *
050271    0    0   2273.18              530.0                -1. 0.8175129257
050272 0.5677500000     0.5677500000         0 0.2531652931      0.56775
050273 -.2838750000     *
050281    0    0   2266.66              540.0                -1.    7.54979
050282 0.9323333333     0.9323333333         0 0.6827037757      0.932333
050283 -.4661666670     *
050291    0    0   2266.85              538.0                -1.  2.304453879
050292 0.9323333333     C.9323333333         0 0.6827037757      0.932333
050293 -.4661666670     *
050301    0    0   2266.51              536.0                -1. 0.2896489032
050302  2.440125000     2.440125000          0 0.9003700370D-01 0.33858
050303 -.1692916670     *
050311    0    0   2265.35              534.0                -1.  4.582558229
050312  4.582500000     4.582500000          0  1.060795302      1.215833
050313  2.270833333     *
050321    0    0   2263.94              532.0                -1.  10.03573817
050322  4.047083333     4.047083333          0  1.161015380      1.215833
050323  6.853333333     *
050331    0    0   2265.35              530.0                -1.  4.582558229
050332  4.582500000     4.582500000          0  1.060795302      1.215833
050333  2.270833334     *
050341    0    0   2266.85              528.0                -1. 0.4089180585
050342  4.541666667     4.541666667          0 0.9003700370D-01 0.33858
050343 -2.270833330     *
050351    0    0   2267.95              527.0                -1.  1.709604034
050352  2.174500000     2.174500000          1 0.6827037757      0.932333
050353 -4.445333330     *
050361    0    0   2267.50              526.0                -1. 0.5786674095
050362  4.317750000     4.317750000          0 0.9003700370D-01 0.33858
050363 -4.148458330     *
050371    1    0   43.0                -271.6                0.   3693.454946
050372  16.09374999     9.420000000          0  9.621127503      3.5
050373 -13.51041670     *
050381    0    0   2270.39              536.0                -1.  8.170456642
050382  2.065083333     2.065083333          0 0.4175836592      1.25
050383 0.4661666667     *
050391    0    0   2266.31              540.0                -1.  5.875465929
[illegible]
```

```
050392 2.6958333333        2.6958333333          0 0.4179838592      1.25
050393 -.3645833330        *
050401  0   0  2263.17              562.0                -1. 0.3623659179
050402  4.035000000        4.035000000           0 0.15559179400D-01 0.14075
050403 0.4661666667        *
050411  3   0  2262.00              -1.  0.0              34.75215344
050412  6.713541667        3.5                   0  6.007260513     2.7656
050413  4.02               *
050421  1     0            0.0     540.0    0.0             281.6
050422 16.46               6.897            0       17.1               4.57
050423 1.99                *
050431  1  0  612.0  90.0  0.0  129.8  9.3054  6.50948
050432  0  11.661   3.8532  0.0
050441  0   0  2273.17              490.0                -1.  3.276254839
050442 0.8411458333        0.8411458333          0 0.55925            0.843833
050443 -.4005729170        *
050451  0   0  2266.84              490.0                -1.  3.276254839
050452 0.8411458333        0.8411458333          0 0.55925            0.843833
050453 -.4005729170        *
050461 0 0 2278.709  540. -1. 1.21309 19179  15.79  0
050462 0.06681 0.29167 -15.79
050471  0   0  2273.18              535.0                -1.  0.1426
050472  0.3386   0.3386   0   0.09004   0.3386  -.16930
060011  0.8  3.0 *                                                    BUBBLE
060021  0.8  1000000.0
060031  .8   2.00
080011  2   1   0   0  597.222 0.480  -.973  0.0    0.6480  0.6480
080012  0  5  2  0  0.901  0.0  0  0  1.0  0
080021  1   3   0   0 597.222 0.6827  0.0  5.173  1.074   1.074
080022  1  5  0  0  0.9323  0.0  0  0
080031  1  28   0   0   0.0   0.6827  0.0  4.741  0.3095  0.4732
080032  1  5  0  0  0.9323  0.0  0  0
080041   3   4   0    0  597.2222222        0.6608871601      0.0
080042  8.744846992        0.3131              0.3131                1   5   0   0
080043 0.9323333333        0.0                   0    0 *
080051   4   5   0    0  597.2222222        0.3588196284      0.0
080052  8.303511660        0.0912              0.0912                1   5   0   0
080053 0.6759166667        0.0                   0    0 *
080061   5   6   0    0  597.2222222        0.682704    0.0
080062  5.216303368        0.522               0.522                 1   5   0   0
080063 0.9323333333        0.0                   0    0 *
080071   6   7   0    0  597.2222222        0.556             1.510110030
080072  1.882983179        2.0                 2.0                   1   5   0   0
080073 0.90167             0.0                   0    0 *
080081   7   8   0    0  597.2222222        1.626207149       2.812193363
080082  2.164041222        0.357               0.6312                0   5   0   0
080083  1.438941017        0.0                   0    2 *
080091   8   9   0    0  597.2222222        1.626207149       9.562193363
080092  3.105385439        0.00                0.00                  0   5   0   0
080093  1.438941017        0.0                   0    3 *
080101   9  10   0    0  597.2222222        1.626207149       9.562193363
080102  3.105385439        0.056               0.056                 0   5   0   0
080103  1.438941017        0.0                   0    3 *
080111  10  11   0    0  597.2222222        1.626207149       2.812193363
080112  2.164041222        0.6312              0.357                 0   5   0   0
080113  1.438941017        0.0                   0    1 *
080121  11  12   0    0  597.2222222        0.556             1.510110030
080122  1.371201641        1.77                1.77                  1   5   0   0
080123 0.90167             0.0                   0    0 *
080131  12  13   0    0  597.2222222        0.6827037757      -.4874368670
080132  6.043461482        0.22                0.22                  0   5   0   0
080133 0.9323333333        0.0                   0    0 *
080141  13  14   0    0  597.2222222        0.6827037757      -3.829936870
080142  9.581354520        1.075               1.25                  1   5   0   0
080143 0.9323333333        0.0                   0    0 *
080151  14  15  -1    0  307.7222222        0.3940626203      -2.121603530
080152  17.00963668        0.2291              0.2291                0   5   0   0
080153 0.7083333333        0.0                   0    0 *
```

```
197     080161 14  16  -2   0  289.5                 0.3940626203      -2.121603330
198     080162  17.00963668     0.2230                0.2230             0   5   0   0
199     080163 0.7083333333     0.0                   0    0 *
200     080171  15  17   1   0  307.7222222          0.3940626203      0.0
201     080172  18.29345297     0.1656                0.1656             0   5   0   0
202     080173 0.7083333333     0.0                   0    0 *
203     080181  16  18   2   0  289.5                0.3940626203      0.0
204     080182  14.42171118     0.21                  0.21               0   5   0   0
205     080183 0.7083333333     0.0                   0    0 *
206     080191  17  19   0   0  307.7222222          0.3940626203      0.0
207     080192  12.85037548     0.6613                0.69               1   5   0   0
208     080193 0.7083333333     0.0                   0    0 *
209     080201  18  19   0   0  289.5                0.3940626203      0.0
210     080202  8.978633689     2.584                 1.20               1   5   0   0
211     080203 0.7083333333     0.0                   0    0 *
212     080211  19  20   0   0  597.2222222          0.6608871601      0.0
213     080212  10.20968122     0.8150                0.8150             1   5   0   0
214     080213 0.9323333333     0.0                   0    0 *
215     080221  20  21   0   0  597.2222222          0.6827037757      0.0
216     080222  3.947755404     1.895                 1.895              1   5   0   0
217     080223 0.9323333333     0.0                   0    0 *
218     080231  21  22  0  0  597.2222  1.30494  -2.35166667  0.0
219     080232  0.0644  0.0647  0  5  2  0  0.91145  0.0  0  0  1.0  0
220     080241  22  23  0  0  597.2222  1.30494  -13.9635833  0.0
221     080242  0.908  0.908  0  5  2  0  1.2889  0.0  0  0  1.0  0
222     080251  23  24  0  0  597.2222  1.056  -12.26  0.0
223     080252  0.982  0.982  0  5  2  0  2.038  0.0  0  0  1.0  0
224     080261  24  2  0  0  597.222  0.7854  -2.838  0.0     0.5130  0.5130
225     080262  0  5  2  0  1.00  0.0  0  0  1.0  0
226     080271  21  25   0   0 0.0                   0.6827037757      0.0
227     080272  3.916834321     0.8040                1.3302             1   5   0   0
228     080273 0.9323333333     0.0                   0    0 *
229     080281  25  26   0   0 0.0                   0.6827037757      0.0
230     080282  5.924176884     0.1005                0.1005             1   5   0   0
231     080283 0.9323333333     0.0                   0    0 *
232     080291  26  47   0   0 0.0                   0.090037          0.0
233     080292   11.11    0.260   0.754                                  1   5   0   0
234     080293 0.3386           0.0                   0    0 *
235     080301  27  44   0   0 0.0                   0.25316           0.0
236     080302  11.61547        0.29956               0.24629            1   0   0   0
237     080303  0.56775    0.6  11   0
238     080311  44  37   0   1 0.0                   0.55925           0.0
239     080312  25.25554003     1.037                 0.537              1   0   0   0
240     080313  0.843833   0.6  11   0
241     080321  28  29   0   0 0.0                   0.6827037757      0.0
242     080322  5.924176884     0.1005                0.1005             1   5   0   0
243     080323 0.9323333333     0.0                   0    0 *
244     080331  29  30   0   0 0.0                   0.090037          0.0
245     080332   20.32980       0.39605               0.75363            1   5   0   0
246     080333  0.0  1.0  0  0
247     080341  30  31   0   0 0.0                   0.90037003700-01  2.270833333
248     080342  19.90104223     0.93596              0.93596             0   5   0   0
249     080343 0.3594166667     0.0                   0    0 *
250     080351  31  32   0   0 0.0                   0.2060339789      6.853333333
251     080352  5.758748039     5.81834               5.81834            0   5   0   0
252     080353 0.5278189198     0.0                   0    0 *
253     080361  32  33   0   0 0.0                   0.2060339789      6.853333333
254     080362  5.758748039     5.81834               5.81834            0   5   0   0
255     080363 0.5278189198     0.0                   0    0 *
256     080371  33  34   0   0 0.0                   0.90037003700-01  2.270833333
257     080372  27.25728546     0.23025               0.23025            0   5   0   0
258     080373 0.3594166667     0.0                   0    0 *
259     080381  34  35   0   0 0.0                   0.90037003700-01 -2.270833330
260     080382  27.05511851     6.351                 6.351              0   5   0   0
261     080383 0.3594166667     0.0                   0    0 *
262     080391  35  36   0   0 0.0                   0.90037003700-01 -3.979166670
263     080392  37.52486243     6.351                 6.351              1   5   0   0
264     080393 0.3594166667     0.0                   0    0 *
265     [illegible]
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080401   38  45   0   0 0.0                          0.090037        0.0
080402  40.91397         0.94883                     0.43834            1   0   0   0
080403  0.33858  0.6  11  0
080411  45  37   0   1 0.0                          0.55925          0.0
080412  25.25554003      1.037                       0.537              1   0   0   0
080413  0.843833  0.6  11  0
080421  29  39  0  0  0.0  0.4175  0.0  19.338  1.247  0.4576
080422  0  5  0  3  0.7083  0.0  0  0
080431  26  38  0  0  0.0  0.4175836592       0.4661666667
080432  24.22295744      1.247                       0.4576             0   5   0   3
080433 0.708333333       0.0                          0   0 *
080441 43 46 0 2 0.0 0.06447 0.0 0.0 29.9  29.9
080442 0 5 2 0 0.2865 0.0 0 0
080451  40  4   0    0 0.0                       0.1555917900D-01 0.466166666
080452  75.32990961      1.0                     1.0                  0   5   0   3
080453 0.1407500000      0.75                     0   0 *
080461  41  40   0    0 0.0                      0.1555917900D-01  4.35
080462  74.88990673      11.34                   11.34                0   5   0   0
080463 0.1407500000      0.0                      0   0 *
080471 46 23 0 0 0.0 0.066813 -15.79 0.0 2.7 2.2 1 5 2 0 0.29167 0 0 0
080481  47  27  0    0 0.0                       0.090037         0.0
080482   15.18   0.415   0.290                                       1   0   0   0
080483 0.3386            0.6                       11   0 *
080491 0 46 1 0 0.0 0.06447 0.0 0.0 1.0 1.0
080492 0 5 2 3 0.2865 0.0 0 0
080501 0 46 2 0 0.0 0.06447 0.0 0.0 1.0 1.0
080502 0 5 2 3 0.2865 0.0 0 0
090011   1   3   0   1 0 3530.  0.5584        5000. 306. 465. 294. 38.75
090012  116.86    0  26.88 0. 72.574       * PUMP 1
090021   1   3   0   1 0 3530.  0.5584        5000. 306. 465. 294. 38.75
090022  116.86    0 26.88 0.  72.574       * PUMP 2
095011   0.0    0.0     0.0
095021   0.0    0.0     0.0
100000 16   0   0   16
*                 PUMP HEAD AND TORQUE MULTIPLIER CURVES
091001 -11 0. 0. .1 0. .15 .05 .24 .8 .3 .96 .4 .98 .6 .97 .8 .9 .9 .8 .96 .5
091002 1. 0.
092001 -7                            0. 0. .1 0. .15 .05 .24 .56 .8 .56 .96 .45 1. 0.
101011   1   1   6 0.        1.4036    .19061    1.3636    .38963    1.3186    * PUMP-HD
101021   1   2   8 0.        -.67      .2        -.5       .4        -.25      * PUMP-HD
101012           .59396      1.2328    .7902     1.1336    1.        1.0078    * PUMP-HD
101022           .57554      0.        .74432    .2583     .77348    .3778     * PUMP-HD
101023           .86313      .6326     1.        1.0078                        * PUMP-HD
101031   1   3   6 -1.       2.4722    -.80574   2.0474    -.6069    1.831     * PUMP-HD
101032           -.40683     1.624     -.200171  1.4705    0.        1.4036    * PUMP-HD
101041   1   4   8 -1.       2.4722    -.82297   1.9968    -.63332   1.5897    * PUMP-HD
101042           -.45534     1.3279    -.27109   1.1949    -.17716   1.0605    * PUMP-HD
101043           -.09073     1.0156    0.        .934279                       * PUMP-HD
101051   1   5   7 0.        .25       .2        .28       .4        .34       * PUMP-HD
101052           .4118       .2768     .59763    .4584     .793467   .6992     * PUMP-HD
101053           1.          .9465                                           * PUMP-HD
101061   1   6  10 0.        .934279   .091099   .9229     .186509   .8963     * PUMP-HD
101062           .271762     .875      .455872   .8433     .574406   .8355     * PUMP-HD
101063           .740576     .8466     .766619   .8469     .871471   .8838     * PUMP-HD
101064           1.          .9465                                           * PUMP-HD
101071   1   7   6 -1.       -1.       -.8       -.63      -.6       -.3       * PUMP-HD
101072           -.4         -.05      -.2       .15       0.        .25       * PUMP-HD
101081   1   8   6 -1.       -1.       -.8       -.97      -.6       -.95      * PUMP-HD
101082           -.4         -.88      -.2       -.8       0.        -.67      * PUMP-HD
101091   2   1   6 0.        .6032     .1930     .6325     .393      .7369     * PUMP-TQ
101092           .59552      .8331     .79782    .9229     1.        .9672     * PUMP-TQ
101101   2   2   7 0.        -.67      .4        -.25      .5        .15       * PUMP-TQ
101102           .737255     .526586   .768049   .606594   .86723    .74366    * PUMP-TQ
101103           1.          .9672                                           * PUMP-TQ
101111   2   3   6 -1.       1.9843    -.80096   1.394     -.60638   1.0975    * PUMP-TQ
101112           -.40686     .822      -.19928   .6648     0.        .6032     * PUMP-TQ
101121   2   4   8 -1.       1.9843    -.82234   1.8308    -.63371   1.6824    * PUMP-TQ
101122           -.45853     1.557     -.267023  1.4362    -.176107  1.3879    * PUMP-TQ
[illegible]
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101123              -.08931   1.3481    0.                1.23361                                 * PUMP-TQ
101131   2  5  4  0.          -.45      .4        -.25      .5        0.                          * PUMP-TQ
101132              1.        .3569                                                               * PUMP-TQ
101141   2  6 10 0.           1.23361   .090643   1.1965    .188569   1.1096                      * PUMP-TQ
101142              .27347    1.0416    .458669   .8958     .57448    .7807                       * PUMP-TQ
101143              .73816    .6134     .76852    .5849     .870057   .4877                       * PUMP-TQ
101144              1.        .3569                                                               * PUMP-TQ
101151   2  7  4 -1.          -1.       -.3       -.9       -.1       -.5                         * PUMP-TQ
101152              0.        -.45                                                                * PUMP-TQ
101161   2  8  4 -1.          -1.       -.25      -.9       -.08      -.8                         * PUMP-TQ
101162              0.        -.67                                                                * PUMP-TQ
104011 1 1 7 0. 0. .1 .83 .2 1.09 .5 1.02 .7 1.01 .9 .94 1. 1.
104021 1 2 8 0. 0. .1 -.04 .2 0. .3 .1 .4 .21 .8 .67 .9 .8 1. 1.
104031 1 3 10 -1. -1.16 -.9 -1.24 -.8 -1.77 -.7 -2.36 -.6 -2.79 -.5 -2.91
104032    -.4 -2.67 -.25 -1.69 -.1 -.5 0. 0.
104041 1 4 10 -1. -1.16 -.9 -.78 -.8 -.5 -.7 -.31 -.6 -.17 -.5 -.08 -.35 0.
104042        -.2 .05 -.1 .08 0. .11
104051 1 5 6 0. 0. .2 -.34 .4 -.65 .6 -.93 .8 -1.19 1. -1.47
104061 1 6 10 0. .11 .1 .13 .25 .15 .4 .13 .5 .07 .6 -.04 .7 -.23 .8 -.51
104062    .9 -.91 1. -1.47
104071 1 7 2 -1. 0. 0. 0.
104081 1 8 2 -1. 0. 0. 0.
104091   2  1  6 0.           .6032     .1930     .6325     .393      .7369                       * PUMP-TQ
104092              .59552    .8331     .79782    .9229     1.        .9672                       * PUMP-TQ
104101   2  2  7 0.           -.67      .4        -.25      .5        .15                         * PUMP-TQ
104102              .737255   .526586   .768049   .606594   .86723    .74366                      * PUMP-TQ
104103              1.        .9672                                                               * PUMP-TQ
104111   2  3  6 -1.          1.9843    -.80096   1.394     -.60638   1.0975                      * PUMP-TQ
104112              -.40686   .822      -.19928   .6648     0.        .6032                       * PUMP-TQ
104121   2  4  8 -1.          1.9843    -.82234   1.8308    -.63371   1.6824                      * PUMP-TQ
104122              -.45853   1.557     -.267023  1.4362    -.176107  1.3879                      * PUMP-TQ
104123              -.08931   1.3481    0.        1.23361                                         * PUMP-TQ
104131   2  5  4 0.           -.45      .4        -.25      .5        0.                          * PUMP-TQ
104132              1.        .3569                                                               * PUMP-TQ
104141   2  6 10 0.           1.23361   .090643   1.1965    .188569   1.1096                      * PUMP-TQ
104142              .27347    1.0416    .458669   .8958     .57448    .7807                       * PUMP-TQ
104143              .73816    .6134     .76852    .5849     .870057   .4877                       * PUMP-TQ
104144              1.        .3569                                                               * PUMP-TQ
104151   2  7  4 -1.          -1.       -.3       -.9       -.1       -.5                         * PUMP-TQ
104152              0.        -.45                                                                * PUMP-TQ
104161   2  8  4 -1.          -1.       -.25      -.9       -.08      -.8                         * PUMP-TQ
104162              0.        -.67                                                                * PUMP-TQ
110010   -2  1  0  0  0  0  0  * BLOWDOWN VALVE
110020   25  0  0  1.0  0.0  0.0  0.0  * ACCUMULATOR
120100      17  2  43.0  0.0  0.0  0.020  0.8168  0.021  0.8503  0.022 0.8743
120101   0.023  0.8922  0.024  0.9102  0.025  0.9222  0.026  0.9341
120102   0.027  0.9425  0.028  0.9497  0.029  0.9581  0.031  0.9701  0.033 0.9808
120103   0.035  0.9880  0.037  0.9940  0.039  1.0   200.0  1.0
130100   6  2  10  4  'GAL/MIN'  12.0  80.0
130101   0.1  2357.68  6.0  2326.66  72.9  1938.89
130102   126.9  1551.11  161.0  1240.88  189.0  930.66  209.0  620.44
130103   220.0  310.22  224.4  0.0  3000.0  0.0
130200   4  2  2  4  'GAL/MIN'  12.0  80.0
130201   0.1  266.79  3000.0  266.79   * HPIS FILL
150011   23  0  1  0 0 0 0  70.0  0.0  2.728  1.744  0.0
150012   1.744  0.0  17.436  0.0  0.0  0.0
150021   1  0  2  0  0  0  0  23.054  0.0  0.9829  1.788
150022   0.0  0.0  0.0  4.103  0.0  0.0  0.0
150031   2  0  2  0  0  0  0  10.477  0.0  0.4467  1.314  0.0
150032   0.0  0.0  1.865  0.0  0.0  0.0
150041   24  0  3  0  0  0  0  60.318  0.0  5.236  2.313  0.0
150042   0.0  0.0  9.422  0.0  0.0  0.0
150051   36  0  11 0 0 0  0  3.42  0.0  0.2533  0.3386  0.0
150052   0.3386  0.0  3.217  0.0  0.0  0.0
150061   35  0  8  0 0 0 0  7.33  0.0  0.9674  0.932  0.0
150062   0.932  0.0  2.504  0.0  0.0  0.0
150071   0  21  4  0  0  0  0  0.0  29.6759  3.5409  0.0  0.5833
150072   0.0  0.0  0.0  3.435  0.0  0.0
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401   150081  21  0  5  0  0  0  0  33.978  0.0  33.054  0.5833  0.0
402   150082  0.0  0.0  3.435  0.0  0.0  0.0
403   150091  0  22  4  0  0  0  0  0.0  100.310  20.556  0.0  0.3333
404   150092  0.0  0.0  0.0  11.611  0.0  0.0
405   150101  22  0  5  0  0  0  0  121.618  0.0  111.737  0.3333  0.0
406   150102  0.0  0.0  11.6110  0.0  0.0  0.0
407   150111  34  0  11  0 0 0 0  9.19  0.0  0.6807  0.3386  0.0
408   150112  0.3386  0.0  8.643  0.0  0.0  0.0
409   150121  33  0  13  0 0 0 0  16.32  0.0  2.722  1.203  0.0
410   150122  1.203  0.0  4.319  0.0  0.0  0.0
411   150131  32  0  13  0 0 0 0  32.67  0.0  5.447  1.203  0.0
412   150132  1.203  0.0  8.643  0.0  0.0  0.0
413   150141  31  0  13  0 0 0 0  16.32  0.0  2.722  1.203  0.0
414   150142  1.203  0.0  4.319  0.0  0.0  0.0
415   150151  30  0  11  0 0 0 0  6.83  0.0  0.5061  0.3386  0.0
416   150152  0.3386  0.0  6.427  0.0  0.0  0.0
417   150161  23  0  5  0 0 0 0  43.414  0.0  39.887  2.892  0.0
418   150162  2.892  0.0  4.145  0.0  0.0  0.0
419   150171  8  42  6  0 0 0 0  1121.92  1395.42  5.139  0.0335  4.667
420   150172  0.0335  4.667  5.79  5.79  0.0  0.0
421   150181  9  42  6  0 0 0 0  649.38  807.68  2.975  0.0335  4.667
422   150182  0.0335  4.667  3.35  3.35  0.0  0.0
423   150191  10  42  6  0 0 0 0  1121.92  1395.42  5.139  0.0335  4.667
424   150192  0.0335  4.667  5.79  5.79  0.0  0.0
425   150201  44  0  7  0 0 0 0  13.063  0.0  1.391  0.932  0.0
426   150202  0.932  0.0  5.895  0.0  0.0  0.0
427   150211  45  0  7  0 0 0 0  13.063  0.0  1.391  0.932  0.0
428   150212  0.932  0.0  5.895  0.0  0.0  0.0
429   150221  25  0  8  0 0 0 0  15.31  0.0  2.02  0.932  0.0
430   150222  0.932  0.0  5.228  0.0  0.0  0.0
431   150231  26  0  8  0 0 0 0  9.88  0.0  1.304  0.932  0.0
432   150232  0.932  0.0  3.375  0.0  0.0  0.0
433   150241  3  0  8  0 0 0 0  15.45  0.0  2.038  0.932  0.0
434   150242  0.932  0.0  5.275  0.0  0.0  0.0
435   150251  4  0  8  0 0 0 0  19.52  0.0  2.575  0.932  0.0
436   150252  0.932  0.0  6.665  0.0  0.0  0.0
437   150261  5  0  8  0 0 0 0  13.68  0.0  1.805  0.932  0.0
438   150262  0.932  0.0  4.672  0.0  0.0  0.0
439   150271  6  0  9  0 0 0 0  10.78  0.0  1.6092  1.0678  0.0
440   150272  1.0678  0.0  3.213  0.0  0.0  0.0
441   150281  7  0  10  0 0 0 0  15.  0.0  5.267  1.4615  0.0
442   150282  1.4615  0.0  2.500  0.0  0.0  0.0
443   150291  11  0  10  0 0 0 0  15.9  0.0  5.267  1.4615  0.0
444   150292  1.4615  0.0  2.500  0.0  0.0  0.0
445   150301  12  0  9  0 0 0 0  7.70  0.0  1.1502  1.0678  0.0
446   150302  1.0678  0.0  2.297  0.0  0.0  0.0
447   150311  13  0  8  0 0 0 0  19.04  0.0  2.511  0.932  0.0
448   150312  0.932  0.0  6.500  0.0  0.0  0.0
449   150321  14  0  8  0 0 0 0  19.27  0.0  2.543  0.932  0.0
450   150322  0.932  0.0  6.581  0.0  0.0  0.0
451   150331  19  0  8  0 0 0 0  26.97  0.0  3.558  0.932  0.0
452   150332  0.932  0.0  9.211  0.0  0.0  0.0
453   150341  20  0  8  0 0 0 0  13.85  0.0  1.828  0.932  0.0
454   150342  0.932  0.0  4.729  0.0  0.0  0.0
455   150351  28  0  8  0 0 0 0  13.72  0.0  1.811  0.932  0.0
456   150352  0.932  0.0  4.686  0.0  0.0  0.0
457   150361  29  0  8  0 0 0 0  9.88  0.0  1.304  0.932  0.0
458   150362  0.932  0.0  3.375  0.0  0.0  0.0
459   150371  27  0  12  0 0 0 0  5.75  0.0  0.4927  0.5678  0.0
460   150372  0.5678  0.0  3.229  0.0  0.0  0.0
461   150381  46 0 14 0 0 0 0 16.4 47.54 8.69  0.83333 0.0 0.0 0.8 18.16
462   150382  18.16  0.0  0.0
463   170101  1  2  1  4  0.0  0.01299  0.0
464   170102  0  1  4  0.02597  0.0
465   170201  2  2  1  4  0.894  0.0208  0.0
466   170202  0  1  4  0.0208  0.0
467   170301  2  2  1  4  1.019  0.0417  0.0
468   170302  0  1  4  0.0417  0.0
469   170401  2  2  1  4  1.25  0.0625  0.0
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170401   2  2  1  4  1.25  0.0625  0.0
170402   0  1  4  0.0625  0.0
170501   2  2  1  4  1.667  0.25  0.0
170502   0  1  4  0.5  0.0
170601   2  2  1  4  0.01675  0.00204  0.0
170602   0  1  4  0.00204  0.0
170701   2  2  1  4  0.354  0.031  0.0
170702   0  1  4  0.063  0.0
170801   2  2  1  4  0.466  0.039  0.0
170802   0  1  4  0.078  0.0
170901   2  2  1  4  0.5339  0.0443  0.0
170902   0  1  4  0.0885  0.0
171001   2  2  1  4  2.25  0.0208  0.0
171002   0  1  4  0.2709  0.0
171101   2  2  1  4  0.1693  0.0208  0.0
171102   0  1  4  0.0417  0.0
171201   2  2  1  4  0.2839  0.0252  0.0
171202   0  1  4  0.0503  0.0
171301   2  2  1  4  0.6016  0.0495  0.0
171302   0  1  4  0.0989  0.0
171401 2 3 1 8 0.14583 0.08333 0.0
171402 0 1 5 0.08333 0.0
171403 0 1 3 0.10417 0.0
180101   -2                        * SS304 THERMAL CONDUCTIVITY
180102          212.   9.574     2372.     19.294
190101   -13                       * SS304 HEAT CAPACITY
190102          170.    44.46081     250.     44.32964     400.     44.48722
190103          600.    45.39201     800.     46.90938    1000.     48.84151
190104         1200.    50.99056    1400.     53.15869    1600.     55.14808
190105         1800.    56.76090    2000.     57.79932    2200.     58.06550
190106         2400.    57.36151
*
```

MISCELLANEOUS PROBLEM CONTROL DATA.

TAPE DUMP 0=NO	NUM EDIT VAR	NUM TIME SETS	NUM TRIP SGNL	NUM VOL	NUM BUB SETS	NUM TIME VOL	NUM JUN	NUM PUMP SETS	NUM CHK VALV	NUM LEAK CURV	NUM FILL CURV	NUM HEAT SLAB	NUM SLAB GEOM	NUM SLAB MAT	NUM CORE SECT	NUM HEAT EXCH	PRO- GRAM FLAG
-2	9	7	6	47	3	0	50	2	2	1	2	38	14	1	0	0	0

RELAP4/C05 01/02/76 (1)   RELAP4 THERMAL HYDRAULIC CODE   CONFIGURATION CONTROL:YES

INITIAL POWER (MEGAWATTS)	IMPLICIT- EXPLICIT FACTOR	LOW PRESSURE LIMIT (PSI.	HIGH PRESSURE LIMIT (PSI)	LOW TEMPERATURE LIMIT (F)	HIGH TEMPERATURE LIMIT (F)
0.	1.000000E+00	8.860000E-02	3.626000E+03	3.210000E+01	8.540312E+03

EDIT IDENTIFICATION NLMBERS

1	2	3	4	5	6	7	8	9
AP 41	AP 40	AP 4	JW 46	JW 45	JW 46	ML 41	AR 25	AR 28

DATA FOR 7 TIME STEP SETS.

SET NUM	T S PER BRF	BRF PER LRG	LRG PER RST	T S CNT CPT	TIME STEP SIZE	MIN T S SIZE	END OF INTERVAL
1	50	2	2	0	.200000E-03	.100000E-04	.100000E+00
2	20	10	1	0	.500000E-03	.500000E-04	.800000E+00
3	10	20	1	0	.100000E-02	.100000E-03	.200000E+01
4	5	10	4	0	.100000E-01	.500000E-03	.700000E+01
5	5	20	4	0	.100000E-01	.500000E-03	.200000E+02
6	5	40	4	0	.100000E-01	.500000E-04	.320000E+02
7	5	80	2	0	.100000E-01	.500000E-03	.560000E+02

ENDCPU = 1.00000E+06

GENERALIZED TRIP PARAMETERS FOR 6 SIGNALS.

TRIP NO.	TRIP ID	SIG ID	INDX 1	INDX 2	ACTION	TRIP SIGNAL	SET POINT	DELAY TIME
1	1	1	0	0	END	ELAPSED TIME	.150000E+02	0.
2	2	1	0	0	GEN TRIP	ELAPSED TIME	.240000E-01	0.
3	3	1	0	0	GEN TRIP	ELAPSED TIME	.500000E+00	0.
4	4	1	0	0	GEN TRIP	ELAPSED TIME	.220000E+02	0.
5	5	-5	43	0	GEN TRIP	LOW MIX LEV	.100000E-01	0.
6	6	1	0	0	GEN TRIP	ELAPSED TIME	.355000E+02	0.

INPUT DATA FOR 47 VOLUMES.

VOL NUM	BUBL INDX	TIME DEP	PRESSURE (PSIA)	TEMPERATURE (DEG F)	HUMIDITY (OR QUALITY)	VOLUME (FT**3)	HEIGHT (FT)	MIXTURE LEVEL (FT)
VOL NUM	2-PH FRIC		FLOW AREA (FT**2)	EQUIVALENT DIAMETER (FT)	ELEVATION (FT)	VOL. BELOW		
1	0	0	.226731E+04	.540000E+03	-.100000E+00	.162817E+02	.750000E+01	.750000E+01
1	0		.251200E+01	.178800E+01	-.973000E+00	0		
2	0	0	.227113E+04	.540000E+03	-.100000E+00	.419600E+01	.186500E+01	.186500E+01
2	0		.249100E+01	.131400E+01	-.283800E+01	0		
3	0	0	.226466E+04	.540000E+03	-.100000E+01	.795126E+01	.932333E+00	.932333E+00
3	0		.682704E+00	.932333E+00	-.466167E+00	0		
4	0	0	.226394E+04	.540000E+03	-.100000E+01	.455041E+01	.932333E+00	.932333E+00
4	0		.682704E+00	.932333E+00	-.466167E+00	0		
5	0	0	.226328E+04	.540000E+03	-.100000E+01	.318986E+01	.932333E+00	.932333E+00
5	0		.682704E+00	.932333E+00	-.466167E+00	0		
6	0	0	.226283E+04	.540000E+03	-.100000E+01	.287822E+01	.242156E+01	.242156E+01
6	0		.895564E+00	.106783E+01	-.533917E+00	0		
7	1	0	.225828E+04	.540000E+03	-.100000E+01	.111824E+02	.250000E+01	.250000E+01
7	.0		.794125E+01	.146150E+01	.312193E+00	0		
8	0	0	.225589E+04	.540000E+03	-.100000E+01	.109769E+02	.675000E+01	.675000E+01
8	0		.162621E+01	.335000E-01	.281219E+01	0		
9	0	0	.225374E+04	.540000E+03	-.100000E+01	.544779E+01	.200521E+01	.200521E+01
9	0		.162621E+01	.335000E-01	.956219E+01	0		
10	0	0	.225447E+04	.540000E+03	-.100000E+01	.109769E+02	.675000E+01	.675000E+01
10	0		.162621E+01	.335000E-01	.281219E+01	0		
11	0	0	.225563E+04	.540000E+03	-.100000E+01	.111824E+02	.250000E+01	.250000E+01
11	0		.794125E+01	.146150E+01	.312193E+00	0		
12	0	0	.225027E+04	.540000E+03	-.100000E+01	.205729E+01	.237508E+01	.237508E+01
12	0		.895564E+00	.106783E+01	-.487437E+00	0		
13	0	0	.225012E+04	.540000E+03	-.100000E+01	.443798E+01	.380867E+01	.380867E+01
13	0		.682704E+00	.932333E+00	-.429610E+01	0		
14	0	0	.224842E+04	.540000E+03	-.100000E+01	.449346E+01	.217450E+01	.217450E+01
14	0		.682704E+00	.932333E+00	-.429610E+01	0		
15	0	0	.226398E+04	.540000E+03	-.100000E+01	.378561E+01	.247577E+01	.247577E+01
15	0		.394063E+00	.394060E+00	-.212160E+01	0		
16	0	0	.226533E+04	.540000E+03	-.100000E+01	.378561E+01	.247577E+01	.247577E+01
16	0		.394063E+00	.394060E+00	-.212160E+01	0		
17	0	0	.227848E+04	.540000E+03	-.100000E+01	.189580E+01	.708333E+00	.708333E+00
17	0		.394063E+00	.708333E+00	-.354167E+00	0		
18	0	0	.228092E+04	.540000E+03	-.100000E+01	.693352E+00	.708333E+00	.708333E+00
18	0		.394063E+00	.708333E+00	-.354167E+00	0		
19	0	0	.227583E+04	.540000E+03	-.100000E+01	.628853E+01	.932333E+00	.932333E+00
19	0		.682704E+00	.932333E+00	-.466167E+00	0		
20	0	0	.227421E+04	.540000E+03	-.100000E+01	.322862E+01	.932333E+00	.932333E+00
20	0		.682704E+00	.932333E+00	-.466167E+00	0		

VOL NUM	BUBL INDX	TIME DEP	PRESSURE (PSIA)	TEMPERATURE (DEG F)	HUMIDITY (OR QUALITY)	VOLUME (FT**3)	HEIGHT (FT)	MIXTURE LEVEL (FT)
VOL NUM	2-PH FRIC		FLOW AREA (FT**2)	EQUIVALENT DIAMETER (FT)	ELEVATION (FT)	VOL. BELOW		
21	0	0	.227261E+04	.540000E+03	-.100000E+01	.744960E+01	.343500E+01	.343500E+01
21	0		.196122E+01	.583333E+00	-.235167E+01	0		
22	0	0	.227486E+04	.540000E+03	-.100000E+01	.170666E+02	.116119E+02	.116119E+02
22	0		.152716E+01	.333330E+00	-.139636E+02	0		
23	1	0	.227673E+04	.540000E+03	-.100000E+00	.231420E+02	.415000E+01	.415000E+01
23	0		.558000E+01	.151800E+01	-.164000E+02	0		
24	0	0	.227372E+04	.540000E+03	-.100000E+00	.302490E+02	.942200E+01	.942200E+01
24	0		.326500E+01	.231300E+01	-.122600E+02	0		
25	0	0	.227318E+04	.540000E+03	-.100000E+01	.356959E+01	.932333E+00	.932333E+00
25	0.		.682704E+00	.932333E+00	-.466167E+00	0		
26	0	0	.227318E+04	.535000E+03	-.100000E+01	.216185E+01	.932333E+00	.932333E+00
26	0		.682704E+00	.932333E+00	-.466167E+00	0		
27	0	0	.227318E+04	.530000E+03	-.100000E+01	.817513E+00	.567750E+00	.567750E+00
27	0		.253165E+00	.567750E+00	-.283875E+00	0		
28	0	0	.226666E+04	.540000E+03	-.100000E+01	.754979E+01	.932333E+00	.932333E+00
28	0		.682704E+00	.932333E+00	-.466167E+00	0		
29	0	0	.226685E+04	.538000E+03	-.100000E+01	.230445E+01	.932333E+00	.932333E+00
29	0		.682704E+00	.932333E+00	-.466167E+00	0		
30	0	0	.226651E+04	.536000E+03	-.100000E+01	.289649E+00	.244013E+01	.244013E+01
30	0		.900370E-01	.338580E+00	-.169292E+00	0		
31	0	0	.226535E+04	.534000E+03	-.100000E+01	.458256E+01	.458250E+01	.458250E+01
31	0		.106080E+01	.121583E+01	.227083E+01	0		
32	0	0	.226394E+04	.532000E+03	-.100000E+01	.100357E+02	.404708E+01	.404708E+01
32	0		.116102E+01	.121583E+01	.685333E+01	0		
33	0	0	.226535E+04	.530000E+03	-.100000E+01	.458256E+01	.458250E+01	.458250E+01
33	0		.106080E+01	.121583E+01	.227083E+01	0		
34	0	0	.226685E+04	.528000E+03	-.100000E+01	.408918E+00	.454167E+01	.454167E+01
34	0		.900370E-01	.338580E+00	-.227083E+01	0		
35	0	0	.226795E+04	.527000E+03	-.100000E+01	.170960E+01	.217450E+01	.217450E+01
35	1		.682704E+00	.932333E+00	-.444533E+01	0		
36	0	0	.226750E+04	.528000E+03	-.100000E+01	.578667E+00	.431775E+01	.431775E+01
36	0		.900370E-01	.338580E+00	-.414846E+01	0		
37	1	0	.430000E+02	-.271600E+03	0.	.369345E+04	.160937E+02	.942000E+01
37	0		.962113E+01	.350000E+01	-.135104E+02	0		
38	0	0	.227039E+04	.536000E+03	-.100000E+01	.817046E+01	.206508E+01	.206508E+01
38	0		.417584E+00	.125000E+01	.466167E+00	0		
39	0	0	.226631E+04	.540000E+03	-.100000E+01	.587547E+01	.289583E+01	.289583E+01
39	0		.417584E+00	.125000E+01	-.364583E+00	0		
40	0	0	.226317E+04	.562000E+03	-.100000E+01	.362366E+00	.403500E+01	.403500E+01
40	0		.155592E-01	.140750E+00	.466167E+00	0		

VOL NUM	BUBL INDX / 2-PH FRIC	TIME DEP	PRESSURE (PSIA) / FLOW AREA (FT**2)	TEMPERATURE (DEG F) / EQUIVALENT DIAMETER (FT)	HUMIDITY (OR QUALITY) / ELEVATION (FT)	VOLUME (FT**3) / VOL. BELOW	HEIGHT (FT)	MIXTURE LEVEL (FT)
41	3	0	.226200E+04	-.100000E+01	0.	.347522E+02	.671354E+01	.350000E+01
41	0		.600726E+01	.276560E+01	.402000E+01	0		
42	1	0	0.	.540000E+03	0.	.281600E+03	.164600E+02	.689700E+01
42	0		.171000E+02	.467000E+01	.199000E+01	0		
43	1	0	.612000E+03	.900000E+02	0.	.129800E+03	.930540E+01	.650948E+01
43	0		.116610E+02	.385320E+01	0.	0		
44	0	0	.227317E+04	.490000E+03	-.100000E+01	.327625E+01	.841146E+00	.841146E+00
44	0		.559250E+00	.843833E+00	-.400573E+00	0		
45	0	0	.226684E+04	.490000E+03	-.100000E+01	.327625E+01	.841146E+00	.841146E+00
45	0		.559250E+00	.843833E+00	-.400573E+00	0		
46	0	0	.227871E+04	.540000E+03	-.100000E+01	.121305E+01	.157900E+02	.157900E+02
46	0		.668100E-01	.291670E+00	-.157900E+02	0		
47	0	0	.227318E+04	.535000E+03	-.100000E+01	.142600E+00	.338600E+00	.338600E+00
47	0		.900400E-01	.338600E+00	-.169300E+00	0		

VOLUME DATA ACTUALLY BEING USED.

VOL NUM	BUBL INDX	TIME DEP	PRESSURE (PSIA)	ENTHALPY	VOLUME (FT**3)	HEIGHT (FT)	MIXTURE LEVEL (FT)	ELEVATION (FT)
1	0	0	.226731E+04	.534893E+03	.162817E+02	.750000E+01	.750000E+01	-.973000E+00
2	0	0	.227113E+04	.534889E+03	.419600E+01	.186500E+01	.186500E+01	-.283800E+01
3	0	0	.226466E+04	.534897E+03	.795126E+01	.932333E+00	.932333E+00	-.466167E+00
4	0	0	.226394E+04	.534898E+03	.455041E+01	.932333E+00	.932333E+00	-.466167E+00
5	0	0	.226328E+04	.534898E+03	.318986E+01	.932333E+00	.932333E+00	-.466167E+00
6	0	0	.226283E+04	.534899E+03	.287822E+01	.242156E+01	.242156E+01	-.533917E+00
7	1	0	.225828E+04	.534905E+03	.111824E+02	.250000E+01	.250000E+01	.312193E+00
8	0	0	.225589E+04	.534908E+03	.109769E+02	.675000E+01	.675000E+01	.281219E+01
9	0	0	.225374E+04	.534910E+03	.544779E+01	.200521E+01	.200521E+01	.956219E+01
10	0	0	.225447E+04	.534909E+03	.109769E+02	.675000E+01	.675000E+01	.281219E+01
11	0	0	.225563E+04	.534908E+03	.111824E+02	.250000E+01	.250000E+01	.312193E+00
12	0	0	.225027E+04	.534915E+03	.205729E+01	.237508E+01	.237508E+01	-.487437E+00
13	0	0	.225012E+04	.534915E+03	.443798E+01	.380867E+01	.380867E+01	-.429610E+01
14	0	0	.224842E+04	.534917E+03	.449346E+01	.217450E+01	.217450E+01	-.429610E+01
15	0	0	.226398E+04	.534897E+03	.378561E+01	.247577E+01	.247577E+01	-.212160E+01
16	0	0	.226533E+04	.534896E+03	.378561E+01	.247577E+01	.247577E+01	-.212160E+01
17	0	0	.227848E+04	.534880E+03	.189580E+01	.708333E+00	.708333E+00	-.354167E+00
18	0	0	.228092E+04	.534877E+03	.693352E+00	.708333E+00	.708333E+00	-.354167E+00
19	0	0	.227583E+04	.534883E+03	.628853E+01	.932333E+00	.932333E+00	-.466167E+00
20	0	0	.227421E+04	.534885E+03	.322862E+01	.932333E+00	.932333E+00	-.466167E+00
21	0	0	.227261E+04	.534887E+03	.744960E+01	.343500E+01	.343500E+01	-.235167E+01
22	0	0	.227486E+04	.534884E+03	.170666E+02	.116119E+02	.116119E+02	-.139636E+02
23	1	0	.227673E+04	.534882E+03	.231420E+02	.415000E+01	.415000E+01	-.164000E+02
24	0	0	.227372E+04	.534885E+03	.302490E+02	.942200E+01	.942200E+01	-.122600E+02
25	0	0	.227318E+04	.534886E+03	.356959E+01	.932333E+00	.932333E+00	-.466167E+00
26	0	0	.227318E+04	.528797E+03	.216185E+01	.932333E+00	.932333E+00	-.466167E+00
27	0	0	.227318E+04	.522722E+03	.817513E+00	.567750E+00	.567750E+00	-.283875E+00
28	0	0	.226666E+04	.534894E+03	.754979E+01	.932333E+00	.932333E+00	-.466167E+00
29	0	0	.226685E+04	.532457E+03	.230445E+01	.932333E+00	.932333E+00	-.466167E+00
30	0	0	.226651E+04	.530022E+03	.289649E+00	.244013E+01	.244013E+01	-.169292E+00
31	0	0	.226535E+04	.527588E+03	.458256E+01	.458250E+01	.458250E+01	.227083E+01
32	0	0	.226394E+04	.525154E+03	.100357E+02	.404708E+01	.404708E+01	.685333E+01
33	0	0	.226535E+04	.522729E+03	.458256E+01	.458250E+01	.458250E+01	.227083E+01
34	0	0	.226685E+04	.520358E+03	.408918E+00	.454167E+01	.454167E+01	-.227083E+01
35	0	0	.226795E+04	.519172E+03	.170960E+01	.217450E+01	.217450E+01	-.444533E+01
36	0	0	.226750E+04	.517988E+03	.578667E+00	.431775E+01	.431775E+01	-.414846E+01
37	1	0	.430000E+02	.241773E+03	.369345E+04	.160937E+02	.942000E+01	-.135104E+02
38	0	0	.227039E+04	.530018E+03	.817046E+01	.206508E+01	.206508E+01	.466167E+00
39	0	0	.226631E+04	.534895E+03	.587547E+01	.289583E+01	.289583E+01	-.364583E+00
40	0	0	.226317E+04	.562288E+03	.362366E+00	.403500E+01	.403500E+01	.466167E+00

VOLUME DATA ACTUALLY BEING USED.

VOL NUM	BUBL INDX	TIME DEP	PRESSURE (PSIA)	ENTHALPY	VOLUME (FT**3)	HEIGHT (FT)	MIXTURE LEVEL (FT)	ELEVATION (FT)
41	3	0	.226200E+04	.759739E+03	.347522E+02	.671354E+01	.350000E+01	.402000E+01
42	1	0	.962790E+03	.576346E+03	.281600E+03	.164600E+02	.589700E+01	.199000E+01
43	1	0	.612000E+03	.595375E+02	.129800E+03	.930540E+01	.550948E+01	0.
44	0	0	.227317E+04	.476087E+03	.327625E+01	.841146E+00	.341146E+00	-.400573E+00
45	0	0	.226684E+04	.476086E+03	.327625E+01	.841146E+00	.341146E+00	-.400573E+00
46	0	0	.227871E+04	.534879E+03	.121305E+01	.157900E+02	.157900E+02	-.157900E+02
47	0	0	.227318E+04	.528797E+03	.142600E+00	.338600E+00	.338600E+00	-.169300E+00

VOLUME DATA ACTUALLY BEING USED.

VOL NUM	2-PH FRIC	FLOW AREA (FT**2)	EQUIVALENT DIAMETER (FT)	LENGTH (FT)	L/2A (FT**-1)	HORIZ. AREA (FT**2)	TEMPERATURE (F)	SATURATION TEMP. (F)	VOL. BELOW
1	0	.251200E+01	.178800E+01	.648158E+01	.129012E+01	.217090E+01	.540000E+03	.653813E+03	0
2	0	.249100E+01	.131400E+01	.168446E+01	.338110E+00	.224987E+01	.540000E+03	.654058E+03	0
3	0	.682704E+00	.932333E+00	.116467E+02	.852985E+01	.852834E+01	.540000E+03	.653643E+03	0
4	0	.682704E+00	.932333E+00	.666528E+01	.488153E+01	.488067E+01	.540000E+03	.653597E+03	0
5	0	.682704E+00	.932333E+00	.467240E+01	.342198E+01	.342138E+01	.540000E+03	.653555E+03	0
6	0	.895564E+00	.106783E+01	.321386E+01	.179432E+01	.118858E+01	.540000E+03	.653526E+03	0
7	0	.794125E+01	.146150E+01	.140814E+01	.886599E-01	.447296E+01	.540000E+03	.653234E+03	0
8	0	.162621E+01	.335000E-01	.675000E+01	.207538E+01	.162621E+01	.540000E+03	.653079E+03	0
9	0	.162621E+01	.335000E-01	.335000E+01	.103000E+01	.271682E+01	.540000E+03	.652941E+03	0
10	0	.162621E+01	.335000E-01	.675000E+01	.207538E+01	.162621E+01	.540000E+03	.652988E+03	0
11	0	.794125E+01	.146150E+01	.140814E+01	.886599E-01	.447296E+01	.540000E+03	.653063E+03	0
12	0	.895564E+00	.106783E+01	.229720E+01	.128254E+01	.866196E+00	.540000E+03	.652718E+03	0
13	0	.682704E+00	.932333E+00	.650060E+01	.476092E+01	.116523E+01	.540000E+03	.652708E+03	0
14	0	.682704E+00	.932333E+00	.658186E+01	.482043E+01	.206643E+01	.540000E+03	.652599E+03	0
15	0	.394063E+00	.394060E+00	.960662E+01	.121892E+02	.152906E+01	.540000E+03	.653599E+03	0
16	0	.394063E+00	.394060E+00	.960662E+01	.121892E+02	.152906E+01	.540000E+03	.653686E+03	0
17	0	.394063E+00	.708333E+00	.481091E+01	.610425E+01	.267643E+01	.540000E+03	.654527E+03	0
18	0	.394063E+00	.708333E+00	.175950E+01	.223251E+01	.978850E+00	.540000E+03	.654683E+03	0
19	0	.682704E+00	.932333E+00	.921121E+01	.674612E+01	.674493E+01	.540000E+03	.654358E+03	0
20	0	.682704E+00	.932333E+00	.472917E+01	.346356E+01	.346295E+01	.540000E+03	.654255E+03	0
21	0	.196122E+01	.583333E+00	.379845E+01	.968391E+00	.216873E+01	.540000E+03	.654152E+03	0
22	0	.152716E+01	.333330E+00	.111754E+02	.365886E+01	.146975E+01	.540000E+03	.654296E+03	0
23	0	.558000E+01	.151800E+01	.414731E+01	.371623E+00	.557639E+01	.540000E+03	.654415E+03	0
24	0	.326500E+01	.231300E+01	.926462E+01	.141878E+01	.321046E+01	.540000E+03	.654223E+03	0
25	0	.682704E+00	.932333E+00	.522861E+01	.382934E+01	.382867E+01	.540000E+03	.654189E+03	0
26	0	.682704E+00	.932333E+00	.316660E+01	.231916E+01	.231875E+01	.535000E+03	.654189E+03	0
27	0	.253165E+00	.567750E+00	.322917E+01	.637759E+01	.143992E+01	.530000E+03	.654189E+03	0
28	0	.682704E+00	.932333E+00	.110587E+02	.809917E+01	.809774E+01	.540000E+03	.653771E+03	0
29	0	.682704E+00	.932333E+00	.337548E+01	.247214E+01	.247171E+01	.538000E+03	.653783E+03	0
30	0	.900370E-01	.338580E+00	.321700E+01	.178649E+02	.118702E+00	.536000E+03	.653762E+03	0
31	0	.106080E+01	.121583E+01	.431993E+01	.203617E+01	.100001E+01	.534000E+03	.653687E+03	0
32	0	.116102E+01	.121583E+01	.864393E+01	.372257E+01	.247975E+01	.532000E+03	.653597E+03	0
33	0	.106080E+01	.121583E+01	.431993E+01	.203617E+01	.100001E+01	.530000E+03	.653687E+03	0
34	0	.900370E-01	.338580E+00	.454167E+01	.252211E+02	.900370E-01	.528000E+03	.653783E+03	0
35	1	.682704E+00	.932333E+00	.250417E+01	.183401E+01	.786206E+00	.527000E+03	.653854E+03	0
36	0	.900370E-01	.338580E+00	.642700E+01	.356909E+02	.134021E+00	.526000E+03	.653825E+03	0
37	0	.962113E+01	.350000E+01	.383890E+03	.199504E+02	.229496E+03	.271634E+03	.271634E+03	0
38	0	.417584E+00	.125000E+01	.195660E+02	.234277E+02	.395648E+01	.536000E+03	.654010E+03	0
39	0	.417584E+00	.125000E+01	.140702E+02	.168471E+02	.202894E+01	.540000E+03	.653749E+03	0
40	0	.155592E-01	.140750E+00	.232895E+02	.748418E+03	.898057E-01	.562000E+03	.653547E+03	0

VOLUME DATA ACTUALLY BEING USED.

VOL NUM	2-PH FRIC	FLOW AREA (FT**2)	EQUIVALENT DIAMETER (FT)	LENGTH (FT)	L/2A (FT**-1)	HORIZ. AREA (FT**2)	TEMPERATURE (F)	SATURATION TEMP. (F)	VOL. BELOW
41	0	.600726E+01	.276560E+01	.578503E+01	.481503E+00	.517643E+01	.653472E+03	.653472E+03	0
42	0	.171000E+02	.467000E+01	.164678E+02	.481516E+00	.171081E+02	.540000E+03	.540000E+03	0
43	0	.116610E+02	.385320E+01	.111311E+02	.477280E+00	.139489E+02	.900000E+02	.900000E+02	0
44	0	.559250E+00	.843833E+00	.585830E+01	.523764E+01	.389499E+01	.490000E+03	.654188E+03	0
45	0	.559250E+00	.843833E+00	.585830E+01	.523764E+01	.389499E+01	.490000E+03	.653783E+03	0
46	0	.668100E-01	.291670E+00	.181567E+02	.135883E+03	.768239E-01	.540000E+03	.654542E+03	0
47	0	.900400E-01	.338600E+00	.158374E+01	.879465E+01	.421146E+00	.535000E+03	.654189E+03	0

INPUT FOR 3 SETS OF BUBBLE CONSTANTS

SET NO.	SLOPE PARAMETER	BUBBLE VELOCITY	
0	0.	0.	(BUILT-IN DATA)
1	.800000E+00	.300000E+01	
2	.800000E+00	.100000E+07	
3	.800000E+00	.200000E+01	

DESCRIPTIONS OF 50 JUNCTIONS.

JUN NUM	FROM VOL. / VERT JUN INDX	TO VOL / CHOK -ING INDX	PUMP LEAK FILL / IC CALC INDX	CHKV VALV / MOM EQ. INDX	INITIAL FLOW (LBM/SEC) / JUNCTION DIAMETER (FT)	JUNCTION FLOW AREA (FT**2) / CONTRACTION COEFFICIENT	JUNCTION ELEVATION (FT) / SUBCOOL CHOKE	JUNCTION INERTIA (FT*-1) / ENTHALPY INDEX	SP. ENERGY LOSS COEF. (FORWARD) / COSINE	SP. ENERGY LOSS COEF. (REVERSE) / IADJUN
1	2	1	0	0	.597222E+03	.480000E+00	-.973000E+00	0.	.648000E+00	.648000E+00
1	0	5	2	0	.901000E+00	0.	0	0	.100000E+01	0
2	1	3	0	0	.597222E+03	.682700E+00	0.	.517300E+01	.107400E+01	.107400E+01
2	1	5	0	0	.932300E+00	0.	0	0	0.	0
3	1	28	0	0	0.	.682700E+00	0.	.474100E+01	.309500E+00	.473200E+00
3	1	5	0	0	.932300E+00	0.	0	0	0.	0
4	3	4	0	0	.597222E+03	.660887E+00	0.	.874485E+01	.313100E+00	.313100E+00
4	1	5	0	0	.932333E+00	0.	0	0	0.	0
5	4	5	0	0	.597222E+03	.358820E+00	0.	.830351E+01	.912000E-01	.912000E-01
5	1	5	0	0	.675917E+00	0.	0	0	0.	0
6	9	6	0	0	.597222E+03	.682704E+00	0.	.521630E+01	.522000E+00	.522000E+00
6	1	5	0	0	.932333E+00	0.	0	0	0.	0
7	6	7	0	0	.597222E+03	.556000E+00	.151011E+01	.188298E+01	.200000E+01	.200000E+01
7	1	5	0	0	.901670E+00	0.	0	0	0.	0
8	7	8	0	0	.597222E+03	.162621E+01	.281219E+01	.216404E+01	.357000E+00	.631200E+00
8	0	5	0	0	.143894E+01	0.	0	2	0.	0
9	8	9	0	0	.597222E+03	.162621E+01	.956219E+01	.310539E+01	0.	0.
9	0	5	0	0	.143894E+01	0.	0	3	0.	0
10	9	10	0	0	.597222E+03	.162621E+01	.956219E+01	.310539E+01	.560000E-01	.560000E-01
10	0	5	0	0	.143894E+01	0.	0	3	0.	0
11	10	11	0	0	.597222E+03	.162621E+01	.281219E+01	.216404E+01	.631200E+00	.357000E+00
11	0	5	0	0	.143894E+01	0.	0	1	0.	0
12	11	12	0	0	.597222E+03	.556000E+00	.151011E+01	.137120E+01	.177000E+01	.177000E+01
12	1	5	0	0	.901670E+00	0.	0	0	0.	0
13	12	13	0	0	.597222E+03	.682704E+00	-.487437E+00	.604346E+01	.220000E+00	.220000E+00
13	0	5	0	0	.932333E+00	0.	0	0	0.	0
14	13	14	0	0	.597222E+03	.682704E+00	-.382994E+01	.958135E+01	.107500E+01	.125000E+01
14	1	5	0	0	.932333E+00	0.	0	0	0.	0
15	14	15	-1	0	.307722E+03	.394063E+00	-.212160E+01	.170096E+02	.229100E+00	.229100E+00
15	0	5	0	0	.708333E+00	0.	0	0	0.	0

JUN NUM	FROM VOL / VERT JUN INDX	TO VOL / CHOK -ING INDX	PUMP LEAK FILL / IC CALC INDX	CHKV VALV / MOM EQ. INDX	INITIAL FLOW (LBM/SEC) / JUNCTION DIAMETER (FT)	JUNCTION FLOW AREA (FT**2) / CONTRACTION COEFFICIENT	JUNCTION ELEVATION (FT) / SUBCOOL CHOKE	JUNCTION INERTIA (FT*-1) / ENTHALPY INDEX	SP. ENERGY LOSS COEF. (FORWARD) / COSINE	SP. ENERGY LOSS COEF. (REVERSE) / IADJUN
16	14	16	-2	0	.289500E+03	.394063E+00	-.212160E+01	.170096E+02	.223000E+00	.223000E+00
16	0	5	0	0	.708333E+00	0.	0	0	0.	0
17	15	17	1	0	.307722E+03	.394063E+00	0.	.182935E+02	.165600E+00	.165600E+00
17	0	5	0	0	.708333E+00	0.	0	0	0.	0
18	16	18	2	0	.289500E+03	.394063E+00	0.	.144217E+02	.210000E+00	.210000E+00
18	0	5	0	0	.708333E+00	0.	0	0	0.	0
19	17	19	0	0	.307722E+03	.394063E+00	0.	.128504E+02	.661300E+00	.690000E+00
19	1	5	0	0	.708333E-00	0.	0	0	0.	0
20	18	19	0	0	.289500E-03	.394063E+00	0.	.897863E+01	.258400E+01	.120000E+01
20	1	5	0.	0	.708333E-00	0.	0	0	0.	0
21	19	20	0	0	.597222E-03	.660887E+00	0.	.102097E+02	.815000E+00	.815000E+00
21	1	5	0	0	.932333E-00	0.	0	0	0.	0
22	20	21	0	0	.597222E+03	.682704E+00	0.	.394776E+01	.189500E+01	.189500E+01
22	1	5	0	0	.932333E+00	0.	0	0	0.	0
23	21	22	0	0	.597222E+03	.130494E+01	-.235167E+01	0.	.644000E-01	.647000E-01
23	0	5	2	0	.911450E+00	0.	0	0	.100000E+01	0
24	22	23	0	0	.597222E+03	.130494E+01	-.139636E+02	0.	.908000E+00	.908000E+00
24	0	5	2	0	.128890E+01	0.	0	0	.100000E+01	0
25	23	24	0	0	.597222E+03	.105600E+01	-.122600E+02	0.	.982000E+00	.982000E+00
25	0	5	2	0	.203800E+01	0.	0	0	.100000E+01	0
26	24	2	0	0	.597222E+03	.785400E+00	-.283800E+01	0.	.513000E+00	.513000E+00
26	0	5	2	0	.100000E+01	0.	0	0	.100000E+01	0
27	21	25	0	0	0.	.682704E+00	0.	.391683E+01	.804000E+00	.133020E+01
27	1	5	0	0	.932333E+00	0.	0	0	0.	0
28	25	26	0	0	0.	.682704E+00	0.	.592418E+01	.100500E+00	.100500E+00
28	1	5	0	0	.932333E+00	0.	0	0	0.	0
29	26	47	0	0	0.	.900370E-01	0.	.111100E+02	.260000E+00	.754000E+00
29	1	5	0	0	.338600E+00	0.	0	0	0.	0
30	27	44	0	0	0.	.253160E+00	0.	.116155E+02	.299560E+00	.246290E+00
30	11	0	0	0	.567750E+00	.600000E+00	11	0	0.	0

JUN NUM	FROM VOL / VERT JUN INDX	TO VOL / CHOK -ING INDX	PUMP LEAK FILL / IC CALC INDX	CHKV VALV / MOM EQ. INDX	INITIAL FLOW (LBM/SEC) / JUNCTION DIAMETER (FT)	JUNCTION FLOW AREA (FT**2) / CONTFACTION COEFFICIENT	JUNCTION ELEVATION (FT) / SUBCOOL CHOKE	JUNCTION INERTIA (FT*-1) / ENTHALPY INDEX	SP. ENERGY LOSS COEF. (FORWARD) / COSINE	SP. ENERGY LOSS COEF. (REVERSE) / IADJUN
31	44	37	0	1	0.	.559250E+00	0.	.252555E+02	.103700E+01	.537000E+00
31	1	0	0	0	.843833E+00	.600000E+00	11	0	0.	0
32	28	29	0	0	0.	.682704E+00	0.	.592418E+01	.100500E+00	.100500E+00
32	1	5	0	0	.932333E+00	0.	0	0	0.	0
33	29	30	0	0	0.	.900370E-01	0.	.203298E+02	.396050E+00	.753630E+00
33	1	5	0	0	0.	.100000E+01	0	0	0.	0
34	30	31	0	0	0.	.900370E-01	.227083E+01	.199010E+02	.935960E+00	.935960E+00
34	0	5	0	0	.359417E+00	0.	0	0	0.	0
35	31	32	0	0	0.	.206034E+00	.685333E+01	.575875E+01	.581834E+01	.581834E+01
35	0	5	0	0	.527819E+00	0.	0	0	0.	0
36	32	33	0	0	0.	.206034E+00	.685333E+01	.575875E+01	.581834E+01	.581834E+01
36	0	5	0	0	.527819E+00	0.	0	0	0.	0
37	33	34	0	0	0.	.900370E-01	.227083E+01	.272573E+02	.230250E+00	.230250E+00
37	0	5	0	0	.359417E+00	0.	0	0	0.	0
38	34	35	0	0	0.	.900370E-01	-.227083E+01	.270551E+02	.635100E+01	.635100E+01
38	0	5	0	0	.359417E+00	0.	0	0	0.	0
39	35	36	0	0	0.	.900370E-01	-.397917E+01	.375249E+02	.635100E+01	.635100E+01
39	1	5	0	0	.359417E+00	0.	0	0	0.	0
40	36	45	0	0	0.	.900370E-01	0.	.409140E+02	.948830E+00	.438340E+00
40	1	0	0	0	.338580E+00	.600000E+00	11	0	0.	0
41	45	37	0	1	0.	.559250E+00	0.	.252555E+02	.103700E+01	.537000E+00
41	1	0	0	0	.843833E+00	.600000E+00	11	0	0.	0
42	29	39	0	0	0.	.417500E+00	0.	.193380E+02	.124700E+01	.457600E+00
42	0	5	0	3	.708300E+00	0.	0	0	0.	0
43	26	38	0	0	0.	.417584E+00	.466167E+00	.242230E+02	.124700E+01	.457600E+00
43	0	5	0	3	.708333E+00	0.	0	0	0.	0
44	43	46	0	2	0.	.644700E-01	0.	0.	.299000E+02	.299000E+02
44	0	5	2	0	.286500E+00	0.	0	0	0.	0
45	40	4	0	0	0.	.155592E-01	.466167E+00	.753299E+02	.100000E+01	.100000E+01
45	0	5	0	3	.140750E+00	.750000E+00	0	0	0.	0

JUN NUM	FROM VOL	TO VOL	PUMP LEAK FILL	CHKV VALV	INITIAL FLOW (LBM/SEC)	JUNCTION FLOW AREA (FT**2)	JUNCTION ELEVATION (FT)	JUNCTION INERTIA (FT*-L)	SP. ENERGY LOSS COEF. (FORWARD)	SP. ENERGY LOSS COEF. (REVERSE)
	VERT JUN INDX	CHOK -ING INDX	IC CALC INDX	MOM EQ. INDX	JUNCTION DIAMETER (FT)	CONTRACTION COEFFICIENT	SUBCOOL CHOKE	ENTHALPY INDEX	COSINE	IADJUN
46	41	40	0	0	0.	.155592E-01	.435000E+01	.748399E+02	.113400E+02	.113400E+02
46	0	5	0	0	.140750E+00	0.	0	0	0.	0
47	46	23	0	0	0.	.668130E-01	-.157900E+02	0.	.270000E+01	.220000E+01
47	1	5	2	0	.291670E+00	0.	0	0	0.	0
48	47	27	0	0	0.	.900370E-01	0.	.151800E+02	.415000E+00	.290000E+00
48	1	0	0	0	.338600E+00	.600000E+00	11	0	0.	0
49	0	46	1	0	0.	.644700E-01	0.	0.	.100000E+01	.100000E+01
49	0	5	2	3	.286500E+00	0.	0	0	0.	0
50	0	46	2	0	0.	.644700E-01	0.	0.	.100000E+01	.100000E+01
50	0	5	2	3	.286500E+00	0.	0	0	0.	0

INPUT DATA FOR 2 PUMPS.

NUMBER OF PUMP CURVES TO BE READ FOR EACH CURVE SET.

16 0 0 16

PMP NUM	CRV SET	TRP ID	REV	DEG	RATED SPEED (REV/MIN)	SPEED RATIO	RATED FLOW (GAL/MIN)	RATED HEAD (FT)	RATED TORQUE (FT-LBF)	MOM OF INERTIA (LBM-FT**2)
	MOT TRK				RATED DENSITY (LBM/FT**3)	FRICT TORQUE COEFF 2	RATED MOTOR TORQ (LBF-FT)	FRICT TORQUE COEFF 0	FRICT TORQUE COEFF 1	FRICT TORQUE COEFF 3
1	1	3	0	1	.353000E+04	-.558400E+00	.500000E+04	.306000E+03	.465000E+03	.294000E+03
	0				.387500E+02	.116860E+03	0.	.268800E+02	0.	.725740E+02
				STOP PUMP AT	0.	SEC. OR IF	SPEED IS GT	0.0 RPM OR LT	0.0 RPM.	(NO STOP ON OPTION IF 0.0)
2	1	3	0	1	.353000E+04	-.558400E+00	.500000E+04	.306000E+03	.465000E+03	.294000E+03
	0				.387500E+02	.116860E+03	0.	.268800E+02	0.	.725740E+02
				STOP PUMP AT	0.	SEC. OR IF	SPEED IS GT	0.0 RPM OR LT	0.0 RPM.	(NO STOP ON OPTION IF 0.0)

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PUMP HEAD MULTIPLIER CURVE
   -11   0.              0.                        .100000E+00  0.                        .150000E+00   .500000E-01
           .240000E+00    .800000E+00              .300000E+00    .960000E+00             .400000E+00   .980000E+00
           .600000E+00    .970000E+00              .800000E+00    .900000E+00             .900000E+00   .800000E+00
           .960000E+00    .500000E+00              .100000E+01  0.

PUMP TORQUE MULTIPLIER CURVE
    -7   0.              0.                        .100000E+00  0.                        .150000E+00   .500000E-01
           .240000E+00    .560000E+00              .800000E+00    .560000E+00             .960000E+00   .450000E+00
           .100000E+01  0.
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PUMP CURVE SET NUMBER 1 HAS 16 CURVES TO BE READ.

SET NUM	HEAD OR TORQ	TYPE	NUM DAT PTS	X	Y	X	Y	X	Y
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
1	1	1	6	0.	.140360E+01	.190610E+00	.136360E+01	.389630E+00	.131860E+01
				.593960E+00	.123280E+01	.790200E+00	.113360E+01	.100000E+01	.100780E+01
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
1	1	2	8	0.	-.670000E+00	.200000E+00	-.500000E+00	.400000E+00	-.250000E+00
				.575540E+00	0.	.744320E+00	.258300E+00	.773480E+00	.377800E+00
				.863130E+00	.632600E+00	.100000E+01	.100780E+01		
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
1	1	3	6	-.100000E+01	.247220E+01	-.805740E+00	.204740E+01	-.606900E+00	.183100E+01
				-.406830E+00	.162400E+01	-.200171E+00	.147050E+01	0.	.140360E+01
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
1	1	4	8	-.100000E+01	.247220E+01	-.822970E+00	.199680E+01	-.633320E+00	.158970E+01
				-.455340E+00	.132790E+01	-.271090E+00	.119490E+01	-.177160E+00	.106050E+01
				-.907300E-01	.101560E+01	0.	.934279E+00		
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
1	1	5	7	0.	.250000E+00	.200000E+00	.280000E+00	.400000E+00	.340000E+00
				.411800E+00	.276800E+00	.597630E+00	.458400E+00	.793467E+00	.699200E+00
				.100000E+01	.946500E+00				
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
1	1	6	10	0.	.934279E+00	.910990E-01	.922900E+00	.186509E+00	.896300E+00
				.271762E+00	.875000E+00	.455872E+00	.843300E+00	.574406E+00	.835500E+00
				.740576E+00	.846600E+00	.766619E+00	.846900E+00	.871471E+00	.883800E+00
				.100000E+01	.946500E+00				
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
1	1	7	6	-.100000E+01	-.100000E+01	-.800000E+00	-.630000E+00	-.600000E+00	-.300000E+00
				-.400000E+00	-.500000E-01	-.200000E+00	.150000E+00	0.	.250000E+00
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
1	1	8	6	-.100000E+01	-.100000E+01	-.800000E+00	-.970000E+00	-.600000E+00	-.950000E+00
				-.400000E+00	-.880000E+00	-.200000E+00	-.800000E+00	0.	-.670000E+00
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
1	2	1	6	0.	.603200E+00	.193000E+00	.632500E+00	.393000E+00	.736900E+00
				.595520E+00	.833100E+00	.797820E+00	.922900E+00	.100000E+01	.967200E+00
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
1	2	2	7	0.	-.670000E+00	.400000E+00	-.250000E+00	.500000E+00	.150000E+00
				.737255E+00	.526586E+00	.768049E+00	.606594E+00	.867230E+00	.743660E+00
				.100000E+01	.967200E+00				
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
1	2	3	6	-.100000E+01	.198430E+01	-.800960E+00	.139400E+01	-.606380E+00	.109750E+01
				-.406860E+00	.822000E+00	-.199280E+00	.664800E+00	0.	.603200E+00
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
1	2	4	8	-.100000E+01	.198430E+01	-.822340E+00	.183080E+01	-.633710E+00	.168240E+01
				-.458530E+00	.155700E+01	-.267023E+00	.143620E+01	-.176107E+00	.138790E+01
				-.893100E-01	.134810E+01	0.	.123361E+01		
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
1	2	5	6	0.	[illegible]	[illegible]	[illegible]	[illegible]	0.

1	2	3	4	0.	-.450000E+00	.400000E+00	-.250000E+00	.500000E+00	0.
				.100000E+01	.356900E+00				
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
1	2	6	10	0.	.123361E+01	.906430E-01	.119650E+01	.188569E+00	.110960E+01
				.273470E+00	.104160E+01	.458669E+00	.895800E+00	.574480E+00	.780700E+00
				.738160E+00	.613400E+00	.768520E+00	.584900E+00	.870057E+00	.487700E+00
				.100000E+01	.356900E+00				
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
1	2	7	4	-.100000E+01	-.100000E+01	-.300000E+00	-.900000E+00	-.100000E+00	-.500000E+00
				0.	-.450000E+00				
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
1	2	8	4	-.100000E+01	-.100000E+01	-.250000E+00	-.900000E+00	-.800000E-01	-.800000E+00
				0.	-.670000E+00				

PUMP CURVE SET NUMBER 1 HEAD CURVES FOLLOW.

SET NUM	HEAD OR TORQ	TYPE	NUM DAT PTS	X	Y	X	Y	X	Y
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
1	1	1	6	0.	.140360E+01	.190610E+00	.136360E+01	.389630E+00	.131860E+01
				.593960E+00	.123280E+01	.790200E+00	.113360E+01	.100000E+01	.100780E+01
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
1	1	2	8	0.	-.670000E+00	.200000E+00	-.500000E+00	.400000E+00	-.250000E+00
				.575540E+00	0.	.744320E+00	.258300E+00	.773480E+00	.377800E+00
				.863130E+00	.632600E+00	.100000E+01	.100780E+01		
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
1	1	3	6	-.100000E+01	.247220E+01	-.805740E+00	.204740E+01	-.606900E+00	.183100E+01
				-.406830E+00	.162400E+01	-.200171E+00	.147050E+01	0.	.140360E+01
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
1	1	4	8	-.100000E+01	.247220E+01	-.822970E+00	.199680E+01	-.633320E+00	.158970E+01
				-.455340E+00	.132790E+01	-.271090E+00	.119490E+01	-.177160E+00	.106050E+01
				-.907300E-01	.101560E+01	0.	.934279E+00		
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
1	1	5	7	0.	.250000E+00	.200000E+00	.280000E+00	.400000E+00	.340000E+00
				.411800E+00	.276800E+00	.597630E+00	.458400E+00	.793467E+00	.699200E+00
				.100000E+01	.946500E+00				
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
1	1	6	10	0.	.934279E+00	.910990E-01	.922900E+00	.186509E+00	.896300E+00
				.271762E+00	.875000E+00	.455872E+00	.843300E+00	.574406E+00	.835500E+00
				.740576E+00	.846600E+00	.766619E+00	.846900E+00	.871471E+00	.883800E+00
				.100000E+01	.946500E+00				
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
1	1	7	6	-.100000E+01	-.100000E+01	-.800000E+00	-.630000E+00	-.600000E+00	-.300000E+00
				-.400000E+00	-.500000E-01	-.200000E+00	.150000E+00	0.	.250000E+00
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
1	1	8	6	-.100000E+01	-.100000E+01	-.800000E+00	-.970000E+00	-.600000E+00	-.950000E+00
				-.400000E+00	-.880000E+00	-.200000E+00	-.800000E+00	0.	-.670000E+00

PUMP CURVE SET NUMBER 1 TORQUE CURVES FOLLOW.

SET NUM	HEAD OR TORQ	TYPE	NUM DAT PTS	X	Y	X	Y	X	Y
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
1	2	1	6	0.	.603200E+00	.193000E+00	.632500E+00	.393000E+00	.736900E+00
				.595520E+00	.833100E+00	.797820E+00	.922900E+00	.100000E+01	.967200E+00
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
1	2	2	7	0.	-.670000E+00	.400000E+00	-.250000E+00	.500000E+00	.150000E+00
				.737255E+00	.526586E+00	.768049E+00	.606594E+00	.867230E+00	.743660E+00
				.100000E+01	.967200E+00				
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
1	2	3	6	-.100000E+01	.198430E+01	-.800960E+00	.139400E+01	-.606380E+00	.109750E+01
				-.406860E+00	.822000E+00	-.199280E+00	.664800E+00	0.	.603200E+00
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
1	2	4	8	-.100000E+01	.198430E+01	-.822340E+00	.183080E+01	-.633710E+00	.168240E+01
				-.458530E+00	.155700E+01	-.267023E+00	.143620E+01	-.176107E+00	.138790E+01
				-.893100E-01	.134810E+01	0.	.123361E+01		
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
1	2	5	4	0.	-.450000E+00	.400000E+00	-.250000E+00	.500000E+00	0.
				.100000E+01	.356900E+00				
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
1	2	6	10	0.	.123361E+01	.906430E-01	.119650E+01	.188569E+00	.110960E+01
				.273470E+00	.104160E+01	.458669E+00	.895800E+00	.574480E+00	.780700E+00
				.738160E+00	.613400E+00	.768520E+00	.584900E+00	.870057E+00	.487700E+00
				.100000E+01	.356900E+00				
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
1	2	7	4	-.100000E+01	-.100000E+01	-.300000E+00	-.900000E+00	-.100000E+00	-.500000E+00
				0.	-.450000E+00				
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
1	2	8	4	-.100000E+01	-.100000E+01	-.250000E+00	-.900000E+00	-.800000E-01	-.800000E+00
				0.	-.670000E+00				

PUMP CURVE SET NUMBER 4 HAS 16 CURVES TO BE READ.

SET NUM	HEAD OR TORQ	TYPE	NUM DAT PTS	X	Y	X	Y	X	Y
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
4	1	1	7	0.	0.	.100000E+00	.830000E+00	.200000E+00	.109000E+01
				.500000E+00	.102000E+01	.700000E+00	.101000E+01	.900000E+00	.940000E+00
				.100000E+01	.100000E+01				
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
4	1	2	8	0.	0.	.100000E+00	-.400000E-01	.200000E+00	0.
				.300000E+00	.100000E+00	.400000E+00	.210000E+00	.800000E+00	.670000E+00
				.900000E+00	.800000E+00	.100000E+01	.100000E+01		
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
4	1	3	10	-.100000E+01	-.116000E+01	-.900000E+00	-.124000E+01	-.800000E+00	-.177000E+01
				-.700000E+00	-.236000E+01	-.600000E+00	-.279000E+01	-.500000E+00	-.291000E+01
				-.400000E+00	-.267000E+01	-.250000E+00	-.169000E+01	-.100000E+00	-.500000E+00
				0.	0.				
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
4	1	4	10	-.100000E+01	-.116000E+01	-.900000E+00	-.780000E+00	-.800000E+00	-.500000E+00
				-.700000E+00	-.310000E+00	-.600000E+00	-.170000E+00	-.500000E+00	-.800000E-01
				-.350000E+00	0.	-.200000E+00	.500000E-01	-.100000E+00	.800000E-01
				0.	.110000E+00				
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
4	1	5	6	0.	0.	.200000E+00	-.340000E+00	.400000E+00	-.650000E+00
				.600000E+00	-.930000E+00	.800000E+00	-.119000E+01	.100000E+01	-.147000E+01
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
4	1	6	10	0.	.110000E+00	.100000E+00	.130000E+00	.250000E+00	.150000E+00
				.400000E+00	.130000E+00	.500000E+00	.700000E-01	.600000E+00	-.400000E-01
				.700000E+00	-.230000E+00	.800000E+00	-.510000E+00	.900000E+00	-.910000E+00
				.100000E+01	-.147000E+01				
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
4	1	7	2	-.100000E+01	0.	0.	0.		
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
4	1	8	2	-.100000E+01	0.	0.	0.		
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
4	2	1	6	0.	.603200E+00	.193000E+00	.632500E+00	.393000E+00	.736900E+00
				.595520E+00	.833100E+00	.797820E+00	.922900E+00	.100000E+01	.967200E+00
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
4	2	2	7	0.	-.670000E+00	.400000E+00	-.250000E+00	.500000E+00	.150000E+00
				.737255E+00	.526586E+00	.768049E+00	.606594E+00	.867230E+00	.743660E+00
				.100000E+01	.967200E+00				
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
4	2	3	6	-.100000E+01	.198430E+01	-.800960E+00	.139400E+01	-.606380E+00	.109750E+01
				-.406860E+00	.822000E+00	-.199280E+00	.664800E+00	0.	.603200E+00
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
4	2	4	8	-.100000E+01	.198430E+01	-.822340E+00	.183080E+01	-.633710E+00	.168240E+01
				-.458530E+00	.155700E+01	-.267023E+00	.143620E+01	-.176107E+00	.138790E+01
				-.893100E-01	.134810E+01	0.	.123361E+01		

				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
4	2	5	4	0.	-.450000E+00	.400000E+00	-.250000E+00	.500000E+00	0.
				.100000E+01	.356900E+00				
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
4	2	6	10	0.	.123361E+01	.906430E-01	.119650E+01	.188569E+00	.110960E+01
				.273470E+00	.104160E+01	.458669E+00	.895800E+00	.574480E+00	.780700E+00
				.738160E+00	.613400E+00	.768520E+00	.584900E+00	.870057E+00	.487700E+00
				.100000E+01	.356900E+00				
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
4	2	7	4	-.100000E+01	-.100000E+01	-.300000E+00	-.900000E+00	-.100000E+00	-.500000E+00
				0.	-.450000E+00				
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
4	2	8	4	-.100000E+01	-.100000E+01	-.250000E+00	-.900000E+00	-.800000E-01	-.800000E+00
				0.	-.670000E+00				

PUMP CURVE SET NUMBER 4 HEAD CURVES FOLLOW.

SET NUM	HEAD OR TORQ	TYPE	NUM DAT PTS	X	Y	X	Y	X	Y
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
4	1	1	7	0.	0.	.100000E+00	.830000E+00	.200000E+00	.109000E+01
				.500000E+00	.10200CE+01	.700000E+00	.101000E+01	.900000E+00	.940000E+00
				.100000E+01	.10000CE+01				
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
4	1	2	8	0.	0.	.100000E+00	-.400000E-01	.200000E+00	0.
				.300000E+00	.10000CE+00	.400000E+00	.210000E+00	.800000E+00	.670000E+00
				.900000E+00	.80000CE+00	.100000E+01	.100000E+01		
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
4	1	3	10	-.100000E+01	-.11600CE+01	-.900000E+00	-.124000E+01	-.800000E+00	-.177000E+01
				-.700000E+00	-.23600CE+01	-.600000E+00	-.279000E+01	-.500000E+00	-.291000E+01
				-.400000E+00	-.26700CE+01	-.250000E+00	-.169000E+01	-.100000E+00	-.500000E+00
				0.	0.				
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
4	1	4	10	-.100000E+01	-.11600CE+01	-.900000E+00	-.780000E+00	-.800000E+00	-.500000E+00
				-.700000E+00	-.31000CE+00	-.600000E+00	-.170000E+00	-.500000E+00	-.800000E-01
				-.350000E+00	0.	-.200000E+00	.500000E-01	-.100000E+00	.800000E-01
				0.	.11000CE+00				
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
4	1	5	6	0.	0.	.200000E+00	-.340000E+00	.400000E+00	-.650000E+00
				.600000E+00	-.93000CE+00	.800000E+00	-.119000E+01	.100000E+01	-.147000E+01
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
4	1	6	10	0.	.11000CE+00	.100000E+00	.130000E+00	.250000E+00	.150000E+00
				.400000E+00	.13000CE+00	.500000E+00	.700000E-01	.600000E+00	-.400000E-01
				.700000E+00	-.230000E+00	.800000E+00	-.510000E+00	.900000E+00	-.910000E+00
				.100000E+01	-.14700CE+01				
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
4	1	7	2	-.100000E+01	0.	0.	0.		
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
4	1	8	2	-.100000E+01	0.	0.	0.		

PUMP CURVE SET NUMBER 4 TORQUE CURVES FOLLOW.

SET NUM	HEAD OR TORQ	TYPE	NUM DAT PTS	X	Y	X	Y	X	Y
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
4	2	1	6	0.	.603200E+00	.193000E+00	.632500E+00	.393000E+00	.736900E+00
				.595520E+00	.833100E+00	.797820E+00	.922900E+00	.100000E+01	.967200E+00
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
4	2	2	7	0.	-.670000E+00	.400000E+00	-.250000E+00	.500000E+00	.150000E+00
				.737255E+00	.526586E+00	.768049E+00	.606594E+00	.867230E+00	.743660E+00
				.100000E+01	.967200E+00				
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
4	2	3	6	-.100000E+01	.198430E+01	-.800960E+00	.139400E+01	-.606380E+00	.109750E+01
				-.406860E+00	.822000E+00	-.199280E+00	.664800E+00	0.	.603200E+00
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
4	2	4	8	-.100000E+01	.198430E+01	-.822340E+00	.183080E+01	-.633710E+00	.168240E+01
				-.458530E+00	.155700E+01	-.267023E+00	.143620E+01	-.176107E+00	.138790E+01
				-.893100E-01	.134810E+01	0.	.123361E+01		
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
4	2	5	4	0.	-.450000E+00	.400000E+00	-.250000E+00	.500000E+00	0.
				.100000E+01	.356900E+00				
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
4	2	6	10	0.	.123361E+01	.906430E-01	.119650E+01	.188569E+00	.110960E+01
				.273470E+00	.104160E+01	.458669E+00	.895800E+00	.574480E+00	.780700E+00
				.738160E+00	.613400E+00	.768520E+00	.584900E+00	.870057E+00	.487700E+00
				.100000E+01	.356900E+00				
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
4	2	7	4	-.100000E+01	-.100000E+01	-.300000E+00	-.900000E+00	-.100000E+00	-.500000E+00
				0.	-.450000E+00				
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
4	2	8	4	-.100000E+01	-.100000E+01	-.250000E+00	-.900000E+00	-.800000E-01	-.800000E+00
				0.	-.670000E+00				

PARAMETERS FOR 2 CHECKVALVES.

VALV NUM	TRIP ID	AREA TABL	LATCH FLAG	BACK PRESSURE FOR CLOSING	FORWARD FRIC. COEFF.	OPEN REVERSE FRIC. COEFF.	CLOSED REVERSE FRIC. COEFF.
1	-2	1	0	0.	0.	0.	0.
2	25	0	0	.100000E+01	0.	0.	0.

PARAMETERS FOR 1 LEAKS.

LEAK NUM	DATA PTS	TRIP ID	SINK PRESSURE	TIME OR ANGLE	AREA	TIME OR ANGLE	AREA	TIME OR ANGLE	AREA
1	17	2	.430000E+02	0.	0.	.200000E-01	.816800E+00	.210000E-01	.850300E+00
			.220000E-01	.874300E+00	.230000E-01	.892200E+00	.240000E-01	.910200E+00	
			.250000E-01	.922200E+00	.260000E-01	.934100E+00	.270000E-01	.942500E+00	
			.280000E-01	.949700E+00	.290000E-01	.958100E+00	.310000E-01	.970100E+00	
			.330000E-01	.980300E+00	.350000E-01	.988000E+00	.370000E-01	.994000E+00	
			.390000E-01	.100000E+01	.200000E+03	.100000E+01			

DATA FOR 2 FILL SYSTEMS

FILL TYPE	TRIP ID	FILL PRESS (PSI)	FILL ENTHALPY (BTU/LB)	AIR FRACTION
2	6	1.200000D+01	4.806775D+01	0.

** FILL TABLE **

N	PRESSURE (PSI)	FLOW RATE (LB/SEC-FT2)	N	PRESSURE (PSI)	FLOW RATE (LB/SEC-FT2)	N	PRESSURE (PSI)	FLOW RATE (LB/SEC-FT2)
1	1.000000D-01	3.268538D+02	5	1.610000D+02	1.720277D+02	8	2.200000D+02	4.300693D+01
2	6.000000D+00	3.225534D+02	6	1.890000D+02	1.290208D+02	9	2.244000D+02	0.
3	7.290000D+01	2.687954D+02	7	2.090000D+02	8.601386D+01	10	3.000000D+03	0.
4	1.269000D+02	2.150360D+02						

FILL TYPE	TRIP ID	FILL PRESS (PSI)	FILL ENTHALPY (BTU/LB)	AIR FRACTION
2	4	1.200000D+01	4.806775D+01	0.

** FILL TABLE **

N	PRESSURE (PSI)	FLOW RATE (LB/SEC-FT2)	N	PRESSURE (PSI)	FLOW RATE (LB/SEC-FT2)	N	PRESSURE (PSI)	FLOW RATE (LB/SEC-FT2)
1	1.000000D-01	3.698607D+01	2	3.000000D+03	3.698607D+01			

*** WARNING *** POSSIBLE INITIAL ENTHALPY IMBALANCE
THE JUNCTION ENTHALPY CALCULATED LIES OUTSIDE THE RANGE OF THE TWO VOLUMES IT CONNECTS.

J	VOL.A	VOL.B	H(J)	H(VOL.A)	H(VOL.B)
9	8	9	5.34912E+02	5.34908E+02	5.34910E+02

*** WARNING *** POSSIBLE INITIAL ENTHALPY IMBALANCE
THE JUNCTION ENTHALPY CALCULATED LIES OUTSIDE THE RANGE OF THE TWO VOLUMES IT CONNECTS.

J	VOL.A	VOL.B	H(J)	H(VOL.A)	H(VOL.B)
10	9	10	5.34908E+02	5.34910E+02	5.34909E+02

*** WARNING *** POSSIBLE INITIAL ENTHALPY IMBALANCE
THE JUNCTION ENTHALPY CALCULATED LIES OUTSIDE THE RANGE OF THE TWO VOLUMES IT CONNECTS.

J	VOL.A	VOL.B	H(J)	H(VOL.A)	H(VOL.B)
11	10	11	5.34910E+02	5.34909E+C2	5.34908E+02

JUNCTION DATA ACTUALLY BEING USED.

JUN NUM	FROM VOL	TO VOL	PUMP LEAK FILL	CHK VALV	INITIAL FLOW (LBM/SEC)	JUNCTION FLOW AREA (FT**2)	JUNCTION ELEVATION (FT)	JUNCTION DIAMETER (FT)	LEAK CONTRACTION COEFFICIENT
1	2	1	0	0	.597222E+03	.480000E+00	-.973000E+00	.901000E+00	.100000E+01
2	1	3	0	0	.597222E+03	.682700E+00	0.	.932300E+00	.100000E+01
3	1	28	0	0	0.	.682700E+00	0.	.932300E+00	.100000E+01
4	3	4	0	0	.597222E+03	.660887E+00	0.	.932333E+00	.100000E+01
5	4	5	0	0	.597222E+03	.358820E+00	0.	.675917E+00	.100000E+01
6	5	6	0	0	.597222E+03	.682704E+00	0.	.932333E+00	.100000E+01
7	6	7	0	0	.597222E+03	.556000E+00	.151011E+01	.901670E+00	.100000E+01
8	7	8	0	0	.597222E+03	.162621E+01	.281219E+01	.143894E+01	.100000E+01
9	8	9	0	0	.597222E+03	.162621E+01	.956219E+01	.143894E+01	.100000E+01
10	9	10	0	0	.597222E+03	.162621E+01	.956219E+01	.143894E+01	.100000E+01
11	10	11	0	0	.597222E+03	.162621E+01	.281219E+01	.143894E+01	.100000E+01
12	11	12	0	0	.597222E+03	.556000E+00	-.151011E+01	.901670E+00	.100000E+01
13	12	13	0	0	.597222E+03	.682704E+00	-.487437E+00	.932333E+00	.100000E+01
14	13	14	0	0	.597222E+03	.682704E+00	-.382994E+01	.932333E+00	.100000E+01
15	14	15	-1	0	.307722E+03	.394063E+00	-.212160E+01	.708333E+00	.100000E+01
16	14	16	-2	0	.289500E+03	.394063E+00	-.212160E+01	.708333E+00	.100000E+01
17	15	17	1	0	.307722E+03	.394063E+00	0.	.708333E+00	.100000E+01
18	16	18	2	0	.289500E+03	.394063E+00	0.	.708333E+00	.100000E+01
19	17	19	0	0	.307722E+03	.394063E+00	0.	.708333E+00	.100000E+01
20	18	19	0	0	.289500E+03	.394063E+00	0.	.708333E+00	.100000E+01
21	19	20	0	0	.597222E+03	.660887E+00	0.	.932333E+00	.100000E+01
22	20	21	0	0	.597222E+03	.682704E+00	0.	.932333E+00	.100000E+01
23	21	22	0	0	.597222E+03	.130494E+01	-.235167E+01	.911450E+00	.100000E+01
24	22	23	0	0	.597222E+03	.130494E+01	-.139636E+02	.128890E+01	.100000E+01
25	23	24	0	0	.597222E+03	.105600E+01	-.122600E+02	.203800E+01	.100000E+01
26	24	2	0	0	.597222E+03	.785400E+00	-.283800E+01	.100000E+01	.100000E+01
27	21	25	0	0	0.	.682704E+00	0.	.932333E+00	.100000E+01
28	25	26	0	0	0.	.682704E+00	0.	.932333E+00	.100000E+01
29	26	47	0	0	0.	.900370E-01	0.	.338600E+00	.100000E+01
30	27	44	0	0	0.	.253160E+00	0.	.567750E+00	.600000E+00
31	44	37	0	1	0.	0.	0.	.843833E+00	.600000E+00
32	28	29	0	0	0.	.682704E+00	0.	.932333E+00	.100000E+01
33	29	30	0	0	0.	.900370E-01	0.	.338583E+00	.100000E+01
34	30	31	0	0	0.	.900370E-01	.227083E+01	.359417E+00	.100000E+01
35	31	32	0	0	0.	.206034E+00	.685333E+01	.527819E+00	.100000E+01
36	32	33	0	0	0.	.206034E+00	.685333E+01	.527819E+00	.100000E+01
37	33	34	0	0	0.	.900370E-01	.227083E+01	.359417E+00	.100000E+01
38	34	35	0	0	0.	.900370E-01	-.227083E+01	.359417E+00	.100000E+01
39	35	36	0	0	0.	.900370E-01	-.397917E+01	.359417E+00	.100000E+01
40	36	45	0	0	0.	.900370E-01	0.	.338580E+00	.600000E+00

JUNCTION DATA ACTUALLY BEING USED.

JUN NUM	FROM VOL	TO VOL	PUMP LEAK FILL	CHK VALV	INITIAL FLOW (LBM/SEC)	JUNCTION FLOW AREA (FT**2)	JUNCTION ELEVATION (FT)	JUNCTION DIAMETER (FT)	LEAK CONTRACTION COEFFICIENT
41	45	37	0	1	0.	0.	0.	.843833E+00	.600000E+00
42	29	39	0	0	0.	.417500E+00	0.	.708300E+00	.100000E+01
43	26	38	0	0	0.	.417584E+00	.466167E+00	.708333E+00	.100000E+01
44	43	46	0	2	0.	.544700E-01	0.	.286500E+00	.100000E+01
45	40	4	0	0	0.	.155592E-01	.466167E+00	.140750E+00	.750000E+00
46	41	40	0	0	0.	.155592E-01	.435000E+01	.140750E+00	.100000E+01
47	46	23	0	0	0.	.668130E-01	-.157900E+02	.291670E+00	.100000E+01
48	47	27	0	0	0.	.900370E-01	0.	.338600E+00	.600000E+00
49	0	46	1	0	0.	0.	0.	.286500E+00	.100000E+01
50	0	46	2	0	0.	0.	0.	.286500E+00	.100000E+01

JUNCTION DATA ACTUALLY BEING USED.

JUN NUM	VERT JUN INDX	CHOK -ING INDX	IC CALC INDX	MOM EQ. INDX	JUNCTION INERTIA	SP. ENERGY LOSS COEF. (FORWARD)	SP.ENERGY LOSS COEF. (REVERSE)	RESIDUAL LOSS COEF. (NON-DIR)	RESIDUAL DELTA P (PSIA)	ENTHALPY TRANS INLET	ENTHALPY TRANS OUTLET	ANGLE
1	0	5	2	0	.162823E+01	.648000E+00	.648000E+00	.130489E-03	.458714E-03	NO	NO	.100000E+01
2	1	5	0	0	.517300E+01	.107400E+01	.107400E+01	.332213E-03	.577339E-03	NO	NO	0.
3	1	5	0	0	.474100E+01	.309500E+00	.473200E+00	0.	0.	NO	NO	0.
4	1	5	0	0	.874485E+01	.313100E+00	.313100E+00	.254241E-03	.471499E-03	NO	NO	0.
5	1	5	0	0	.830351E+01	.912000E-01	.912000E-01	.895879E-04	.563627E-03	NO	NO	0.
6	1	-5	0	0	.521630E+01	.522000E+00	.522000E+00	.286777E-03	.498400E-03	NO	NO	0.
7	1	2	0	0	.188298E+01	.200000E+01	.200000E+01	.167226E-03	.438184E-03	NO	NO	0.
8	0	5	0	0	.216404E+01	.357000E+00	.631200E+00	.132986E-02	.407364E-03	NO	YES	0.
9	0	5	0	0	.310539E+01	0.	0.	.142764E-02	.437331E-03	YES	YES	0.
10	0	-5	0	0	.310539E+01	.560000E-01	.560000E-01	.120133E-02	.368015E-03	YES	YES	0.
11	0	5	0	0	.216404E+01	.631200E+00	.357000E+00	.112452E-02	.344484E-03	YES	NO	0.
12	1	5	0	0	.137120E+01	.177000E+01	.177000E+01	.203368E-03	.532936E-03	NO	NO	0.
13	0	5	0	0	.604346E+01	.220000E+00	.220000E+00	.255313E-03	.443796E-03	NO	NO	0.
14	1	5	0	0	.958135E+01	.107500E+01	.125000E+01	.250448E-03	.435341E-03	NO	NO	0.
15	0	5	0	0	.170096E+02	.229100E+00	.229100E+00	.103307E+00	.143098E+00	NO	NO	0.
						FLOW SOLUTION MAY BE UNSTABLE DUE TO HIGH NEGATIVE RESIDUAL.				***** WARNING.		
16	0	5	0	0	.170096E+02	.223000E+00	.223000E+00	-.181680E+00	-.222736E+00	NO	NO	0.
17	0	5	0	0	.182935E+02	.165600E+00	.165600E+00	.103412E+00	.143212E+00	NO	NO	0.
						FLOW SOLUTION MAY BE UNSTABLE DUE TO HIGH NEGATIVE RESIDUAL.				***** WARNING.		
18	0	5	0	0	.144217E+02	.210000E+00	.210000E+00	-.182518E+00	-.223711E+00	NO	NO	0.
19	1	5	0	0	.128504E+02	.661300E+00	.690000E+00	.290264E-03	.401900E-03	NO	NO	0.
20	1	5	0	0	.897863E+01	.258400E+01	.120000E+01	.385185E-03	.472019E-03	NO	NO	0.
21	1	5	0	0	.102097E+02	.815000E+00	.815000E+00	.256846E-03	.476259E-03	NO	NO	0.
22	1	5	0	0	.394776E+01	.189500E+01	.189500E+01	.252332E-03	.438473E-03	NO	NO	0.
23	0	5	2	0	.462725E+01	.644000E-01	.647000E-01	.128452E-02	.610948E-03	NO	NO	.100000E+01
24	0	5	2	0	.403049E+01	.908000E+00	.908000E+00	.112547E-02	.535282E-03	NO	NO	.100000E+01
25	0	5	2	0	.179040E+01	.982000E+00	.982000E+00	.668589E-03	.485569E-03	NO	NO	.100000E+01
26	0	5	2	0	.175689E+01	.513000E+00	.513000E+00	.335595E-03	.440626E-03	NO	NO	.100000E+01
27	1	5	0	0	.391683E+01	.804000E+00	.133020E+01	0.	0.	NO	NO	0.
28	1	5	0	0	.592418E+01	.100500E+00	.100500E+00	0.	0.	NO	NO	0.
29	1	5	0	0	.111100E+02	.260000E+00	.754000E+00	0.	0.	NO	NO	0.
30	1	0	0	0	.116155E+02	.299560E+00	.246290E+00	0.	0.	NO	NO	0.
31	1	0	0	0	.252555E+02	0.	0.	0.	0.	NO	NO	0.
32	1	5	0	0	.592418E+01	.100500E+00	.100500E+00	0.	0.	NO	NO	0.
33	1	5	0	0	.203298E+02	.396050E+00	.753630E+00	0.	0.	NO	NO	0.
34	0	5	0	0	.199010E+02	.935960E+00	.935960E+00	0.	0.	NO	NO	0.
35	0	5	0	0	.575875E+01	.581834E+01	.581834E+01	0.	0.	NO	NO	0.
36	0	5	0	0	.575875E+01	.581834E+01	.581834E+01	0.	0.	NO	NO	0.
37	0	5	0	0	.272573E+02	.230250E+00	.230250E+00	0.	0.	NO	NO	0.
38	0	5	0	0	.270551E+02	.635100E+01	.635100E+01	0.	0.	NO	NO	0.
39	1	5	0	0	.375249E+02	.635100E+01	.635100E+01	0.	0.	NO	NO	0.
40	1	0	0	0	.409140E+02	.948830E+00	.438340E+00	0.	0.	NO	NO	0.
41	1	0	0	0	.252555E+02	0.	0.	0.	0.	NO	NO	0.

JUNCTION DATA ACTUALLY BEING USED.

JUN NUM	VERT JUN INDX	CHOK -ING INDX	IC CALC INDX	MOM EQ. INDX	JUNCTION INERTIA	SP. ENERGY LOSS COEF. (FORWARD)	SP.ENERGY LOSS COEF. (REVERSE)	RESIDUAL LOSS COEF.. (NON-DIR)	RESIDUAL DELTA P (PSIA)	ENTHALPY TRANS INLET	ENTHALPY TRANS OUTLET	ANGLE
42	0	5	0	3	.193380E+02	.124700E+01	.457600E+00	0.	0.	NO	NO	0.
43	0	5	0	3	.142230E+02	.124700E+01	.457600E+00	0.	0.	NO	NO	0.
44	0	5	2	0	.136360E+03	.299000E+02	.299000E+02	0.	0.	NO	NO	0.
45	0	5	0	3	.753299E+02	.100000E+01	.100000E+01	0.	0.	NO	NO	0.
46	0	5	0	0	.748899E+02	.113400E+02	.113400E+02	0.	0.	NO	NO	0.
47	1	5	2	0	.136255E+03	.270000E+01	.220000E+01	0.	0.	NO	NO	0.
48	1	0	0	0	.151800E+02	.415000E+00	.290000E+00	0.	0.	NO	NO	0.
49	0	5	2	3	.135883E+03	0.	0.	0.	0.	NO	NO	0.
50	0	5	2	3	.135883E+03	0.	0.	0.	0.	NO	NO	0.

PARAMETERS IN JUNCTION MATRIX

NUMBER OF CHAINS	(MS)	=	4
NUMBER OF CHAIN JUNCTIONS	(NTRI)	=	25
NUMBER OF NON-CHAIN JUNCTIONS	(NQ)	=	23
INDEX OF FIRST CRITICAL JUNCTION	(MPP)	=	49
TOTAL NUMBER OF JUNCTIONS	(NTOTJ)	=	50

DATA FOR 38 HEAT CONDUCTING SLABS.

SLAB NUM	L VOL	R VOL / LOC X IND	GEOM NUM / L C IND	STK IND / R C IND	LEFT SURFACE AREA, FT**2 / LFT HEATED EQ DIAMETER, FT	RIGHT SURFACE AREA, FT**2 / RHT HEATED EQ DIAMETER, FT	VOLUME FT**3 / LEFT CHANNEL LENGTH, FT	LEFT HYDRAULIC DIAMETER, FT / RIGHT CHANNEL LENGTH, FT	RIGHT HYDRAULIC DIAMETER, FT / BOT HEIGHT IN R (L) VOL, FT	MAJOR L IN / TOP HEIGHT IN R (L) VOL, FT	MAJOR L OUT	JUNCTIONS R IN	JUNCTIONS R OUT
1	23	0	1	0	.700000E+02	0.	.272800E+01	.174400E+01	0.	24	25	0	0
		0	0	0	.174400E+01	0.	.174360E+02	0.	0.	0.			
2	1	0	2	0	.230540E+02	0.	.982900E+00	.178800E+01	0.	1	2	0	0
		0	0	0	0.	0.	.410300E+01	0.	0.	0.			
3	2	0	2	0	.104770E+02	0.	.446700E+00	.131400E+01	0.	26	1	0	0
		0	0	0	0.	0.	.186500E+01	0.	0.	0.			
4	24	0	3	0	.603180E+02	0.	.523600E+01	.231300E+01	0.	25	26	0	0
		0	0	0	0.	0.	.942200E+01	0.	0.	0.			
5	36	0	11	0	.342000E+01	0.	.253300E+00	.338600E+00	0.	39	40	0	0
		0	0	0	.338600E+00	0.	.321700E+01	0.	0.	0.			
6	35	0	8	0	.733000E+01	0.	.967400E+00	.932000E+00	0.	38	39	0	0
		0	0	0	.932000E+00	0.	.250400E+01	0.	0.	0.			
7	0	21	4	0	0.	.296759E+02	.354090E+01	0.	.583300E+00	0	0	22	23
		0	0	0	0.	0.	0.	.343500E+01	0.	0.			
8	21	0	5	0	.359780E+02	0.	.330540E+02	.583300E+00	0.	22	23	0	0
		0	0	0	0.	0.	.343500E+01	0.	0.	0.			
9	0	22	4	0	0.	.100310E+03	.205560E+02	0.	.333300E+00	0	0	23	24
		0	0	0	0.	0.	0.	.116110E+02	0.	0.			
10	22	0	5	0	.121618E+03	0.	.111737E+03	.333300E+00	0.	23	24	0	0
		0	0	0	0.	0.	.116110E+02	0.	0.	0.			
11	34	0	11	0	.919000E+01	0.	.680700E+00	.338600E+00	0.	37	38	0	0
		0	0	0	.338600E+00	0.	.864300E+01	0.	0.	0.			
12	33	0	13	0	.163200E+02	0.	.272200E+01	.120300E+01	0.	36	37	0	0
		0	0	0	.120300E+01	0.	.431900E+01	0.	0.	0.			
13	32	0	13	0	.326700E+02	0.	.544700E+01	.120300E+01	0.	35	36	0	0
		0	0	0	.120300E+01	0.	.864300E+01	0.	0.	0.			
14	31	0	13	0	.163200E+02	0.	.272200E+01	.120300E+01	0.	34	35	0	0
		0	0	0	.120300E+01	0.	.431900E+01	0.	0.	0.			
15	30	0	11	0	.683000E+01	0.	.506100E+00	.338600E+00	0.	33	34	0	0
		0	0	0	.338600E+00	0.	.642700E+01	0.	0.	0.			
16	23	0	5	0	.434140E+02	0.	.398870E+02	.289200E+01	0.	24	25	0	0
		0	0	0	.289200E+01	0.	.414500E+01	0.	0.	0.			
17	8	42	6	0	.112192E+04	.139542E+04	.513900E+01	.335000E-01	.466700E+01	8	9	0	0
		0	0	0	.335000E-01	.466700E+01	.579000E+01	.579000E+01	0.	0.			

SLAB 17 EXTENDS BEYOND TOP OR BOTTOM OF 1 VOLUME. IF IXLO GT 0, EXECUTION IS DELETED.

18	9	42	6	0	.649380E+03	.607680E+03	.297500E+01	.335000E-01	.466700E+01		9	10	0	0
		0	0	0	.335000E-01	.466700E+01	.335000E+01	.335000E+01	0.	0.				

SLAB 18 EXTENDS BEYOND TOP OR BOTTOM OF 1 VOLUME. IF IXLO GT 0, EXECUTION IS DELETED.

19	10	42	6	0	.112192E+04	.139542E+04	.513900E+01	.335000E-01	.466700E+01		10	11	0	0
		0	0	0	.335000E-01	.466700E+01	.579000E+01	.579000E+01	0.	0.				

SLAB 19 EXTENDS BEYOND TOP OR BOTTOM OF 1 VOLUME. IF IXLO GT 0, EXECUTION IS DELETED.

20	44	0	7	0	.130630E+02	0.	.139100E+01		.932000E+00	0.		30	31	0	0
		0	0	0	.932000E+00	0.	.589500E+01	0.		0.	0.				
21	45	0	7	0	.130630E+02	0.	.139100E+01		.932000E+00	0.		40	41	0	0
		0	0	0	.932000E+00	0.	.589500E+01	0.		0.	0.				
22	25	0	8	0	.153100E+02	0.	.202000E+01		.932000E+00	0.		27	28	0	0
		0	0	0	.932000E+00	0.	.522800E+01	0.		0.	0.				
23	26	0	8	0	.988000E+01	0.	.130400E+01		.932000E+00	0.		28	29	0	0
		0	0	0	.932000E+00	0.	.337500E+01	0.		0.	0.				
24	3	0	8	0	.154500E+02	0.	.203800E+01		.932000E+00	0.		2	4	0	0
		0	0	0	.932000E+00	0.	.527500E+01	0.		0.	0.				
25	4	0	8	0	.195200E+02	0.	.257500E+01		.932000E+00	0.		4	5	0	0
		0	0	0	.932000E+00	0.	.666500E+01	0.		0.	0.				
26	5	0	8	0	.136800E+02	0.	.180500E+01		.932000E+00	0.		5	6	0	0
		0	0	0	.932000E+00	0.	.467200E+01	0.		0.	0.				
27	6	0	9	0	.107800E+02	0.	.160920E+01		.106780E+01	0.		6	7	0	0
		0	0	0	.106780E+01	0.	.321300E+01	0.		0.	0.				
28	7	0	10	0	.150000E+02	0.	.526700E+01		.146150E+01	0.		7	8	0	0
		0	0	0	.146150E+01	0.	.250000E+01	0.		0.	0.				
29	11	0	10	0	.159000E+02	0.	.526700E+01		.146150E+01	0.		11	12	0	0
		0	0	0	.146150E+01	0.	.250000E+01	0.		0.	0.				
30	12	0	9	0	.770000E+01	0.	.115020E+01		.106780E+01	0.		12	13	0	0
		0	0	0	.106780E+01	0.	.229700E+01	0.		0.	0.				
31	13	0	8	0	.190400E+02	0.	.251100E+01		.932000E+00	0.		13	14	0	0
		0	0	0	.932000E+00	0.	.650000E+01	0.		0.	0.				
32	14	0	8	0	.192700E+02	0.	.254300E+01		.932000E+00	0.		14	15	0	0
		0	0	0	.932000E+00	0.	.658100E+01	0.		0.	0.				
33	19	0	8	0	.269700E+02	0.	.355800E+01		.932000E+00	0.		19	21	0	0
		0	0	0	.932000E+00	0.	.921100E+01	0.		0.	0.				
34	20	0	8	0	.138500E+02	0.	.182800E+01		.932000E+00	0.		21	22	0	0
		0	0	0	.932000E+00	0.	.472900E+01	0.		0.	0.				
35	28	0	8	0	.137200E+02	0.	.181100E+01		.932000E+00	0.		3	32	0	0
		0	0	0	.932000E+00	0.	.468600E+01	0.		0.	0.				
36	29	0	8	0	.988000E+01	0.	.130400E+01		.932000E+00	0.		32	33	0	0
		0	0	0	.932000E+00	0.	.337500E+01	0.		0.	0.				
37	27	0	12	0	.575000E+01	0.	.492700E+00		.567800E+00	0.		48	30	0	0
		0	0	0	.567800E+00	0.	.322900E+01	0.		0.	0.				

38	46	0	14	0	.164000E+02	.475400E+02	.869000E+01	.833330E+00	0.		44	47	0	0
		0	0	0	0.	.800000E+00	.181600E+02	.181600E+02	0.	0.				

AXIAL STACKS OF HEAT SLABS

1	THROUGH	1	1	DIMENSIONAL HEAT TRANSFER
2	THROUGH	2	1	DIMENSIONAL HEAT TRANSFER
3	THROUGH	3	1	DIMENSIONAL HEAT TRANSFER
4	THROUGH	4	1	DIMENSIONAL HEAT TRANSFER
5	THROUGH	5	1	DIMENSIONAL HEAT TRANSFER
6	THROUGH	6	1	DIMENSIONAL HEAT TRANSFER
7	THROUGH	7	1	DIMENSIONAL HEAT TRANSFER
8	THROUGH	8	1	DIMENSIONAL HEAT TRANSFER
9	THROUGH	9	1	DIMENSIONAL HEAT TRANSFER
10	THROUGH	10	1	DIMENSIONAL HEAT TRANSFER
11	THROUGH	11	1	DIMENSIONAL HEAT TRANSFER
12	THROUGH	12	1	DIMENSIONAL HEAT TRANSFER
13	THROUGH	13	1	DIMENSIONAL HEAT TRANSFER
14	THROUGH	14	1	DIMENSIONAL HEAT TRANSFER
15	THROUGH	15	1	DIMENSIONAL HEAT TRANSFER
16	THROUGH	16	1	DIMENSIONAL HEAT TRANSFER
17	THROUGH	17	1	DIMENSIONAL HEAT TRANSFER
18	THROUGH	18	1	DIMENSIONAL HEAT TRANSFER
19	THROUGH	19	1	DIMENSIONAL HEAT TRANSFER
20	THROUGH	20	1	DIMENSIONAL HEAT TRANSFER
21	THROUGH	21	1	DIMENSIONAL HEAT TRANSFER
22	THROUGH	22	1	DIMENSIONAL HEAT TRANSFER
23	THROUGH	23	1	DIMENSIONAL HEAT TRANSFER
24	THROUGH	24	1	DIMENSIONAL HEAT TRANSFER
25	THROUGH	25	1	DIMENSIONAL HEAT TRANSFER
26	THROUGH	26	1	DIMENSIONAL HEAT TRANSFER
27	THROUGH	27	1	DIMENSIONAL HEAT TRANSFER
28	THROUGH	28	1	DIMENSIONAL HEAT TRANSFER
29	THROUGH	29	1	DIMENSIONAL HEAT TRANSFER
30	THROUGH	30	1	DIMENSIONAL HEAT TRANSFER
31	THROUGH	31	1	DIMENSIONAL HEAT TRANSFER
32	THROUGH	32	1	DIMENSIONAL HEAT TRANSFER
33	THROUGH	33	1	DIMENSIONAL HEAT TRANSFER
34	THROUGH	34	1	DIMENSIONAL HEAT TRANSFER
35	THROUGH	35	1	DIMENSIONAL HEAT TRANSFER
36	THROUGH	36	1	DIMENSIONAL HEAT TRANSFER
37	THROUGH	37	1	DIMENSIONAL HEAT TRANSFER
38	THROUGH	38	1	DIMENSIONAL HEAT TRANSFER

DATA FOR 14 HEAT SLAB GEOMETRIES

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
1	1		1	4	0.	.129900E-01	0.
	2	0	1	4		.259700E-01	0.

SUM OF POWER FRACTIONS IS 0.

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
2	1		1	4	.894000E+00	.208000E-01	0.
	2	0	1	4		.208000E-01	0.

SUM OF POWER FRACTIONS IS 0.

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
2	1		1	4	.101900E+01	.417000E-01	0.
	2	0	1	4		.417000E-01	0.

SUM OF POWER FRACTIONS IS 0.

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
2	1		1	4	.125000E+01	.625000E-01	0.
	2	0	1	4		.625000E-01	0.

SUM OF POWER FRACTIONS IS 0.

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
2	1		1	4	.166700E+01	.250000E+00	0.
	2	0	1	4		.500000E+00	0.

SUM OF POWER FRACTIONS IS 0.

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
2	1		1	4	.167500E-01	.204000E-02	0.
	2	0	1	4		.204000E-02	0.

SUM OF POWER FRACTIONS IS 0.

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
2	1		1	4	.354000E+00	.310000E-01	0.
	2	0	1	4		.630000E-01	0.

SUM OF POWER FRACTIONS IS 0.

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
2	1		1	4	.400000E+00	.390000E-01	0.
	2	0	1	4		.780000E-01	0.

SUM OF POWER FRACTIONS IS 0.

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
2	1		1	4	.533900E+00	.443000E-01	0.
	2	0	1	4		.885000E-01	0.

SUM OF POWER FRACTIONS IS 0.

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
2	1		1	4	.225000E+01	.208000E-01	0.
	2	0	1	4		.270900E+00	0.

SUM OF POWER FRACTIONS IS 0.

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
2	1		1	4	.169300E+00	.208000E-01	0.
	2	0	1	4		.417000E-01	0.

SUM OF POWER FRACTIONS IS 0.

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
2	1		1	4	.283900E+00	.252000E-01	0.
	2	0	1	4		.503000E-01	0.

SUM OF POWER FRACTIONS IS 0.

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
2	1		1	4	.601600E+00	.495000E-01	0.
	2	0	1	4		.989000E-01	0.

SUM OF POWER FRACTIONS IS 0.

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
2	1		1	8	.145830E+00	.833300E-01	0.
	2	0	1	5		.833300E-01	0.
	3	0	1	3		.104170E+00	0.

SUM OF POWER FRACTIONS IS 0.

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PROPERTIES FOR HEAT CONDUCTING MATERIAL NUMBER   1

                              THERMAL CONDUCTIVITY (BTU/FT-HR-F) VS TEMPERATURE      (T(1),K(1),----)

 -2 POINTS          .212000E+03    .957400E+01    .237200E+04    .192940E+02

                              VOL HEAT CAPACITY (BTU/FT**3-F) VS TEMPERATURE         (T(1),C(1),----)

-13 POINTS          .170000E+03    .444608E+02    .250000E+03    .443296E+02    .400000E+03    .444872E+02
                    .600000E+03    .453920E+02    .800000E+03    .469094E+02    .100000E+04    .488415E+02
                    .120000E+04    .509906E+02    .140000E+04    .531587E+02    .160000E+04    .551481E+02
                    .180000E+04    .567609E+02    .200000E+04    .577993E+02    .220000E+04    .580655E+02
                    .240000E+04    .573616E+02
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RELAP4/C05 01/02/76 (1) RELAP4 THERMAL HYDRAULIC CODE CONFIGURATION CONTROL:YES
LOFT L135-A23 PRE-TEST PREDICTIONS WITH NEW PRESSURIZER MODEL CONCO=.75 12/20/7o

CPU TIME = 1.03
STANDARD TIME STEP NUMBER 0. ACTUAL TIME STEP NUMBER 0. TIME = 0. SEC. LAST CT = 0. SEC.

TOTAL SYSTEM QUANTITIES	NORM POWR	POWR (MW)	HEAT REM (BTU/HR)	ENGY LEAK (BTU)	MASS LEAK (LB)	ENGY BAL. (BTU)	MASS BAL. (LB)	TOT. REAC ($)	REAC T SEC.
	1.00000E+00	0.	0.	0.	0.	4.77463E+07	1.5C502E+05	0.	0.

VOLUME NUMBER	AVG. PRES PSIA	TOT. MASS (LB) H2O	AVG. ENTH (BTU/LB)	AVG. DENS (LB/FT3)	AVG. TEMP (F)	AVG. QUAL	BUBB MASS (LB)	MIXT LEVL (FT)	LIQ. MASS (LB)
1	2.26731E+03	7.73749E+02	5.34893E+02	4.75226E+01	5.40000E+02	0.	0.	7.50000E+00	7.73749E+02
2	2.27113E+03	1.99415E+02	5.34889E+02	4.75250E+01	5.40000E+02	0.	0.	1.86500E+00	1.99415E+02
3	2.26466E+03	3.77851E+02	5.34897E+02	4.75209E+01	5.40000E+02	0.	0.	9.32333E-01	3.77851E+02
4	2.26394E+03	2.16237E+02	5.34898E+02	4.75204E+01	5.40000E+02	0.	0.	9.32333E-01	2.16237E+02
5	2.26328E+03	1.51582E+02	5.34898E+02	4.75200E+01	5.40000E+02	0.	0.	9.32333E-01	1.51582E+02
6	2.26283E+03	1.36772E+02	5.34899E+02	4.75197E+01	5.40000E+02	0.	0.	2.42156E+00	1.36772E+02
7	2.25828E+03	5.31351E+02	5.34905E+02	4.75168E+01	5.40000E+02	0.	0.	2.50000E+00	5.31351E+02
8	2.25589E+03	5.21570E+02	5.34908E+02	4.75152E+01	5.40000E+02	0.	0.	6.75000E+00	5.21570E+02
9	2.25374E+03	2.58846E+02	5.34910E+02	4.75138E+01	5.40000E+02	0.	0.	2.00521E+00	2.58846E+02
10	2.25447E+03	5.21560E+02	5.34909E+02	4.75143E+01	5.40000E+02	0.	0.	6.75000E+00	5.21560E+02
11	2.25563E+03	5.31332E+02	5.34908E+02	4.75151E+01	5.40000E+02	0.	0.	2.50000E+00	5.31332E+02
12	2.25027E+03	9.77451E+01	5.34915E+02	4.75116E+01	5.40000E+02	0.	0.	2.37508E+00	9.77451E+01
13	2.25012E+03	2.10855E+02	5.34915E+02	4.75115E+01	5.40000E+02	0.	0.	3.80867E+00	2.10855E+02
14	2.24842E+03	2.13486E+02	5.34917E+02	4.75104E+01	5.40000E+02	0.	0.	2.17450E+00	2.13486E+02
15	2.26398E+03	1.79894E+02	5.34897E+02	4.75204E+01	5.40000E+02	0.	0.	2.47577E+00	1.79894E+02
16	2.26533E+03	1.79897E+02	5.34896E+02	4.75213E+01	5.40000E+02	0.	0.	2.47577E+00	1.79897E+02
17	2.27848E+03	9.01069E+01	5.34880E+02	4.75297E+01	5.40000E+02	0.	0.	7.08333E-01	9.01069E+01
18	2.28092E+03	3.29559E+01	5.34877E+02	4.75313E+01	5.40000E+02	0.	0.	7.08333E-01	3.29559E+01
19	2.27583E+03	2.98881E+02	5.34883E+02	4.75280E+01	5.40000E+02	0.	0.	9.32333E-01	2.98881E+02
20	2.27421E+03	1.53447E+02	5.34885E+02	4.75270E+01	5.40000E+02	0.	0.	9.32333E-01	1.53447E+02
21	2.27261E+03	3.54049E+02	5.34887E+02	4.75259E+01	5.40000E+02	0.	0.	3.43500E+00	3.54049E+02
22	2.27486E+03	8.11131E+02	5.34884E+02	4.75274E+01	5.40000E+02	0.	0.	1.16119E+01	8.11131E+02
23	2.27673E+03	1.09991E+03	5.34882E+02	4.75286E+01	5.40000E+02	0.	0.	4.15000E+00	1.09991E+03
24	2.27372E+03	1.43763E+03	5.34885E+02	4.75267E+01	5.40000E+02	0.	0.	9.42200E+00	1.43763E+03
25	2.27318E+03	1.69650E+02	5.34886E+02	4.75263E+01	5.40000E+02	0.	0.	9.32333E-01	1.69650E+02
26	2.27318E+03	1.03394E+02	5.28797E+02	4.78266E+01	5.35000E+02	0.	0.	9.32333E-01	1.03394E+02
27	2.27318E+03	3.93317E+01	5.22722E+02	4.81115E+01	5.30000E+02	0.	0.	5.67750E-01	3.93317E+01
28	2.26666E+03	3.58782E+02	5.34894E+02	4.75221E+01	5.40000E+02	0.	0.	9.32333E-01	3.58782E+02
29	2.26685E+03	1.09795E+02	5.32457E+02	4.76445E+01	5.38000E+02	0.	0.	9.32333E-01	1.09795E+02
30	2.26651E+03	1.38347E+01	5.30022E+02	4.77638E+01	5.36000E+02	0.	0.	2.44013E+00	1.38347E+01
31	2.26535E+03	2.19412E+02	5.27588E+02	4.78798E+01	5.34000E+02	0.	0.	4.58250E+00	2.19412E+02
32	2.26394E+03	4.81642E+02	5.25154E+02	4.79927E+01	5.32000E+02	0.	0.	4.04708E+00	4.81642E+02
33	2.26535E+03	2.20452E+02	5.22729E+02	4.81068E+01	5.30000E+02	0.	0.	4.58250E+00	2.20452E+02
34	2.26685E+03	1.97222E+01	5.20358E+02	4.82302E+01	5.28000E+02	0.	0.	4.54167E+00	1.97222E+01
35	2.26795E+03	8.25591E+01	5.19172E+02	4.82914E+01	5.27000E+02	0.	0.	2.17450E+00	8.25591E+01
36	2.26750E+03	2.79792E+01	5.17988E+02	4.83510E+01	5.26000E+02	0.	0.	4.31775E+00	2.79792E+01
37	4.29912E+01	1.25925E+05	2.41773E+02	3.40940E+01	2.71634E+02	1.23983E-03	0.	9.42000E+00	1.25768E+05
38	2.27039E+03	3.90272E+02	5.30018E+02	4.77662E+01	5.36000E+02	0.	0.	2.06508E+00	3.90272E+02
39	2.26631E+03	2.79213E+02	5.34895E+02	4.75219E+01	5.40000E+02	0.	0.	2.89583E+00	2.79213E+02
40	2.26317E+03	1.67035E+01	5.62288E+02	4.60956E+01	5.62000E+02	0.	0.	4.03500E+00	1.67035E+01
41	2.26202E+03	7.77191E+02	7.59739E+02	2.23638E+01	6.53472E+02	1.37637E-01	1.44149E-03	3.50002E+00	6.70221E+02
42	9.62790E+02	5.85317E+03	5.76346E+02	2.07854E+01	5.40000E+02	6.01149E-02	3.67076E-07	6.89700E+00	5.50130E+03
43	6.12000E+02	5.64037E+03	5.80333E+01	4.43563E+01	9.00000E+01	1.47705E-05	0.	6.50948E+00	5.64028E+03
44	2.27317E+03	1.64811E+02	4.76087E+02	5.03046E+01	4.90000E+02	0.	0.	8.41146E-01	1.64811E+02
45	2.26684E+03	1.64801E+02	4.76086E+02	5.03016E+01	4.90000E+02	0.	0.	8.41146E-01	1.64801E+02
46	2.27871E+03	5.76561E+01	5.34879E+02	4.75298E+01	5.40000E+02	0.	0.	1.57900E+01	5.76561E+01
47	2.27318E+03	6.82008E+00	5.28797E+02	4.78266E+01	5.35000E+02	0.	0.	3.38600E-01	6.82008E+00

VOLUME AIR MASS

1	0.
2	0.
3	0.
4	0.
5	0.
6	0.
7	0.
8	0.
9	0.
10	0.
11	0.
12	0.
13	0.
14	0.
15	0.
16	0.
17	0.
18	0.
19	0.
20	0.
21	0.
22	0.
23	0.
24	0.
25	0.
26	0.
27	0.
28	0.
29	0.
30	0.
31	0.
32	0.
33	0.
34	0.
35	0.
36	0.
37	0.
38	0.
39	0.
40	0.
41	0.
42	0.
43	1.17080E+02
44	0.
45	0.
46	0.
47	0.

VOLUME NUMBER	PUMP SPEED (RPM)	PUMP NORM TORQUE
15	1.97115E+03	3.73311E-01
16	1.97115E+03	3.68116E-01

HEAT SLAB NUMBER		VOL NUM	HEAT TRAN MODE	SURF FLUX (BTU/HR/FT2)	CRIT FLUX (BTU/HR/FT2)	H.T. COEF (BTU/H/F2/F)	SURF TEMP (F)	AVG. QUAL	POWR H2O (BTU/HR)
1	LEFT	23	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
2	LEFT	1	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
3	LEFT	2	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
4	LEFT	24	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
5	LEFT	36	0	0.	9.00000E+04	5.00000E+00	5.26000E+02	0.	0.
6	LEFT	35	0	0.	9.00000E+04	5.00000E+00	5.27000E+02	0.	0.
7	RIGHT	21	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
8	LEFT	21	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
9	RIGHT	22	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
10	LEFT	22	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
11	LEFT	34	0	0.	9.00000E+04	5.00000E+00	5.28000E+02	0.	0.
12	LEFT	33	0	0.	9.00000E+04	5.00000E+00	5.30000E+02	0.	0.
13	LEFT	32	0	0.	9.00000E+04	5.00000E+00	[illegible]	0.	0.

13	LEFT	32	0	0.	9.00000E+04	5.00000E+00	5.32000E+02	0.	0.
14	LEFT	31	0	0.	9.00000E+04	5.00000E+00	5.34000E+02	0.	0.
15	LEFT	30	0	0.	9.00000E+04	5.00000E+00	5.36000E+02	0.	0.
16	LEFT	23	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
17	LEFT	8	0	0.	7.74493E+05	5.00000E+00	5.40000E+02	0.	0.
17	RIGHT	42	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	6.01149E-02	0.
18	LEFT	9	0	0.	7.75253E+05	5.00000E+00	5.40000E+02	0.	0.
18	RIGHT	42	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	6.01149E-02	0.
19	LEFT	10	0	0.	7.74995E+05	5.00000E+00	5.40000E+02	0.	0.
19	RIGHT	42	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	6.01149E-02	0.
20	LEFT	44	0	0.	9.00000E+04	5.00000E+00	4.90000E+02	0.	0.
21	LEFT	45	0	0.	9.00000E+04	5.00000E+00	4.90000E+02	0.	0.
22	LEFT	25	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
23	LEFT	26	0	0.	9.00000E+04	5.00000E+00	5.35000E+02	0.	0.
24	LEFT	3	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
25	LEFT	4	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
26	LEFT	5	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
27	LEFT	6	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
28	LEFT	7	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
29	LEFT	11	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
30	LEFT	12	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
31	LEFT	13	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
32	LEFT	14	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
33	LEFT	19	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
34	LEFT	20	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
35	LEFT	28	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.
36	LEFT	29	0	0.	9.00000E+04	5.00000E+00	5.38000E+02	0.	0.
37	LEFT	27	0	0.	9.00000E+04	5.00000E+00	5.30000E+02	0.	0.
38	LEFT	46	0	0.	9.00000E+04	5.00000E+00	5.40000E+02	0.	0.

CPU TIME = 1.08

JUNCTION NUMBER	CONNECTING VOLUMES	CHOKE	JCT. FLOW (LB/SEC)	JCT. ENTH (BTU/LB)	JCT. SPVL (FT3/LB)	PRESSURE DIFFERENTIALS STAG PSI	ELEV PSI	FRIC PSI	ACCL PSI	PUMP PSI
1	2 TO 1	0 0	5.97222E+02	5.34887E+02	2.10416E-02	3.82646E+00	-1.54532E+00	-2.28114E+00	2.50910E-14	0.
2	1 TO 3	0 0	5.97222E+02	5.34897E+02	2.10426E-02	1.03940E+00	9.16459E-01	-1.95586E+00	2.13163E-14	0.
3	1 TO 28	0 0	0.	5.34897E+02	2.10427E-02	9.03423E-01	9.16459E-01	-1.97848E-03	1.81790E+00	0.
4	3 TO 4	0 0	5.97222E+02	5.34897E+02	2.10434E-02	7.17665E-01	-1.70439E-15	-7.17665E-01	3.55271E-15	0.
5	4 TO 5	0 0	5.97222E+02	5.34898E+02	2.10436E-02	6.58869E-01	-4.40559E-16	-6.58869E-01	7.10543E-15	0.
6	5 TO 6	0 0	5.97222E+02	5.34898E+02	2.10438E-02	1.17806E+00	-2.23364E-01	-9.54698E-01	1.42109E-14	0.
7	6 TO 7	0 0	5.97222E+02	5.34898E+02	2.10439E-02	5.54542E+00	-2.92155E-01	-5.25327E+00	7.81597E-14	0.
8	7 TO 8	0 0	5.97222E+02	5.34903E+02	2.10452E-02	2.10301E+00	-1.52611E+00	-5.76895E-01	0.	0.
9	8 TO 9	0 0	5.97222E+02	5.34912E+02	2.10460E-02	2.14378E+00	-1.44445E+00	-6.99328E-01	3.46945E-18	0.
10	9 TO 10	0 0	5.97222E+02	5.34908E+02	2.10466E-02	-7.27994E-01	1.44443E+00	-7.16439E-01	1.11022E-16	0.
11	10 TO 11	0 0	5.97222E+02	5.34910E+02	2.10464E-02	-8.65211E-01	1.52607E+00	-6.60863E-01	3.55271E-15	0.
12	11 TO 12	0 0	5.97222E+02	5.34908E+02	2.10460E-02	4.36323E+00	2.84440E-01	-4.64767E+00	6.03961E-14	0.
13	12 TO 13	0 0	5.97222E+02	5.34916E+02	2.10475E-02	-5.80109E-01	1.02014E+00	-4.40028E-01	3.55271E-15	0.
14	13 TO 14	0 0	5.97222E+02	5.34917E+02	2.10475E-02	1.69702E+00	2.69594E-01	-1.96661E+00	2.84217E-14	0.
15	14 TO 15	0 0	3.07722E+02	5.34916E+02	2.10481E-02	-1.39240E+01	-7.67226E-01	-6.60879E-01	7.10543E-15	1.53521E+01
16	14 TO 16	0 0	2.89500E+02	5.34916E+02	2.10481E-02	-1.50597E+01	-7.67233E-01	-2.34766E-01	-3.55271E-15	1.60617E+01
17	15 TO 17	0 0	3.07722E+02	5.34896E+02	2.10436E-02	-1.44990E+01	-2.91630E-01	-5.61517E-01	7.10543E-15	1.53521E+01
18	16 TO 18	0 0	2.89500E+02	5.34895E+02	2.10432E-02	-1.55890E+01	-2.91635E-01	-1.81072E-01	-4.44089E-16	1.60617E+01
19	17 TO 19	0 0	3.07722E+02	5.34880E+02	2.10395E-02	1.02232E+00	-3.53135E-15	-1.02232E+00	1.77636E-14	0.
20	18 TO 19	0 0	2.89500E+02	5.34877E+02	2.10388E-02	3.24803E+00	-7.31452E-15	-3.24803E+00	3.90799E-14	0.
21	19 TO 20	0 0	5.97222E+02	5.34883E+02	2.10402E-02	1.61562E+00	-2.51031E-15	-1.61562E+00	1.42109E-14	0.
22	20 TO 21	0 0	5.97222E+02	5.34885E+02	2.10407E-02	3.12581E+00	2.09301E-01	-3.33511E+00	2.84217E-14	0.
23	21 TO 22	0 0	5.97222E+02	5.34889E+02	2.10411E-02	-2.38629E+00	2.48311E+00	-9.68241E-02	0.	0.
24	22 TO 23	0 0	5.97222E+02	5.34892E+02	2.10405E-02	-1.54375E+00	2.03555E+00	-4.91807E-01	7.10543E-15	0.
25	23 TO 24	0 0	5.97222E+02	5.34879E+02	2.10400E-02	2.95173E+00	-2.23642E+00	-7.15312E-01	8.65974E-15	0.
26	24 TO 2	0 0	5.97222E+02	5.34879E+02	2.10408E-02	2.53864E+00	-1.86261E+00	-6.76037E-01	1.04361E-14	0.
27	21 TO 25	0 0	0.	5.34886E+02	2.10412E-02	-1.47565E-01	-2.09301E-01	-6.50889E-03	-3.63375E-01	0.
28	25 TO 26	0 0	0.	5.34886E+02	2.10410E-02	0.	7.29391E-13	0.	0.	0.
29	26 TO 47	0 0	0.	5.28797E+02	2.09088E-02	0.	-1.16245E-10	0.	-1.16415E-10	0.
30	27 TO 44	0 11	0.	5.22722E+02	2.07851E-02	1.00000E-02	-6.98675E-03	0.	3.01325E-03	0.
31	44 TO 37	0 11	0.	4.76087E+02	1.00000E-02	0.	0.	0.	0.	0.
32	28 TO 29	0 0	0.	5.34894E+02	2.10428E-02	-1.90000E-01	2.96939E-13	0.	-1.90000E-01	0.
33	29 TO 30	0 0	0.	5.32457E+02	2.09888E-02	3.40000E-01	-3.48534E-01	0.	-8.53365E-03	0.
34	30 TO 31	0 0	0.	5.30020E+02	2.09363E-02	1.16000E+00	-1.16652E+00	0.	-6.52377E-03	0.
35	31 TO 32	0 0	0.	5.27585E+02	2.08856E-02	1.41000E+00	-1.43625E+00	0.	-2.62488E-02	0.
36	32 TO 33	0 0	0.	5.25157E+02	2.08365E-02	-1.41000E+00	1.43986E+00	0.	2.98605E-02	0.
37	33 TO 34	0 0	0.	5.22732E+02	2.07871E-02	-1.50000E+00	1.52602E+00	0.	2.60242E-02	0.
38	34 TO 35	0 0	0.	5.20361E+02	2.07339E-02	-1.10000E+00	1.12519E+00	0.	2.51917E-02	0.
39	35 TO 36	0 0	0.	5.19173E+02	2.07076E-02	4.50000E-01	-4.59760E-01	0.	-9.75976E-03	0.
40	36 TO 45	0 11	0.	5.17985E+02	2.06821E-02	6.60000E-01	-6.75031E-01	0.	-1.50305E-02	0.
41	45 TO 37	0 11	0.	4.76086E+02	1.00000E-02	0.	0.	0.	0.	0.
42	29 TO 39	0 0	0.	5.32457E+02	2.09888E-02	5.40000E-01	-3.57514E-01	0.	1.82486E-01	0.
43	26 TO 38	0 0	0.	5.28797E+02	2.09088E-02	2.79000E+00	-4.97332E-01	0.	2.29267E+00	0.
44	43 TO 46	0 0	0.	5.80221E+01	1.79762E-02	-1.66671E+03	4.00992E+00	0.	0.	0.
45	40 TO 4	0 0	0.	5.62291E+02	2.16941E-02	-7.70000E-01	7.99655E-01	-4.96978E-02	-2.00433E-02	0.
46	41 TO 40	0 0	0.	7.02801E+02	2.70328E-02	-1.17000E+00	1.08091E+00	0.	-8.90898E-02	0.
47	46 TO 23	0 0	0.	5.34890E+02	2.10394E-02	1.93108E+00	2.12235E+00	-3.44747E-04	4.05309E+00	0.
48	47 TO 27	0 11	0.	5.28797E+02	2.09088E-02	0.	0.	0.	0.	0.
49	0 TO 46	0 0	0.	0.	0.	0.	0.	0.	0.	0.
50	0 TO 46	0 0	0.	0.	0.	0.	0.	0.	0.	0.

JUNCTION NUMBER	SLIP VEL. (FT/SEC)	LIQUID VEL. (FT/SEC)	VAPOR VEL. (FT/SEC)	JCT. FLOW-L (LBM/SEC)	JCT. FLOW-G (LBM/SEC)	SAT. H-L (BTU/LBM)	SAT. H-G (BTU/LBM)	FLOW-WEIGHTED H (BTU/LBM)
1	0.	2.61802E+01	2.61802E+01	5.97222E+02	0.	5.34889E+02	0.	5.34889E+02
2	0.	1.84080E+01	1.84080E+01	5.97222E+02	0.	5.34894E+02	0.	5.34894E+02

3	0.	0.	0.	0.	0.	0.	0.	0.	0.
4	0.	1.90162E+01	1.90162E+01	5.97222E+02	0.	5.34903E+02	0.	5.34903E+02	
5	0.	3.50251E+01	3.50251E+01	5.97222E+02	0.	5.34904E+02	0.	5.34904E+02	
6	0.	1.84089E+01	1.84089E+01	5.97222E+02	0.	5.34905E+02	0.	5.34905E+02	
7	0.	2.26041E+01	2.26041E+01	5.97222E+02	0.	5.34903E+02	0.	5.34903E+02	
8	0.	7.72882E+00	7.72882E+00	5.97222E+02	0.	5.34905E+02	0.	5.34905E+02	
9	0.	7.72907E+00	7.72907E+00	5.97222E+02	0.	5.34918E+02	0.	5.34918E+02	
10	0.	7.72929E+00	7.72929E+00	5.97222E+02	0.	5.34908E+02	0.	5.34908E+02	
11	0.	7.72922E+00	7.72922E+00	5.97222E+02	0.	5.34907E+02	0.	5.34907E+02	
12	0.	2.26063E+01	2.26063E+01	5.97222E+02	0.	5.34908E+02	0.	5.34908E+02	
13	0.	1.84121E+01	1.84121E+01	5.97222E+02	0.	5.34919E+02	0.	5.34919E+02	
14	0.	1.84122E+01	1.84122E+01	5.97222E+02	0.	5.34922E+02	0.	5.34922E+02	
15	0.	1.64363E+01	1.64363E+01	3.07722E+02	0.	5.34924E+02	0.	5.34924E+02	
16	0.	1.54630E+01	1.54630E+01	2.89500E+02	0.	5.34924E+02	0.	5.34924E+02	
17	0.	1.64329E+01	1.64329E+01	3.07722E+02	0.	5.34903E+02	0.	5.34903E+02	
18	0.	1.54595E+01	1.54595E+01	2.89500E+02	0.	5.34901E+02	0.	5.34901E+02	
19	0.	1.64297E+01	1.64297E+01	3.07722E+02	0.	5.34885E+02	0.	5.34885E+02	
20	0.	1.54562E+01	1.54562E+01	2.89500E+02	0.	5.34881E+02	0.	5.34881E+02	
21	0.	1.90134E+01	1.90134E+01	5.97222E+02	0.	5.34890E+02	0.	5.34890E+02	
22	0.	1.84062E+01	1.84062E+01	5.97222E+02	0.	5.34892E+02	0.	5.34892E+02	
23	0.	9.62974E+00	9.62974E+00	5.97222E+02	0.	5.34888E+02	0.	5.34888E+02	
24	0.	9.62945E+00	9.62945E+00	5.97222E+02	0.	5.34885E+02	0.	5.34885E+02	
25	0.	1.18992E+01	1.18992E+01	5.97222E+02	0.	5.34882E+02	0.	5.34882E+02	
26	0.	1.59995E+01	1.59995E+01	5.97222E+02	0.	5.34886E+02	0.	5.34886E+02	
27	0.	0.	0.	0.	0.	0.	0.	0.	
28	0.	0.	0.	0.	0.	0.	0.	0.	
29	0.	0.	0.	0.	0.	0.	0.	0.	
30	0.	0.	0.	0.	0.	0.	0.	0.	
31	0.	0.	0.	0.	0.	0.	0.	0.	
32	0.	0.	0.	0.	0.	0.	0.	0.	
33	0.	0.	0.	0.	0.	0.	0.	0.	
34	0.	0.	0.	0.	0.	0.	0.	0.	
35	0.	0.	0.	0.	0.	0.	0.	0.	
36	0.	0.	0.	0.	0.	0.	0.	0.	
37	0.	0.	0.	0.	0.	0.	0.	0.	
38	0.	0.	0.	0.	0.	0.	0.	0.	
39	0.	0.	0.	0.	0.	0.	0.	0.	
40	0.	0.	0.	0.	0.	0.	0.	0.	
41	0.	0.	0.	0.	0.	0.	0.	0.	
42	0.	0.	0.	0.	0.	0.	0.	0.	
43	0.	0.	0.	0.	0.	0.	0.	0.	
44	0.	0.	0.	0.	0.	0.	0.	0.	
45	0.	0.	0.	0.	0.	0.	0.	0.	
46	0.	0.	0.	0.	0.	0.	0.	0.	
47	0.	0.	0.	0.	0.	0.	0.	0.	
48	0.	0.	0.	0.	0.	0.	0.	0.	
49	0.	0.	0.	0.	0.	0.	0.	0.	

```
RELAP4/C05 01/02/76 ( I)                      RELAP4 THERMAL HYDRAULIC CODE      CONFIGURATION  CONTROL:YES
    LOFT L135-A23 PRE-TEST PREDICTIONS WITH NEW PRESSURIZER MODEL CONCO=.75                 12/20/76

CPU TIME =     1.12

JUNCTION        SLIP VEL.    LIQUID VEL.   VAPOR VEL.    JCT. FLOW-L   JCT. FLOW-G   SAT. H-L      SAT. H-G      FLOW-WEIGHTED H
 NUMBER         (FT/SEC)     (FT/SEC)      (FT/SEC)      (LBM/SEC)     (LBM/SEC)     (BTU/LBM)     (BTU/LBM)     (BTU/LBM)
   50           0.           0.            0.            0.            0.            0.            0.            0.

PLOT RECORD NUMBER =      0

RESTART NUMBER     =      0
```

RELAP4/C05 01/02/76 (1)   RELAP4 THERMA_ HYDRAULIC CODE   CONFIGURATION   CONTROL:YES
LOFT L135-A23 PRE-TEST PREDICTIONS WITH NEW PRESSURIZER MODEL CONCD=.75   12/20/76

CPU TIME = 11.57
STANDARD TIME STEP NUMBER 200. ACTUAL TIME STEP NUMBER 108. TIME = .200000E-01 SEC. LAST DT = .200000E-03 SEC.

TOTAL SYSTEM QUANTITIES	NORM POWR	POWR (MW)	HEAT REM (BTU/HR)	ENGY LEAK (BTU)	MASS LEAK (LB)	ENGY BAL. (BTU)	MASS BAL. (LB)	TOT. REAC ($)	REAC T SEC.
	1.00000E+00	0.	0.	0.	0.	4.77468E+07	1.50502E+05	0.	0.

VOLUME NUMBER	AVG. PRES PSIA	TOT. MASS (LB) H2O	AVG. ENTH (BTU/LB)	AVG. DENS (LB/FT3)	AVG. TEMP (F)	AVG. QUAL	BUBB MASS (LB)	MIXT LEVL (FT)	LIQ. MASS (LB)
1	2.26686E+03	7.73746E+02	5.34891E+02	4.75224E+01	5.39998E+02	0.	0.	7.50000E+00	7.73746E+02
2	2.27072E+03	1.99414E+02	5.34886E+02	4.75249E+01	5.39998E+02	0.	0.	1.86500E+00	1.99414E+02
3	2.26421E+03	3.77849E+02	5.34895E+02	4.75207E+01	5.39998E+02	0.	0.	9.32333E-01	3.77849E+02
4	2.26363E+03	2.16237E+02	5.34896E+02	4.75203E+01	5.39999E+02	0.	0.	9.32333E-01	2.16237E+02
5	2.26304E+03	1.51582E+02	5.34897E+02	4.75199E+01	5.39999E+02	0.	0.	9.32333E-01	1.51582E+02
6	2.26263E+03	1.36772E+02	5.34898E+02	4.75196E+01	5.39999E+02	0.	0.	2.42156E+00	1.36772E+02
7	2.25810E+03	5.31350E+02	5.34904E+02	4.75167E+01	5.39999E+02	0.	0.	2.50000E+00	5.31350E+02
8	2.25571E+03	5.21569E+02	5.34907E+02	4.75152E+01	5.39999E+02	0.	0.	6.75000E+00	5.21569E+02
9	2.25353E+03	2.58845E+02	5.34909E+02	4.75138E+01	5.39999E+02	0.	0.	2.00521E+00	2.58845E+02
10	2.25420E+03	5.21559E+02	5.34908E+02	4.75142E+01	5.39999E+02	0.	0.	6.75000E+00	5.21559E+02
11	2.25530E+03	5.31330E+02	5.34907E+02	4.75149E+01	5.39999E+02	0.	0.	2.50000E+00	5.31330E+02
12	2.24991E+03	9.77449E+01	5.34912E+02	4.75115E+01	5.39998E+02	0.	0.	2.37508E+00	9.77449E+01
13	2.24967E+03	2.10854E+02	5.34913E+02	4.75113E+01	5.39998E+02	0.	0.	3.80867E+00	2.10854E+02
14	2.24792E+03	2.13485E+02	5.34915E+02	4.75102E+01	5.39998E+02	0.	0.	2.17450E+00	2.13485E+02
15	2.26345E+03	1.79892E+02	5.34901E+02	4.75199E+01	5.40002E+02	0.	0.	2.47577E+00	1.79892E+02
16	2.26480E+03	1.79895E+02	5.34899E+02	4.75208E+01	5.40002E+02	0.	0.	2.47577E+00	1.79895E+02
17	2.27806E+03	9.01064E+01	5.34879E+02	4.75295E+01	5.39999E+02	0.	0.	7.08333E-01	9.01064E+01
18	2.28049E+03	3.29557E+01	5.34878E+02	4.75309E+01	5.40001E+02	0.	0.	7.08333E-01	3.29557E+01
19	2.27547E+03	2.98880E+02	5.34881E+02	4.75279E+01	5.39998E+02	0.	0.	9.32333E-01	2.98880E+02
20	2.27403E+03	1.53446E+02	5.34884E+02	4.75269E+01	5.39999E+02	0.	0.	9.32333E-01	1.53446E+02
21	2.27249E+03	3.54049E+02	5.34887E+02	4.75259E+01	5.40000E+02	0.	0.	3.43500E+00	3.54049E+02
22	2.27445E+03	8.11128E+02	5.34883E+02	4.75272E+01	5.39998E+02	0.	0.	1.16119E+01	8.11128E+02
23	2.27636E+03	1.09990E+03	5.34880E+02	4.75284E+01	5.39999E+02	0.	0.	4.15000E+00	1.09990E+03
24	2.27334E+03	1.43763E+03	5.34884E+02	4.75265E+01	5.39998E+02	0.	0.	9.42200E+00	1.43763E+03
25	2.27295E+03	1.69649E+02	5.34885E+02	4.75262E+01	5.39999E+02	0.	0.	9.32333E-01	1.69649E+02
26	2.27315E+03	1.03394E+02	5.28798E+02	4.78266E+01	5.35000E+02	0.	0.	9.32333E-01	1.03394E+02
27	2.27371E+03	3.93320E+01	5.22723E+02	4.81117E+01	5.30001E+02	0.	0.	5.67750E-01	3.93320E+01
28	2.26792E+03	3.58786E+02	5.34899E+02	4.75226E+01	5.40005E+02	0.	0.	9.32333E-01	3.58786E+02
29	2.26793E+03	1.09796E+02	5.32462E+02	4.76449E+01	5.38005E+02	0.	0.	9.32333E-01	1.09796E+02
30	2.26795E+03	1.38349E+01	5.30030E+02	4.77642E+01	5.36008E+02	0.	0.	2.44013E+00	1.38349E+01
31	2.26714E+03	2.19415E+02	5.27595E+02	4.78805E+01	5.34007E+02	0.	0.	4.58250E+00	2.19415E+02
32	2.26585E+03	4.81650E+02	5.25162E+02	4.79934E+01	5.32008E+02	0.	0.	4.04708E+00	4.81650E+02
33	2.26736E+03	2.20455E+02	5.22737E+02	4.81075E+01	5.30008E+02	0.	0.	4.58250E+00	2.20455E+02
34	2.26863E+03	1.97225E+01	5.20365E+02	4.82309E+01	5.28007E+02	0.	0.	4.54167E+00	1.97225E+01
35	2.26950E+03	8.25600E+01	5.19178E+02	4.82919E+01	5.27006E+02	0.	0.	2.17450E+00	8.25600E+01
36	2.26885E+03	2.79794E+01	5.17993E+02	4.83515E+01	5.26005E+02	0.	0.	4.31775E+00	2.79794E+01
37	4.29912E+01	1.25925E+05	2.41773E+02	3.40940E+01	2.71634E+02	1.23983E-03	6.46847E-07	9.42000E+00	1.25768E+05
38	2.27226E+03	3.90278E+02	5.30025E+02	4.77670E+01	5.36008E+02	0.	0.	2.06508E+00	3.90278E+02
39	2.26732E+03	2.79216E+02	5.34898E+02	4.75223E+01	5.40004E+02	0.	0.	2.89583E+00	2.79216E+02
40	2.26306E+03	1.67034E+01	5.62291E+02	4.60953E+01	5.62002E+02	0.	0.	4.03500E+00	1.67034E+01
41	2.26202E+03	7.77191E+02	7.59739E+02	2.23638E+01	6.53472E+02	1.37637E-01	1.45674E-03	3.50002E+00	6.70221E+02
42	9.62790E+02	5.85317E+03	5.76346E+02	2.07854E+01	5.40000E+02	6.01149E-02	3.61357E-07	6.89700E+00	5.50130E+03
43	6.12000E+02	5.64037E+03	5.80333E+01	4.43563E+01	9.00000E+01	1.47705E-05	0.	6.50948E+00	5.64028E+03
44	2.27387E+03	1.64811E+02	4.76090E+02	5.03048E+01	4.90003E+02	0.	0.	8.41146E-01	1.64811E+02
45	2.26804E+03	1.64802E+02	4.76091E+02	5.03020E+01	4.90004E+02	0.	0.	8.41146E-01	1.64802E+02
46	2.27604E+03	5.76548E+01	5.34869E+02	4.75238E+01	5.39989E+02	0.	0.	1.57900E+01	5.76548E+01
47	2.27340E+03	6.82010E+00	5.28796E+02	4.78268E+01	5.35000E+02	0.	0.	3.38600E-01	6.82010E+00

VOLUME   AIR MASS

1	0.
2	0.
3	0.
4	0.
5	0.
6	0.
7	0.
8	0.
9	0.
10	0.
11	0.
12	0.
13	0.
14	0.
15	0.
16	0.
17	0.
18	0.
19	0.
20	0.
21	0.
22	0.
23	0.
24	0.
25	0.
26	0.
27	0.
28	0.
29	0.
30	0.
31	0.
32	0.
33	0.
34	0.
35	0.
36	0.
37	0.
38	0.
39	0.
40	0.
41	0.
42	0.
43	1.17080E+02
44	0.
45	0.
46	0.
47	0.

VOLUME NUMBER	PUMP-SPEED (RPM)	PUMP NORM TORQUE
15	1.97115E+03	3.73349E-01
16	1.97115E+03	3.68168E-01

HEAT SLAB NUMBER		VOL NUM	HEAT TRAN MODE	SURF FLUX (BTU/HR/FT2)	CRIT FLUX (BTU/HR/FT2)	H.T. COEF (BTU/H/F2/F)	SURF TEMP (F)	AVG. QUAL	POWR H2O (BTU/HR)
1	LEFT	23	1	8.95268E-01	9.00000E+04	6.04690E+02	5.40000E+02	0.	6.26688E+01
2	LEFT	1	1	2.15398E+00	9.00000E+04	1.13857E+03	5.40000E+02	0.	4.96578E+01
3	LEFT	2	1	2.63029E+00	9.00000E+04	1.21876E+03	5.40000E+02	0.	2.75575E+01
4	LEFT	24	1	1.48325E+00	9.00000E+04	8.76704E+02	5.40000E+02	0.	8.94664E+01
5	LEFT	36	1	-2.29675E-01	9.00000E+04	4.49813E+01	5.26000E+02	0.	-7.85489E-01
6	LEFT	35	1	-5.28030E-02	9.00000E+04	8.91841E+00	5.27000E+02	0.	-3.87046E-01
7	RIGHT	21	1	5.57123E-01	9.00000E+04	1.73834E+03	5.40000E+02	0.	1.65331E+01
8	LEFT	21	1	5.88384E-01	9.00000E+04	1.73834E+03	5.40000E+02	0.	2.11689E+01
9	RIGHT	22	1	3.81744E+00	9.00000E+04	2.37711E+03	5.40000E+02	0.	3.82927E+02
10	LEFT	22	1	3.84959E+00	9.00000E+04	2.37711E+03	5.40000E+02	0.	4.68180E+02
11	LEFT	34	1	-4.54885E-01	9.00000E+04	6.37458E+01	5.28000E+02	0.	-4.18039E+00
12	LEFT	33	1	-6.88389E-02	9.00000E+04	8.66328E+00	5.30000E+02	0.	-1.12345E+00
13	LEFT	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

13	LEFT	32	1	-9.37582E-02	9.00000E+04	1.29124E+01	5.32000E+02	0.	-3.08243E+00
14	LEFT	31	1	-1.25946E-01	9.00000E+04	1.73154E+01	5.34000E+02	0.	-2.05544E+00
15	LEFT	30	1	-1.37266E+00	9.00000E+04	1.67840E+02	5.36000E+02	0.	-9.37524E+00
16	LEFT	23	1	8.36593E-01	9.00000E+04	5.46515E+02	5.40000E+02	0.	3.63199E+01
17	LEFT	8	1	2.71077E+00	7.74463E+05	3.57420E+03	5.40000E+02	0.	3.04126E+03
17	RIGHT	42	1	-2.69554E-06	9.00000E+04	5.00000E+00	5.40000E+02	6.01149E-02	-3.76141E-03
18	LEFT	9	1	2.66346E+00	7.75344E+05	3.57592E+03	5.40000E+02	0.	1.72960E+03
18	RIGHT	42	1	-1.41679E-06	9.00000E+04	5.00000E+00	5.40000E+02	6.01149E-02	-1.14432E-03
19	LEFT	10	1	2.80147E+00	7.75160E+05	3.57662E+03	5.40000E+02	0.	3.14302E+03
19	RIGHT	42	2	7.72525E-08	9.00000E+04	5.00000E+00	5.40000E+02	6.01149E-02	1.07800E-04
20	LEFT	44	1	-1.37337E-02	9.00000E+04	5.00000E+00	4.90000E+02	0.	-1.79403E-01
21	LEFT	45	1	-1.94347E-02	9.00000E+04	5.00000E+00	4.90000E+02	0.	-2.53875E-01
22	LEFT	25	1	1.69490E-02	9.00000E+04	1.78335E+01	5.40000E+02	0.	2.59489E-01
23	LEFT	26	1	-6.75375E-03	9.00000E+04	1.67922E+01	5.35000E+02	0.	-6.67271E-02
24	LEFT	3	1	6.92293E+00	9.00000E+04	3.67848E+03	5.40000E+02	0.	1.06959E+02
25	LEFT	4	1	4.98427E+00	9.00000E+04	3.67848E+03	5.40000E+02	0.	9.72930E+01
26	LEFT	5	1	4.01436E+00	9.00000E+04	3.67746E+03	5.40000E+02	0.	5.49164E+01
27	LEFT	6	1	2.13386E+00	9.00000E+04	2.88009E+03	5.40000E+02	0.	2.30030E+01
28	LEFT	7	1	3.59649E-01	9.00000E+04	4.72081E+02	5.40000E+02	0.	5.39474E+00
29	LEFT	11	1	6.27391E-01	9.00000E+04	4.72658E+02	5.40000E+02	0.	9.97551E+00
30	LEFT	12	1	6.83325E+00	9.00000E+04	2.88419E+03	5.40000E+02	0.	5.26160E+01
31	LEFT	13	1	6.83739E+00	9.00000E+04	3.68232E+03	5.40000E+02	0.	1.30184E+02
32	LEFT	14	1	7.77403E+00	9.00000E+04	3.68250E+03	5.40000E+02	0.	1.49806E+02
33	LEFT	19	1	5.96950E+00	9.00000E+04	3.68199E+03	5.40000E+02	0.	1.60997E+02
34	LEFT	20	1	2.89480E+00	9.00000E+04	3.68168E+03	5.40000E+02	0.	4.00929E+01
35	LEFT	28	1	-4.61503E-02	9.00000E+04	8.51789E+00	5.40000E+02	0.	-6.33183E-01
36	LEFT	29	1	-7.10030E-02	9.00000E+04	1.41274E+01	5.38000E+02	0.	-7.01510E-01
37	LEFT	27	1	-4.63500E-03	9.00000E+04	5.00000E+00	5.30000E+02	0.	-2.66513E-02
38	LEFT	46	1	4.34266E-01	9.00000E+04	3.66733E+01	5.40000E+02	0.	7.12197E+00

CPU TIME = 11.62

JUNCTION NUMBER	CONNECTING VOLUMES	CHOKE	JCT. FLOW (LB/SEC)	JCT. ENTH (BTU/LB)	JCT. SPVL (FT3/LB)	P R E S S U R E D I F F E R E N T I A L S STAG PSI	ELEV PSI	FRIC PSI	ACCL PSI	PUMP PSI
1	2 TO 1	0 0	5.96450E+02	5.34885E+02	2.10416E-02	3.84674E+00	-1.54532E+00	-2.27510E+00	2.63149E-02	0.
2	1 TO 3	0 0	5.96643E+02	5.34895E+02	2.10427E-02	1.04467E+00	9.16456E-01	-1.95208E+00	9.03863E-03	0.
3	1 TO 28	0 0	1.19710E-01	5.34895E+02	2.10427E-02	-8.17183E-01	9.16456E-01	-1.97477E-03	9.72989E-02	0.
4	3 TO 4	0 0	5.96764E+02	5.34895E+02	2.10435E-02	6.24291E-01	-1.05492E-15	-7.16565E-01	-9.22741E-02	0.
5	4 TO 5	0 0	5.96552E+02	5.34896E+02	2.10437E-02	5.79778E-01	-9.42382E-16	-6.57424E-01	-7.76467E-02	0.
6	5 TO 6	0 0	5.96411E+02	5.34897E+02	2.10438E-02	1.11941E+00	-2.23363E-01	-9.52134E-01	-5.60864E-02	0.
7	6 TO 7	0 0	5.96426E+02	5.34897E+02	2.10440E-02	5.51009E+00	-2.92155E-01	-5.23936E+00	-2.14229E-02	0.
8	7 TO 8	0 0	5.96714E+02	5.34902E+02	2.10452E-02	2.08547E+00	-1.52611E+00	-5.76330E-01	-1.69651E-02	0.
9	8 TO 9	0 0	5.97216E+02	5.34908E+02	2.10460E-02	2.18015E+00	-1.44445E+00	-6.99004E-01	3.66938E-02	0.
10	9 TO 10	0 0	5.97413E+02	5.34910E+02	2.10466E-02	-6.53863E-01	1.44443E+00	-7.16838E-01	7.37292E-02	0.
11	10 TO 11	0 0	5.97525E+02	5.34909E+02	2.10465E-02	-7.93820E-01	1.52607E+00	-6.61376E-01	7.08744E-02	0.
12	11 TO 12	0 0	5.97416E+02	5.34907E+02	2.10460E-02	4.39061E+00	2.84440E-01	-4.65045E+00	2.46037E-02	0.
13	12 TO 13	0 0	5.97388E+02	5.34914E+02	2.10475E-02	-4.92060E-01	1.02013E+00	-4.40250E-01	8.78241E-02	0.
14	13 TO 14	0 0	5.97348E+02	5.34915E+02	2.10476E-02	1.74340E+00	2.69593E-01	-1.96742E+00	4.55685E-02	0.
15	14 TO 15	0 0	3.07805E+02	5.34913E+02	2.10482E-02	-1.39003E+01	-7.67220E-01	-6.61308E-01	1.52762E-02	1.53441E+01
16	14 TO 16	0 0	2.89617E+02	5.34913E+02	2.10482E-02	-1.50415E+01	-7.67228E-01	-2.35004E-01	1.15532E-02	1.60553E+01
17	15 TO 17	0 0	3.07922E+02	5.34900E+02	2.10438E-02	-1.45878E+01	-2.91627E-01	-5.62222E-01	-9.75047E-02	1.53441E+01
18	16 TO 18	0 0	2.89713E+02	5.34898E+02	2.10434E-02	-1.56786E+01	-2.91632E-01	-1.81312E-01	-9.62128E-02	1.60553E+01
19	17 TO 19	0 0	3.07878E+02	5.34879E+02	2.10396E-02	9.52661E-01	-3.28515E-15	-1.02340E+00	-7.07406E-02	0.
20	18 TO 19	0 0	2.89711E+02	5.34878E+02	2.10389E-02	3.18448E+00	-6.81965E-15	-3.25292E+00	-6.84413E-02	0.
21	19 TO 20	0 0	5.97425E+02	5.34881E+02	2.10403E-02	1.42972E+00	-2.34475E-15	-1.61683E+00	-1.87108E-01	0.
22	20 TO 21	0 0	5.97423E+02	5.34884E+02	2.10407E-02	3.06167E+00	2.09301E-01	-3.33752E+00	-6.65491E-02	0.
23	21 TO 22	0 0	5.98328E+02	5.34889E+02	2.10412E-02	-2.07829E+00	2.48310E+00	-9.71060E-02	3.07702E-01	0.
24	22 TO 23	0 0	5.98008E+02	5.34890E+02	2.10406E-02	-1.57510E+00	2.03555E+00	-4.93129E-01	-3.26857E-02	0.
25	23 TO 24	0 0	5.96689E+02	5.34878E+02	2.10400E-02	2.95151E+00	-2.23641E+00	-7.14014E-01	1.08161E-03	0.
26	24 TO 2	0 0	5.96427E+02	5.34878E+02	2.10409E-02	2.56132E+00	-1.86260E+00	-6.74203E-01	2.45133E-02	0.
27	21 TO 25	0 0	-8.50060E-01	5.34885E+02	2.10410E-02	-4.61023E-02	-2.09301E-01	-6.50911E-03	-2.61912E-01	0.
28	25 TO 26	0 0	-7.69456E-01	5.28798E+02	2.09089E-02	-2.02838E-01	7.30097E-13	5.79110E-07	-2.02838E-01	0.
29	26 TO 47	0 0	-4.22952E-03	5.28796E+02	2.09089E-02	-2.43678E-01	-1.16246E-10	7.72733E-08	-2.43678E-01	0.
30	27 TO 44	0 11	7.84655E-03	5.22723E+02	2.07850E-02	-1.48036E-01	-6.98678E-03	-7.91413E-09	-1.55023E-01	0.
31	44 TO 37	0 11	0.	4.76090E+02	1.00000E-02	2.23088E+03	1.90870E+00	0.	0.	0.
32	28 TO 29	0 0	5.07008E-01	5.34899E+02	2.10426E-02	-1.17717E-02	2.97300E-13	-2.92819E-07	-1.17720E-02	0.
33	29 TO 30	0 0	1.27142E+00	5.32462E+02	2.09886E-02	7.65294E-03	-3.48537E-01	-2.23845E-04	-3.41108E-01	0.
34	30 TO 31	0 0	1.27700E+00	5.30029E+02	2.09362E-02	8.25734E-01	-1.16654E+00	-4.77047E-04	-3.41281E-01	0.
35	31 TO 32	0 0	1.12886E+00	5.27592E+02	2.08853E-02	1.30320E+00	-1.43627E+00	-4.10175E-04	-1.33479E-01	0.
36	32 TO 33	0 0	6.23182E-01	5.25164E+02	2.08362E-02	-1.50736E+00	1.43988E+00	-1.23976E-04	-6.76054E-02	0.
37	33 TO 34	0 0	4.06605E-01	5.22740E+02	2.07868E-02	-1.27145E+00	1.52604E+00	-1.67266E-05	2.54581E-01	0.
38	34 TO 35	0 0	3.84918E-01	5.20368E+02	2.07336E-02	-8.58616E-01	1.12521E+00	-2.54403E-04	2.66335E-01	0.
39	35 TO 36	0 0	2.76043E-01	5.19179E+02	2.07074E-02	6.52329E-01	-4.59764E-01	-1.33362E-04	1.92432E-01	0.
40	36 TO 45	0 11	2.32926E-01	5.17990E+02	2.06819E-02	8.15868E-01	-6.75037E-01	-1.81552E-05	1.40813E-01	0.
41	45 TO 37	0 11	0.	4.76091E+02	1.00000E-02	2.22500E+03	1.90870E+00	0.	0.	0.
42	29 TO 39	0 0	-6.41642E-01	5.34900E+02	2.10427E-02	5.84573E-01	-3.57517E-01	2.67491E-06	2.27058E-01	0.
43	26 TO 38	0 0	-6.83430E-01	5.30026E+02	2.09350E-02	8.66058E-01	-4.97337E-01	3.31892E-06	3.68724E-01	0.
44	43 TO 46	0 0	0.	5.80221E+01	1.79762E-02	-1.66389E+03	4.00987E+00	0.	0.	0.
45	40 TO 4	0 0	6.28220E-02	5.62294E+02	2.16942E-02	-5.81230E-01	7.99651E-01	-4.97694E-02	1.68652E-01	0.
46	41 TO 40	0 0	7.95578E-02	7.02800E+02	2.70328E-02	-9.98092E-01	1.08091E+00	-9.76225E-04	8.18389E-02	0.
47	46 TO 23	0 0	-3.45957E-01	5.34882E+02	2.10400E-02	-5.02612E-01	2.12230E+00	-1.87404E-04	1.61950E+00	0.
48	47 TO 27	0 11	-4.66437E-04	5.22723E+02	2.09088E-02	-3.07647E-01	0.	-5.54131E-08	-3.07647E-01	0.
49	0 TO 46	0 0	0.	0.	0.	0.	0.	0.	0.	0.
50	0 TO 46	0 0	0.	0.	0.	0.	0.	0.	0.	0.

JUNCTION NUMBER	SLIP VEL. (FT/SEC)	LIQUID VEL. (FT/SEC)	VAPOR VEL. (FT/SEC)	JCT. FLOW-L (LBM/SEC)	JCT. FLOW-G (LBM/SEC)	SAT. H-L (BTU/LBM)	SAT. H-G (BTU/LBM)	FLOW-WEIGHTED H (BTU/LBM)
1	0.	2.61464E+01	2.61464E+01	5.96450E+02	0.	5.34887E+02	0.	5.34887E+02
2	0.	1.83902E+01	1.83902E+01	5.96643E+02	0.	5.34892E+02	0.	5.34892E+02
3	0.	[illegible]	[illegible]	[illegible]	0.	[illegible]	0.	[illegible]

3	0.	3.60979E-03	3.60979E-03	1.19710E-01	0.	5.34892E+02	0.	5.34892E+02
4	0.	1.90017E+01	1.90017E+01	5.96764E+02	0.	5.34901E+02	0.	5.34901E+02
5	0.	3.49859E+01	3.49859E+01	5.96552E+02	0.	5.34903E+02	0.	5.34903E+02
6	0.	1.83839E+01	1.83839E+01	5.96411E+02	0.	5.34904E+02	0.	5.34904E+02
7	0.	2.25740E+01	2.25740E+01	5.96426E+02	0.	5.34902E+02	0.	5.34902E+02
8	0.	7.72225E+00	7.72225E+00	5.96714E+02	0.	5.34904E+02	0.	5.34904E+02
9	0.	1.08422E+01	1.08422E+01	5.97216E+02	0.	5.34913E+02	0.	5.34913E+02
10	0.	1.08380E+01	1.08380E+01	5.97413E+02	0.	5.34910E+02	0.	5.34910E+02
11	0.	1.08424E+01	1.08424E+01	5.97525E+02	0.	5.34906E+02	0.	5.34906E+02
12	0.	2.26137E+01	2.26137E+01	5.97416E+02	0.	5.34907E+02	0.	5.34907E+02
13	0.	1.84173E+01	1.84173E+01	5.97388E+02	0.	5.34916E+02	0.	5.34916E+02
14	0.	1.84161E+01	1.84161E+01	5.97348E+02	0.	5.34920E+02	0.	5.34920E+02
15	0.	1.64408E+01	1.64408E+01	3.07805E+02	0.	5.34922E+02	0.	5.34922E+02
16	0.	1.54693E+01	1.54693E+01	2.89617E+02	0.	5.34922E+02	0.	5.34922E+02
17	0.	1.64437E+01	1.64437E+01	3.07922E+02	0.	5.34906E+02	0.	5.34906E+02
18	0.	1.54710E+01	1.54710E+01	2.89713E+02	0.	5.34904E+02	0.	5.34904E+02
19	0.	1.64381E+01	1.64381E+01	3.07878E+02	0.	5.34885E+02	0.	5.34885E+02
20	0.	1.54676E+01	1.54676E+01	2.89711E+02	0.	5.34883E+02	0.	5.34883E+02
21	0.	1.90199E+01	1.90199E+01	5.97425E+02	0.	5.34888E+02	0.	5.34888E+02
22	0.	1.84124E+01	1.84124E+01	5.97423E+02	0.	5.34891E+02	0.	5.34891E+02
23	0.	9.64758E+00	9.64758E+00	5.98328E+02	0.	5.34887E+02	0.	5.34887E+02
24	0.	9.64215E+00	9.64215E+00	5.98008E+02	0.	5.34884E+02	0.	5.34884E+02
25	0.	1.18886E+01	1.18886E+01	5.96689E+02	0.	5.34881E+02	0.	5.34881E+02
26	0.	1.59783E+01	1.59783E+01	5.96427E+02	0.	5.34884E+02	0.	5.34884E+02
27	0.	-2.61989E-02	-2.61989E-02	-8.50060E-01	0.	5.34885E+02	0.	5.34885E+02
28	0.	-2.35658E-02	-2.35658E-02	-7.69456E-01	0.	5.28798E+02	0.	5.28798E+02
29	0.	-9.82196E-04	-9.82196E-04	-4.22952E-03	0.	5.28796E+02	0.	5.28796E+02
30	0.	6.44218E-04	6.44218E-04	7.84655E-03	0.	5.22723E+02	0.	5.22723E+02
31	0.	0.	0.	0.	0.	0.	0.	0.
32	0.	1.56272E-02	1.56272E-02	5.07008E-01	0.	5.34899E+02	0.	5.34899E+02
33	0.	2.96382E-01	2.96382E-01	1.27142E+00	0.	5.32462E+02	0.	5.32462E+02
34	0.	2.96938E-01	2.96938E-01	1.27700E+00	0.	5.30030E+02	0.	5.30030E+02
35	0.	1.14431E-01	1.14431E-01	1.12886E+00	0.	5.27595E+02	0.	5.27595E+02
36	0.	6.30222E-02	6.30222E-02	6.23182E-01	0.	5.25162E+02	0.	5.25162E+02
37	0.	9.38726E-02	9.38726E-02	4.06605E-01	0.	5.22737E+02	0.	5.22737E+02
38	0.	8.86385E-02	8.86385E-02	3.84918E-01	0.	5.20365E+02	0.	5.20365E+02
39	0.	6.34865E-02	6.34865E-02	2.76043E-01	0.	5.19178E+02	0.	5.19178E+02
40	0.	5.35042E-02	5.35042E-02	2.32926E-01	0.	5.17993E+02	0.	5.17993E+02
41	0.	0.	0.	0.	0.	0.	0.	0.
42	0.	-3.23399E-02	-3.23399E-02	-6.41642E-01	0.	5.34898E+02	0.	5.34898E+02
43	0.	-3.42628E-02	-3.42628E-02	-6.83430E-01	0.	5.30025E+02	0.	5.30025E+02
44	0.	0.	0.	0.	0.	0.	0.	0.
45	0.	8.75927E-02	8.75927E-02	6.28220E-02	0.	5.62291E+02	0.	5.62291E+02
46	0.	1.38221E-01	1.38221E-01	7.95577E-02	6.06697E-08	7.02795E+02	1.11650E+03	7.02796E+02
47	0.	-1.08945E-01	-1.08945E-01	-3.45957E-01	0.	5.34881E+02	0.	5.34881E+02
48	0.	-1.07677E-04	-1.07677E-04	-4.66437E-04	0.	5.22723E+02	0.	5.22723E+02
49	0.	0.	0.	0.	0.	0.	0.	0.

RELAP4/C05 01/02/76 (1) RELAP4 THERMAL HYDRAULIC CODE CONFIGURATION CONTROL:YES
LOFT L135-A23 PRE-TEST PREDICTIONS WITH NEW PRESSURIZER MODEL CONCO=.75 12/20/76

CPU TIME = 11.66

JUNCTION NUMBER	SLIP VEL. (FT/SEC)	LIQUID VEL. (FT/SEC)	VAPOR VEL. (FT/SEC)	JCT. FLOW-L (LBM/SEC)	JCT. FLOW-G (LBM/SEC)	SAT. H-L (BTU/LBM)	SAT. H-G (BTU/LBM)	FLOW-WEIGHTED H (BTU/LBM)
50	0.	0.	0.	0.	0.	0.	0.	0.

PLOT RECORD NUMBER = 2

THIS PAGE
WAS INTENTIONALLY
LEFT BLANK

APPENDIX B

INPUT AND TIME = 0.0 LISTING FOR THE
POSTTEST ANALYSIS RUN
(RELAP4 RUN L135-A22)

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LISTING OF INPUT DATA FOR CASE   1
   1    *LOFT LI35-A22  LI-3A POSTTEST ANALYSIS
   2    010001 -2  9. 7      54  3  1  58  2  1  1  3  50  14  1 0 0 0
   3    010002  0.0  1.0
   4    020000  JW 51 JW     JW 24 AP 2 JW 25 JW 56 AP 23 ML 41 PR 15
   5    010002  0.0  1.0
        CARD ABOVE IS REPLACEMENT CARD.
   6    020000   JW 51 JW 50 JW 24 AP 2 JW 25 JW 56 AP 23 ML 41 PR 15
        CARD ABOVE IS REPLACEMENT CARD.
   7    030010  50   2  2  0  0.0002  0.00001  0.1
   8    030020  20  10  1  0  0.0005  0.00005  0.8
   9    030030  10  20  1  0  0.001   0.0001   2.0
  10    030040   5  10  4  0  0.01    0.0005   7.0
  11    030050   5  20  4  0  0.01    0.0005   20.0
  12    030060   5  40  4  0  0.01    0.00005  32.0
  13    030070   5  80  2  0  0.01    0.0005   80.0
  14    040010  1  1  0  0  0.001   0.                               *END TRIP
  15    040010  1  1  0          0    0  *       END TRIP
        CARD ABOVE IS REPLACEMENT CARD.
  16    040020  2  1  0  0  0.024   0  *         BREAK OPENING TRIP
  17    040030  3  1  0  0  0.5       0.0     *  PUMP TRIP
  18    040040  4  1  0  0  25.0      0.0     *  HPIS TRIP
  19    040050  5  1  0  0    22.46     0.    *  ACCUMULATOR
  20    040060  6  1  0  0  37.8   0.0  *  LPIS
  21    *          W1      W2          W3          W4            W5                  W6
  22    *        IBUB   IREAD     PRESSURE      TEMP          QUAL                VOLUME
  23    050011  0  0  2267.0391 541.62 -.1  16.28172  7.5  7.5
  24    050021  0  0  2271.0380 541.62 -.1  4.196  1.865  1.865
  25    050031    0    0  2264.4112            541.62                -1.    7.95126
  26    050041    0    0  2264.1612            541.62                -1.  4.550411903
  27    050051    0    0  2263.9155            541.62                -1.  3.189863350
  28    050061    0    0  2263.1672            541.62                -1.  2.878222427
  29    050071    1    0  2259.6136            541.62                -1.  11.18238868
  30    050081    0    0  2257.1552            541.62                -1.  10.97689826
  31    050091    0    0  2254.9642            541.62                -1.  5.447793949
  32    050101    0    0  2255.6375            541.62                -1.  10.97689826
  33    050111    0    0  2256.7671            541.62                -1.  11.18238868
  34    050121    0    0  2252.0692            541.62                -1.  2.057288380
  35    050131    0    0  2251.8722            541.62                -1.  4.437981240
  36    050141   0      0     2249.9757     541.62     -1.               4.493459374
  37    050151   0      0     2264.121388   541.62     -1.               3.785608924
  38    050161   0      0     2265.7486     541.62     -1.               3.785608924
  39    050171   0      0     2276.99872    541.62     -1.               1.895801523
  40    050181   0      0     2280.1546     541.62     -1.               0.6933519742
  41    050191   0      0     2274.0966     541.62     -1.               6.288527277
  42    050201   0      0     2273.0844     541.62     -1.               3.228619939
  43    050211    0    0  2272.5752            541.62                -1.  7.4496
  44    050221   0      0     2275.8756     541.62     -1.               5.68886667
  45    050231   0      0     2277.2709     541.62     -1.0               8.375
  46    050241   0      0     2274.792583    541.62    -1.               10.083
  47    050251    0    0  2273.18              541.62                -1.  3.569594146
  48    050261   0      0     2273.18       541.62     -1.               1.5304
  49    050271    0    0  2273.18              530.0                 -1. 0.8175129257
  50    050281   0      0     2266.66       541.62     -1.               7.54979
  51    050291   0      0     2266.85       541.62     -1.               1.53039
  52    050301    0    0  2266.51              536.0                 -1. 0.2896489032
  53    050311    0    0  2265.35              530.0                 -1.  4.582558229
  54    050321    0    0  2263.94              520.0                 -1.  10.03573817
  55    050331    0    0  2265.35              510.0                 -1.  4.582558229
  56    050341    0    0  2266.85              500.0                 -1. 0.4089180585
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050351   0   0  2267.95              495.0                  -1.  1.709604034
050361   0   0  2267.50              490.0                  -1. 0.5786674095
050371   0       1    33.6      -271.6         0.           3693.454946
050381   0   0  2270.39              530.0                  -1.  8.170456642
050391   0   0    [illegible]31      530.0                  -1.  5.875465929
050401   0   0      .1055            562.0                  -1. 0.3623659179
050411   3       0    2261.927    -1.0         0.             34.75215344
050421   1       0       0.0     539.4         0.            281.6
050431   0       0        2275.803039 541.62  -1.0             6.392
050441   0   0  2273.17              506.0                  -1.  3.276254839
050451   0   0  2266.84              483.0                  -1.  3.276254839
050461   0       0    2278.709   410.      [illegible]          1.21305
050471   0   0  2273.18              541.0                  -1.  0.1426
050481   0   0    2276.741239 541.62  -1.  [illegible]  1.2232   1.2232
050491   0       0    2266.85    541.62  -1.                 0.774056
050501   0       0    2273.18    541.62  -1.                 0.6315
050511   0       0    2273.5129  541.62  -1.                 5.68886667
050521   0       0    2273.753192 541.62 -1.               10.083
050531   0       0    2272.7138164  541.62  -1.            10.083
050541   0       0    2274.69424  541.62  -1.               5.68886667
*              W7             W8              W9         W10                W11
*        VOLUME HEIGHT    MIX LEVEL         FRIC    FLOW AREA           EQ DIAM
050012   0   2.512   1.788   -.973
050022   0   2.491   1.314   -2.838  0
050032 0.9323333333        0.9323333333          0 0.6827037757        0.932333
050042 0.9323333333        0.9323333333          0 0.6827037757        0.932333
050052 0.9323333333        0.9323333333          0 0.6827037757        0.932333
050062  2.421562792         2.421562792          0 0.8955644145        1.067833
050072  2.500000000         2.500000000          0   7.941248101       1.461496
050082  6.750000000         6.750000000          0   1.626207149       0.0335
050092  2.005208333         2.005208333          0   1.626207149       0.0335
050102  6.750000000         6.750000000          0   1.626207149       0.0335
050112  2.500000000         2.500000000          0   7.941248101       1.461496
050122  2.375082991         2.375082991          0 0.8955644145        1.067833
050132  3.808666667         3.808666667          0 0.6827037757        0.932333
050142  2.174500000         2.174500000          0 0.6827037757        0.932333
050152  2.475770200         2.475770200          0 0.3940626203        0.39406
050162  2.475770200         2.475770200          0 0.3940626203        0.39406
050172 0.7083333333        0.7083333333          0 0.3940626203        0.708333
050182 0.7083333333        0.7083333333          0 0.3940626203        0.708333
050192 0.9323333333        0.9323333333          0 0.6827037757        0.932333
050202 0.9323333333        0.9323333333          0 0.6827037757        0.932333
050212  3.435000000         3.435000000          0   1.961219534       0.583333
050222 3.87063889          3.87063889       0        1.527163094       0.33333
050232 1.2232              1.2232           0        7.497480256       3.089674
050242 3.140666667         3.140666667      0        3.265             2.313
050252 0.9323333333        0.9323333333          0 0.6827037757        0.932333
050262 0.9323333333        0.9323333333          0 0.6827037757        0.932333
050272 0.5677500000        0.5677500000          0 0.2531652931        0.56775
050282 0.9323333333        0.9323333333          0 0.6827037757        0.932333
050292 0.9323333333        0.9323333333          0 0.6827037757        0.932333
050302  2.440125000         2.440125000          0 0.9003700370D-01 0.33858
050312  4.582500000         4.582500000          0   1.060795302       1.215833
050322  4.047083333         4.047083333          0   1.161015380       1.215833
050332  4.582500000         4.582500000          0   1.060795302       1.215833
050342  4.541666667         4.541666667          0 0.9003700370D-01 0.33858
050352  2.174500000         2.174500000        0   0.6827037757        0.932333
050362  4.317750000         4.317750000          0 0.9003700370D-01 0.33858
050372  16.09374999      16.09374999            0   9.621127503       3.5
050382  2.065083333         2.065083333          0 0.4175836592        1.25
050392  2.895833333         2.895833333          0 0.4175836592        1.25
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050402  4.035000000        4.035000000          0 0.15559179400-01 0.14075
050412 6.713541667        3.500            0      6.007260513       2.7656
050422 27.45             11.7              0      17.1              4.67
050432 1.7036             1.7036           0      3.743294584       2.183142
050442 0.8411458333       0.8411458333        0 0.55925             0.843833
050452 0.8411458333       0.8411458333        0 0.55925             0.843833
050462 15.79              15.79            0       .06681           0.29167
050472  0.3386   0.3386   0  0.09004  0.3386  -.16930
050482    0    7.497480256    3.089674   -15.1768    0
050492  .932333            .932333         0      .682704            .932333
050502  .932333            .932333         0      .682704            .932333
050512 3.870638890        3.870638890      0    1.527163094         0.333333
050522 3.140666667        3.140666667      0      3.265             2.313
050532 3.140666667        3.140666667      0      3.265             2.313
050542 3.87063889         3.87063889       0    1.527163094         0.33333
*           W12          W13
*        ELEVATION      IAMBLO
050033 -.4661666670         *
050043 -.4661666670         *
050053 -.4661666670         *
050063 -.5339166650         *
050073 0.3121933630         *
050083  2.812193363         *
050093  9.562193363         *
050103  2.812193363         *
050113 0.3121933630         *
050123 -.4874368660         *
050133 -4.296103530         *
050143 -4.296103530         *
050153 -2.121603530         *
050163 -2.121603530         *
050173 -.3541666670         *
050183 -.3541666670         *
050193 -.4661666670         *
050203 -.4661666670         *
050213 -2.351666670         *
050223 -13.96358334         *
050233 -16.4                *
050243 -12.260000001        *
050253 -.4661666670         *
050263 -.4661666670         *
050273 -.2838750000         *
050283 -.4661666670         *
050293 -.4661666670         *
050303 -.1692916670         *
050313  2.270833333         *
050323  6.853333333         *
050333  2.270833334         *
050343 -2.270833330         *
050353 -4.445333330         *
050363 -4.148458330         *
050373 -13.51041670         *
050383 0.4661666667         *
050393 -.3645833330         *
050403 0.4661666667         *
050413  4.02                *
050423  1.99                *
050433 -13.9536             *
050443 -.4005729170         *
050453 -.4005729170         *
050463 -15.79               *
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050493 -.466167          *
050503 -.466167          *
050513 -6.222305560      *
050523  -9.119333334     *
050533  -5.978666667     *
050543 -10.09294445      *
060011  0.8  3.0  *                                                              BUBBLE
060021  0.8  1000000.0
060031  0.8  2.0
070100  20                 * NUMBER OF DATA POINTS IN TIME DEPENDENT VOLUME
070101  0.2  23.553  100.0  1.0E-6  16.09374999
070102  1.0  27.414  100.0  1.0E-6  16.09374999
070103  2.0  33.402  100.0  1.0E-6  16.09374999
070104  4.0  36.613  100.0  1.0E-6  16.09374999
070105  6.0  37.913  100.0  1.0E-6  16.09374999
070106  8.0  39.721  100.0  1.0E-6  16.09374999
070107 10.0  41.663  100.0  1.0E-6  16.09374999
070108 15.0  48.496  100.0  1.0E-6  16.09374999
070109 20.0  55.215  100.0  1.0E-6  16.09374999
070110 25.0  61.222  100.0  1.0E-6  16.09374999
070111 30.0  64.610  100.0  1.0E-6  16.09374999
070112 35.0  65.291  100.0  1.0E-6  16.09374999
070113 40.0  64.493  100.0  1.0E-6  16.09374999
070114 45.0  63.928  100.0  1.0E-6  16.09374999
070115 50.0  63.245  100.0  1.0E-6  16.09374999
070116 60.0  62.426  100.0  1.0E-6  16.09374999
070117 69.48 61.680  100.0  1.0E-6  16.09374999
070118 70.0  61.300  100.0  1.0E-6  16.09374999
070119 80.0  61.300  100.0  1.0E-6  16.09374999
*         W1  W2  W3   W4         W5               W6                  W7
*         IN OUT PUMP VALVE       FLOW             FLOW AREA           ELEVATION
080011  2   1   0   0  619.444 0.480  -.973  0.0     0.6481  0.6481
080021  1   3   0   0  619.444 0.6827  0.0  5.173   0.9134  0.9134
080031  1  28   0   0  0.0     0.6827  0.0  4.741   0.3095  0.4732
080041   3   4   0   0  619.444            0.6608871601      0.0
080051   4   5   0   0  619.444            0.3588196284      0.0
080061   5   6   0   0  619.444            0.682704    0.0
080071   6   7   0   0  619.444            0.556                 1.510110030
080081   7   8   0   0  619.444              1.626207149         2.812193363
080091   8   9   0   0  619.444              1.626207149         9.562193363
080101   9  10   0   0  619.444              1.626207149         9.562193363
080111  10  11   0   0  619.444              1.626207149         2.812193363
080121  11  12   0   0  619.444            0.556                 1.510110030
080131  12  13   0   0  619.444            0.6827037757         -.4874368670
080141  13  14   0   0  619.444            0.6827037757         -3.829936870
080151  14  15  -1   0  311.844            0.3940626203         -2.121603530
080161  14  16  -2   0  307.600            0.3940626203         -2.121603530
080171  15  17   1   0  311.844            0.3940626203         0.0
080181  16  18   2   0  307.600            0.3940626203         0.0
080191  17  19   0   0  311.844            0.3940626203         0.0
080201  18  19   0   0  307.600            0.3940626203         0.0
080211  19  20   0   0  619.444            0.6608871601         0.0
080221  20  21   0   0  619.444            0.6827037757         0.0
080231  21  51   0   0     619.444         1.30494                -2.35166667
080241  22  48   0   0     619.444         1.30494               -13.96358334
080251  43  24   0   0     619.444         1.056                 -12.260000001
080261  53   2   0   0     619.444         0.78544                -2.838000000
080271  21  25   0   0 0.0                 0.6827037757         0.0
080281  25  26   0   0 0.0                 0.6827037757         0.0
080291  50  47   0   0 0.0                 0.090037             0.0
080301  27  44   0   0 0.0                 0.25316              0.0
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080311   44   37    0    1 0.0                              0.55925                 0.0
080321   28   29    0    0 0.0                              0.6827037757            0.0
080331   49   30    0    0 0.0                              0.090037                0.0
080341   30   31    0    0 0.0                              0.9003700370D-01  2.270833333
080351   31   32    0    0 0.0                              0.2060339789      6.853333333
080361   32   33    0    0 0.0                              0.2060339789      6.853333333
080371   33   34    0    0 0.0                              0.9003700370D-01  2.270833333
080381   34   35    0    0 0.0                              0.9003700370D-01 -2.270833330
080391   35   36    0    0 0.0                              0.9003700370D-01 -3.979166670
080401   36   45    0    0 0.0                               0.090037               0.0
080411   45   37    0    1 0.0                              0.55925                 0.0
080421   29   39    0    0    0.0  0.4179   0.0  19.338   1.247  0.4576
080431   26   38    0    0    0.0  0.4175836592        0.4661666667
080441   48   43    0    0       619.444                  1.05597                -13.9536
080451   40    4    0    0 0.0                              0.1555917900D-01 0.466166666
080461   41   40    0    0 0.0                              0.1555917900D-01  4.225
080471 46 23 0 0 0.0 0.066813 -15.79 0.0 2.7 2.2 1 5 2 0 0.29167 0 0 0
080481   47   27    0    0 0.0                              0.090037                0.0
080491   23   48    0    0           0.0                    7.497480256          -15.1768
080501   29   49    0    0           0.0                    0.682704               0.0
080511   26   50    0    0           0.0                    0.682704               0.0
080521   51   54    0    0         619.444                  1.304940872           -6.22230556
080531   24   52    0    0         619.444                  3.265                 -9.119333334
080541   52   53    0    0         619.444                  3.265                 -5.978666667
080551   54   22    0    0         619.444                  1.304940872          -10.09294445
080561    0   46    3    0           0.0                    0.06447                0.0
080571    0   46    1    0           0.0                    0.06447                0.0
080581    0   46    2    0           0.0                    0.06447                0.0
*              W8                W9                        W10                 W11   W12 W13   W14
*            INERTA             FJUNF                      FJUNR              INDX    J   CAL  MVMIX
080012   0    5    2    0   0.901   0.0   0   0   1.0   0
080022   1    5    0    0   0.9323   0.0   0   0
080032   1    5    0    0   0.9323   0.0   0   0
080042   8.744846992          0.0514                      0.0514                1     5    0    0
080052   8.303511660          0.02278                     0.0912                1     5    0    0
080062   5.216303368          0.6722                      0.6722                1     5    0    0
080072   1.882983179          1.53061                     1.7764                1     5    0    0
080082   2.164041222          0.3584                      0.6312                0     5    0    0
080092   3.105385439          0.0013                      0.0013                0     5    0    0
080102   3.105385439          0.0572                      0.0572                0     5    0    0
080112   2.164041222          0.6325                      0.357                 0     5    0    0
080122   1.371201641          1.3794                      1.6017                1     5    0    0
080132   6.043461482          0.19658                     0.2065                0     5    0    0
080142   9.981354520          1.0994                      1.25                  1     5    0    0
080152   17.00963668          0.22884                     0.22884               0     5    0    0
080162   17.00963668          0.2234                      0.2234                0     5    0    0
080172   18.29345297          0.16541                     0.16541               0     5    0    0
080182   14.42171118          0.21027                     0.2103                0     5    0    0
080192   12.85037548          0.66128                     0.69                  1     5    0    0
080202   8.978633689          2.93689                     1.20                  1     5    0    0
080212   10.20968122          0.45025                     0.45025               1     5    0    0
080222   3.947755404          1.23809                     1.23809               1     5    0    0
080232     0.0                 .17528                      .17528               0     5    2    0
080242     1.832              0.600                       0.600                 0     5    2    0
080252   0.0                   .2499998                    .2499998             0     5    2    0
080262   0.0                  0.55918                     0.55918               0     5    2    0
080272   3.916834321          0.8040                      1.3302                1     5    0    0
080282   5.4708               0.1005                      0.1005                1     5    0    0
080292     9.4701    0.260     0.754                                            1     5    0    0
080302   11.61547             0.29956                     0.24629               1     0    0    0
080312   25.25554003          1.037                       0.537                 1     0    0    0
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080322 5.0742               0.1005               0.1005           1  5  0  0
080332   19.7019            0.39605              0.75363          1  5  0  0
080342 19.90104223          0.93596            0.93596            0  5  0  0
080352 5.758748039          5.81834              5.81834          0  5  0  0
080362 5.758748039          5.81834              5.81834          0  5  0  0
080372 27.25728546          0.23025              0.23025          0  5  0  0
080382 27.05511851          6.351                6.351            0  5  0  0
080392 37.52486243          6.351                6.351            1  5  0  0
080402 40.91397             0.94883              0.43834          1  0  0  0
080412 25.25554003          1.037                0.537            1  0  0  0
080422  0  5  0  3  0.7083  0.0  0  0
080432 24.22295746          1.247                0.4576           0  5  0  3
080442   .781                .52259               .52259          0  5  0  0
080452 75.32990961          1.0                  1.0              0  5  0  3
080462 74.88990673          11.34                11.34            0  5  0  0
080482   15.18     0.429    0.290                                 1  0  0  0
080492   0.0                0.01                 0.01             0  5  2  0
080502   3.4788             0.01                 0.01             1  5  0  0
080512   2.3192             0.01                 0.01             1  5  0  0
080522   0.0                0.0999980            0.0999980        0  5  2  0
080532   0.                 0.049991             0.049991         0  5  2  0
080542   0.                 0.049981             0.049981         0  5  2  0
080552   0.0                0.1000               0.1000           0  5  2  0
080562   0.0               29.9                 29.9              0  5  2  0
080572   0.0                1.0                  1.0              0  5  2  3
080582   0.0                1.0                  1.0              0  5  2  3
*            W15            W16                  W17   W18    W19   W20
*        JUN. DIAM.         CONCO               ICHOKE ENTH  SRCOS  IADJUN
080043 0.9323333333         0.0                    0    0  *
080053 0.6759166667         0.0                    0    0  *
080063 0.9323333333         0.0                    0    0  *
080073 0.90167              0.0                    0    0  *
080083  1.438941017         0.0                    0    2  *
080093  1.438941017         0.0                    0    3  *
080103  1.438941017         0.0                    0    3  *
080113  1.438941017         0.0                    0    1  *
080123 0.90167              0.0                    0    0  *
080133 0.9323333333         0.0                    0    0  *
080143 0.9323333333         0.0                    0    0  *
080153 0.7083333333         0.0                    0    0  *
080163 0.7083333333         0.0                    0    0  *
080173 0.7083333333         0.0                    0    0  *
080183 0.7083333333         0.0                    0    0  *
080193 0.7083333333         0.0                    0    0  *
080203 0.7083333333         0.0                    0    0  *
080213 0.9323333333         0.0                    0    0  *
080223 0.9323333333         0.0                    0    0  *
080233 0.91145              0.0                    0    0       1.0    0
080243 1.2889               0.0                    0    0       1.0    0
080263 1.0                  0.0                    0    0       1.0    0
080253 2.038                0.0                    0    0       1.0    0
080273 0.9323333333         0.0                    0    0  *
080283 0.9323333333         0.0                    0    0  *
080293 0.3386               0.0                    0    0  *
080303  0.56775     0.6  11  0
080313  0.843833    0.6  11  0
080323 0.9323333333         0.0                    0    0  *
080333   0.0  1.0  0  0
080343 0.3594166667         0.0                    0    0  *
080353 0.5278189198         0.0                    0    0  *
080363 0.5278189198         0.0                    0    0  *
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080373 0.3594166667        0.0                        0    0 *
080383 0.3594166667        0.0                        0    0 *
080393 0.3594166667        0.0                        0    0 *
080403  0.33858   0.6  11   0
080413  0.843833   0.6   11   0
080433 0.7083333338        0.0                        0    0 *
080443 1.26557             0.0                        0    0          1.0      0
080453 0.1407500000        0.75                       0    0 *
080463 0.1407500000        0.0                        0    0 *
080483 0.3386              0.6                        11   0 *
080493 3.0833333333        0.0                        0    0          1.0      0
080503 0.932333            0.0                        0    0    *
080513 0.932333            0.0                        0    0    *
080523 1.288992755         0.0                        0    0          1.0      0
080533 2.038               0.0                        0    0          1.0      0
080543 2.038               0.0                        0    0          1.0      0
080553 1.288992755         0.0                        0    0          1.0      0
080563 0.2865              0.0                        0    0    *
080573 0.2865              0.0                        0    0    *
080583 0.2865              0.0                        0    0    *
090011   1   3   0   1 0 3530.   0.4985   5000.   408.950 465. 294. 38.75
090012   0.0    0    18.4    103.55   0.0         * PUMP 1
090021   1   3   0   1 0 3530.   0.5092   5000.   408.950 465. 294. 38.75
090022   0.0    0    18.4    103.55   0.0         * PUMP 2
095011   0.0    0.0    0.0
095021   0.0    0.0    0.0
100000 16   0   0   16
*               PUMP HEAD AND TORQUE MULTIPLIER CURVES
091001 -11 0. 0. .1 0. .15 .05 .24 .8 .3 .96 .4 .98 .6 .97 .8 .9 .9 .8 .96 .5
091002 1. 0.
092001 -7                      0. 0. .1 0. .15 .05 .24 .56 .8 .56 .96 .45 1. 0.
101011   1   1   6 0.          1.4036    .19061    1.3636    .38963    1.3186     * PUMP-HD
101012             .59396      1.2328    .7902     1.1336    1.        1.0078     * PUMP-HD
101021   1   2   8 0.          -.67      .2        -.5       .4        -.25       * PUMP-HD
101022             .57554      0.        .74432    .2583     .77348    .3778      * PUMP-HD
101023             .86313      .9326     1.        1.0078                         * PUMP-HD
101031   1   3   6 -1.         2.4722    -.80574   2.0474    -.6069    1.831      * PUMP-HD
101032             -.40683     1.624     -.200171  1.4705    0.        1.4036     * PUMP-HD
101041   1   4   8 -1.         2.4722    -.82297   1.9968    -.63332   1.5897     * PUMP-HD
101042             -.45534     1.3279    -.27109   1.1949    -.17716   1.0605     * PUMP-HD
101043             -.09073     1.0156    0.        .934279                        * PUMP-HD
101051   1   5   7 0.          .25       .2        .28       .4        .34        * PUMP-HD
101052             .4118       .2768     .59763    .4584     .793467   .6992      * PUMP-HD
101053             1.          .9465                                              * PUMP-HD
101061   1   6  10 0.          .934279   .091099   .9229     .186509   .8963      * PUMP-HD
101062             .271762     .875      .455872   .8433     .574406   .8355      * PUMP-HD
101063             .740576     .8466     .766619   .8469     .871471   .8838      * PUMP-HD
101064             1.          .9465                                              * PUMP-HD
101071   1   7   6 -1.         -1.       -.8       -.63      -.6       -.3        * PUMP-HD
101072             -.4         -.05      -.2       .15       0.        .25        * PUMP-HD
101081   1   8   6 -1.         -1.       -.8       -.97      -.6       -.95       * PUMP-HD
101082             -.4         -.88      -.2       -.8       0.        -.67       * PUMP-HD
101091   2   1   6 0.          .6032     .1930     .6325     .393      .7369      * PUMP-TQ
101092             .59552      .8331     .79782    .9229     1.        .9672      * PUMP-TQ
101101   2   2   7 0.          -.67      .4        -.25      .5        .15        * PUMP-TQ
101102             .737255     .526586   .768049   .606594   .86723    .74366     * PUMP-TQ
101103             1.          .9672                                              * PUMP-TQ
101111   2   3   6 -1.         1.9843    -.80096   1.394     -.60638   1.0975     * PUMP-TQ
101112             -.40686     .822      -.19928   .6648     0.        .6032      * PUMP-TQ
101121   2   4   8 -1.         1.9843    -.82234   1.8308    -.63371   1.6824     * PUMP-TQ
101122             -.45853     1.557     -.267023  1.4362    -.176107  1.3879     * PUMP-TQ
```

```
101123             -.08931  1.3481    0.         1.23361                          * PUMP-TQ
101131  2  5  4  0.         -.45      .4         -.25       .5        0.        * PUMP-TQ
101132           1.         .3569                                               * PUMP-TQ
101141  2  6 10  0.         1.23361   .090643    1.1965     .188569   1.1096    * PUMP-TQ
101142           .27347     1.0416    .458669    .8958      .57448    .7807     * PUMP-TQ
101143           .73816     .6134     .76852     .5849      .870057   .4877     * PUMP-TQ
101144           1.         .3569                                               * PUMP-TQ
101151  2  7  4 -1.         -1.       -.3        -.9        -.1       -.5       * PUMP-TQ
101152           0.         -.45                                                * PUMP-TQ
101161  2  8  4 -1.         -1.       -.25       -.9        -.08      -.8       * PUMP-TQ
101162           0.         -.67                                                * PUMP-TQ
104011 1 1 7 0. 0. .1 .03 .2 1.09 .5 1.02 .7 1.01 .9 .94 1. 1.
104021 1 2 8 0. 0. .1 -.04 .2 0. .3 .1 .4 .21 .8 .67 .9 .8 1. 1.
104031 1 3 10 -1. -1.16 -.9 -1.24 -.8 -1.77 -.7 -2.36 -.6 -2.79 -.5 -2.91
104032 -.4 -2.67 -.25 -1.69 -.1 -.5 0. 0.
104041 1 4 10 -1. -1.16 -.9 -.78 -.8 -.5 -.7 -.01 -.6 .17 -.5 .08 -.4 .32 0.
104042       -.2 .05 -.1 .08 0. .11
104051 1 5 6 0. 0. .2 -.34 .4 -.65 .6 -.93 .8 -1.19 1. -1.47
104061 1 6 10 0. .11 .1 .13 .25 .15 .4 .13 .5 .07 .6 -.04 .7 -.23 .8 -.51
104062  .9 -.91 1. -1.47
104071 1 7 2 -1. 0. 0. 0.
104081 1 8 2 -1. 0. 0. 0.
104091  2  1  6  0.         .6032     .1930      .6325      .393      .7369     * PUMP-TQ
104092           .59552     .8331     .79782     .9229      1.        .9672     * PUMP-TQ
104101  2  2  7  0.         -.67      .4         -.25       .5        .15       * PUMP-TQ
104102           .237255    .526586   .768049    .606594    .86723    .74366    * PUMP-TQ
104103           1.         .9672                                               * PUMP-TQ
104111  2  3  6 -1.         1.9843    -.80096    1.394      -.60638   1.0975    * PUMP-TQ
104112           -.40686    .822      -.19928    .6648      0.        .6032     * PUMP-TQ
104121  2  4  8 -1.         1.9843    -.82234    1.8308     -.69371   1.6824    * PUMP-TQ
104122           -.45853    1.557     -.267023   1.4362     -.176107  1.3879    * PUMP-TQ
104123           -.08931    1.3481    0.         1.23361                        * PUMP-TQ
104131  2  5  4  0.         -.45      .4         -.25       .5        0.        * PUMP-TQ
104132           1.         .3569                                               * PUMP-TQ
104141  2  6 10  0.         1.23361   .090643    1.1965     .188569   1.1096    * PUMP-TQ
104142           .27347     1.0416    .458669    .8958      .57448    .7807     * PUMP-TQ
104143           .73816     .6134     .76852     .5849      .870057   .4877     * PUMP-TQ
104144           1.         .3569                                               * PUMP-TQ
104151  2  7  4 -1.         -1.       -.3        -.9        -.1       -.5       * PUMP-TQ
104152           0.         -.45                                                * PUMP-TQ
104161  2  8  4 -1.         -1.       -.25       -.9        -.08      -.8       * PUMP-TQ
104162           0.         -.67                                                * PUMP-TQ
110010   -2  1  0  0  0  0  0  * BLOWDOWN VALVE
120100   -1   2   43.0   0.0   0.0   0.0175  1.0   200.0  1.0
130100  6  1  16  4  'GAL/MIN' 100.0  90.0
130101 0.2  232.20   1.2  648.50   2.2  805.02    3.2  923.95   4.2  994.23
130102 5.2 1065.66   6.2 1110.92   7.2 1160.76    8.2 1209.38  10.2 1296.57
130103 12.2 1321.28 17.2 1437.01 22.2 1471.80   27.2 1545.88  31.68 1580.89
130104   42.2    1659.69
130200  4  2  2  4  'GAL/MIN' 100.0  90.0
130201  0.1  279.20  3000.0  279.20    * HPIS FILL
130300  5  1  20  4 "GAL/MIN"  210.0 90.0       * ACCUMULATOR FILL
130301  0.02     169.10    0.54    3774.62    1.54    5809.83    2.54    6750.12
130302  3.54    7858.38    4.54    8959.67    5.54    9916.40    7.54   11807.35
130303  9.54   12379.40   11.54   12404.99   13.54   12270.05   15.54   12175.74
130304 17.54   11915.46   22.54   11183.96   27.54   10445.17   32.54    9668.22
130305 37.54    8981.70   42.54    8580.74   47.02    8205.99   57.54    7367.0
150011  23  0  1  0 0 0 0  20.629  0.0  0.8039  1.744  0.0
150012  1.744  0.0  5.1384  0.0  0.0  0.0
150021  1  0  2  0  0  0  0  23.054  0.0  0.9829  1.788
150022  0.0  0.0  0.0  4.103  0.0  0.0  0.0
```

484	150031	2	0	2	0	0	0	0	10.477	0.0	0.4467	1.314	0.0
485	150032	0.0	0.0	1.865	0.0	0.0	0.0						
486	150041	53	0	3	0	0	0	0	20.46	0.	1.776	2.313	0.
487	150042	0.	0.	3.196	0.0	0.	0.						
488	150051	36	0	11	0	0	0	0	3.42	0.0	0.2533	0.3386	0.0
489	150052	0.3386	0.0	3.217	0.0	0.0	0.0						
490	150061	35	0	8	0	0	0	0	7.33	0.0	0.9674	0.932	0.0
491	150062	0.932	0.0	2.504	0.0	0.0	0.0						
492	150071	0	21	4	0	0	0	0	0.0	29.6759	3.5409	0.0	0.5833
493	150072	0.0	0.0	0.0	3.435	0.0	0.0						
494	150081	21	0	5	0	0	0	0	35.978	0.0	33.054	0.5833	0.0
495	150082	0.0	0.0	3.435	0.0	0.0	0.0						
496	150091	0	51	4	0	0	0	0	0.	33.477	6.8603	0.	.3333
497	150092	0.	0.	0.	3.875	0.	0.						
498	150101	51	0	5	0	0	0	0	40.586	0.	37.289	.3333	0.
499	150102	0.	0.	0.	3.875	0.	0.						
500	150111	34	0	11	0	0	0	0	9.19	0.0	0.6807	0.3386	0.0
501	150112	0.3386	0.0	8.643	0.0	0.0	0.0						
502	150121	33	0	13	0	0	0	0	16.32	0.0	2.722	1.203	0.0
503	150122	1.203	0.0	4.319	0.0	0.0	0.0						
504	150131	32	0	13	0	0	0	0	32.67	0.0	5.447	1.203	0.0
505	150132	1.203	0.0	8.643	0.0	0.0	0.0						
506	150141	31	0	13	0	0	0	0	16.32	0.0	2.722	1.203	0.0
507	150142	1.203	0.0	4.319	0.0	0.0	0.0						
508	150151	30	0	11	0	0	0	0	6.83	0.0	0.5061	0.3386	0.0
509	150152	0.3386	0.0	6.427	0.0	0.0	0.0						
510	150161	23	0	5	0	0	0	0	12.794	0.0	11.755	2.892	0.0
511	150162	2.892	0.0	1.222	0.0	0.0	0.0						
512	150171	8	42	6	0	2	0	0	1121.92	1395.42	5.139	0.0335	4.667
513	150172	0.0335	4.667	5.79	5.79	0.83	7.57						
514	150181	9	42	6	0	2	0	0	649.38	807.68	2.975	0.0335	4.667
515	150182	0.0335	4.667	3.35	3.35	7.573	9.573						
516	150191	10	42	6	0	2	0	0	1121.92	1395.42	5.139	0.0335	4.667
517	150192	0.0335	4.667	5.79	5.79	0.83	7.57						
518	150201	44	0	7	0	0	0	0	13.063	0.0	1.391	0.932	0.0
519	150202	0.932	0.0	5.895	0.0	0.0	0.0						
520	150211	45	0	7	0	0	0	0	13.063	0.0	1.391	0.932	0.0
521	150212	0.932	0.0	5.895	0.0	0.0	0.0						
522	150221	25	0	8	0	0	0	0	15.31	0.0	2.02	0.932	0.0
523	150222	0.932	0.0	5.228	0.0	0.0	0.0						
524	150231	26	0	8	0	0	0	0	6.995	0.0	0.923	0.932	0.0
525	150232	0.932	0.0	2.3895	0.0	0.0	0.0						
526	150241	3	0	8	0	0	0	0	15.45	0.0	2.038	0.932	0.0
527	150242	0.932	0.0	5.275	0.0	0.0	0.0						
528	150251	4	0	8	0	0	0	0	19.52	0.0	2.575	0.932	0.0
529	150252	0.932	0.0	6.665	0.0	0.0	0.0						
530	150261	5	0	8	0	0	0	0	13.68	0.0	1.805	0.932	0.0
531	150262	0.932	0.0	4.672	0.0	0.0	0.0						
532	150271	6	0	9	0	0	0	0	10.78	0.0	1.6092	1.0678	0.0
533	150272	1.0678	0.0	3.213	0.0	0.0	0.0						
534	150281	7	0	10	0	0	0	0	15.	0.0	5.267	1.4615	0.0
535	150282	1.4615	0.0	2.500	0.0	0.0	0.0						
536	150291	11	0	10	0	0	0	0	15.9	0.0	5.267	1.4615	0.0
537	150292	1.4615	0.0	2.500	0.0	0.0	0.0						
538	150301	12	0	9	0	0	0	0	7.70	0.0	1.1502	1.0678	0.0
539	150302	1.0678	0.0	2.297	0.0	0.0	0.0						
540	150311	13	0	8	0	0	0	0	19.04	0.0	2.511	0.932	0.0
541	150312	0.932	0.0	6.500	0.0	0.0	0.0						
542	150321	14	0	8	0	0	0	0	19.27	0.0	2.543	0.932	0.0
543	150322	0.932	0.0	6.581	0.0	0.0	0.0						
544	150331	19	0	8	0	0	0	0	26.97	0.0	3.558	0.932	0.0

```
545    150332  0.932  0.0  9.211  0.0   0.0  0.0
546    150341  20  0  8  0 0 0 0  13.85  0.0  1.828  0.932  0.0
547    150342  0.932  0.0  4.729  0.0   0.0  0.0
548    150351  28  0  8  0 0 0 0  13.72  0.0  1.811  0.932  0.0
549    150352  0.932  0.0  4.686  0.0   0.0  0.0
550    150361  29  0  8  0 0 0 0  6.56  0.0  0.866  0.932  0.0
551    150362  0.932  0.0  2.241  0.0   0.0  0.0
552    150371  27  0  12  0 0 0 0  5.75  0.0  0.4927  0.5678  0.0
553    150372  0.5678  0.0  3.229  0.0  0.0  0.0
554    150381  46 0 14 0 0 0 0 16.4 47.54 8.69  0.83333 0.0 0.0 0.8 18.16
555    150382 18.16  0.0  0.0
556    150391  48  0  1  0  0  0  0  20.629  0.0  0.0039  1.745  0.0
557    150392  1.744  0.0  5.138  0.0  0.0  0.0
558    150401  48  0  8  0  0  0  0  12.794  0.0  11.755  2.892  0.0
559    150402  2.892  0.0  1.222  0.0  0.0  0.0
560    150411  43  0  1  0  0  0  0  28.735  0.0  1.1298  1.744  0.0
561    150412  1.744  0.0  7.158  0.0  0.0  0.0
562    150421  43  0  5  0  0  0  0  17.821  0.0  16.374  2.892  0.0
563    150422  2.892  0.0  1.702  0.0  0.0  0.0
564    150431   49   0   8   0   0   0   0   3.92   0.0   0.438
565    150432   0.932   0.0   0.932   0.0   1.134   0.0   0.0   0.0
566    150441   50   0   8   0   0   0   0   2.885   0.0   0.381
567    150442   0.932   0.0   0.932   0.0   0.9855   0.0   0.0   0.0
568    150451  0  54  4  0  0  0  0  0.  33.114  6.7859  0.  .3333
569    150452  0.  0.  0.  3.833  0.  0.
570    150461  54  0  5  0  0  0  0  40.147  0.  36.685  .3333  0.
571    150462  0.  0.  0.  3.833  0.  0.
572    150471  0  22  4  0  0  0  0  0.  33.719  6.9098  0.  .3333
573    150472  0.  0.  0.  3.903  0.  0.
574    150481  22  0  5  0  0  0  0  40.885  0.  37.563  .3333  0.
575    150482  0.  0.  0.  3.9035 0.  0.
576    150491  52  0  3  0  0  0  0  19.929  0.  1.73  2.313  0.
577    150492  0.  0.  3.113  0.  0.  0.
578    150501  24  0  3  0  0  0  0  19.929  0.  1.73  2.313  0.
579    150502  0.  0.  3.113  0.  0.  0.
580    170101  1  2  1  4  0.0  0.01299  0.0
581    170102  0  1  4  0.02597  0.0
582    170201  2  2  1  4  0.894  0.0208  0.0
583    170202  0  1  4  0.0208  0.0
584    170301  2  2  1  4  1.019  0.0417  0.0
585    170302  0  1  4  0.0417  0.0
586    170401  2  2  1  4  1.25  0.0625  0.0
587    170402  0  1  4  0.0625  0.0
588    170501  2  2  1  4  1.667  0.25  0.0
589    170502  0  1  4  0.5  0.0
590    170601  2  2  1  4  0.01675  0.00204  0.0
591    170602  0  1  4  0.00204  0.0
592    170701  2  2  1  4  0.354  0.031  0.0
593    170702  0  1  4  0.063  0.0
594    170801  2  2  1  4  0.466  0.039  0.0
595    170802  0  1  4  0.078  0.0
596    170901  2  2  1  4  0.5339  0.0443  0.0
597    170902  0  1  4  0.0885  0.0
598    171001  2  2  1  4  2.25  0.0208  0.0
599    171002  0  1  4  0.2709  0.0
600    171101  2  2  1  4  0.1693  0.0208  0.0
601    171102  0  1  4  0.0417  0.0
602    171201  2  2  1  4  0.2839  0.0252  0.0
603    171202  0  1  4  0.0503  0.0
604    171301  2  2  1  4  0.6016  0.0495  0.0
605    171302  0  1  4  0.0989  0.0
```

```
171401 2 3 1 8 0.14583 0.08333 0.0
171402 0 1 5 0.08333 0.0
171403 0 1 3 0.10417 0.0
180101  -2                          * SS304 THERMAL CONDUCTIVITY
180102        212.   9.574      2372.      19.294
190101  -13                         * SS304 HEAT CAPACITY
190102        170.      44.46081    250.      44.32964    400.      44.48722
190103        600.      45.39201    800.      46.90938   1000.      48.84151
190104       1200.      50.99056   1400.      53.15869   1600.      55.14808
190105       1800.      56.76090   2000.      57.79932   2200.      58.06550
190106       2400.      57.36161
400201  42  42  42
.
```

MISCELLANEOUS PROBLEM CONTROL DATA.

TAPE DUMP 0=NO	NUM EDIT VAR	NUM TIME SETS	NUM TRIP SGNL	NUM VOL	NUM BUB SETS	NUM TIME VOL	NUM JUN	NUM PUMP SETS	NUM CHK VALV	NUM LEAK CURV	NUM FILL CURV	NUM HEAT SLAB	NUM SLAB GEOM	NUM SLAB MAT	NUM CORE SECT	NUM HEAT EXCH	PRO- GRAM FLAG
-2	9	7	6	54	3	1	58	2	1	1	3	50	14	1	0	0	0

EXPJP4/C E (73) EXPERIMENTAL RELAP4 TYPE PROGRAM CONFIGURATION CONTROL NO

INITIAL POWER (MEGAWATTS)	IMPLICIT-EXPLICIT FACTOR	LOW PRESSURE LIMIT (PSI)	HIGH PRESSURE LIMIT (PSI)	LOW TEMPERATURE LIMIT (F)	HIGH TEMPERATURE LIMIT (F)
0.	1.000000E+00	8.860000E-02	3.626000E+03	3.210000E+01	8.540312E+03

EDIT IDENTIFICATION NUMBERS

1	2	3	4	5	6	7	8	9
JW 51	JW 50	JW 24	AP 2	JW 25	JW 56	AP 23	ML 41	PR 12

DATA FOR 7 TIME STEP SETS

SET NUM	T S PER BRF	BRF PER LRG	LRG PER RST	T S CNT OPT	TIME STEP SIZE	MIN T S SIZE	END OF INTERVAL
1	50	2	2	0	.200000E-03	.100000E-04	.100000E+00
2	20	10	1	0	.500000E-03	.500000E-04	.800000E+00
3	10	20	1	0	.100000E-02	.100000E-03	.200000E+01
4	5	10	4	0	.100000E-01	.500000E-03	.700000E+01
5	5	20	4	0	.100000E-01	.500000E-03	.200000E+02
6	5	40	4	0	.100000E-01	.500000E-04	.320000E+02
7	5	80	2	0	.100000E-01	.500000E-03	.800000E+02

ENDCPU = 1.00000E+06

GENERALIZED TRIP PARAMETERS FOR 6 SIGNALS.

TRIP NO	TRIP ID	SIG ID	INDX 1	INDX 2	ACTION	TRIP SIGNAL	SET POINT	DELAY TIME
1	1	1	0	0	END	ELAPSED TIME	0.	0.
2	2	1	0	0	GEN TRIP	ELAPSED TIME	.240000E-01	0.
3	3	1	0	0	GEN TRIP	ELAPSED TIME	.500000E+00	0.
4	4	1	0	0	GEN TRIP	ELAPSED TIME	.250000E+02	0.
5	5	1	0	0	GEN TRIP	ELAPSED TIME	.224600E+02	0.
6	6	1	0	0	GEN TRIP	ELAPSED TIME	.378000E+02	0.

INPUT DATA FOR 54 VOLUMES.

VOL NUM	BUBL INDX	TIME DEP	PRESSURE (PSIA)	TEMPERATURE (DEG F)	HUMIDITY (OR QUALITY)	VOLUME (FT**3)	HEIGHT (FT)	MIXTURE LEVEL (FT)
VOL NUM	2-PH FRIC		FLOW AREA (FT**2)	EQUIVALENT DIAMETER (FT)	ELEVATION (FT)	VOL. BELOW		
1	0	0	.226704E+04	.541620E+03	-.100000E+00	.162817E+02	.750000E+01	.750000E+01
1	0		.251200E+01	.178800E+01	-.973000E+00	0		
2	0	0	.227104E+04	.541620E+03	-.100000E+00	.419600E+01	.186500E+01	.186500E+01
2	0		.249100E+01	.131400E+01	-.283800E+01	0		
3	0	0	.226441E+04	.541620E+03	-.100000E+01	.795126E+01	.932333E+00	.932333E+00
3	0		.682704E+00	.932333E+00	-.466167E+00	0		
4	0	0	.226416E+04	.541620E+03	-.100000E+01	.455041E+01	.932333E+00	.932333E+00
4	0		.682704E+00	.932333E+00	-.466167E+00	0		
5	0	0	.226392E+04	.541620E+03	-.100000E+01	.318986E+01	.932333E+00	.932333E+00
5	0		.682704E+00	.932333E+00	-.466167E+00	0		
6	0	0	.226317E+04	.541620E+03	-.100000E+01	.287022E+01	.242156E+01	.242156E+01
6	0		.895564E+00	.106783E+01	-.533917E+00	0		
7	1	0	.225961E+04	.541620E+03	-.100000E+01	.111824E+02	.250000E+01	.250000E+01
7	0		.794125E+01	.146150E+01	.312193E+00	0		
8	0	0	.225716E+04	.541620E+03	-.100000E+01	.109769E+02	.675000E+01	.675000E+01
8	0		.162621E+01	.335000E-01	.281219E+01	0		
9	0	0	.225496E+04	.541620E+03	-.100000E+01	.544779E+01	.200521E+01	.200521E+01
9	0		.162621E+01	.335000E-01	.956219E+01	0		
10	0	0	.225564E+04	.541620E+03	-.100000E+01	.109769E+02	.675000E+01	.675000E+01
10	0		.162621E+01	.335000E-01	.281219E+01	0		
11	0	0	.225677E+04	.541620E+03	-.100000E+01	.111824E+02	.250000E+01	.250000E+01
11	0		.794125E+01	.146150E+01	.312193E+00	0		
12	0	0	.225207E+04	.541620E+03	-.100000E+01	.205729E+01	.237508E+01	.237508E+01
12	0		.895564E+00	.106783E+01	-.487437E+00	0		
13	0	0	.225187E+04	.541620E+03	-.100000E+01	.443798E+01	.380867E+01	.380867E+01
13	0		.682704E+00	.932333E+00	-.429610E+01	0		
14	0	0	.224998E+04	.541620E+03	-.100000E+01	.449346E+01	.217450E+01	.217450E+01
14	0		.682704E+00	.932333E+00	-.429610E+01	0		
15	0	0	.226412E+04	.541620E+03	-.100000E+01	.378561E+01	.247577E+01	.247577E+01
15	0		.394063E+00	.394060E+00	-.212160E+01	0		
16	0	0	.226575E+04	.541620E+03	-.100000E+01	.378561E+01	.247577E+01	.247577E+01
16	0		.394063E+00	.394060E+00	-.212160E+01	0		
17	0	0	.227700E+04	.541620E+03	-.100000E+01	.189980E+01	.708333E+00	.708333E+00
17	0		.394063E+00	.708333E+00	-.354167E+00	0		
18	0	0	.228015E+04	.541620E+03	-.100000E+01	.693352E+00	.708333E+00	.708333E+00
18	0		.394063E+00	.708333E+00	-.354167E+00	0		
19	0	0	.227410E+04	.541620E+03	-.100000E+01	.628853E+01	.932333E+00	.932333E+00
19	0		.682704E+00	.932333E+00	-.466167E+00	0		
20	0	0	.227308E+04	.541620E+03	-.100000E+01	.322862E+01	.932333E+00	.932333E+00
20	0		.682704E+00	.932333E+00	-.466167E+00	0		

VOL NUM	BUBL INDX	TIME DEP	PRESSURE (PSIA)	TEMPERATURE (DEG F)	HUMIDITY (OR QUALITY)	VOLUME (FT**3)	HEIGHT (FT)	MIXTURE LEVEL (FT)
VOL NUM	2-PH FRIC		FLOW AREA (FT**2)	EQUIVALENT DIAMETER (FT)	ELEVATION (FT)	VOL. BELOW		
21	0	0	.227258E+04	.541620E+03	-.100000E+01	.744960E+01	.343500E+01	.343500E+01
21	0		.196122E+01	.583333E+00	-.235167E+01	0		
22	0	0	.227588E+04	.541620E+03	-.100000E+01	.568887E+01	.387064E+01	.387064E+01
22	0		.152716E+01	.333330E+00	-.139636E+02	0		
23	0	0	.227727E+04	.541620E+03	-.100000E+01	.837500E+01	.122320E+01	.122320E+01
23	0		.749748E+01	.308967E+01	-.164000E+02	0		
24	0	0	.227479E+04	.541620E+03	-.100000E+01	.100830E+02	.314067E+01	.314067E+01
24	0		.326500E+01	.231300E+01	-.122600E+02	0		
25	0	0	.227318E+04	.541620E+03	-.100000E+01	.356959E+01	.932333E+00	.932333E+00
25	0		.682704E+00	.932333E+00	-.466167E+00	0		
26	0	0	.227318E+04	.541620E+03	-.100000E+01	[illegible]	.932333E+00	.932333E+00
26	0		.682704E+00	.932333E+00	-.466167E+00	0		
27	0	0	.227318E+04	.530000E+03	-.100000E+01	.817513E+00	.567750E+00	.567750E+00
27	0		.253165E+00	.567750E+00	-.283875E+00	0		
28	0	0	.226666E+04	.541620E+03	-.100000E+01	.754979E+01	.932333E+00	.932333E+00
28	0		.682704E+00	.932333E+00	-.466167E+00	0		
29	0	0	.226685E+04	.541620E+03	-.100000E+01	.153039E+01	.932333E+00	.932333E+00
29	0		.682704E+00	.932333E+00	-.466167E+00	0		
30	0	0	.226651E+04	.536000E+03	-.100000E+01	.289649E+00	.244013E+01	.244013E+01
30	0		.900370E-01	.338580E+00	-.169292E+00	0		
31	0	0	.226535E+04	.530000E+03	-.100000E+01	.458256E+01	.458250E+01	.458250E+01
31	0		.106080E+01	.121583E+01	.227083E+01	0		
32	0	0	.226394E+04	.520000E+03	-.100000E+01	.100357E+02	.404708E+01	.404708E+01
32	0		.116102E+01	.121583E+01	.685333E+01	0		
33	0	0	.226535E+04	.510000E+03	-.100000E+01	.458256E+01	.458250E+01	.458250E+01
33	0		.106080E+01	.121583E+01	.227083E+01	0		
34	0	0	.226685E+04	.500000E+03	-.100000E+01	.408918E+00	.454167E+01	.454167E+01
34	0		.900370E-01	.338580E+00	.227083E+01	0		
35	0	0	.226795E+04	.495000E+03	-.100000E+01	.170960E+01	.217450E+01	.217450E+01
35	0		.682704E+00	.932333E+00	.444533E+01	0		
36	0	0	.226750E+04	.490000E+03	-.100000E+01	.578667E+00	.431775E+01	.431775E+01
36	0		.900370E-01	.338580E+00	-.414846E+01	0		
37	0	0	.836000E+02	.271600E+03	0.	.369345E+04	.160937E+02	.160937E+02
37	0		.962113E+01	.350000E+01	-.135104E+02	0		
38	0	0	.227039E+04	.530000E+03	-.100000E+01	.817046E+01	.206508E+01	.206508E+01
38	0		.417584E+00	.125000E+01	.466167E+00	0		
39	0	0	.226631E+04	.530000E+03	-.100000E+01	.587547E+01	.289583E+01	.289583E+01
39	0		.417584E+00	.125000E+01	-.364583E+00	0		
40	0	0	.226311E+04	.562000E+03	-.100000E+01	.362366E+00	.403500E+01	.403500E+01
40	0		.155592E-01	.140750E+00	.466167E+00	0		

VOL NUM	BUBL INDX	TIME DEP	PRESSURE (PSIA)	TEMPERATURE (DEG F)	HUMIDITY (OR QUALITY)	VOLUME (FT**3)	HEIGHT (FT)	MIXTURE LEVEL (FT)
VOL NUM	2-PH FRIC		FLOW AREA (FT**2)	EQUIVALENT DIAMETER (FT)	ELEVATION (FT)	VOL. BELOW		
41	3	0	.226193E+04	-.100000E+01	0.	.347522E+02	.671354E+01	.350000E+01
41	0		.600726E+01	.276560E+01	.402000E+01	0		
42	1	0	0.	.539400E+03	0.	.281600E+03	.274500E+02	.117000E+02
42	0		.171000E+02	.467000E+01	.199000E+01	0		
43	0	0	.227580E+04	.541620E+03	-.100000E+01	.639200E+01	.170360E+01	.170360E+01
43	0		.374329E+01	.218314E+01	-.139536E+02	0		
44	0	0	.227317E+04	.506000E+03	-.100000E+01	.327625E+01	.841146E+00	.841146E+00
44	0		.559250E+00	.843833E+00	-.400573E+00	0		
45	0	0	.226684E+04	.483000E+[illegible]	-.100000E+01	.327625E+01	.841146E+00	.841146E+00
45	0		.559250E+00	.843833E+00	-.400573E+00	0		
46	0	0	.2[illegible]871E+04	.410000E+03	-.100000E+01	.12130[illegible]E+0[illegible]	.157900E+02	.157900E+02
46	0		.668100E-01	.291670E+00	-.157900E+02	0		
47	0	0	.227318E+04	.541000E+03	-.100000E+01	.142600E+00	.338600E+00	.338600E+00
47	0		.900400E-01	.338600E+00	-.169300E+00	0		
48	0	0	.227674E+04	.541620E+03	-.100000E+01	.837500E+01	.122320E+01	.122320E+01
48	0		.749748E+01	.308567E+01	-.151768E+02	0		
49	0	0	.226685E+04	.541620E+03	-.100000E+01	.774056E+00	.932333E+00	.932333E+00
49	0		.682704E+00	.932333E+00	-.466167E+00	0		
50	0	0	.227318E+04	.541620E+03	-.100000E+01	.631500E+00	.932333E+00	.932333E+00
50	0		.682704E+00	.932333E+00	-.466167E+00	0		
51	0	0	.227351E+04	.541620E+03	-.100000E+01	.568887E+01	.387064E+01	.387064E+01
51	0		.152716E+01	.333333E+00	-.622231E+01	0		
52	0	0	.227375E+04	.541620E+03	-.100000E+01	.100830E+02	.314067E+01	.314067E+01
52	0		.326500E+01	.231300E+01	-.911933E+01	0		
53	0	0	.227271E+04	.541620E+03	-.100000E+01	.100830E+02	.314067E+01	.314067E+01
53	0		.326500E+01	.231300E+01	-.597867E+01	0		
54	0	0	.227469E+04	.541620E+03	-.100000E+01	.568887E+01	.387064E+01	.387064E+01
54	0		.152716E+01	.333330E+00	-.100929E+02	0		

VOLUME DATA ACTUALLY BEING USED.

VOL NUM	BUBL INDX	TIME DEP	PRESSURE (PSIA)	ENTHALPY	VOLUME (FT**3)	HEIGHT (FT)	MIXTURE LEVEL (FT)	ELEVATION (FT)
1	0	0	.226704E+04	.536868E+03	.162817E+02	.750000E+01	.750000E+01	-.973000E+00
2	0	0	.227104E+04	.536863E+03	.419600E+01	.186500E+01	.186500E+01	-.283800E+01
3	0	0	.226441E+04	.536871E+03	.795126E+01	.932333E+00	.932333E+00	-.466167E+00
4	0	0	.226416E+04	.536871E+03	.455041E+01	.932333E+00	.932333E+00	-.466167E+00
5	0	0	.226392E+04	.536872E+03	.318986E+01	.932333E+00	.932333E+00	-.466167E+00
6	0	0	.226317E+04	.536873E+03	.287822E+01	.242196E+01	.242196E+01	-.533917E+00
7	1	0	.225961E+04	.536877E+03	.111824E+02	.250000E+01	.250000E+01	.312193E+00
8	0	0	.225716E+04	.536881E+03	.109769E+02	.675000E+01	.675000E+01	.281219E+01
9	0	0	.225496E+04	.536883E+03	.544779E+01	.200521E+01	.200521E+01	.956219E+01
10	0	0	.225564E+04	.536883E+03	.109769E+02	.675000E+01	.675000E+01	.281219E+01
11	0	0	.225677E+04	.536881E+03	.111824E+02	.250000E+01	.250000E+01	.312193E+00
12	0	0	.225207E+04	.536887E+03	.205729E+01	.237508E+01	.237508E+01	-.487437E+00
13	0	0	.225187E+04	.536887E+03	.443798E+01	.380867E+01	.380867E+01	-.429610E+01
14	0	0	.224998E+04	.536890E+03	.449346E+01	.217450E+01	.217450E+01	-.429610E+01
15	0	0	.226412E+04	.536871E+03	.378561E+01	.247577E+01	.247577E+01	-.212160E+01
16	0	0	.226575E+04	.536869E+03	.378561E+01	.247577E+01	.247577E+01	-.212160E+01
17	0	0	.227700E+04	.536855E+03	.189580E+01	.708333E+00	.708333E+00	-.354167E+00
18	0	0	.228015E+04	.536851E+03	.693352E+00	.708333E+00	.708333E+00	-.354167E+00
19	0	0	.227410E+04	.536859E+03	.628853E+01	.932333E+00	.932333E+00	-.466167E+00
20	0	0	.227308E+04	.536860E+03	.322862E+01	.932333E+00	.932333E+00	-.466167E+00
21	0	0	.227258E+04	.536861E+03	.744960E+01	.343500E+01	.343500E+01	-.235167E+01
22	0	0	.227588E+04	.536856E+03	.568887E+01	.387064E+01	.387064E+01	-.139636E+02
23	0	0	.227727E+04	.536855E+03	.837500E+01	.122320E+01	.122320E+01	-.164000E+02
24	0	0	.227479E+04	.536858E+03	.100830E+02	.314067E+01	.314067E+01	-.122600E+02
25	0	0	.227318E+04	.536860E+03	.356959E+01	.932333E+00	.932333E+00	-.466167E+00
26	0	0	.227318E+04	.536860E+03	.193040E+01	.932333E+00	.932333E+00	-.466167E+00
27	0	0	.227318E+04	.522722E+03	.817513E+00	.567750E+00	.567750E+00	-.283875E+00
28	0	0	.226666E+04	.536868E+03	.754979E+01	.932333E+00	.932333E+00	-.466167E+00
29	0	0	.226685E+04	.536868E+03	.153039E+01	.932333E+00	.932333E+00	-.466167E+00
30	0	0	.226651E+04	.530022E+03	.289649E+00	.244013E+01	.244013E+01	-.169292E+00
31	0	0	.226535E+04	.522729E+03	.458256E+01	.458250E+01	.458250E+01	.227083E+01
32	0	0	.226394E+04	.510884E+03	.100357E+02	.404708E+01	.404708E+01	.685333E+01
33	0	0	.226535E+04	.499109E+03	.458256E+01	.458250E+01	.458250E+01	.227083E+01
34	0	0	.226685E+04	.487546E+03	.408918E+00	.454167E+01	.454167E+01	-.227083E+01
35	0	0	.226795E+04	.481768E+03	.170960E+01	.217450E+01	.217450E+01	-.444533E+01
36	0	0	.226750E+04	.476086E+03	.578667E+00	.431775E+01	.431775E+01	-.414846E+01
37	0	1	.336000E+02	.225585E+03	.369345E+04	.160937E+02	.160937E+02	-.135104E+02
38	0	0	.227039E+04	.522725E+03	.817046E+01	.206508E+01	.206508E+01	.466167E+00
39	0	0	.226631E+04	.522729E+03	.587547E+01	.289583E+01	.289583E+01	-.364583E+00
40	0	0	.226311E+04	.562288E+03	.362366E+00	.403500E+01	.403500E+01	.466167E+00

VOLUME DATA ACTUALLY BEING USED.

VOL NUM	BUBL INDX	TIME DEP	PRESSURE (PSIA)	ENTHALPY	VOLUME (FT**3)	HEIGHT (FT)	MIXTURE LEVEL (FT)	ELEVATION (FT)
41	3	0	.226193E+04	.759729E+03	.347522E+02	.671354E+01	.350000E+01	.402000E+01
42	1	0	.957995E+03	.574333E+03	.281600E+03	.274500E+02	.117000E+02	.199000E+01
43	0	0	.227580E+04	.536856E+03	.639200E+01	.170360E+01	.170360E+01	-.139536E+02
44	0	0	.227317E+04	.494481E+03	.327625E+01	.841146E+00	.841146E+00	-.400573E+00
45	0	0	.226684E+04	.468156E+03	.327625E+01	.841146E+00	.841146E+00	-.400573E+00
46	0	0	.227871E+04	.881194E+03	.121305E+01	.157900E+02	.157900E+02	-.157900E+02
47	0	0	.227318E+04	.536104E+03	.142600E+00	.338600E+00	.338600E+00	-.169300E+00
48	0	0	.227674E+04	.536855E+03	.837500E+01	.122320E+01	.122320E+01	-.151768E+02
49	0	0	.226685E+04	.536368E+03	.774056E+00	.932333E+00	.932333E+00	-.466167E+00
50	0	0	.227318E+04	.536860E+03	.631500E+00	.932333E+00	.932333E+00	-.466167E+00
51	0	0	.227351E+04	.536359E+03	.568887E+01	.387064E+01	.387064E+01	-.622231E+01
52	0	0	.227375E+04	.536359E+03	.100830E+02	.314067E+01	.314067E+01	-.911933E+01
53	0	0	.227271E+04	.536360E+03	.100830E+02	.314067E+01	.314067E+01	-.597867E+01
54	0	0	.227469E+04	.536358E+03	.568887E+01	.387064E+01	.387064E+01	-.100929E+02

VOLUME DATA ACTUALLY BEING USED.

VOL NUM	2-PH FRIC	FLOW AREA (FT**2)	EQUIVALENT DIAMETER (FT)	LENGTH (FT)	L/2A (FT**-1)	HORIZ. AREA (FT**2)	TEMPERATURE (F)	SATURATION TEMP. (F)	VOL. BELOW
1	0	.251200E+01	.178000E+01	.648158E+01	.129012E+01	.217090E+01	.541620E+03	.653796E+03	0
2	0	.249100E+01	.131400E+01	.168446E+01	.338110E+00	.224987E+01	.541620E+03	.654052E+03	0
3	0	.682704E+00	.932333E+00	.116467E+02	.852985E+01	.852834E+01	.541620E+03	.653627E+03	0
4	0	.682704E+00	.932333E+00	.666528E+01	.488153E+01	.488067E+01	.541620E+03	.653611E+03	0
5	0	.682704E+00	.932333E+00	.467240E+01	.342198E+01	.342138E+01	.541620E+03	.653595E+03	0
6	0	.395564E+00	.106783E+01	.321386E+01	.179432E+01	.118858E+01	.541620E+03	.653547E+03	0
7	0	.794125E+01	.146150E+01	.140814E+01	.886599E-01	.447296E+01	.541620E+03	.653319E+03	0
8	0	.162621E+01	.335000E-01	.675000E+01	.207538E+01	.162621E+01	.541620E+03	.653161E+03	0
9	0	.162621E+01	.335000E-01	.335000E+01	.103000E+01	.271682E+01	.541620E+03	.653020E+03	0
10	0	.162621E+01	.335000E-01	.675000E+01	.207538E+01	.162621E+01	.541620E+03	.653063E+03	0
11	0	.794125E+01	.146150E+01	.140814E+01	.886599E-01	.447296E+01	.541620E+03	.653136E+03	0
12	0	.395564E+00	.106783E+01	.229720E+01	.128254E+01	.866196E+00	.541620E+03	.652834E+03	0
13	0	.682704E+00	.932333E+00	.650060E+01	.476092E+01	.116523E+01	.541620E+03	.652821E+03	0
14	0	.682704E+00	.932333E+00	.658186E+01	.482043E+01	.206643E+01	.541620E+03	.652699E+03	0
15	0	.394063E+00	.394060E+00	.960662E+01	.121892E+02	.152906E+01	.541620E+03	.653609E+03	0
16	0	.394063E+00	.394060E+00	.960662E+01	.121892E+02	.152906E+01	.541620E+03	.653713E+03	0
17	0	.394063E+00	.708333E+00	.481091E+01	.610425E+01	.267643E+01	.541620E+03	.654433E+03	0
18	0	.394063E+00	.708333E+00	.175950E+01	.223251E+01	.978850E+00	.541620E+03	.654634E+03	0
19	0	.682704E+00	.932333E+00	.921121E+01	.674612E+01	.674493E+01	.541620E+03	.654247E+03	0
20	0	.682704E+00	.932333E+00	.472917E+01	.346356E+01	.346295E+01	.541620E+03	.654183E+03	0
21	0	.196122E+01	.583333E+00	.379845E+01	.968391E+00	.216873E+01	.541620E+03	.654150E+03	0
22	0	.152716E+01	.333330E+00	.372512E+01	.121962E+01	.146975E+01	.541620E+03	.654361E+03	0
23	0	.749748E+01	.308967E+01	.111704E+01	.744945E-01	.684680E+01	.541620E+03	.654450E+03	0
24	0	.326500E+01	.231300E+01	.308821E+01	.472926E+00	.321046E+01	.541620E+03	.654292E+03	0
25	0	.682704E+00	.932333E+00	.522861E+01	.382934E+01	.382867E+01	.541620E+03	.654189E+03	0
26	0	.682704E+00	.932333E+00	.224168E+01	.164176E+01	.164147E+01	.541620E+03	.654189E+03	0
27	0	.253165E+00	.567750E+00	.322917E+01	.637759E+01	.143992E+01	.530000E+03	.654189E+03	0
28	0	.682704E+00	.982333E+00	.110587E+02	.809917E+01	.809774E+01	.541620E+03	.653771E+03	0
29	0	.682704E+00	.932333E+00	.224166E+01	.164175E+01	.164146E+01	.541620E+03	.653783E+03	0
30	0	.900370E-01	.338580E+00	.321700E+01	.178649E+02	.118702E+00	.536000E+03	.653762E+03	0
31	0	.106080E+01	.121583E+01	.431993E+01	.203617E+01	.100001E+01	.530000E+03	.653687E+03	0
32	0	.116102E+01	.121583E+01	.864393E+01	.372257E+01	.247975E+01	.520000E+03	.653597E+03	0
33	0	.106080E+01	.121583E+01	.431993E+01	.203617E+01	.100001E+01	.510000E+03	.653687E+03	0
34	0	.900370E-01	.338580E+00	.454167E+01	.252211E+02	.900370E-01	.500000E+03	.653783E+03	0
35	0	.682704E+00	.932333E+00	.250417E+01	.183401E+01	.786206E+00	.495000E+03	.653854E+03	0
36	0	.900370E-01	.338580E+00	.642700E+01	.356909E+02	.134021E+00	.490000E+03	.653825E+03	0
37	0	.962113E+01	.350000E+01	.383890E+03	.199504E+02	.229496E+03	.256880E+03	.256880E+03	0
38	0	.417584E+00	.125000E+01	.195660E+02	.234277E+02	.395648E+01	.530000E+03	.654010E+03	0
39	0	.417584E+00	.125000E+01	.140702E+02	.168471E+02	.202894E+01	.530000E+03	.653749E+03	0
40	0	.155592E-01	.140750E+00	.232895E+02	.748418E+03	.898057E-01	.562000E+03	.653543E+03	0

VOLUME DATA ACTUALLY BEING USED.

VOL NUM	2-PH FRIC	FLOW AREA (FT**2)	EQUIVALENT DIAMETER (FT)	LENGTH (FT)	L/2A (FT**-1)	HORIZ. AREA (FT**2)	TEMPERATURE (F)	SATURATION TEMP. (F)	VOL. BELOW
41	0	.600726E+01	.276560E+01	.278503E+01	.481503E+00	.517643E+01	.653468E+03	.653468E+03	0
42	0	.171000E+02	.467000E+01	.164678E+02	.481516E+00	.102587E+02	.539400E+03	.539400E+03	0
43	0	.374329E+01	.218314E+01	.170759E+01	.228086E+00	.375205E+01	.541620E+03	.654356E+03	0
44	0	.559250E+00	.343833E+00	.585830E+01	.523764E+01	.389499E+01	.506000E+03	.654188E+03	0
45	0	.559250E+00	.343833E+00	.585830E+01	.523764E+01	.389499E+01	.483000E+03	.653783E+03	0
46	0	.668100E-01	.291670E+00	.181567E+02	.135883E+03	.768239E-01	.410000E+03	.654542E+03	0
47	0	.900400E-01	.338600E+00	.158374E+01	.879465E+01	.421146E+00	.541000E+03	.654189E+03	0
48	0	.749748E+01	.308967E+01	.111704E+01	.744945E-01	.684680E+01	.541620E+03	.654416E+03	0
49	0	.682704E+00	.932333E+00	.113381E+01	.830381E+00	.830236E+00	.541620E+03	.653783E+03	0
50	0	.682704E+00	.932333E+00	.924998E+00	.677452E+00	.677333E+00	.541620E+03	.654189E+03	0
51	0	.152716E+01	.333333E+00	.372512E+01	.121962E+01	.146975E+01	.541620E+03	.654210E+03	0
52	0	.326500E+01	.231300E-01	.308821E+01	.472926E+00	.321046E+01	.541620E+03	.654225E+03	0
53	0	.326500E+01	.231300E-01	.308821E+01	.472926E+00	.321046E+01	.541620E+03	.654159E+03	0
54	0	.152716E+01	.333330E-00	.372512E+01	.121962E+01	.146975E+01	.541620E+03	.654285E+03	0

INPUT FOR 3 SETS OF BUBBLE CONSTANTS

SET NO.	SLOPE PARAMETER	BUBBLE VELOCITY	
0	0.	0.	(BUILT-IN DATA)
1	.800000E+00	.300000E+01	
2	.800000E+00	.100000E+07	
3	.800000E+00	.200000E+01	

TIME DEPENDENT TABLES FOR 1 VOLUMES.

SET NUM	NUM PTS	TIME (SECONDS)	PRESSURE (PSIA)	TEMPERATURE (DEG F)	MIXTURE QUALITY	MIXTURE LEVEL (FEET)	
1		0.	.336000E+02	.256880E+03	0.	.160937E+02	(VOL 37)
	20	.2[illegible]0E+00	.235530E+02	.100000E+03	.100000E-05	.160937E+02	P IS NOT USED, PSAT USED.
		.100000E+01	.274140E+02	.100000E+03	.100000E-05	.160937E+02	P IS NOT USED, PSAT USED.
		.200000E+01	.334020E+02	.100000E+03	.100000E-05	.160937E+02	P IS NOT USED, PSAT USED.
		.400000E+01	.366130E+02	.100000E+03	.100000E-05	.160937E+02	P IS NOT USED, PSAT USED.
		.600000E+01	.379130E+02	.100000E+03	.100000E-05	.160937E+02	P IS NOT USED, PSAT USED.
		.800000E+01	.397210E+02	.100000E+03	.100000E-05	.160937E+02	P IS NOT USED, PSAT USED.
		.1[illegible]00E+02	.416630E+02	.100000E+03	.100000E-05	.160937E+02	P IS NOT USED, PSAT USED.
		.1[illegible]0000E+02	.484960E+02	.100000E+03	.100000E-05	.160937E+02	P IS NOT USED, PSAT USED.
		.200000E+02	.552150E+02	.100000E+03	.100000E-05	.160937E+02	P IS NOT USED, PSAT USED.
		.250000E+02	.612220E+02	.100000E+03	.100000E-05	.160937E+02	P IS NOT USED, PSAT USED.
		.300000E+02	.646100E+02	.100000E+03	.100000E-05	.160937E+02	P IS NOT USED, PSAT USED.
		.350000E+02	.652910E+02	.100000E+03	.100000E-05	.160937E+02	P IS NOT USED, PSAT USED.
		.400000E+02	.644930E+02	.100000E+03	.100000E-05	.160937E+02	P IS NOT USED, PSAT USED.
		.450000E+02	.639280E+02	.100000E+03	.100000E-05	.160937E+02	P IS NOT USED, PSAT USED.
		.500000E+02	.632450E+02	.100000E+03	.100000E-05	.160937E+02	P IS NOT USED, PSAT USED.
		.600000E+02	.624260E+02	.100000E+03	.100000E-05	.160937E+02	P IS NOT USED, PSAT USED.
		.694800E+02	.616800E+02	.100000E+03	.100000E-05	.160937E+02	P IS NOT USED, PSAT USED.
		.700000E+02	.613000E+02	.100000E+03	.100000E-05	.160937E+02	P IS NOT USED, PSAT USED.
		.800000E+02	.613000E+02	.100000E+03	.100000E-05	.160937E+02	P IS NOT USED, PSAT USED.

DESCRIPTIONS OF 58 JUNCTIONS.

JUN NUM / VERT JUN INDX	FROM VOL / CHOK-ING INDX	TO VOL / IC CALC INDX	PUMP LEAK FILL / MOM EQ. INDX	CHKV VALV	INITIAL FLOW (LBM/SEC) / JUNCTION DIAMETER (FT)	JUNCTION FLOW AREA (FT**2) / CONTRACTION COEFFICIENT	JUNCTION ELEVATION (FT) / SUBCOOL CHOKE	JUNCTION INERTIA (FT**-1) / ENTHALPY INDEX	SP. ENERGY LOSS COEF. (FORWARD) / COSINE	SP. ENERGY LOSS COEF. (REVERSE) / IADJUN
1	2	1	0	0	.619444E+03	.480000E+00	-.973000E+00	0.	.648100E+00	.648100E+00
1	0	5	2	0	.901000E+00	0.	0	0	.100000E+01	0
2	1	3	0	0	.619444E+03	.682700E+00	0.	.517300E+01	.913400E+00	.913400E+00
2	1	5	0	0	.932300E+00	0.	0	0	0.	0
3	1	28	0	0	0.	.682700E+00	0.	.474100E+01	.309500E+00	.473200E+00
3	1	5	0	0	.932300E+00	0.	0	0	0.	0
4	3	4	0	0	.619444E+03	.660087E+00	0.	.874485E+01	.514000E-01	.514000E-01
4	1	5	0	0	.932333E+00	0.	0	0	0.	0
5	4	5	0	0	.619444E+03	.358820E+00	0.	.830351E+01	.227800E-01	.912000E-01
5	1	5	0	0	.675917E+00	0.	0	0	0.	0
6	5	6	0	0	.619444E+03	.682704E+00	0.	.521630E+01	.672200E+00	.672200E+00
6	1	5	0	0	.932333E+00	0.	0	0	0.	0
7	6	7	0	0	.619444E+03	.556000E+00	.151011E+01	.188298E+01	.153061E+01	.177640E+01
7	1	5	0	0	.901670E+00	0.	0	0	0.	0
8	7	8	0	0	.619444E+03	.162621E+01	.281219E+01	.216404E+01	.358400E+00	.631200E+00
8	0	5	0	0	.143894E+01	0.	0	2	0.	0
9	8	9	0	0	.619444E+03	.162621E+01	.956219E+01	.310539E+01	.130000E-02	.130000E-02
9	0	5	0	0	.143894E+01	0.	0	3	0.	0
10	9	10	0	0	.619444E+03	.162621E+01	.956219E+01	.310539E+01	.572000E-01	.572000E-01
10	0	5	0	0	.143894E+01	0.	0	3	0.	0
11	10	11	0	0	.619444E+03	.162621E+01	.281219E+01	.216404E+01	.632500E+00	.357000E+00
11	0	5	0	0	.143894E+01	0.	0	1	0.	0
12	11	12	0	0	.619444E+03	.556000E+00	.151011E+01	.137120E+01	.137940E+01	.160170E+01
12	1	5	0	0	.901670E+00	0.	0	0	0.	0
13	12	13	0	0	.619444E+03	.682704E+00	-.487437E+00	.604346E+01	.196580E+00	.206500E+00
13	0	5	0	0	.932333E+00	0.	0	0	0.	0
14	13	14	0	0	.619444E+03	.682704E+00	-.382994E+01	.958135E+01	.109940E+01	.125000E+01
14	1	5	0	0	.932333E+00	0.	0	0	0.	0
15	14	15	-1	0	.311844E+03	.394063E+00	-.212160E+01	.170096E+02	.228840E+00	.228840E+00
15	0	5	0	0	.708333E+00	0.	0	0	0.	0

JUN NUM	FROM VOL / VERT JUN INDX	TO VOL / CHOK -ING INDX	PUMP LEAK FILL / IC CALC INDX	CHKV VALV / MOM EQ. INDX	INITIAL FLOW (LBM/SEC) / JUNCTION DIAMETER (FT)	JUNCTION FLOW AREA (FT**2) / CONTRACTION COEFFICIENT	JUNCTION ELEVATION (FT) / SUBCOOL CHOKE	JUNCTION INERTIA (FT*-1) / ENTHALPY INDEX	SP. ENERGY LOSS COEF. (FORWARD) / COSINE	SP. ENERGY LOSS COEF. (REVERSE) / IADJUN
16	14	16	-2	0	.307600E+03	.394063E+00	-.212160E+01	.170096E+02	.223400E+00	.223400E+00
16	0	5	0	0	.708333E+00	0.	0	0	0.	0
17	15	17	1	0	.311844E+03	.394063E+00	0.	.182935E+02	.165410E+00	.165410E+00
17	0	5	0	0	.708333E+00	0.	0	0	0.	0
18	16	18	2	0	.307600E+03	.394063E+00	0.	.144217E+02	.210270E+00	.210300E+00
18	0	5	0	0	.708333E+00	0.	0	0	0.	0.
19	17	19	0	0	.311844E+03	.394063E+00	0.	.128504E+02	.661280E+00	.690000E+00
19	1	5	0	0	.708333E+00	0.	0	0	0.	0
20	18	19	0	0	07600E+03	.394063E+00	0.	.897863E+01	.293689E+01	.120000E+01
20	1	5	0	0	.708333E+00	0.	0	0	0.	0
21	19	20	0	0	.619444E+03	.660887E+00	0.	.102097E+02	.450250E+00	.450250E+00
21	1	5	0	0	.932333E+00	0.	0	0	0.	0
22	20	21	0	0	.619444E+03	.682704E+00	0.	.394776E+01	.123809E+01	.123809E+01
22	1	5	0	0	.932333E+00	0.	0	0	0.	0
23	21	51	0	0	.619444E+03	.130494E+01	-.235167E+01	0.	.175280E+00	.175280E+00
23	0	5	2	0	.911450E+00	0.	0	0	.100000E+01	0
24	22	48	0	0	.619444E+03	.130494E+01	-.139636E+02	.183200E+01	.600000E+00	.600000E+00
24	0	5	2	0	.128890E+01	0.	0	0	.100000E+01	0
25	43	24	0	0	.619444E+03	.105600E+01	-.122600E+02	0.	.250000E+00	.250000E+00
25	0	5	2	0	.203800E+01	0.	0	0	.100000E+01	0
26	53	2	0	0	.619444E+03	.785440E+00	-.283800E+01	0.	.559180E+00	.559180E+00
26	0	5	2	0	.100000E+01	0.	0	0	.100000E+01	0
27	21	25	0	0	0.	.682704E+00	0.	.391683E+01	.804000E+00	.133020E+01
27	1	5	0	0	.932333E+00	0.	0	0	0.	0.
28	25	26	0	0	0.	.682704E+00	0.	.547080E+01	.100500E+00	.100500E+00
28	1	5	0	0	.932333E+00	0.	0	0	0.	0
29	50	47	0	0	0.	.900370E-01	0.	.947010E+01	.260000E+00	.754000E+00
29	1	5	0	0	.338600E+00	0.	0	0	0.	0
30	27	44	0	0	0.	.253160E+00	0.	.116155E+02	.299560E+00	.246290E+00
30	1	0	0	0	.567750E+00	.600000E+00	11	0	0.	0

JUN NUM	FROM VOL / VERT JUN INDX	TO VOL / CHOK-ING INDX	PUMP LEAK FILL / IC CALC INDX	CHKV VALV / MOM EQ. INDX	INITIAL FLOW (LBM/SEC) / JUNCTION DIAMETER (FT)	JUNCTION FLOW AREA (FT**2) / CONTRACTION COEFFICIENT	JUNCTION ELEVATION (FT) / SUBCOOL CHOKE	JUNCTION INERTIA (FT*-1) / ENTHALPY INDEX	SP. ENERGY LOSS COEF. (FORWARD) / COSINE	SP. ENERGY LOSS COEF. (REVERSE) / IADJUN
31	44	37	0	1	0.	.559250E+00	0.	.252555E+02	.103700E+01	.537000E+00
31	1	0	0	0	.843833E+00	.600000E+00	11	0	0.	0
32	28	29	0	0	0.	.682704E+00	0.	.507420E+01	.100500E+00	.100500E+00
32	4	5	0	0	.992383E+00	0.	0	0	0.	0
33	49	30	0	0	0.	.900370E-01	0.	.197019E+02	.396050E+00	.753630E+00
33	1	5	0	0	0.	.100000E+01	0	0	0.	0
34	30	31	0	0	0.	.900370E-01	.227083E+01	.199010E+02	.935960E+00	.935960E+00
34	0	5	0	0	.359417E+00	0.	0	0	0.	0
35	31	32	0	0	0.	.206034E+00	.685333E+01	.575875E+01	.581834E+01	.581834E+01
35	0	5	0	0	.527819E+00	0.	0	0	0.	0
36	32	33	0	0	0.	.206034E+00	.685333E+01	.575875E+01	.581834E+01	.581834E+01
36	0	5	0	0	.527819E+00	0.	0	0	0.	0
37	33	34	0	0	0.	.900370E-01	.227083E+01	.272573E+02	.230250E+00	.230250E+00
37	0	5	0	0	.359417E+00	0.	0	0	0.	0
38	34	35	0	0	0.	.900370E-01	-.227083E+01	.270551E+02	.635100E+01	.635100E+01
38	0	5	0	0	.359417E+00	0.	0	0	0.	0
39	35	36	0	0	0.	.900370E-01	-.397917E+01	.375249E+02	.635100E+01	.635100E+01
39	1	5	0	0	.359417E+00	0.	0	0	0.	0
40	36	45	0	0	0.	.900370E-01	0.	.409140E+02	.948830E+00	.438340E+00
40	1	0	0	0	.338580E+00	.600000E+00	11	0	0.	0
41	45	37	0	1	0.	.559250E+00	0.	.252555E+02	.103700E+01	.537000E+00
41	1	0	0	0	.843833E+00	.600000E+00	11	0	0.	0
42	29	39	0	0	0.	.417500E+00	0.	.193380E+02	.124700E+01	.457600E+00
42	0	5	0	3	.708300E+00	0.	0	0	0.	0
43	26	38	0	0	0.	.417584E+00	.466167E+00	.242230E+02	.124700E+01	.457600E+00
43	0	5	0	3	.708333E+00	0.	0	0	0.	0
44	48	43	0	0	.619444E+03	.105597E+01	-.139536E+02	.781000E+00	.522590E+00	.522590E+00
44	0	5	0	0	.126557E+01	0.	0	0	.100000E+01	0
45	40	4	0	0	0.	.155592E-01	.466167E+00	.753299E+02	.100000E+01	.100000E+01
45	0	5	0	3	.140750E+00	.750000E+00	0	0	0.	0

JUN NUM. / JUN	FROM VOL / VERT JUN INDX	TO VOL / CHOK -ING INDX	PUMP LEAK FILL / TC CALC INDX	CHKV VALV / MOM EQ. INDX	INITIAL FLOW (LBM/SEC) / JUNCTION DIAMETER (FT)	JUNCTION FLOW AREA (FT**2) / CONTRACTION COEFFICIENT	JUNCTION ELEVATION (FT) / SUBCOOL CHOKE	JUNCTION INERTIA (FT*-1) / ENTHALPY INDEX	SP. ENERGY LOSS COEF. (FORWARD) / COSINE	SP. ENERGY LOSS COEF. (REVERSE) / IADJUN
46	41	40	0	0	0.	.155592E-01	.422500E+01	.748899E+02	.113400E+02	.113400E+02
46	0	5	0	0	.140750E+00	0.	0	0	0.	0
47	46	23	0	0	0.	.668130E-01	-.157900E+02	0.	.270000E+01	.220000E+01
47	1	5	2	0	.291670E+00	0.	0	0	0.	0
48	47	27	0	0	0.	.500370E-01	0.	.151800E+02	.415000E+00	.290000E+00
48	1	0	0	0	.388600E+00	.600000E+00	11	0	0.	0
49	23	48	0	0	0.	.249748E+01	-.151768E+02	0.	.100000E-01	.100000E-01
49	0	5	2	0	.308333E+01	0.	0	0	.100000E+01	0
50	29	49	0	0	0.	.682704E+00	0.	.347880E+01	.100000E-01	.100000E-01
50	1	5	0	0	.932333E+00	0.	0	0	0.	0
51	26	50	0	0	0.	.682704E+00	0.	.231920E+01	.100000E-01	.100000E-01
51	1	5	0	0	.932333E+00	0.	0	0	0.	0
52	51	54	0	0	.619444E+03	.130494E+01	-.622231E+01	0.	.999980E-01	.999980E-01
52	0	5	2	0	.128899E+01	0.	0	0	.100000E+01	0
53	24	52	0	0	.619444E+03	.126500E+01	-.911933E+01	0.	.499910E-01	.499910E-01
53	0	5	2	0	.203800E+01	0.	0	0	.100000E+01	0
54	52	53	0	0	.619444E+03	.126500E+01	-.997867E+01	0.	.499810E-01	.499810E-01
54	0	5	2	0	.203800E+01	0.	0	0	.100000E+01	0
55	54	22	0	0	.619444E+03	.130494E+01	-.100029E+02	0.	.100000E+00	.100000E+00
55	0	5	2	0	.128899E+01	0.	0	0	.100000E+01	0
56	0	46	3	0	0.	.644700E-01	0.	0.	.299000E+02	.299000E+02
56	0	5	2	0	.286500E+00	0.	0	0	0.	0
57	0	46	1	0	0.	.644700E-01	0.	0.	.100000E+01	.100000E+01
57	0	5	2	3	.286500E+00	0.	0	0	0.	0
58	0	46	2	0	0.	.644700E-01	0.	0.	.100000E+01	.100000E+01
58	0	5	2	3	.286500E+00	0.	0	0	0.	0

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INPUT DATA FOR  2 PUMPS.

NUMBER OF PUMP CURVES TO BE READ FOR EACH CURVE SET.

  16    0    0   16

PMP CRV TRP REV DEG  RATED SPEED     SPEED RATIO      RATED FLOW       RATED HEAD       RATED TORQUE     MOM OF INERTIA
NUM SET  ID          (REV/MIN)                        (GAL/MIN)        (FT)             (FT-LBF)         (LBM-FT**2)
------------------------------------------------------------------------------------------------------------------------
    MOT              RATED DENSITY   FRICT TORQUE     RATED MOTOR      FRICT TORQUE     FRICT TORQUE     FRICT TORQUE
    TRK              (LBM/FT**3)     COEFF 2          TORQ (LBF-FT)    COEFF 0          COEFF 1          COEFF 3

  1   1   3   0   1   .353000E+04     .498500E+00      .500000E+04      .408950E+03      .465000E+03      .294000E+03
      0               .387500E+02    0.               0.                .184000E+02      .103550E+03     0.
               STOP PUMP AT  0.               SEC. OR IF SPEED IS GT     0.0 RPM OR LT      0.0 RPM.  (NO STOP ON OPTION IF 0.0)

  2   1   3   0   1   .353000E+04     .509200E+00      .500000E+04      .408950E+03      .465000E+03      .294000E+03
      0               .387500E+02    0.               0.                .184000E+02      .103550E+03     0.
               STOP PUMP AT  0.               SEC. OR IF SPEED IS GT     0.0 RPM OR LT      0.0 RPM.  (NO STOP ON OPTION IF 0.0)
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PUMP HEAD MULTIPLIER CURVE
   -11   0.            0.                      .100000E+00  0.                        .150000E+00   .500000E-01
            .240000E+00   .[illegible]00000E+00              .300000E+00   .960000E+00               .400000E+00   .980000E+00
            .600000E+00   .970000E+00              .800000E+00   .900000E+00               .900000E+00   .800000E+00
            .960000E+00   .500000E+00              .100000E+01   0.

PUMP TORQUE MULTIPLIER CURVE
    -7   0.            0.                      .100000E+00  0.                        .150000E+00   .500000E-01
            .240000E+00   .560000E+00              .300000E+00   .560000E+00               .960000E+00   .450000E+00
            .100000E+01   0.
```

PUMP CURVE SET NUMBER 1 HAS 16 CURVES TO BE READ.

SET NUM	HEAD OR TORQ	TYPE	NUM DAT PTS	X	Y	X	Y	X	Y
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
1	1	1	6	0.	.140360E+01	.190610E+00	.136360E+01	.389630E+00	.131860E+01
				.593960E+00	.123280E+01	.790200E+00	.113360E+01	.100000E+01	.100780E+01
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
1	1	2	8	0.	-.670000E+00	.200000E+00	-.500000E+00	.400000E+00	-.250000E+00
				.575540E+00	0.	.744320E+00	.258300E+00	.773480E+00	.377800E+00
				.863130E+00	.632600E+00	.100000E+01	.100780E+01		
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
1	1	3	6	-.100000E+01	.247220E+01	-.805740E+00	.204740E+01	-.606900E+00	.183100E+01
				-.406830E+00	.162400E+01	-.200171E+00	.147050E+01	0.	.140360E+01
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
1	1	4	8	-.100000E+01	.247220E+01	-.822970E+00	.199680E+01	-.633320E+00	.158970E+01
				-.455340E+00	.132790E+01	-.271090E+00	.119490E+01	-.177160E+00	.106050E+01
				-.907300E-01	.101560E+01	0.	.934279E+00		
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
1	1	5	7	0.	.250000E+00	.200000E+00	.280000E+00	.400000E+00	.340000E+00
				.411800E+00	.276800E+00	.597630E+00	.458400E+00	.793467E+00	.699200E+00
				.100000E+01	.946500E+00				
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
1	1	6	10	0.	.934279E+00	.910990E-01	.922900E+00	.186509E+00	.896300E+00
				.271762E+00	.873000E+00	.455872E+00	.843300E+00	.574406E+00	.835500E+00
				.740576E+00	.846600E+00	.766619E+00	.846900E+00	.871471E+00	.883800E+00
				.100000E+01	.946500E+00				
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
1	1	7	6	-.100000E+01	-.100000E+01	-.800000E+00	-.630000E+00	-.600000E+00	-.300000E+00
				-.400000E+00	-.500000E-01	-.200000E+00	.150000E+00	0.	.250000E+00
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
1	1	8	6	-.100000E+01	-.100000E+01	-.800000E+00	-.970000E+00	-.600000E+00	-.950000E+00
				-.400000E+00	-.880000E+00	-.200000E+00	-.800000E+00	0.	-.670000E+00
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
1	2	1	6	0.	.603200E+00	.193000E+00	.632500E+00	.393000E+00	.736900E+00
				.595520E+00	.833100E+00	.797820E+00	.922900E+00	.100000E+01	.967200E+00
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
1	2	2	7	0.	-.670000E+00	.400000E+00	-.250000E+00	.500000E+00	.150000E+00
				.737255E+00	.526586E+00	.768049E+00	.606594E+00	.867230E+00	.743660E+00
				.100000E+01	.967200E+00				
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
1	2	3	6	-.100000E+01	.198430E+01	-.800960E+00	.139400E+01	-.606380E+00	.109750E+01
				-.406860E+00	.822000E+00	-.199280E+00	.664800E+00	0.	.603200E+00
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
1	2	4	8	-.100000E+01	.198430E+01	-.822340E+00	.183080E+01	-.633710E+00	.168240E+01
				-.458530E+00	.155700E+01	-.267023E+00	.143620E+01	-.176107E+00	.138790E+01
				-.893100E-01	.134810E+01	0.	.123361E+01		

				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
1	2	5	4	0.	-.450000E-00	.400000E+00	-.250000E+00	.500000E+00	0.
				.100000E+01	.356900E-00				
				SPE[illegible]FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
1	2	6	10	0.	.123361E+01	.906430E-01	.119650E+01	.188569E+00	.110960E+01
				.273470E+00	.104160E-01	.458669E+00	.895800E+00	.574480E+00	.780700E+00
				.738160E+00	.613400E-00	.768520E+00	.584900E+00	.870057E+00	.487700E+00
				.100000E+01	.356900E-00				
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
1	2	7	4	-.100000E+01	-.100000E-01	-.300000E+00	-.900000E+00	-.100000E+00	-.500000E+00
				0.	-.450000E-00				
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
1	2	8	4	-.100000E+01	-.100000E+01	-.250000E+00	-.900000E+00	-.800000E-01	-.800000E+00
				0.	-.670000E+00				

PUMP CURVE SET NUMBER 1 HEAD CURVES FOLLOW.

SET NUM	HEAD OR TORQ	TYPE	NUM DAT PTS	X	Y	X	Y	X	Y
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
1	1	1	6	0.	.140360E+01	.190610E+00	.136360E+01	.389630E+00	.131860E+01
				.593960E+00	.123280E+01	.790200E+00	.113360E+01	.100000E+01	.100780E+01
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
1	1	2	8	0.	-.670000E+00	.200000E+00	-.500000E+00	.400000E+00	-.250000E+00
				.575540E+00	0.	.744320E+00	.258300E+00	.773480E+00	.377800E+00
				.863130E+00	.632600E+00	.100000E+01	.100780E+01		
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
1	1	3	6	-.100000E+01	.247220E+01	-.805740E+00	.204740E+01	-.606900E+00	.183100E+01
				-.406830E+00	.162400E+01	-.200171E+00	.147050E+01	0.	.140360E+01
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
1	1	4	8	-.100000E+01	.247220E+01	-.822970E+00	.199680E+01	-.633320E+00	.158970E+01
				-.455340E+00	.132790E+01	-.271090E+00	.119490E+01	-.177160E+00	.106050E+01
				-.907300E-01	.101560E+01	0.	.934279E+00		
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
1	1	5	7	0.	.250000E+00	.200000E+00	.280000E+00	.400000E+00	.340000E+00
				.411800E+00	.276800E+00	.597630E+00	.458400E+00	.793467E+00	.699200E+00
				.100000E+01	.946500E+00				
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
1	1	6	10	0.	.934279E+00	.910990E-01	.922900E+00	.186509E+00	.896300E+00
				.271762E+00	.875000E+00	.455872E+00	.843300E+00	.574406E+00	.835500E+00
				.740576E+00	.846600E+00	.766619E+00	.846900E+00	.871471E+00	.883800E+00
				.400000E+01	.946500E+00				
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
1	1	7	6	-.100000E+01	-.100000E+01	-.800000E+00	-.630000E+00	-.600000E+00	-.300000E+00
				-.400000E+00	-.500000E-01	-.200000E+00	.150000E+00	0.	.250000E+00
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
1	1	8	6	-.100000E+01	-.100000E+01	-.800000E+00	-.970000E+00	-.600000E+00	-.950000E+00
				-.400000E+00	-.880000E+00	-.200000E+00	-.800000E+00	0.	-.670000E+00

PUMP CURVE SET NUMBER 1 TORQUE CURVES FOLLOW.

SET NUM	HEAD OR TORQ	TYPE	NUM DAT PTS	X	Y	X	Y	X	Y
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
1	2	1	6	0.	.603200E+00	.193000E+00	.632500E+00	.393000E+00	.736900E+00
				.595520E+00	.833100E+00	.797820E+00	.922900E+00	.100000E+01	.967200E+00
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
1	2	2	7	0.	-.670000E+00	.400000E+00	-.250000E+00	.500000E+00	.150000E+00
				.737255E+00	.526586E+00	.768049E+00	.606594E+00	.867230E+00	.743660E+00
				.100000E+01	.967200E+00				
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
1	2	3	6	-.100000E+01	.198430E+01	-.800960E+00	.139400E+01	-.606380E+00	.109750E+01
				-.406860E+00	.822000E+00	-.199280E+00	.664800E+00	0.	.603200E+00
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
1	2	4	8	-.100000E+01	.198430E+01	-.822340E+00	.183080E+01	-.633710E+00	.168240E+01
				-.458530E+00	.155700E+01	-.267023E+00	.143620E+01	-.176107E+00	.138790E+01
				-.893100E-01	.134810E+01	0.	.123361E+01		
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
1	2	5	4	0.	-.450000E+00	.400000E+00	-.250000E+00	.500000E+00	0.
				.100000E+01	.356900E+00				
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
1	2	6	10	0.	.123361E+01	.906430E-01	.119650E+01	.188569E+00	.110960E+01
				.273470E+00	.104150E+01	.458669E+00	.895800E+00	.574480E+00	.780700E+00
				.738160E+00	.613400E+00	.768520E+00	.584900E+00	.870057E+00	.487700E+00
				.100000E+01	.356900E+00				
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
1	2	7	4	-.100000E+01	-.100000E+01	-.300000E+00	-.900000E+00	-.100000E+00	-.500000E+00
				0.	-.450000E+00				
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
1	2	8	4	-.100000E+01	-.100000E+01	-.250000E+00	-.900000E+00	-.800000E-01	-.800000E+00
				0.	-.670000E+00				

PUMP CURVE SET NUMBER 4 HAS 16 CURVES TO BE READ.

SET NUM	HEAD OR TORQ	TYPE	NUM DAT PTS	X	Y	X	Y	X	Y
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
4	1	1	7	0.	0.	.100000E+00	.830000E+00	.200000E+00	.109000E+01
				.500000E+00	.102000E+01	.700000E+00	.101000E+01	.900000E+00	.940000E+00
				.100000E+01	.100000E+01				
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
4	1	2	8	0.	0.	.100000E+00	-.400000E-01	.200000E+00	0.
				.300000E+00	.100000E+00	.400000E+00	.210000E+00	.800000E+00	.670000E+00
				.900000E+00	.800000E+00	.100000E+01	.100000E+01		
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
4	1	3	10	-.100000E+01	-.116000E+01	-.900000E+00	-.124000E+01	-.800000E+00	-.177000E+01
				-.700000E+00	-.236000E+01	-.600000E+00	-.279000E+01	-.500000E+00	-.291000E+01
				-.400000E+00	-.267000E+01	-.250000E+00	-.169000E+01	-.100000E+00	-.500000E+00
				0.	0.				
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
4	1	4	10	-.100000E+01	-.116000E+01	-.900000E+00	-.780000E+00	-.800000E+00	-.500000E+00
				-.700000E+00	-.310000E+00	-.600000E+00	-.170000E+00	-.500000E+00	-.800000E-01
				-.350000E+00	0.	-.200000E+00	.500000E-01	-.100000E+00	.800000E-01
				0.	.110000E+00				
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
4	1	5	6	0.	0.	.200000E+00	-.340000E+00	.400000E+00	-.650000E+00
				.600000E+00	-.930000E+00	.800000E+00	-.119000E+01	.100000E+01	-.147000E+01
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
4	1	6	10	0.	.110000E+00	.100000E+00	.130000E+00	.250000E+00	.150000E+00
				.400000E+00	.130000E+00	.500000E+00	.700000E-01	.600000E+00	-.400000E-01
				.700000E+00	-.230000E+00	.800000E+00	-.510000E+00	.900000E+00	-.910000E+00
				.100000E+01	-.147000E+01				
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
4	1	7	2	-.100000E+01	0.	0.	0.		
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
4	1	8	2	-.100000E+01	0.	0.	0.		
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
4	2	1	6	0.	.603200E+00	.193000E+00	.632500E+00	.393000E+00	.736900E+00
				.595520E+00	.833100E+00	.797820E+00	.922900E+00	.100000E+01	.967200E+00
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
4	2	2	7	0.	-.670000E+00	.400000E+00	-.250000E+00	.500000E+00	.150000E+00
				.737255E+00	.526586E+00	.766049E+00	.606594E+00	.867230E+00	.743660E+00
				.100000E+01	.967200E+00				
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
4	2	3	6	-.100000E+01	.198430E+01	-.800960E+00	.139400E+01	-.606380E+00	.109750E+01
				-.406860E+00	.822000E+00	-.199280E+00	.664800E+00	0.	.603200E+00
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
4	2	4	8	-.100000E+01	.198430E+01	-.822340E+00	.183080E+01	-.633710E+00	.168240E+01
				-.458530E+00	.155700E+01	-.267023E+00	.143620E+01	-.176107E+00	.138790E+01
				-.893100E-01	.134810E+01	0.	.123361E+01		

				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
4	2	5	4	0.	-.450000E+00	.400000E+00	-.250000E+00	.500000E+00	0.
				.100000E+01	.356900E+00				
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
4	2	6	10	0.	.123361E+01	.906430E-01	.119630E+01	.188569E+00	.110960E+01
				.273470E+00	.104160E+01	.458669E+00	.895800E+00	.574480E+00	.780700E+00
				.738160E+00	.613400E+00	.768520E+00	.584900E+00	.870057E+00	.487700E+00
				.100000E+01	.356900E+00				
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
4	2	7	4	-.100000E+01	-.100000E+01	-.300000E+00	-.900000E+00	-.100000E+00	-.500000E+00
				0.	-.450000E+00				
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
4	2	8	4	-.100000E+01	-.100000E+01	-.250000E+00	-.900000E+00	-.800000E-01	-.800000E+00
				0.	-.670000E+00				

PUMP CURVE SET NUMBER 4 HEAD CURVES FOLLOW.

SET NUM	HEAD OR TORQ	TYPE	NUM DAT PTS	X	Y	X	Y	X	Y
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
4	1	1	7	0.	0.	.100000E+00	.830000E+00	.200000E+00	.109000E+01
				.500000E+00	.102000E+01	.700000E+00	.101000E+01	.900000E+00	.940000E+00
				.100000E+01	.100000E+01				
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
4	1	2	8	0.	0.	.100000E+00	-.400000E-01	.200000E+00	0.
				.300000E+00	.100000E+00	.400000E+00	.210000E+00	.800000E+00	.670000E+00
				.900000E+00	.800000E+00	.100000E+01	.100000E+01		
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
4	1	3	10	-.100000E+01	-.116000E+01	-.900000E+00	-.124000E+01	-.800000E+00	-.177000E+01
				-.700000E+00	-.236000E+01	-.600000E+00	-.279000E+01	-.500000E+00	-.291000E+01
				[illegible]	-.267000E+01	-.250000E+00	-.169000E+01	-.100000E+00	-.500000E+00
				0.	0.				
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
4	1	4	10	-.100000E+01	-.116000E+01	-.900000E+00	-.780000E+00	-.800000E+00	-.500000E+00
				-.700000E+00	-.310000E+00	-.600000E+00	-.170000E+00	-.500000E+00	-.800000E-01
				-.350000E+00	0.	-.200000E+00	.500000E-01	-.100000E+00	.800000E-01
				0.	.110000E+00				
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
4	1	5	6	0.	0.	.200000E+00	-.340000E+00	.400000E+00	-.650000E+00
				.600000E+00	-.930000E+00	.800000E+00	-.119000E+01	.100000E+01	-.147000E+01
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
4	1	6	10	0.	.110000E+00	.100000E+00	.130000E+00	.250000E+00	.150000E+00
				.400000E+00	.130000E+00	.500000E+00	.700000E-01	.600000E+00	-.400000E-01
				.700000E+00	-.230000E+00	.800000E+00	-.510000E+00	.900000E+00	-.910000E+00
				.100000E+01	-.147000E+01				
				FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2	FLOW/SPEED	HEAD/SPEED**2
4	1	7	2	-.100000E+01	0.	0.	0.		
				SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2	SPEED/FLOW	HEAD/FLOW**2
4	1	8	2	-.100000E+01	0.	0.	0.		

PUMP CURVE SET NUMBER 4 TORQUE CURVES FOLLOW.

SET NUM	HEAD OR TORQ	TYPE	NUM DAT PTS	X	Y	X	Y	X	Y
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
4	2	1	6	0.	.603200E+00	.193000E+00	.632500E+00	.393000E+00	.736900E+00
				.595520E+00	.833100E+00	.797820E+00	.922900E+00	.100000E+01	.967200E+00
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
4	2	2	7	0.	-.670000E+00	.400000E+00	-.250000E+00	.900000E+00	.150000E+00
				.737255E+00	.526586E+00	.768049E+00	.606594E+00	.867230E+00	.743660E+00
				.100000E+01	.967200E+00				
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
4	2	3	6	-.100000E+01	.198430E+01	-.800960E+00	.139400E+01	-.606380E+00	.109750E+01
				-.406860E+00	.822000E+00	-.199280E+00	.664800E+00	0.	.603200E+00
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
4	2	4	8	-.100000E+01	.198430E+01	-.822340E+00	.183080E+01	-.633710E+00	.168240E+01
				-.458530E+00	.155700E+01	-.267023E+00	.143620E+01	-.176107E+00	.138790E+01
				-.893100E-01	.134810E+01	0.	.123361E+01		
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
4	2	5	4	0.	-.450000E+00	.400000E+00	-.250000E+00	.500000E+00	0.
				.100000E+01	.356900E+00				
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
4	2	6	10	0.	.123361E+01	.906430E-01	.119650E+01	.188569E+00	.110960E+01
				.273470E+00	.104160E+01	.458669E+00	.895800E+00	.574480E+00	.780700E+00
				.738160E+00	.613400E+00	.768520E+00	.584900E+00	.870057E+00	.487700E+00
				.100000E+01	.356900E+00				
				FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2	FLOW/SPEED	TORQ/SPEED**2
4	2	7	4	-.100000E+01	-.100000E+01	-.300000E+00	-.900000E+00	-.100000E+00	-.500000E+00
				0.	-.450000E+00				
				SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2	SPEED/FLOW	TORQ/FLOW**2
4	2	8	4	-.100000E+01	-.100000E+01	-.250000E+00	-.900000E+00	-.800000E-01	-.800000E+00
				0.	-.670000E+00				

PARAMETERS FOR 1 CHECKVALVES.

VALV NUM	TRIP ID	AREA TABL	LATCH FLAG	BACK PRESSURE FOR CLOSING	FORWARD FRIC. COEFF.	OPEN REVERSE FRIC. COEFF.	CLOSED REVERSE FRIC. COEFF.
1	-2	1	0	0.	0.	0.	0.

PARAMETERS FOR 1 LEAKS.

LEAK NUM	DATA PTS	TRIP ID	SINK PRESSURE	TIME OR ANGLE	AREA	TIME OR ANGLE	AREA	TIME OR ANGLE	AREA
1	-3	2	.430000E+02	0.	0.	.175000E-01	.100000E+01	.200000E+03	.100000E+01

DATA FOR 3 FILL SYSTEMS

FILL TYPE	TRIP ID	FILL PRESS (PSI)	FILL ENTHALPY (BTU/LB)	AIR FRACTION
1		1.000000D+02	5.828412D+01	0.

** FILL TABLE **

N	TIME (SEC)	FLOW RATE (LB/SEC-FT2)	N	TIME (SEC)	FLOW RATE (LB/SEC-FT2)	N	TIME (SEC)	FLOW RATE (LB/SEC-FT2)
1	2.000000D-01	3.214894D+01	7	6.200000D+00	1.538109D+02	12	1.720000D+01	1.989593D+02
2	1.200000D+00	8.978720D+01	8	7.200000D+00	1.607115D+02	13	2.220000D+01	2.037761D+02
3	2.200000D+00	1.114580D+02	9	8.200000D+00	1.674431D+02	14	2.720000D+01	2.140328D+02
4	3.200000D+00	1.279243D+02	10	1.020000D+01	1.795149D+02	15	3.168000D+01	2.188800D+02
5	4.200000D+00	1.376548D+02	11	1.220000D+01	1.829361D+02	16	4.220000D+01	2.297902D+02
6	5.200000D+00	1.475445D+02						

FILL TYPE	TRIP ID	FILL PRESS (PSI)	FILL ENTHALPY (BTU/LB)	AIR FRACTION
2	4	1.000000D+02	5.828412D+01	0.

** FILL TABLE **

N	PRESSURE (PSI)	FLOW RATE (LB/SEC-FT2)	N	PRESSURE (PSI)	FLOW RATE (LB/SEC-FT2)	N	PRESSURE (PSI)	FLOW RATE (LB/SEC-FT2)
1	1.000000D-01	3.865626D+01	2	3.000000D+03	3.865626D+01			

FILL TYPE	TRIP ID	FILL PRESS (PSI)	FILL ENTHALPY (BTU/LB)	AIR FRACTION
1	5	2.100000D+02	5.857914D+01	0.

** FILL TABLE **

N	TIME (SEC)	FLOW RATE (LB/SEC-FT2)	N	TIME (SEC)	FLOW RATE (LB/SEC-FT2)	N	TIME (SEC)	FLOW RATE (LB/SEC-FT2)
1	2.000000D-02	2.342038D+01	8	7.540000D+00	1.635320D+03	15	2.754000D+01	1.446658D+03
2	5.400000D-01	5.227855D+02	9	9.540000D+00	1.714549D+03	16	3.254000D+01	1.339050D+03
3	1.540000D+00	8.046624D+02	10	1.154000D+01	1.718093D+03	17	3.754000D+01	1.243967D+03
4	2.540000D+00	9.348928D+02	11	1.354000D+01	1.699404D+03	18	4.254000D+01	1.188434D+03
5	3.540000D+00	1.088387D+03	12	1.554000D+01	1.686342D+03	19	4.702000D+01	1.136531D+03
6	4.540000D+00	1.240916D+03	13	1.754000D+01	1.650293D+03	20	5.754000D+01	1.020331D+03
7	5.540000D+00	1.373423D+03	14	2.254000D+01	1.548980D+03			

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*** WARNING ***  POSSIBLE INITIAL ENTHALPY IMBALANCE
                  THE JUNCTION ENTHALPY CALCULATED LIES OUTSIDE THE RANGE OF THE TWO VOLUMES IT CONNECTS.
                  J  VOL.A  VOL.B        H(J)       H(VOL.A)      H(VOL.B)
                  9    8      9 5.36885E+02 5.36881E+02 5.36883E+02

*** WARNING ***  POSSIBLE INITIAL ENTHALPY IMBALANCE
                  THE JUNCTION ENTHALPY CALCULATED LIES OUTSIDE THE RANGE OF THE TWO VOLUMES IT CONNECTS.
                  J  VOL.A  VOL.B        H(J)       H(VOL.A)      H(VOL.B)
                 10    9     10 5.36881E+02 5.36883E+02 5.36883E+02

*** WARNING ***  POSSIBLE INITIAL ENTHALPY IMBALANCE
                  THE JUNCTION ENTHALPY CALCULATED LIES OUTSIDE THE RANGE OF THE TWO VOLUMES IT CONNECTS.
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J	VOL.A	VOL.B	H(J)	H(VOL.A)	H(VOL.B)
11	10	11	5.36884E+02	5.36863E+02	5.36881E+02

JUNCTION DATA ACTUALLY BEING USED.

JUN NUM	FROM VOL	TO VOL	PUMP LEAK FILL	CHK VALV	INITIAL FLOW (LBM/SEC)	JUNCTION FLOW AREA (FT**2)	JUNCTION ELEVATION (FT)	JUNCTION DIAMETER (FT)	LEAK CONTRACTION COEFFICIENT
1	2	1	0	0	.619444E+03	.480000E+00	-.973000E+00	.901000E+00	.100000E+01
2	1	3	0	0	.619444E+03	.682700E+00	0.	.932300E+00	.100000E+01
3	1	28	0	0	0.	.682700E+00	0.	.932300E+00	.100000E+01
4	3	4	0	0	.619444E+03	.660887E+00	0.	.932333E+00	.100000E+01
5	4	5	0	0	.619444E+03	.358820E+00	0.	.675917E+00	.100000E+01
6	5	6	0	0	.619444E+03	.682704E+00	0.	.932333E+00	.100000E+01
7	6	7	0	0	.619444E+03	.556000E+00	.151011E+01	.901670E+00	.100000E+01
8	7	8	0	0	.619444E+03	.162621E+01	.281219E+01	.143894E+01	.100000E+01
9	8	9	0	0	.619444E+03	.162621E+01	.956219E+01	.143894E+01	.100000E+01
10	9	10	0	0	.619444E+03	.162621E+01	.956219E+01	.143894E+01	.100000E+01
11	10	11	0	0	.619444E+03	.162621E+01	.281219E+01	.143894E+01	.100000E+01
12	11	12	0	0	.619444E+03	.556000E+00	.151011E+01	.901670E+00	.100000E+01
13	12	13	0	0	.619444E+03	.682704E+00	-.487437E+00	.932333E+00	.100000E+01
14	13	14	0	0	.619444E+03	.682704E+00	-.382994E+01	.932333E+00	.100000E+01
15	14	15	-1	0	.311844E+03	.394063E+00	-.212160E+01	.708333E+00	.100000E+01
16	14	16	-2	0	.307600E+03	.394063E+00	-.212160E+01	.708333E+00	.100000E+01
17	15	17	1	0	.311844E+03	.394063E+00	0.	.708333E+00	.100000E+01
18	16	18	2	0	.307600E+03	.394063E+00	0.	.708333E+00	.100000E+01
19	17	19	0	0	.311844E+03	.394063E+00	0.	.708333E+00	.100000E+01
20	18	19	0	0	.307600E+03	.394063E+00	0.	.708333E+00	.100000E+01
21	19	20	0	0	.619444E+03	.660887E+00	0.	.932333E+00	.100000E+01
22	20	21	0	0	.619444E+03	.682704E+00	0.	.932333E+00	.100000E+01
23	21	51	0	0	.619444E+03	.130494E+01	-.235167E+01	.911450E+00	.100000E+01
24	22	48	0	0	.619444E+03	.130494E+01	-.139636E+02	.128890E+01	.100000E+01
25	43	24	0	0	.619444E+03	.105600E+01	-.122600E+02	.203800E+01	.100000E+01
26	53	2	0	0	.619444E+03	.785440E+00	-.283800E+01	.100000E+01	.100000E+01
27	21	25	0	0	0.	.682704E+00	0.	.932333E+00	.100000E+01
28	25	26	0	0	0.	.682704E+00	0.	.932333E+00	.100000E+01
29	50	47	0	0	0.	.900370E-01	0.	.338600E+00	.100000E+01
30	27	44	0	0	0.	.253160E+00	0.	.567750E+00	.600000E+00
31	44	37	0	1	0.	0.	0.	.843833E+00	.600000E+00
32	28	29	0	0	0.	.682704E+00	0.	.932333E+00	.100000E+01
33	49	30	0	0	0.	.900370E-01	0.	.338583E+00	.100000E+01
34	30	31	0	0	0.	.900370E-01	.227083E+01	.359417E+00	.100000E+01
35	31	32	0	0	0.	.206034E+00	.685333E+01	.527819E+00	.100000E+01
36	32	33	0	0	0.	.206034E+00	.685333E+01	.527819E+00	.100000E+01
37	33	34	0	0	0.	.900370E-01	.227083E+01	.359417E+00	.100000E+01
38	34	35	0	0	0.	.900370E-01	-.227083E+01	.359417E+00	.100000E+01
39	35	36	0	0	0.	.900370E-01	-.397917E+01	.359417E+00	.100000E+01
40	36	45	0	0	0.	.900370E-01	0.	.338580E+00	.600000E+00

JUNCTION DATA ACTUALLY BEING USED.

JUN NUM	FROM VOL	TO VOL	PUMP LEAK FILL	CHK VALV	INITIAL FLOW (LBM/SEC)	JUNCTION FLOW AREA (FT**2)	JUNCTION ELEVATION (FT)	JUNCTION DIAMETER (FT)	LEAK CONTRACTION COEFFICIENT
41	45	37	0	1	0.	0.	0.	.843833E+00	.600000E+00
42	29	39	0	0	0.	.417500E+00	0.	.708300E+00	.100000E+01
43	26	38	0	0	0.	.417584E+00	.466167E+00	.708333E+00	.100000E+01
44	48	43	0	0	.619444E+03	.105597E+01	-.139536E+02	.126557E+01	.100000E+01
45	40	4	0	0	0.	.155592E-01	.466167E+00	.140750E+00	.750000E+00
46	41	40	0	0	0.	.155592E-01	.422500E+01	.140750E+00	.100000E+01
47	46	23	0	0	0.	.668130E-01	-.157900E+02	.291670E+00	.100000E+01
48	47	27	0	0	0.	.900370E-01	0.	.338600E+00	.600000E+00
49	23	48	0	0	0.	.749748E+01	-.151768E+02	.308333E+01	.100000E+01
50	29	49	0	0	0.	.682704E+00	0.	.932333E+00	.100000E+01
51	26	50	0	0	0.	.682704E+00	0.	.932333E+00	.100000E+01
52	51	54	0	0	.619444E+03	.130494E+01	-.622231E+01	.128899E+01	.100000E+01
53	24	52	0	0	.619444E+03	.326500E+01	-.911933E+01	.203800E+01	.100000E+01
54	52	53	0	0	.619444E+03	.326500E+01	-.597867E+01	.203800E+01	.100000E+01
55	54	22	0	0	.619444E+03	.130494E+01	-.100929E+02	.128899E+01	.100000E+01
56	0	46	3	0	0.	0.	0.	.286500E+00	.100000E+01
57	0	46	1	0	0.	0.	0.	.286500E+00	.100000E+01
58	0	46	2	0	0.	0.	0.	.286500E+00	.100000E+01

JUNCTION DATA ACTUALLY BEING USED.

JUN NUM	VERT JUN INDX	CHOK -ING INDX	IC CALC INDX	MOM EQ. INDX	JUNCTION INERTIA	SP. ENERGY LOSS COEF. (FORWARD)	SP.ENERGY LOSS COEF. (REVERSE)	RESIDUAL LOSS COEF. (NON-DIR)	RESIDUAL DELTA P (PSIA)	ENTHALPY TRANS INLET	ENTHALPY TRANS OUTLET	ANGLE
1	0	5	2	0	.162823E+01	.648100E+00	.648100E+00	.124738E-04	.472742E-04	NO	NO	.100000E+01
2	1	5	0	0	.517300E+01	.913400E+00	.913400E+00	.132137E-04	.247569E-04	NO	NO	0.
3	1	5	0	0	.474100E+01	.309500E+00	.473200E+00	0.	0.	NO	NO	0.
4	1	5	0	0	.874485E+01	.514000E-01	.514000E-01	.938996E-05	.187741E-04	NO	NO	0.
5	1	5	0	0	.830351E+01	.227800E-01	.912000E-01	.607843E-05	.412277E-04	NO	NO	0.
6	1	5	0	0	.521630E+01	.672200E+00	.672200E+00	.407001E-04	.762574E-04	NO	NO	0.
7	1	5	0	0	.188298E+01	.153061E+01	.177640E+01	.691580E-05	.195366E-04	NO	NO	0.
8	0	5	0	0	.216404E+01	.358400E+00	.631200E+00	.726653E-04	.239968E-04	NO	YES	0.
9	0	5	0	0	.310539E+01	.130000E-02	.130000E-02	.551885E-05	.182260E-05	YES	YES	0.
10	0	5	0	0	.310539E+01	.572000E-01	.572000E-01	.628801E-C4	.207667E-04	YES	YES	0.
11	0	5	0	0	.216404E+01	.632500E+00	.357000E+00	.429133E-C4	.141724E-04	YES	NO	0.
12	1	5	0	0	.137120E+01	.137940E+01	.160170E+01	.141575E-C4	.399972E-04	NO	NO	0.
13	0	5	0	0	.604346E+01	.196580E+00	.206500E+00	.930734E-05	.174415E-04	NO	NO	0.
14	1	5	0	0	.958135E+01	.109940E+01	.125000E+01	.117734E-04	.220627E-04	NO	NO	0.
15	0	5	0	0	.170096E+02	.228840E+00	.228840E+00	.144627E-C4	.206171E-04	NO	NO	0.
16	0	5	0	0	.170096E+02	.223400E+00	.223400E+00	.451477E-C4	.626197E-04	NO	NO	0.
17	0	5	0	0	.182935E+02	.165410E+00	.165410E+00	.330419E-C4	.470930E-04	NO	NO	0.
18	0	5	0	0	.144217E+02	.210270E+00	.210300E+00	.158293E-C5	.219503E-05	NO	NO	0.
19	1	5	0	0	.128504E+02	.661280E+00	.690000E+00	.334862E-C4	.477178E-04	NO	NO	0.
20	1	5	0	0	.897863E+01	.293689E+01	.120000E+01	.210607E-C5	.291989E-05	NO	NO	0.
21	1	5	0	0	.102097E+02	.450250E+00	.450250E+00	.188469E-05	.376770E-05	NO	NO	0.
22	1	5	0	0	.394776E+01	.123809E+01	.123809E+01	.317813E-05	.595394E-05	NO	NO	0.
23	0	5	2	0	.218801E+01	.175280E+00	.175280E+00	.162839E-05	.834981E-06	NO	NO	.100000E+01
24	0	5	2	0	.129412E+01	.600000E+00	.600000E+00	.752247E-06	.385709E-06	NO	NO	.100000E+01
25	0	5	2	0	.701012E+00	.250000E+00	.250000E+00	.722663E-07	.565834E-07	NO	NO	.100000E+01
26	0	5	2	0	.811036E+00	.559180E+00	.559180E+00	.528387E-05	.747869E-05	NO	NO	.100000E+01
27	1	5	0	0	.391683E+01	.804000E+00	.133020E+01	0.	0.	NO	NO	0.
28	1	5	0	0	.547080E+01	.100500E+00	.100500E+00	0.	0.	NO	NO	0.
29	1	5	0	0	.947010E+01	.260000E+00	.754000E+00	0.	0.	NO	NO	0.
30	1	0	0	0	.116155E+02	.299560E+00	.246290E+00	0.	0.	NO	NO	0.
31	1	0	0	0	.252555E+02	0.	0.	0.	0.	NO	NO	0.
32	1	0	0	0	.507420E+01	.100500E+00	.100500E+00	0.	0.	NO	NO	0.
33	1	5	0	0	.197019E+02	.396050E+00	.753630E+00	0.	0.	NO	NO	0.
34	0	5	0	0	.199010E+02	.935960E+00	.935960E+00	0.	0.	NO	NO	0.
35	0	5	0	0	.575875E+01	.581834E+01	.581834E+01	0.	0.	NO	NO	0.
36	0	5	0	0	.575875E+01	.581834E+01	.581834E+01	0.	0.	NO	NO	0.
37	0	5	0	0	.272573E+02	.230250E+00	.230250E+00	0.	0.	NO	NO	0.
38	0	5	0	0	.270551E+02	.635100E+01	.635100E+01	0.	0.	NO	NO	0.
39	1	5	0	0	.375249E+02	.635100E+01	.635100E+01	0.	0.	NO	NO	0.
40	1	0	0	0	.409140E+02	.948830E+00	.438340E+00	0.	0.	NO	NO	0.
41	1	0	0	0	.252555E+02	0.	0.	0.	0.	NO	NO	0.

JUNCTION DATA ACTUALLY BEING USED.

JUN NUM.	VERT JUN INDX	CHCK -ING INDX	IC CALC INDX	MOM EQ. INDX	JUNCTION INERTIA	SP. ENERGY LOSS COEF. (FORWARD)	SP. ENERGY LOSS COEF. (REVERSE)	RESIDUAL LOSS COEF. (NON-DIR)	RESIDUAL DELTA P (PSIA)	ENTHALPY TRANS INLET	ENTHALPY TRANS OUTLET	ANGLE
42	0	5	0	3	.193380E+02	.124700E+01	.457600E+00	0.	0.	NO	NO	0.
43	0	5	0	3	.242230E+02	.124700E+01	.457600E+00	0.	0.	NO	NO	0.
44	0	5	0	0	.781000E+00	.522590E+00	.522590E+00	.427918E-05	.335068E-05	NO	NO	.100000E+01
45	0	5	0	3	.753299E+02	.100000E+01	.100000E+01	0.	0.	NO	NO	0.
46	0	5	0	0	.748899E+02	.113400E+02	.113400E+02	0.	0.	NO	NO	0.
47	1	5	2	0	.135958E+03	.270000E+01	.220000E+01	0.	0.	NO	NO	0.
48	1	0	0	0	.151800E+02	.415000E+00	.290000E+00	0.	0.	NO	NO	0.
49	0	5	2	0	.148989E+00	.100000E-01	.100000E-01	0.	0.	NO	NO	.100000E+01
50	1	5	0	0	.347880E+01	.100000E-01	.100000E-01	0.	0.	NO	NO	0.
51	1	5	0	0	.231920E+01	.100000E-01	.100000E-01	0.	0.	NO	NO	0.
52	0	5	2	0	.243924E+01	.999980E-01	.999980E-01	.188113E-06	.964564E-07	NO	NO	.100000E+01
53	0	5	2	0	.945852E+00	.499910E-01	.499910E-01	.396587E-05	.324832E-06	NO	NO	.100000E+01
54	0	5	2	0	.945852E+00	.499810E-01	.499810E-01	.386186E-05	.316317E-06	NO	NO	.100000E+01
55	0	5	2	0	.243924E+01	.100000E+00	.100000E+00	.481170E-05	.246720E-05	NO	NO	.100000E+01
56	0	5	2	0	.135883E+03	0.	0.	0.	0.	NO	NO	0.
57	0	5	2	3	.135883E+03	0.	0.	0.	0.	NO	NO	0.
58	0	5	2	3	.135883E+03	0.	0.	0.	0.	NO	NO	0.

PARAMETERS IN JUNCTION MATRIX

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NUMBER OF CHAINS                (MS   ) =   6
NUMBER OF CHAIN JUNCTIONS       (NTRI ) =  34
NUMBER OF NON-CHAIN JUNCTIONS   (NQ   ) =  21
INDEX OF FIRST CRITICAL JUNCTION (MPP ) =  56
TOTAL NUMBER OF JUNCTIONS       (NTOT1) =  58
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DATA FOR 50 HEAT CONDUCTING SLABS.

SLAB NUM	L VOL	R VOL / LOC X IND	GEOM NUM / L C IND	STR IND / R C IND	LEFT SURFACE AREA, FT**2 / LEFT HEATED EQ DIAMETER, FT	RIGHT SURFACE AREA, FT**2 / RHT HEATED EQ DIAMETER, FT	VOLUME FT**3 / LEFT CHANNEL LENGTH, FT	LEFT HYDRAULIC DIAMETER, FT / RIGHT CHANNEL LENGTH, FT	RIGHT HYDRAULIC DIAMETER, FT / BOT HEIGHT IN R (L) VOL, FT	MAJOR L IN / TOP HEIGHT IN R (L) VOL, FT	MAJOR L OUT	JUNCTIONS R IN	JUNCTIONS R OUT
1	23	0	1	0	.206290E+02	0.	.803900E+00	.174400E+01	0.	47	49	0	0
		0	0	0	.174400E+01	0.	.513840E+01	0.	0.	0.			
2	1	0	2	0	.230540E+02	0.	.982900E+00	.178800E+01	0.	1	2	0	0
		0	0	0	0.	0.	.410300E+01	0.	0.	0.			
3	2	0	2	0	.104770E+02	0.	.446700E+00	.131400E+01	0.	26	1	0	0
		0	0	0	0.	0.	.186500E+01	0.	0.	0.			
4	54	0	3	0	.204600E+02	0.	.177600E+01	.231300E+01	0.	54	26	0	0
		0	0	0	0.	0.	.319600E+01	0.	0.	0.			
5	36	0	11	0	.342000E+01	0.	.253300E+00	.338600E+00	0.	39	40	0	0
		0	0	0	.338600E+00	0.	.321700E+01	0.	0.	0.			
6	35	0	8	0	.733000E+01	0.	.967400E+00	.932000E+00	0.	38	39	0	0
		0	0	0	.932000E+00	0.	.250400E+01	0.	0.	0.			
7	0	21	4	0	0.	.296759E+02	.354090E+01	0.	.583300E+00	0	0	22	23
		0	0	0	0.	0.	0.	.343500E+01	0.	0.			
8	21	0	5	0	.859780E+02	0.	.330540E+02	.583300E+00	0.	22	23	0	0
		0	0	0	0.	0.	.343500E+01	0.	0.	0.			
9	0	51	4	0	0.	.334770E+02	.686030E+01	0.	.333300E+00	0	0	23	52
		0	0	0	0.	0.	0.	.387500E+01	0.	0.			
10	51	0	12	0	.405860E+02	0.	.372890E+02	.333300E+00	0.	23	52	0	0
		0	0	0	0.	0.	0.	.387500E+01	0.	0.			
11	34	0	11	0	.919000E+01	0.	.680700E+00	.338600E+00	0.	37	38	0	0
		0	0	0	.338600E+00	0.	.864300E+01	0.	0.	0.			
12	33	0	13	0	.163200E+02	0.	.272200E+01	.120300E+01	0.	36	37	0	0
		0	0	0	.120300E+01	0.	.431900E+01	0.	0.	0.			
13	32	0	13	0	.326700E+02	0.	.544700E+01	.120300E+01	0.	35	36	0	0
		0	0	0	.120300E+01	0.	.864300E+01	0.	0.	0.			
14	31	0	13	0	.163200E+02	0.	.272200E+01	.120300E+01	0.	34	35	0	0
		0	0	0	.120300E+01	0.	.431900E+01	0.	0.	0.			
15	30	0	11	0	.683000E+01	0.	.506100E+00	.338600E+00	0.	33	34	0	0
		0	0	0	.338600E+00	0.	.642700E+01	0.	0.	0.			
16	23	0	5	0	.127940E+02	0.	.117550E+02	.289200E+01	0.	47	49	0	0
		0	0	0	.289200E+01	0.	.122200E+01	0.	0.	0.			
17	8	42	6	0	.112192E+04	.139542E+04	.513900E+01	.335000E-01	.466700E+01	8	9	0	0
		2	0	0	.335000E-01	.466700E+01	.579000E+01	.579000E+01	.830000E+00	.757000E+01			
18	9	42	6	0	.649380E+03	.807680E+03	.297500E+01	.335000E-01	.466700E+01	9	10	0	0
		2	0	0	.335000E-01	.466700E+01	.335000E+01	.335000E+01	.757300E+01	.957300E+01			

19	10	42	6	0	.112192E+04	.139542E+04	.513900E+01	.335000E-01	.466700E+01	10	11	0	0
		2	0	0	.335000E-01	.466700E+01	.579000E+01	.579000E+01	.830000E+00	.757000E+01			
20	44	0	7	0	.130630E+02	0.	.139100E+01	.932000E+00	0.	30	31	0	0
		0	0	0	.932000E+00	0.	.589500E+01	0.	0.	0.			
21	45	0	7	0	.130630E+02	0.	.139100E+01	.932000E+00	0.	40	41	0	0
		0	0	0	.932000E+00	0.	.589500E+01	0.	0.	0.			
22	25	0	8	0	.153100E+02	0.	.202000E+01	.932000E+00	0.	27	28	0	0
		0	0	0	.932000E+00	0.	.522800E+01	0.	0.	0.			
23	26	0	8	0	.699500E+01	0.	.923000E+00	.932000E+00	0.	28	43	0	0
		0	0	0	.932000E+00	0.	.238950E+01	0.	0.	0.			
24	3	0	8	0	.154500E+02	0.	.203800E+01	.932000E+00	0.	2	4	0	0
		0	0	0	.932000E+00	0.	.527500E+01	0.	0.	0.			
25	4	0	8	0	.195200E+02	0.	.297500E+01	.932000E+00	0.	4	5	0	0
		0	0	0	.932000E+00	0.	.666500E+01	0.	0.	0.			
26	5	0	8	0	.136800E+02	0.	.180500E+01	.932000E+00	0.	5	6	0	0
		0	0	0	.932000E+00	0.	.467200E+01	0.	0.	0.			
27	6	0	9	0	.107800E+02	0.	.160920E+01	.106780E+01	0.	6	7	0	0
		0	0	0	.106780E+01	0.	.321300E+01	0.	0.	0.			
28	7	0	10	0	.150000E+02	0.	.526700E+01	.146150E+01	0.	7	8	0	0
		0	0	0	.146150E+01	0.	.250000E+01	0.	0.	0.			
29	11	0	10	0	.159000E+02	0.	.526700E+01	.146150E+01	0.	11	12	0	0
		0	0	0	.146150E+01	0.	.250000E+01	0.	0.	0.			
30	12	0	9	0	.770000E+01	0.	.115020E+01	.106780E+01	0.	12	13	0	0
		0	0	0	.106780E+01	0.	.229700E+01	0.	0.	0.			
31	13	0	8	0	.190400E+02	0.	.251100E+01	.932000E+00	0.	13	14	0	0
		0	0	0	.932000E+00	0.	.650000E+01	0.	0.	0.			
32	14	0	8	0	.192700E+02	0.	.254300E+01	.932000E+00	0.	14	15	0	0
		0	0	0	.932000E+00	0.	.658100E+01	0.	0.	0.			
33	19	0	8	0	.269700E+02	0.	.355800E+01	.932000E+00	0.	19	21	0	0
		0	0	0	.932000E+00	0.	.921100E+01	0.	0.	0.			
34	20	0	8	0	.138500E+02	0.	.182800E+01	.932000E+00	0.	21	22	0	0
		0	0	0	.932000E+00	0.	.472900E+01	0.	0.	0.			
35	28	0	8	0	.137200E+02	0.	.181100E+01	.932000E+00	0.	3	32	0	0
		0	0	0	.932000E+00	0.	.4686C0E+01	0.	0.	0.			
36	29	0	8	0	.656000E+01	0.	.8660C0E+00	.932000E+00	0.	32	42	0	0
		0	0	0	.932000E+00	0.	.224100E+01	0.	0.	0.			
37	27	0	12	0	.575000E+01	0.	.492700E+00	.567800E+00	0.	48	30	0	0
		0	0	0	.567800E+00	0.	.322900E+01	0.	0.	0.			
38	46	0	14	0	.164000E+02	.475400E+02	.8690C0E+01	.833330E+00	0.	0	47	0	0
		0	0	0	0.	.800000E+00	.1816C0E+02	.181600E+02	0.	0.			

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39  48   0   1   0   .206290E+02   0.                      .803900E+00   .174400E+01   0.                     24    44     0     0
         0   0   0   .174400E+01   0.                      .513800E+01   0.            0.                 0.
40  48   0   5   0   .127940E+02   0.                      .117550E+02   .289200E+01   0.                     24    44     0     0
         0   0   0   .289200E+01   0.                      .122200E+01   0.            0.                 0.
41  43   0   1   0   .287350E+02   0.                      .111980E+01   .174400E+01   0.                     44    25     0     0
         0   0   0   .174400E+01   0.                      .715800E+01   0.            0.                 0.
42  43   0   5   0   .178210E+02   0.                      .163740E+02   .289200E+01   0.                     44    25     0     0
         0   0   0   .289200E+01   0.                      .170200E+01   0.            0.                 0.
43  49   0   8   0   .332000E+01   0.                      .438000E+00   .932000E+00   0.                     50    33     0     0
         0   0   0   .932000E+00   0.                      .113400E+01   0.            0.                 0.
44  50   0   8   0   .288500E+01   0.                      .381000E+00   .932000E+00   0.                     51    29     0     0
         0   0   0   .932000E+00   0.                      .985500E+00   0.            0.                 0.
45   0  54   4   0   0.                      .331140E+02   .678590E+01   0.                  .333300E+00    0     0    52    55
         0   0   0   0.            0.                      0.            .383300E+01   0.                 0.
46  54   0   5   0   .401470E+02   0.                      .368850E+02   .333300E+00   0.                     52    55     0     0
         0   0   0   0.            0.                      0.            .383300E+01   0.                 0.
47   0  22   4   0   0.                      .337190E+02   .690980E+01   0.                  .333300E+00    0     0    55    24
         0   0   0   0.            0.                      0.            .390300E+01   0.                 0.
48  22   0   5   0   .408850E+02   0.                      .375630E+02   .333300E+00   0.                     55    24     0     0
         0   0   0   0.            0.                      0.            .390350E+01   0.                 0.
49  52   0   3   0   .199290E+02   0.                      .173000E+01   .231300E+01   0.                     53    54     0     0
         0   0   0   0.            0.                      .311300E+01   0.            0.                 0.
50  24   0   3   0   .199290E+02   0.                      .173000E+01   .231300E+01   0.                     25    53     0     0
         0   0   0   0.            0.                      .311300E+01   0.            0.                 0.
      AXIAL STACKS OF HEAT SLABS -
                              1 THROUGH   1             1 DIMENSIONAL HEAT TRANSFER
                              2 THROUGH   2             1 DIMENSIONAL HEAT TRANSFER
                              3 THROUGH   3             1 DIMENSIONAL HEAT TRANSFER
                              4 THROUGH   4             1 DIMENSIONAL HEAT TRANSFER
                              5 THROUGH   5             1 DIMENSIONAL HEAT TRANSFER
                              6 THROUGH   6             1 DIMENSIONAL HEAT TRANSFER
                              7 THROUGH   7             1 DIMENSIONAL HEAT TRANSFER
                              8 THROUGH   8             1 DIMENSIONAL HEAT TRANSFER
                              9 THROUGH   9             1 DIMENSIONAL HEAT TRANSFER
                             10 THROUGH  10             1 DIMENSIONAL HEAT TRANSFER
                             11 THROUGH  11             1 DIMENSIONAL HEAT TRANSFER
                             12 THROUGH  12             1 DIMENSIONAL HEAT TRANSFER
                             13 THROUGH  13             1 DIMENSIONAL HEAT TRANSFER
                             14 THROUGH  14             1 DIMENSIONAL HEAT TRANSFER
                             15 THROUGH  15             1 DIMENSIONAL HEAT TRANSFER
                             16 THROUGH  16             1 DIMENSIONAL HEAT TRANSFER
                             17 THROUGH  17             1 DIMENSIONAL HEAT TRANSFER
                             18 THROUGH  18             1 DIMENSIONAL HEAT TRANSFER
                             19 THROUGH  19             1 DIMENSIONAL HEAT TRANSFER
                             20 THROUGH  20             1 DIMENSIONAL HEAT TRANSFER
                             21 THROUGH  21             1 DIMENSIONAL HEAT TRANSFER
                             22 THROUGH  22             1 DIMENSIONAL HEAT TRANSFER
                             23 THROUGH  23             1 DIMENSIONAL HEAT TRANSFER
                             24 THROUGH  24             1 DIMENSIONAL HEAT TRANSFER
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25 THROUGH  25        1 DIMENSIONAL HEAT TRANSFER
26 THROUGH  26        1 DIMENSIONAL HEAT TRANSFER
27 THROUGH  27        1 DIMENSIONAL HEAT TRANSFER
28 THROUGH  28        1 DIMENSIONAL HEAT TRANSFER
29 THROUGH  29        1 DIMENSIONAL HEAT TRANSFER
30 THROUGH  30        1 DIMENSIONAL HEAT TRANSFER
31 THROUGH  31        1 DIMENSIONAL HEAT TRANSFER
32 THROUGH  32        1 DIMENSIONAL HEAT TRANSFER
33 THROUGH  33        1 DIMENSIONAL HEAT TRANSFER
34 THROUGH  34        1 DIMENSIONAL HEAT TRANSFER
35 THROUGH  35        1 DIMENSIONAL HEAT TRANSFER
36 THROUGH  36        1 DIMENSIONAL HEAT TRANSFER
37 THROUGH  37        1 DIMENSIONAL HEAT TRANSFER
38 THROUGH  38        1 DIMENSIONAL HEAT TRANSFER
39 THROUGH  39        1 DIMENSIONAL HEAT TRANSFER
40 THROUGH  40        1 DIMENSIONAL HEAT TRANSFER
41 THROUGH  41        1 DIMENSIONAL HEAT TRANSFER
42 THROUGH  42        1 DIMENSIONAL HEAT TRANSFER
43 THROUGH  43        1 DIMENSIONAL HEAT TRANSFER
44 THROUGH  44        1 DIMENSIONAL HEAT TRANSFER
45 THROUGH  45        1 DIMENSIONAL HEAT TRANSFER
46 THROUGH  46        1 DIMENSIONAL HEAT TRANSFER
47 THROUGH  47        1 DIMENSIONAL HEAT TRANSFER
48 THROUGH  48        1 DIMENSIONAL HEAT TRANSFER
49 THROUGH  49        1 DIMENSIONAL HEAT TRANSFER
50 THROUGH  50        1 DIMENSIONAL HEAT TRANSFER
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DATA FOR  14 HEAT SLAB GEOMETRIES

GEOM REG GAP MAT NO  XO TO N=1      REGION WIDTH   POWER FRAC
TYPE  NO IND  NO DX

  1   1        1   4   0.                .129900E-01   0.
      2    0   1   4                     .259700E-01   0.

                               SUM OF POWER FRACTIONS IS    0.

GEOM REG GAP MAT NO  XO TO N=1      REGION WIDTH   POWER FRAC
TYPE  NO IND  NO DX

  2   1        1   4   .894000E+00       .208000E-01   0.
      2    0   1   4                     .208000E-01   0.

                               SUM OF POWER FRACTIONS IS    0.

GEOM REG GAP MAT NO  XO TO N=1      REGION WIDTH   POWER FRAC
TYPE  NO IND  NO DX

  2   1        1   4   .101900E+01       .417000E-01   0.
      2    0   1   4                     .417000E-01   0.

                               SUM OF POWER FRACTIONS IS    0.

GEOM REG GAP MAT NO  XO TO N=1      REGION WIDTH   POWER FRAC
TYPE  NO IND  NO DX

  2   1        1   4   .125000E+01       .625000E-01   0.
      2    0   1   4                     .625000E-01   0.

                               SUM OF POWER FRACTIONS IS    0.

GEOM REG GAP MAT NO  XO TO N=1      REGION WIDTH   POWER FRAC
TYPE  NO IND  NO DX

  2   1        1   4   .166700E+01       .250000E+00   0.
      2    0   1   4                     .500000E+00   0.

                               SUM OF POWER FRACTIONS IS    0.

GEOM REG GAP MAT NO  XO TO N=1      REGION WIDTH   POWER FRAC
TYPE  NO IND  NO DX

  2   1        1   4   .167500E-01       .204000E-02   0.
      2    0   1   4                     .204000E-02   0.

                               SUM OF POWER FRACTIONS IS    0.

GEOM REG GAP MAT NO  XO TO N=1      REGION WIDTH   POWER FRAC
TYPE  NO IND  NO DX

  2   1        1   4   .354000E+00       .310000E-01   0.
      2    0   1   4                     .630000E-01   0.

                               SUM OF POWER FRACTIONS IS    0.

GEOM REG GAP MAT NO  XO TO N=1      REGION WIDTH   POWER FRAC
TYPE  NO IND  NO DX
```

2	1		1	4	.466000E+00	.390000E-01	0.
	2	0	1	4		.780000E-01	0.

SUM OF POWER FRACTIONS IS 0.

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
2	1		1	4	.533900E+00	.443000E-01	0.
	2	0	1	4		.885000E-01	0.

SUM OF POWER FRACTIONS IS 0.

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
2	1		1	4	.225000E+01	.208000E-01	0.
	2	0	1	4		.270900E+00	0.

SUM OF POWER FRACTIONS IS 0.

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
2	1		1	4	.169300E+00	.208000E-01	0.
	2	0	1	4		.417000E-01	0.

SUM OF POWER FRACTIONS IS 0.

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
2	1		1	4	.283900E+00	.252000E-01	0.
	2	0	1	4		.503000E-01	0.

SUM OF POWER FRACTIONS IS 0.

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
2	1		1	4	.601600E+00	.495000E-01	0.
	2	0	1	4		.989000E-01	0.

SUM OF POWER FRACTIONS IS 0.

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	XO TO N=1	REGION WIDTH	POWER FRAC
2	1		1	8	.145830E+00	.833300E-01	0.
	2	0	1	5		.833300E-01	0.
	3	0	1	3		.104170E+00	0.

SUM OF POWER FRACTIONS IS 0.

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PROPERTIES FOR HEAT CONDUCTING MATERIAL NUMBER  1

                                        THERMAL CONDUCTIVITY (BTU/FT-HR-F) VS TEMPERATURE      (T(1),K(1),-----)

  -2 POINTS             .212000E+03    .957400E+01    .237200E+04    .192940E+02

                                        VOL HEAT CAPACITY (BTU/FT**3-F) VS TEMPERATURE         (T(1),C(1),-----)

 -13 POINTS             .170000E+03    .444608E+02    .250000E+03    .443296E+02    .400000E+03    .444872E+02
                        .600000E+03    .453920E+02    .800000E+03    .469094E+02    .100000E+04    .488415E+02
                        .120000E+04    .509906E+02    .140000E+04    .531587E+02    .160000E+04    .551481E+02
                        .180000E+04    .567609E+02    .200000E+04    .577993E+02    .220000E+04    .580655E+02
                        .240000E+04    .573616E+02
```

EXPJP4/C E (73) EXPERIMENTAL RELAP4 TYPE PROGRAM CONFIGURATION CONTROL NO
LOFT L135-A22 L1-3A POSTTEST ANALYSIS 05/04/77

CPU TIME = 1.32
STANDARD TIME STEP NUMBER 0. ACTUAL TIME STEP NUMBER 0. TIME = 0. SEC. LAST DT = -R SEC.

TOTAL SYSTEM QUANTITIES	NORM POWR	POWR (MW)	HEAT REM (BTU/HR)	ENGY LEAK (BTU)	MASS LEAK (LB)	ENGY BAL. (BTU)	MASS BAL. (LB)	TOT. REAC ($)	REAC T SEC.
	1.00000E+00	0.	0.	0.	0.	6.57968E+07	2.35509E+05	0.	0.

VOLUME NUMBER	AVG. PRES PSIA	TOT. MASS (LB) H2O	AVG. ENTH (BTU/LB)	AVG. DENS (LB/FT3)	AVG. TEMP (F)	AVG. QUAL	BUBB MASS (LB)	MIXT LEVL (FT)	LIQ. MASS (LB)
1	2.26704E+03	7.72101E+02	5.36868E+02	4.74213E+01	5.41620E+02	0.	0.	7.50000E+00	7.72101E+02
2	2.27104E+03	1.98991E+02	5.36863E+02	4.74239E+01	5.41620E+02	0.	0.	1.86500E+00	1.98991E+02
3	2.26441E+03	3.77046E+02	5.36871E+02	4.74196E+01	5.41620E+02	0.	0.	9.32333E-01	3.77046E+02
4	2.26416E+03	2.15778E+02	5.36871E+02	4.74194E+01	5.41620E+02	0.	0.	9.32333E-01	2.15778E+02
5	2.26392E+03	1.51261E+02	5.36872E+02	4.74193E+01	5.41620E+02	0.	0.	9.32333E-01	1.51261E+02
6	2.26317E+03	1.36482E+02	5.36873E+02	4.74188E+01	5.41620E+02	0.	0.	2.42156E+00	1.36482E+02
7	2.25961E+03	5.30230E+02	5.36877E+02	4.74165E+01	5.41620E+02	0.	0.	2.50000E+00	5.30230E+02
8	2.25716E+03	5.20468E+02	5.36881E+02	4.74149E+01	5.41620E+02	0.	0.	6.75000E+00	5.20468E+02
9	2.25496E+03	2.58299E+02	5.36883E+02	4.74135E+01	5.41620E+02	0.	0.	2.00521E+00	2.58299E+02
10	2.25564E+03	5.20458E+02	5.36883E+02	4.74139E+01	5.41620E+02	0.	0.	6.75000E+00	5.20458E+02
11	2.25677E+03	5.30209E+02	5.36881E+02	4.74146E+01	5.41620E+02	0.	0.	2.50000E+00	5.30209E+02
12	2.25207E+03	9.75393E+01	5.36887E+02	4.74116E+01	5.41620E+02	0.	0.	2.87508E+00	9.75393E+01
13	2.25187E+03	2.10411E+02	5.36887E+02	4.74115E+01	5.41620E+02	0.	0.	3.80867E+00	2.10411E+02
14	2.24998E+03	2.13036E+02	5.36890E+02	4.74102E+01	5.41620E+02	0.	0.	2.17450E+00	2.13036E+02
15	2.26412E+03	1.79511E+02	5.36871E+02	4.74194E+01	5.41620E+02	0.	0.	2.47577E+00	1.79511E+02
16	2.26575E+03	1.79515E+02	5.36869E+02	4.74205E+01	5.41620E+02	0.	0.	2.47577E+00	1.79515E+02
17	2.27700E+03	8.99136E+01	5.36855E+02	4.74278E+01	5.41620E+02	0.	0.	7.08333E-01	8.99136E+01
18	2.28015E+03	3.28856E+01	5.36851E+02	4.74298E+01	5.41620E+02	0.	0.	7.08333E-01	3.28856E+01
19	2.27410E+03	2.98239E+02	5.36859E+02	4.74259E+01	5.41620E+02	0.	0.	9.32333E-01	2.98239E+02
20	2.27308E+03	1.53118E+02	5.36860E+02	4.74252E+01	5.41620E+02	0.	0.	9.32333E-01	1.53118E+02
21	2.27258E+03	3.53297E+02	5.36861E+02	4.74249E+01	5.41620E+02	0.	0.	3.43500E+00	3.53297E+02
22	2.27588E+03	2.69806E+02	5.36856E+02	4.74270E+01	5.41620E+02	0.	0.	3.87064E+00	2.69806E+02
23	2.27727E+03	3.97209E+02	5.36855E+02	4.74279E+01	5.41620E+02	0.	0.	1.22320E+00	3.97209E+02
24	2.27479E+03	4.78200E+02	5.36858E+02	4.74263E+01	5.41620E+02	0.	0.	3.14067E+00	4.78200E+02
25	2.27318E+03	1.69289E+02	5.36860E+02	4.74253E+01	5.41620E+02	0.	0.	9.32333E-01	1.69289E+02
26	2.27318E+03	7.25797E+01	5.36860E+02	4.74253E+01	5.41620E+02	0.	0.	9.32333E-01	7.25797E+01
27	2.27318E+03	3.93317E+01	5.22722E+02	4.81115E+01	5.30000E+02	0.	0.	5.67750E-01	3.93317E+01
28	2.26666E+03	3.58019E+02	5.36868E+02	4.74211E+01	5.41620E+02	0.	0.	9.32333E-01	3.58019E+02
29	2.26685E+03	7.25729E+01	5.36868E+02	4.74212E+01	5.41620E+02	0.	0.	9.32333E-01	7.25729E+01
30	2.26651E+03	1.38347E+01	5.30022E+02	4.77638E+01	5.36000E+02	0.	0.	2.44013E+00	1.38347E+01
31	2.26935E+03	2.20452E+02	5.22729E+02	4.81068E+01	5.30000E+02	0.	0.	4.58250E+00	2.20452E+02
32	2.26394E+03	4.88708E+02	5.10884E+02	4.86968E+01	5.20000E+02	0.	0.	4.04708E+00	4.88708E+02
33	2.26535E+03	2.25666E+02	4.99109E+02	4.92446E+01	5.10000E+02	0.	0.	4.58250E+00	2.25666E+02
34	2.26685E+03	2.03588E+01	4.87546E+02	4.97869E+01	5.00000E+02	0.	0.	4.54167E+00	2.03588E+01
35	2.26795E+03	8.55480E+01	4.81768E+02	5.00397E+01	4.95000E+02	0.	0.	2.17450E+00	8.55480E+01
36	2.26750E+03	2.91081E+01	4.76086E+02	5.03020E+01	4.90000E+02	0.	0.	4.31775E+00	2.91081E+01
37	8.36000E+01	2.16470E+05	2.25585E+02	5.86092E+01	2.56880E+02	0.	0.	1.60937E+01	2.16470E+05
38	2.27039E+03	3.93079E+02	5.22725E+02	4.81098E+01	5.30000E+02	0.	0.	2.06508E+00	3.93079E+02
39	2.26631E+03	2.82653E+02	5.22729E+02	4.81073E+01	5.30000E+02	0.	0.	2.89583E+00	2.82653E+02
40	2.26311E+03	1.67034E+01	5.62288E+02	4.60955E+01	5.62000E+02	0.	0.	4.03500E+00	1.67034E+01
41	2.26195E+03	7.77196E+02	7.59729E+02	2.23640E+01	6.53467E+02	1.37628E-01	1.43899E-03	3.50002E+00	6.70232E+02
42	9.57995E+02	5.94612E+03	5.74333E+02	2.11155E+01	5.39400E+02	5.81188E-02	3.51099E-07	1.17000E+01	5.60054E+03
43	2.27580E+03	3.03153E+02	5.36856E+02	4.74270E+01	5.41620E+02	0.	0.	1.70360E+00	3.03153E+02
44	2.27317E+03	1.62080E+02	4.94481E+02	4.94710E+01	5.06000E+02	0.	0.	8.41146E-01	1.62080E+02
45	2.26684E+03	1.65964E+02	4.68156E+02	5.06566E+01	4.83000E+02	0.	0.	8.41146E-01	1.65964E+02
46	2.27871E+03	6.54196E+01	3.88194E+02	5.39299E+01	4.10000E+02	0.	0.	1.57900E+01	6.54196E+01
47	2.27318E+03	6.76839E+00	5.36104E+02	4.74642E+01	5.41000E+02	0.	0.	3.38600E-01	6.76839E+00
48	2.27674E+03	3.97206E+02	5.36855E+02	4.74276E+01	5.41620E+02	0.	0.	1.22320E+00	3.97206E+02

49	2.26685E+03	3.67067E+01	5.36868E+02	4.74212E+01	5.41620E+02	0.	0.	9.32333E-01	3.67067E+01
50	2.27318E+03	2.99491E+01	5.36860E+02	4.74253E+01	5.41620E+02	0.	0.	9.32333E-01	2.99491E+01
51	2.27351E+03	2.69797E+02	5.36859E+02	4.74255E+01	5.41620E+02	0.	0.	3.87064E+00	2.69797E+02
52	2.27375E+03	4.78193E+02	5.36859E+02	4.74257E+01	5.41620E+02	0.	0.	3.14067E+00	4.78193E+02
53	2.27271E+03	4.78186E+02	5.36860E+02	4.74250E+01	5.41620E+02	0.	0.	3.14067E+00	4.78186E+02
54	2.27469E+03	2.69802E+02	5.36858E+02	4.74263E+01	5.41620E+02	0.	0.	3.87064E+00	2.69802E+02

VOLUME	AIR MASS
1	0.
2	0.
3	0.
4	0.
5	0.
6	0.
7	0.
8	0.
9	0.
10	0.
11	0.
12	0.
13	0.
14	0.
15	0.
16	0.
17	0.
18	0.
19	0.
20	0.
21	0.
22	0.
23	0.
24	0.
25	0.
26	0.
27	0.
28	0.
29	0.
30	0.
31	0.
32	0.
33	0.
34	0.
35	0.
36	0.
37	0.
38	0.
39	0.
40	0.
41	0.
42	0.
43	0.
44	0.
45	0.
46	0.
47	0.
48	0.
49	0.
50	0.
51	0.
52	0.

53	0.
54	0.

VOLUME NUMBER	PUMP SPEED (RPM)	PUMP NORM TORQUE
15	1.75971E+03	3.03708E-01
16	1.79748E+03	3.13629E-01

HEAT SLAB NUMBER		VOL NUM	HEAT TRAN MODE	SURF FLUX (BTU/HR/FT2)	CRIT FLUX (BTU/HR/FT2)	H.T. COEF (BTU/H/F2/F)	SURF TEMP (F)	AVG. QUAL	POWR H2O (BTU/HR)
1	LEFT	23	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
2	LEFT	1	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
3	LEFT	2	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
4	LEFT	53	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
5	LEFT	36	0	0.	9.00000E+04	5.00000E+00	4.90000E+02	0.	0.
6	LEFT	35	0	0.	9.00000E+04	5.00000E+00	4.95000E+02	0.	0.
7	RIGHT	21	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
8	LEFT	21	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
9	RIGHT	51	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
10	LEFT	51	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
11	LEFT	34	0	0.	9.00000E+04	5.00000E+00	5.00000E+02	0.	0.
12	LEFT	33	0	0.	9.00000E+04	5.00000E+00	5.10000E+02	0.	0.
13	LEFT	32	0	0.	9.00000E+04	5.00000E+00	5.20000E+02	0.	0.
14	LEFT	31	0	0.	9.00000E+04	5.00000E+00	5.30000E+02	0.	0.
15	LEFT	30	0	0.	9.00000E+04	5.00000E+00	5.36000E+02	0.	0.
16	LEFT	23	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
17	LEFT	8	1	-1.63813E+03	7.81000E+05	3.68478E+03	5.41175E+02	0.	-1.83786E+06
17	RIGHT	42	2	1.31706E+03	9.00000E+04	1.07813E+03	5.40635E+02	4.99273E-11	1.83786E+06
18	LEFT	9	1	-1.63705E+03	7.81754E+05	3.68487E+03	5.41176E+02	0.	-1.06307E+06
18	RIGHT	42	2	1.31620E+03	9.00000E+04	1.07777E+03	5.40636E+02	8.84848E-11	1.06307E+06
19	LEFT	10	1	-1.63814E+03	7.81522E+05	3.68484E+03	5.41175E+02	0.	-1.83786E+06
19	RIGHT	42	2	1.31707E+03	9.00000E+04	1.07813E+03	5.40635E+02	4.99273E-11	1.83786E+06
20	LEFT	44	0	0.	9.00000E+04	5.00000E+00	5.06000E+02	0.	0.
21	LEFT	45	0	0.	9.00000E+04	5.00000E+00	4.83000E+02	0.	0.
22	LEFT	25	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
23	LEFT	26	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
24	LEFT	3	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
25	LEFT	4	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
26	LEFT	5	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
27	LEFT	6	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
28	LEFT	7	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
29	LEFT	11	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
30	LEFT	12	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
31	LEFT	13	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
32	LEFT	14	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
33	LEFT	19	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
34	LEFT	20	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
35	LEFT	28	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
36	LEFT	29	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
37	LEFT	27	0	0.	9.00000E+04	5.00000E+00	5.30000E+02	0.	0.
38	LEFT	46	0	0.	9.00000E+04	5.00000E+00	4.10000E+02	0.	0.
39	LEFT	48	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
40	LEFT	48	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
41	LEFT	43	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
42	LEFT	43	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
43	LEFT	49	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
44	LEFT	50	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
45	RIGHT	54	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
46	LEFT	54	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
47	RIGHT	22	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
48	LEFT	22	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.

49	LEFT	52	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.
50	LEFT	24	0	0.	9.00000E+04	5.00000E+00	5.41620E+02	0.	0.

EXPJP47C E (73) EXPERIMENTAL RELAP4 TYPE PROGRAM CONFIGURATION CONTROL NO
LOFT L195-A22 L1-3A POSITEST ANALYSIS 05/04/77

CPU TIME = 1.37

JUNCTION NUMBER	CONNECTING VOLUMES			CHOKE		JCT. FLOW (LB/SEC)	JCT. ENTH (BTU/LB)	JCT. SPVL (FT3/LB)	P R E S S U R E STAG PSI	ELEV PSI	D I F F E R E N T I A L S FRIC PSI	ACCL PSI	PUMP PSI
1	2	TO	1	0	0	6.19444E+02	5.36861E+02	2.10864E-02	4.00123E+00	-1.54203E+00	-2.45920E+00	2.40641E-14	0.
2	1	TO	3	0	0	6.19444E+02	5.36871E+02	2.10876E-02	8.92589E-01	9.14507E-01	-1.80710E+00	1.42109E-14	0.
3	1	TO	28	0	0	0.	5.36871E+02	2.10876E-02	6.55873E-01	9.14507E-01	-2.11741E-03	1.56826E+00	0.
4	3	TO	4	0	0	6.19444E+02	5.36871E+02	2.10883E-02	2.49987E-01	-9.79364E-16	-2.49987E-01	1.33227E-15	0.
5	4	TO	5	0	0	6.19444E+02	5.36871E+02	2.10884E-02	2.45687E-01	1.97309E-16	-2.45687E-01	1.77636E-15	0.
6	5	TO	6	0	0	6.19444E+02	5.36872E+02	2.10885E-02	1.53310E+00	-2.22890E-01	-1.31021E+00	1.42109E-14	0.
7	6	TO	7	0	0	6.19444E+02	5.36872E+02	2.10887E-02	4.62859E+00	-2.91535E-01	-4.33705E+00	5.68434E-14	0.
8	7	TO	8	0	0	6.19444E+02	5.36876E+02	2.10897E-02	2.14199E+00	-1.52289E+00	-6.19101E-01	0.	0.
9	8	TO	9	0	0	6.19444E+02	5.36885E+02	2.10905E-02	2.19098E+00	-1.44140E+00	-7.49576E-01	3.46945E-18	0.
10	9	TO	10	0	0	6.19444E+02	5.36881E+02	2.10911E-02	-6.73294E-01	1.44138E+00	-7.68087E-01	2.22045E-16	0.
11	10	TO	11	0	0	6.19444E+02	5.36884E+02	2.10910E-02	-8.13196E-01	1.52285E+00	-7.09653E-01	5.32907E-15	0.
12	11	TO	12	0	0	6.19444E+02	5.36881E+02	2.10905E-02	3.62268E+00	2.83841E-01	-3.90652E+00	3.55271E-14	0.
13	12	TO	13	0	0	6.19444E+02	5.36889E+02	2.10919E-02	-5.87956E-01	1.01799E+00	-4.30033E-01	0.	0.
14	13	TO	14	0	0	6.19444E+02	5.36889E+02	2.10920E-02	1.89640E+00	2.69027E-01	-2.16543E+00	1.42109E-14	0.
15	14	TO	15	0	0	3.11844E+02	5.36889E+02	2.10926E-02	-1.22976E+01	-7.65601E-01	-5.34642E-01	0.	1.35978E+01
16	14	TO	16	0	0	3.07600E+02	5.36889E+02	2.10926E-02	-1.38734E+01	-7.65610E-01	-5.14390E-01	3.55271E-15	1.51534E+01
17	15	TO	17	0	0	3.11844E+02	5.36870E+02	2.10884E-02	-1.28768E+01	-2.91010E-01	-4.29996E-01	2.66454E-15	1.35978E+01
18	16	TO	18	0	0	3.07600E+02	5.36868E+02	2.10880E-02	-1.44055E+01	-2.91016E-01	-4.56911E-01	3.55271E-15	1.51534E+01
19	17	TO	19	0	0	3.11844E+02	5.36855E+02	2.10847E-02	1.05512E+00	-3.97986E-15	-1.05512E+00	1.42109E-14	0.
20	18	TO	19	0	0	3.07600E+02	5.36851E+02	2.10838E-02	4.15956E+00	-8.93997E-15	-4.15956E+00	7.46070E-14	0.
21	19	TO	20	0	0	6.19444E+02	5.36859E+02	2.10855E-02	1.01215E+00	-1.59297E-15	-1.01215E+00	7.10543E-15	0.
22	20	TO	21	0	0	6.19444E+02	5.36860E+02	2.10858E-02	2.15559E+00	2.08856E-01	-2.36445E+00	3.55271E-14	0.
23	21	TO	51	0	0	6.19444E+02	5.36863E+02	2.10860E-02	-1.08507E+00	1.20303E+00	-1.17953E-01	8.88178E-16	0.
24	22	TO	48	0	0	6.19444E+02	5.36859E+02	2.10850E-02	-5.06794E-01	8.35554E-01	-3.28759E-01	5.32907E-15	0.
25	43	TO	24	0	0	6.19444E+02	5.36855E+02	2.10850E-02	9.90860E-01	-7.94439E-01	-1.96421E-01	2.22045E-15	0.
26	53	TO	2	0	0	6.19444E+02	5.36858E+02	2.10859E-02	1.61700E+00	-8.24277E-01	-7.92724E-01	1.44329E-14	0.
27	21	TO	25	0	0	0.	5.36860E+02	2.10860E-02	-1.50777E-01	-2.08856E-01	-6.98487E-03	-3.66618E-01	0.
28	25	TO	26	0	0	0.	5.36860E+02	2.10858E-02	0.	0.	0.	0.	0.
29	50	TO	47	0	0	0.	5.36104E+02	2.10858E-02	0.	-1.64671E-07	0.	-1.64684E-07	0.
30	27	TO	44	0	11	0.	5.22722E+02	2.07851E-02	1.00000E-02	-6.87097E-03	0.	3.12903E-03	0.
31	44	TO	37	0	11	0.	4.94481E+02	1.00000E-02	0.	0.	0.	0.	0.
32	28	TO	29	0	0	0.	5.36868E+02	2.10877E-02	-1.90000E-01	2.99554E-16	0.	-1.90000E-01	0.
33	49	TO	30	0	0	0.	5.30023E+02	2.10876E-02	3.40000E-01	-3.48534E-01	0.	-8.53381E-03	0.
34	30	TO	31	0	0	0.	5.22732E+02	2.09363E-02	1.16000E+00	-1.17014E+00	0.	-1.01355E-02	0.
35	31	TO	32	0	0	0.	5.10886E+02	2.07871E-02	1.41000E+00	-1.44975E+00	0.	-3.97540E-02	0.
36	32	TO	33	0	0	0.	5.10886E+02	2.05352E-02	-1.41000E+00	1.46786E+00	0.	5.78581E-02	0.
37	33	TO	34	0	0	0.	4.99112E+02	2.03068E-02	-1.50000E+00	1.56868E+00	0.	6.86764E-02	0.
38	34	TO	35	0	0	0.	4.87549E+02	2.00856E-02	-1.10000E+00	1.16294E+00	0.	6.29401E-02	0.
39	35	TO	36	0	0	0.	4.76089E+02	1.99841E-02	4.50000E-01	-4.79175E-01	0.	-2.91746E-02	0.
40	36	TO	45	0	11	0.	4.68156E+02	1.98799E-02	6.60000E-01	-7.02035E-01	0.	-4.20352E-02	0.
41	45	TO	37	0	11	0.	4.68156E+02	1.00000E-02	0.	0.	0.	0.	0.
42	29	TO	39	0	0	0.	5.36868E+02	2.10876E-02	5.40000E-01	-3.61919E-01	0.	1.78081E-01	0.
43	26	TO	38	0	0	0.	5.36859E+02	2.10858E-02	2.79000E+00	-4.98496E-01	0.	2.29150E+00	0.
44	48	TO	43	0	0	6.19444E+02	5.36854E+02	2.10848E-02	8.91420E-01	-4.81979E-01	-4.09440E-01	6.21725E-15	0.
45	40	TO	4	0	0	0.	5.36871E+02	2.16943E-02	-1.05570E+00	7.99327E-01	-5.35788E-02	-3.09952E-01	0.
46	41	TO	40	0	0	0.	5.62286E+02	2.70316E-02	-1.17850E+00	1.07301E+00	0.	-1.05490E-01	0.
47	46	TO	23	0	0	0.	3.88204E+02	1.85426E-02	1.43810E+00	2.95625E+00	0.	4.39435E+00	0.
48	47	TO	27	0	11	0.	5.22722E+02	2.10685E-02	0.	0.	0.	0.	0.
49	23	TO	48	0	0	0.	5.36854E+02	2.10846E-02	4.98596E-01	-4.02873E-01	-2.57482E-05	9.56974E-02	0.
50	29	TO	49	0	0	0.	5.36868E+02	2.10876E-02	0.	1.64542E-07	0.	1.64553E-07	0.
51	26	TO	50	0	0	0.	5.36860E+02	2.10858E-02	0.	1.64556E-07	0.	1.64568E-07	0.
52	51	TO	54	0	0	6.19444E+02	5.36862E+02	2.10857E-02	-1.18133E+00	1.27478E+00	-9.34534E-02	4.44089E-16	0.
53	24	TO	52	0	0	6.19444E+02	5.36856E+02	2.10853E-02	1.03939E+00	-1.03437E+00	-5.01877E-03	5.55112E-17	0.
54	52	TO	53	0	0	6.19444E+02	5.36857E+02	2.10856E-02	1.03937E+00	-1.03436E+00	-5.01805E-03	8.32667E-17	0.

55	54	TO	22	0	0	6.19444E+02	5.36860E+02	2.10854E-02	-1.18135E+00	1.27480E+00	-9.34539E-02	6.66134E-16	0.
56	0	TO	46	0	0	0.	3.88184E+02	0.	0.	0.	0.	0.	0.
57	0	TO	46	0	0	0.	3.88184E+02	0.	0.	0.	0.	0.	0.
58	0	TO	46	0	0	0.	3.88184E+02	0.	0.	0.	0.	0.	0.

CPU TIME = 1.40

JUNCTION NUMBER	SLIP VEL. (FT/SEC)	LIQUID VEL. (FT/SEC)	VAPOR VEL. (FT/SEC)	JCT. FLOW-L (LBM/SEC)	JCT. FLOW-G (LBM/SEC)	SAT. H-L (BTU/LBM)	SAT. H-G (BTU/LBM)	FLOW-WEIGHTED H (BTU/LBM)
1	0.	2.72122E+01	2.72122E+01	6.19444E+02	0.	5.36863E+02	0.	5.36863E+02
2	0.	1.91337E+01	1.91337E+01	6.19444E+02	0.	5.36868E+02	0.	5.36868E+02
3	0.	0.	0.	0.	0.	0.	0.	0.
4	0.	1.97659E+01	1.97659E+01	6.19444E+02	0.	5.36878E+02	0.	5.36878E+02
5	0.	3.64057E+01	3.64057E+01	6.19444E+02	0.	5.36879E+02	0.	5.36879E+02
6	0.	1.91344E+01	1.91344E+01	6.19444E+02	0.	5.36879E+02	0.	5.36879E+02
7	0.	2.34951E+01	2.34951E+01	6.19444E+02	0.	5.36877E+02	0.	5.36877E+02
8	0.	8.03335E+00	8.03335E+00	6.19444E+02	0.	5.36877E+02	0.	5.36877E+02
9	0.	8.03362E+00	8.03362E+00	6.19444E+02	0.	5.36891E+02	0.	5.36891E+02
10	0.	8.03386E+00	8.03386E+00	6.19444E+02	0.	5.36881E+02	0.	5.36881E+02
11	0.	8.03379E+00	8.03379E+00	6.19444E+02	0.	5.36881E+02	0.	5.36881E+02
12	0.	2.34971E+01	2.34971E+01	6.19444E+02	0.	5.36881E+02	0.	5.36881E+02
13	0.	1.91375E+01	1.91375E+01	6.19444E+02	0.	5.36891E+02	0.	5.36891E+02
14	0.	1.91376E+01	1.91376E+01	6.19444E+02	0.	5.36895E+02	0.	5.36895E+02
15	0.	1.66917E+01	1.66917E+01	3.11844E+02	0.	5.36897E+02	0.	5.36897E+02
16	0.	1.64645E+01	1.64645E+01	3.07600E+02	0.	5.36897E+02	0.	5.36897E+02
17	0.	1.66884E+01	1.66884E+01	3.11844E+02	0.	5.36877E-02	0.	5.36877E+02
18	0.	1.64610E+01	1.64610E+01	3.07600E+02	0.	5.36875E-02	0.	5.36875E+02
19	0.	1.66855E+01	1.66855E+01	3.11844E+02	0.	5.36860E-02	0.	5.36860E+02
20	0.	1.64577E+01	1.64577E+01	3.07600E+02	0.	5.36856E-02	0.	5.36856E+02
21	0.	1.97633E+01	1.97633E+01	6.19444E+02	0.	5.36866E+02	0.	5.36866E+02
22	0.	1.91320E+01	1.91320E+01	6.19444E+02	0.	5.36867E+02	0.	5.36867E+02
23	0.	1.00093E+01	1.00093E+01	6.19444E+02	0.	5.36861E+02	0.	5.36861E+02
24	0.	1.00089E+01	1.00089E+01	6.19444E+02	0.	5.36858E+02	0.	5.36858E+02
25	0.	1.23684E+01	1.23684E+01	6.19444E+02	0.	5.36857E+02	0.	5.36857E+02
26	0.	1.66296E+01	1.66296E+01	6.19444E+02	0.	5.36861E+02	0.	5.36861E+02
27	0.	0.	0.	0.	0.	0.	0.	0.
28	0.	0.	0.	0.	0.	0.	0.	0.
29	0.	0.	0.	0.	0.	0.	0.	0.
30	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.
32	0.	0.	0.	0.	0.	0.	0.	0.
33	0.	0.	0.	0.	0.	0.	0.	0.
34	0.	0.	0.	0.	0.	0.	0.	0.
35	0.	0.	0.	0.	0.	0.	0.	0.
36	0.	0.	0.	0.	0.	0.	0.	0.
37	0.	0.	0.	0.	0.	0.	0.	0.
38	0.	0.	0.	0.	0.	0.	0.	0.
39	0.	0.	0.	0.	0.	0.	0.	0.
40	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.
42	0.	0.	0.	0.	0.	0.	0.	0.
43	0.	0.	0.	0.	0.	0.	0.	0.
44	0.	1.23686E+01	1.23686E+01	6.19444E+02	0.	5.36855E+02	0.	5.36855E+02
45	0.	0.	0.	0.	0.	0.	0.	0.
46	0.	0.	0.	0.	0.	0.	0.	0.
47	0.	0.	0.	0.	0.	0.	0.	0.
48	0.	0.	0.	0.	0.	0.	0.	0.
49	0.	0.	0.	0.	0.	0.	0.	0.

EXPJP4/C E (73) EXPERIMENTAL RELAP4 TYPE PROGRAM CONFIGURATION CONTROL NO
LOFT L135-A22 L1-3A POSTTEST ANALYSIS 05/04/77

CPU TIME = 1.42

JUNCTION NUMBER	SLIP VEL. (FT/SEC)	LIQUID VEL. (FT/SEC)	VAPOR VEL. (FT/SEC)	JCT. FLOW-L (LBM/SEC)	JCT. FLOW-G (LBM/SEC)	SAT. H-L (BTU/LBM)	SAT. H-G (BTU/LBM)	FLOW-WEIGHTED H (BTU/LBM)
50	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.
52	0.	1.00092E+01	1.00092E+01	6.19444E+02	0.	5.36861E+02	0.	5.36861E+02
53	0.	4.00036E+00	4.00036E+00	6.19444E+02	0.	5.36858E+02	0.	5.36858E+02
54	0.	4.00042E+00	4.00042E+00	6.19444E+02	0.	5.36859E+02	0.	5.36859E+02
55	0.	1.00090E+01	1.00090E+01	6.19444E+02	0.	5.36859E+02	0.	5.36859E+02
56	0.	0.	0.	0.	0.	0.	0.	0.
57	0.	0.	0.	0.	0.	0.	0.	0.
58	0.	0.	0.	0.	0.	0.	0.	0.

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