

International Agreement Report

NUREG/IA-0050

ICSP-LP-FP-1

TRAC-PF1 Code Assessment Using OECD LOFT LP-FP-1 Experiment

Prepared by F. J. Barbero

Centro de Investigaciones Energeticas Medioambientales y Tecnologicas Consejo de Seguridad Nuclear Madrid, Spain

Office of Nuclear Regulatory Research U.S. Nuclear Regulatory Commission Washington, DC 20555

April 1992

Prepared as part of The Agreement on Research Participation and Technical Exchange under the International Thermal-Hydraulic Code Assessment and Application Program (ICAP)

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ABSTRACT

Document resumes the final calculations of the thermalhydraulic aspects of the OECD LOFT-LP-FP-1 experiment, with emphasis in those related with the assessment of the TRAC-PF1 code.

LOFT LP-FP-1 experiment was carried out at the LOFT facility in INEL, sponsored by the OECD.

Code used for this simulation was TRAC-PF1/Mod 1 (version 11.0) running on a CDC Cyber 830 (0.5. NOS-BE).

14.

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FOREWORD

This report represents one of the assessment application calculations submitted in fulfilment of the bilateral agreement for cooperation in thermalhydraulic activities between the Consejo de Seguridad Nuclear of Spain (CSN) and the United States Nuclear Regulatory Commission (US-NRC) in the form of Spanish contribution to the International Code Assessment and Applications Program (ICAP) of the US-NRC whose main purpose is the validation of the TRAC and RELAP system codes.

The Consejo de Seguridad Nuclear has promoted a coordinated Spanish Nuclear Industry effort (ICAP-SPAIN) aiming to satisfy the requirements of this agreement and to improve the quality of the technical support groups at the Spanish Utilities, Spanish Research Establishments. Regulatory Staff and Engineering Companies, for safety purposes.

This ICAP-SPAIN national program includes agreements between CSN and each of the following organizations:

- Unidad Eléctrica (UNESA)
- Unión Iberoamericana de Tecnología Eléctrica (UITESA)
- Empresa Nacional del Uranio (ENUSA)
- Centro de Investigaciones Energéticas y Medioambientales (CIEMAT)
- TECNATOM
- LOFT-ESPAÑA

The program is executed by 12 working groups and a generic code review group and is coordinated by the "Comité de Coordinación". This committee has approved the distribution of this document for ICAP purposes.

1. INTRODUCTION

The fission products release test LP-FP-1 was conducted on Dec 19,1984. The first trial to conduct the test on Dec 12 had failed because of a defect in the position indicator of the hot leg QOBV (Quick Opening Blowdown Valve). The test was terminated by the PPS (Plant Protection System) action at about 10 s and the transient ended at 50 s. This test is designated as LP-FP-1A.

The thermal-hydraulic transient of the test LP-FP-1 has been initiated by the reactor scram and opening of the QOBV's with one second dalay. This experiment simulates large : eak LOCA in the cold leg with delayed ECC injection to allow pin rupture and fission products release.

LP-FP-1 was specified to be similar to LOFT experiment L2-5 and OECD LOFT experiments LP-02-6 and LP-LB-1, except for initial primary pump operation, closure of the BLCL valve and ECCS operation for core recovery and fuel cladding quench.

From the thermal-hydraulic point of view, the following objectives were considered achievable:

- Determine system thermal-hydraulics and core thermal response for initial and boundary conditions similar to a large break design basis LOCA leading to and limited to fission product release from the fuel cladding gap region.
- Determine the fission product retention effectiveness of the ECCS operating in a mode representative of a German

PWR ECCS in nominal (best estimate) conditions for combined hot leg and cold leg injection.

During the conduct of FF-1, most of the water in the accumulator B line was unintentionally injected into the upper plenum during the blowdown. This water distorted the thermal behaviour of the core and delayed the burst of the pressurized fuel pins by more than 200 s. Also more than 60 % of the rods that were planned to burst, remained intact. the thermal-hydraulic conditions in the core at the time of fission product release are far less definite than was expected. In order to be able to analyse the test results and to carry out post-test calculations using advanced thermal hydraulic codes, one has to know the amount and the rate of water injected.

We have selected a history for this unexpected injection, based on previous studies. We have run a simulation of 400 s, covering blowdown, heat-up and reflood phases in order to compare the obtained results with the data measured along the experiment, both hydraulic and thermal variables.

A brief description of the LOFT facility, system configuration for LP-FP-1 experiment and test evolution are included in Section 2, together with initial conditions and operational set points.

Section 3 contains the input model for TRAC-PF1 code and nodalization details. In Section 4, results obtained are checked against the measured data for a set of important parameters showing main physical phenomena that occurred during the experiment.

•

Run statistics in different regions of the transient are shown in Section 5.

Conclusions and recomendations arising from the study are resumed in Section 6.

Apendim A resumes the instrumentation nomenclature and location for the LOFT system, related with the assessment.

2. FACILITY AND TEST DESCRIPTION

2.1 System configuration

The LOFT facility was designed to simulate the major components and system responses of a commercial PWR during " a LOCA. The experimental assembly includes five major subsystems which have been instrumented in such a way that the system variables can be measured and recorded during a LOCA simulation. The subsystems include:

- Reactor vessel
- Intact loop
- Broken loop
- Blowdown supression tank (BST)
- ECC system

Complete information on the LOFT system is provided in ref [1].

The arrangement of the major LOFT components is shown in Figs 2.1 and 2.2. The intact loop simulates three loops of a commercial four-loop PWR and contains a steam generator, two primmery coolant pumps in parallel, a pressurizer, a venturi flowmeter and connecting piping.

The broken loop consists of a hot and a cold legs, each of which are connected to the reactor vessel and the BST header. Primary coolant pump and steam generator simulators were installed in the broken loop hot leg to provide the flow resistence normally represented by these components in a commercial PWR. Each broken leg contains a quick-opening blowdown valve, a recirculation line, an isolation valve, an orifice to represent the break plane, and connecting piping. The recirculation lines establish a small flow through the broken loop to maintain hot fluid conditions in these loops which otherwise are stagnant prior to initiation of the experiment.

The LOFT reactor vessel, shown in Figure 2.3 has an annular downcomer, a lower plenum, lower core support plates, a nuclear core and an upper plenum. The downcomer is connected to the cold legs of the intact and broken loops and the upper plenum is connected to the hot legs.

The core consists of 1300 enriched uranium fuel rods arranged in five square and four triangular fuel assemblies. The fuel rods were designed to commercial PWR specifications except that they are only 1.68 m long and several fuel rods have special instrumentation. Twenty-four fuel rods were enriched to 6 % (wt) U235, and twenty-two of these were prepressurized at cold conditions to 2.41 MPa. The other two fuel rods were unpressurized and were designed to be easily removed for PIE. All other fuel rods in the core were unpressurized and enriched to 4 % (wt) U235. Fig 2.4 shows the fuel cladding thermocouple locati ns and Fig 2.5 shows all the central fuel assembly instrumentation, as well as the locations of the two fuel rods which were removed for PIE. Fig 2.6 shows the location for the thermocouples in the upper plenum. Nomenclature and location of the instruments may be seen in Apendix A.

The ECCS in FP-' was designed to simulate the hot leg and cold leg ECC injection rates representative of the ECCS operation in a KWU 1300 Mwe reference PWR under nominal conditions. As mentioned, injection have to be delayed to allow fuel rupture and fission product release and transport in a vapour environment. Accumulator A was rooted to the intact loop cold leg (Fig 2.2) and was used to inject ECC scaled to the reference FWR best estimate cold leg accumulators and LFIS injection based on power scaling (1:100).

Accumulator B was rooted to the upper plenum (Fig 2.2) near the top of the center fuel assembly through a special piping configuration conveniant to the LOFT system and not related to the reference PWR. Accumulator B was designed to inject ECC scaled to the reference PWR.

As the injection line enters the pressure vessel, it penetrates through the central fue! module and branches in the upper structure (see Fig 2.7). At station 203.17 (3.44 m) above reactor vessel bottom and about 42 cm above the top of fuel pins, 6 reflood injection nozzles are positioned to inject inside the flow shroud in the central fuel module. At station 191.82 (about 13 cm above the top of fuel pins) another 8 reflood nozzles are positioned in such a way as to inject outside the flow shroud and towards the peripheral elements. Details may be found in reference [2].

Accumulator B is connected to the pressure vessel by three lines. Injection in the hot leg, in downcomer or in the upper plenum can be activated. Direct injection in the downcomer is only activated in case of PPS as hapenned in LP-FP-1A. The same lines are also used by the low pressure injection system (LPIS). See design of the injection line in Fig 2.8.

The upper plenum injection valve CV-P120-54 which is very near to the pressure vessel was then opened about 90 s before the test while the far valve CV-P120-33 was kept close. This means that the whole line between that valve and the nozzles in the upper plenum was subjected to the system pressure of 14.77 MPa during a period of 90 s before the test.

No accumulator blowdown and no venting of the primary system were performed after the failed experiment and no precaltions were taken to prevent nitrogen injection. The injection line of accumulator B included large amount of nitrogen before system pressurization in the transient phase of FP-1. This nitrogen was then compressed to system pressure during the 90 s after opening CV-P120-54 and the gas bubble was moved towards the accumulator B, behind the flowmeter FE-P120-33.

The LOFT steam generator, located in the intact loop, is a vertical U-tube-design steam generator. Operation of the secondary coolant system approximates that of a commercial PWR.

2.2 Test description

LP-FP-1 was defined to consist of four distinct phases which were designated as: fuel preconditioning, pretransient, transient and postransient. The four phases were continous and had specific beginning and ending definitions.

The purpose of the fuel preconditioning phase, in conjunction with the pretransient phase, was to subject the 24 6 % (wt) enriched fuel rods in the new center assembly to the minimum required burnup condition of 1175 MWD/MTU prior to conducting the transient. This burnup is equivalent to power operation at a maximum linear heat generation rate of 52.2 Kw/m for 20 days on the enriched fuel rods. The preconditionning phase started at the begining of plant heatup prior to power operation and ended with termination of power operation after the calculated burnup fraction had been achieved. An additional period of preconditioning beyond that required for minimum burnup occurred after the first attempt of conducting the experiment. The delay of one week resulted in three more days of power operation, reaching 1417 MWD/MTU.

The pretransient phase consisted of a reactor shutdown interval of approximately five days, followed by a power operation interval. The final plant preparations were completed during the reactor shutdown interval. The power operation interval established the required minimum decay heat level (86 % of DH in commercial FWR fuel rods after one year of at 52 Kw/m), and the initial conditions for conducting the experiment. The requirement to build up the short lived

fission product inventory of 40 Equivalent Fission Product Hours was achieved by 70 %. The pretransient phase started at the termination of power operation in the preconditioning phase and ended with initiation of the transient by a reactor scram.

The transient phase of the experiment started with reactor scram, followed by the opening of the QOBV's and ended at the initiation of the closure of the broken loop hot leg (BLHL) QOBV. The BLCL-QOBV was closed at 68 s to ensure that positive cors vapour flow existed for the transport of fission products, released from the fuel rod gap, along the intended path for fission product measurements. The unplanned injection of water in the upper plenum due to the expansion of noncondensable gases in the injection line from accumulator B have caused a delay in pin rupture, core reflood and system recovery, which commenced at 344 s instead of the expected value of 100 s on a peak cladding temperature trip of 1037 K in the peripheral fusl assemblies was accomplished with cold leg and upper plenum accumulator ECC injection. The maximum cladding temperature measured in the central fuel assembly was 1210 K.

The final (postransient) phase consisted of a 12 h time from the closure of the BLHL-QOBV, for measuring the redistribution of fission product inventory in gas and liquid in the BST and PCS.

The infiial conditions are specified in Table 2.1 together with the measured system conditions inmediately prior to the

transient phase of LP-FP-1. The operational setpoints specified are listed in Table 3 together with the measured values. Differences between specified and operational setpoints reflect in some cases the time elapsed between operator action and system response.

As shown in Table 2.2, the break apertures was taken as the initiation time of the experiment. The reactor was scrammed one second prior to the initiation of blowdown. This was done for avoiding early departure from nucleate boiling (DNB) on the 6 % fuel rods which would lead to excessive cladding temperatures early in the transient. The blowdown was the initiated by opening the QOBVs and the pumps were turned off and decoupled from their flywheels within 1 s.

The PCS quickly depressurized to saturation pressure in the upper plenum, broken hot and cold legs by 0.1, 1.1 and 3.5 s, respectively. A bottom-up partial core quench occurred between 6 and 7 s, followed at 12 to 18 s by a total top-down quench of the central fuel assembly. The lower part of some of the peripheral fuel rods did not completely quench at this time. This total top-down quench was the 1st indication thet the upper plenum injection line was leaking. Th _ unplanned injection of water in the upper plenum doesn't influence the pressure history.

The cold leg QOBV was closed by 58 s, forcing all break flow out the cold leg and core flow from bottom to top. A sustained heatup of most (not all) of the core started at 90 s, resulting in the rupture of some of the enriched fuel

rods beginning at 325 s. The ECCS was initiated at 344 s and the entire core was quenched by 365 s. A 12 h postexperiment sampling period followed and the experiment was then terminated with plant cleanup and sample removal for PIE. TABLE 2.1. Initial conditions for experiment LP-FP-1

	Specified ^(a) Value	Measured Value
PRIMARY COOLANT SYSTEM		
Core delta T (K)		14.4 ± 0.1
Primary system pressure (hot leg) (MPa)	14.95 ± 0.1	14.77 ± 0.07 ^(b) (-1.2 %)
Hot leg temperatura (K)	577 ± 1.1	577.6 ± 0.8
Cold leg temperatura (K)		563.2 ± 1.1
Mass flow intect loop (kg/s)	479 ± 19	486.7 ± 2.5 ^(b) (+1.6 %)
Boron concentration (ppm)		612 ± 15
Pr/mary coolant pump injection (both pumps) (L/s)	0.127 ± 0.016	0.126 ± 0.003
REACTOR VESSEL		
Power level (MW)	38 ± 1	37.0 ± 1.2 ^(b) (-2.6 %)
Maximum linear heat generation rate (kW/m)	∿52	51.2 ± 3.6
Control rod position 'above full-in position) (m)	1.37 ± 0.01	1.38 ± 0.002
STEAM GENERATOR		
Secondary system pressure (MPa) .		6.41 ± 0.08
Water level (m) (c)	0.19 ± 0.05	0.15 ± 0.06 ^(b) (-21 %)
PRESSURIZE		
Liquid voicas (m ³)		0.66 ± 0.02
Steam volume		0.27 ± 0.02
Water temperature (K)		616.2 ± 5.8
Pressure (MPa)		14.73 ± 0.11
Liquid level (m)	1.12 ± 0.1	1.23 ± 0.04 ^(b) (+9.8 %)
BROKEN LOOP		
Cold leg temperature (K)		561.4 ± 1.5
Hot leg temperature (K)		564.8 ± 1.8

Specified ^(a) Value	Measured Value	
1.27 ± 0.127	1.52 ± 0.	06 2) (+19.6 %
	47.90 ± 2.	11
	354.4 ± 3	
	99.5 ± 3	
	3898 ± 15	
	Specified ^(a) <u>Value</u> 1.27 ± 0.127	Specified (a) Value Measured Value 1.27 ± 0.127 1.52 ± 0.0 47.90 ± 2.0 354.4 ± 3 99.5 ± 3 3898 ± 15

EMERGENCY CORE COOLING SYSTEM

... / ...

Borated water storage tank tem- perature (K)	303	2	3	303.4	±	7		
Accumulator A liquid level (m)	2.15	1	0.03	2.11	*	0.01	2)	(-1.8 %)
Accumulator A stardpipe position (above inside bottom of tank) (m)				0.4	*	0.03		
Accumulator A pressure (MPa)	4.14	+1	0.17	4.30	*	0.06	2)	(+3.8 %)
Accumulator A liquid tempera- ture (K)	303	:	3	300	±	6 2)		(-0.99 %)
Accumulator B liquid level (c)	2.1	+	0.03	2.08	t	0.01	2)	(-0.9 %)
Accumulator B pressure (MPa)	4.16	ż	0.17	4.26	ż	0.06	2)	(+2.8 %)
Accumulator B liquid tempera- ture (K)	303	+1	3	308	+1	6 2)		(+1.6 %)

(a) If no walue is listed, non was specified.

(b) These values were out of specification.

(c) Steam generator liquid level referenced to 2.95 m (116 in.) above top of tube sheet.

TABLE 2.2. Operational setuoints

Event	Specified (s)	Actual (s)
Reactor scram	1.0 ± 0.025	-0.99 ± 0.01
QOBV open	0	0
Primary pumps turned off	1.25 ± 0.25	0.91 ± 0.01
FPMS isolation valve opened	29 ± 2	29.2 ± 0.1
BLCL QOBV closed	49 ± 5	62.5 ± 0.1
FPMS incore isolation valves closed (a)	341	340.8 ± 0.05
Accumulator A & B injection started (b)	347 ± 1	344.3 ± 0.05
FPMS BLHL isolation valve closed (c)	371 ± 2	371.7 ± 0.05
Accumulator injection stopped ^(d)	507 ± 1	506.5 ± 0.5
HPIS injection starts (d)	507 ± 1	515.8 ± 0.5
BLHL QOBV closed (e)	<527	535 ± 1
QOBV isolation valves closed (f)	>527	695 2 4

(a) Defined as when 3 peripheral thermocouples measured 1037 K (1408 °F).

(b) 5 to 7 & after FPMS incore isolation valves closed.

(c) 30±2 s after FPMS incore isolation valve closure.

(d) 160 s after accumulator injection initiation.

(e) Within 20 s after accumulator injection termination.

(f) After closure of BLHL QOBV.



Figure 2.1. Axonometric representation of LOFT system



Figure 2.2. Emergency Core Cooling System



Figure 2.3. Loft rector vessel



Figure 2.4. Fuel cladding thermocouples in core



Figure 2.5. Central fuel assembly ins*rumentation



Figure 2.6. Upper plenum thermocouples



Figure 2.7. Accumulator B upper head injection



Figure 2.8. Accomulator B injection line

3. INPUT MODEL AND NODALIZATION

3.1 Code

Code used was TRAC-PF1/Mod 1 (version 11.0), installed on CDC Cyber 830.

The Transient Reactor Analysis Code (TRAC serie P) is an advanced best-estimate code for handling PWR accidents, having the capability to make a 3-D model in the reactor vessel. Code uses full two-fluid model with two-steps numerics in the onedimensional components and may also handle a noncondensible gas field.

TRAC has the capability to treat the following physical phenomena:

- ECC downcomer penetration and bypass, including the effects of countercurrent flow and hot walls
- Lower plenum refill with entrainment and phase separation effects
- 3. Bottom-flood and falling-film reflood quench fro-ts
- Multidimensional flow patterns in the core and plenum regions
- Pool formation and countercurrent flow at the upper core support plate region
- 6. Pool formation in the upper plenum
- 7. Steam binding

- 8. Average rod and hot rod cladding temperature histories
- 9. Alternate ECC injection systems. including hot leg and upper head injection
- Direct injection of subcooled ECC water, without artificial mixing zones
- 11. Critical flow (choking)
- 12. Liquid carryover during reflood
- 13. Metal-water reaction
- 14. Water-hammer effects
- 15. Wall friction losses
- 16. Horizontal stratified flow, including reflux cooling

Code has been used without any modification in models or components. No multiplicative factor for minimum stable film boiling temperature (MSFBT) has been introduced. Nodalization of the LOFT system for the FP-1 test may be seen in Figures 3.1 to 3.6 and Table 3.1.

Input deck for determining the plant steady state (actually "a first processing by TRAC), is in Table 3.2.

Paactor vessel is modelled as three-dimensional due to the non-homogeneous phenomena registered during the experiment. 3-inner rings represent the core and the 4th downcomer, which extends from level 3 to level 11. Core covers levels 4 to 8 and loops insert at level 11.

First ring simulates the central (11 x 11) fuel assembly and around, a zircaloy shroud. Second and third rings are the internal parts of the peripheral bundles. Vessel is nodalized in 192 cells.

Bypasses have been introduced in the nodalization for getting a better calculation of core liquid fraction (underestimated in pretest calculations). Description and calculations of these bypasses may be found in reference (3):

- 4 bypasses connecting lower and upper plena, carrying
 4.7 % of the flux through the intact loop in the steady state.
- 3 bypasses from downcomer to lower plenum, carrying 4.1 % of the above mentioned flux.

The existence of 1300 rods in the core was simulated using 18 "theoretical" TRAC rods:

- 12 standard rods, representing 4 % enriched fuel rods, one per internal cell.
- 4 rods with peak factor 1.25, simulate the 24 6 % fuel rods, one per cell in the central ring.
- 1 rod in cell 8 with peak factor 1.094
- 1 rod in cell 12 with peak factor 1.236

Rod axial dynamic renodalization factor is fixed in a value of 11, instead the initially selected of 60, due to high running times.

Decay heat used has been obtained from the previous power and burn-up histories and may be seen in Table 3.3.

Figure 3.4 shows the intact loop nodalization, including pressurizer, primary side of SG and ECCS with the roots of LPI and HPI systems:

- Accumulator A has been simulated as a PIPE composiont instend an ACCUM component for avoiding calculation time. Flow rates correspond to those of a 1300 MW scaled KWU reactor.

- Cold leg is fractioned in several cells for helping follow condensation when the accumulator begins to inject.

- Pressurizer has been simulated also as a PIPE for the same reason as before. FILL connected at the upper end represents a relief value.

Steam generator secondary side is modelled as a STGEN component, including secondary downcomer, main steam line and steam control value (see Figure 3.5).

The loop is shown in Fig 3.6 where secondary sides of TERS represent Reflood Assist Bypass Valve, connecting both the Monormal Strain and the simulators of steam generator of pumpr, is nodalized in detail but the cold leg has been ined using the minimum number of nodes, due to the TRAC ability for modelling the choked flow.

Accumulator B has been nodalized as 12 independent FILLs (one for each cell) rooted on the vessel axial node 9, where the upper head injector is located. Each FILL has the same injection history (see Fig 3.7 and Table 3.4) but different weights. History has been defined to be azimuthally symmetric but non-homogeneous from one ring to another. During the blowdown and heatup phases, these weights are:

with the	Mark and A	Weight
Ring	werduc	bet cerr
****	*******	**********
1	0.33	0.0825
2	0.67	0.1675
3	Ο.	0.

Planned injection from 345 s on, follows the measured data from accumulators and the corresponding weights are:

Weight Ring Weight per cell 1 0.20 0.05 2 0.34 0.085 3 0.46 0.115

Unexpected injection history from accumulator B line has been selected through several parametric studies from different authors and from the data registered by thermocouples such as TE-5UP-004 (see Fig 3.8), guide tubes and flowmeter FE-P120-31. Main characteristics of the selected injection were:

- Bulk of mass injection starts at 16 s, being preceeded of a slight mass flow of coolant.
- Duration of this injection expands up to 100 s.
- Mass flow doesn't cease during the heatup phase.
- A second injection peak exists al 270 s.
- Total unplanned mass water injected is 400.5 Kg.

Trips defined in TRAC to simulate the events occurred during the experiment, were:

t(s)	Event	Components
Ö .	SCRAM	50
1.	QOBVs aperture	32,43
2.	Pumps disconnect	4,5
63.5	QOBV (BLHL) closes	s 43
345.	Reflood begins	15

Accumulator B and BREAKS are inhibited during the plant steady state calculations. When this state is reached, code starts the transient using restart data and the input deck in Table 3.5.

1.2 . 4.

	Component	Description	Number	of Cells	
and the subfrage bases of the mediate	Number	Description	Primary	Secondary	
*	5.5	Vet leger TSP			
TUCACE	1.1	DOT TER	°	3	
Loop	2	Steam generator STGEN	10	5	
	-	pipingTEE	3	3	
	4	PumpPUMP	2	-	
	5	PumpPUMP	2		
	6	Pump dischargeTEE	2	1	
	7	Cold leg-TEE	9	1	
	8	PressurizerPRIZER	3		
Steam	21	Header-TEE	2	1	
Generator	22	DowncomerTEE	4	1	
Secondary	23	Exit valveVALVE	6		
	24	Water inletFILL		-	
	25	Steam exitBREAK	-		
Vessel	50	Vessel			
		Axial levels	12		
		Radial segments	4	192	
		Azimuthal sectors	- 4		
Broken	31	Hot legTEE (a)	26	3	
Loop	41	Cold legTEE ^(a)	2	2	
	32	Hot leg break-BREAK	-		
	42	Cold leg breakBREAK		~	
	43	Cold leg breakVALVE	4	-	
Emergency	12	HPI connection and pipingTEE.	1	1	
Core	13	LPI connection and pipingTEE.	1	1	
Cooling	1.4	Accumulator check valveVALVE.	2	*	
Systems	15 16	Accumulator-ACCUM	3	1	
Upper Plenum	81-92	Upper plenum connections, Cells 1 through 12, Vessel Level 9PIPE	1		
5000	61.75	Honer alenum filleFILL			
2003	01-12	while hrough rereations in the			

TABLE 3.1. Nodalization elements of LOFT system

 (a) Secondary sides of hot and cold bloken loops represent reflood assist bypass lines.
TABLE 3.3. Decay heat in LP-FP-1

t(s)	DH (MW)	t(s)	DH (MW)
0. 0.3 0.9 1.28 1.38 1.40 1.46 1.52 1.59 1.61 2. 3.	37. 32.425 9.875 5.514 3.990 3.299 2.996 2.648 2.332 2.271 2.155 2.062	4. 6. 8. 10. 15. 20. 30. 40. 60. 100. 200. 300. 10. E4	1.987 1.875 1.792 1.726 1.605 1.518 1.396 1.309 1.136 1.070 0.950 0.840 0.053

TABLE 3.4. Unplanned injection history

-

t(s)	Mass flow rate (Kg/s)	Integrated flow (Kg)
0.	0.	0.
0.45	1.0	2.9
1.	0.67	6.5
2.	0.67	6.8
16.	7.2	16.2
38.	5.9	102.8
40.	0.5	115.9
100.	0.5	292.9
175.	0.5	311.6
255.	0.5	351.7
265.	0.5	354.2
271.	0.5	359.6
277.	0.5	366.5
345.	0.5	400.5



Figure 3.1. Section of LOFT reactor



Figure 3.2. Vessel nodalization



- --- TRAC fluid cell boundaries

Figure 3.3. Simulated rods location





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Figure 3.5. Steam generator secondary side nodalization

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Figure 3.6. Broken loop nodalization



Figure 3.7. Unexpected injection history

WY22 EFON IKC/2EC)



Figure 3.8. TE-5UP-004 measurements

4. RESULTS

4.1 Steady state

Plant steady state conditions have been determined after . 52 s of "pseudo-transient" for starting the transient phase calculations, based on the referred input model.

Table 4.1 resumes the final values for a representative set of variables, compared with the equivalent measured ones. The agreement is good in general, except in the case of the steam generator dome pressure, which shows a minor convergence tate. The main consequence of this fact is to have a slightly higher temperature in the intact loop (mantaining differences between hot and cold legs), without influence on the transient evolution.

Convergence criteria used (also in transient) have been:

- Inner convergence : 5.0E-6
- Outer convergence : 5.0E-4
- Steady state convergence : 1.0E-5
- Maximum number of iterations in vessel : 50
- Maximum number of outer iterations : 10
- Maximum number of steady state iterations : 25

Total calculation time for this 92 s of pseudo-transient has been 89400 s of CPU.

4.2 Transient

We analize in this chapter, results obtained after simulating 400 s of transient, compared with measured data along the experiment. In the case of hydraulic variables, comparison is done between registered data and the variable calculated in the TRAC node related to the detector actual location. For cladding temperatures, code provides information at fixed rod heights; measurements for each thermocouple is compared with the calculations in two adjacent levels and, in some cases, using a cosine law interpolation.

Analysis is mainly directed to explain the asymmetry in the damaged rods distribution and to determine vessel thermalhydraulic conditions during the fuel rod rupture period (325-345 s), in connection with fission products generation and transport.

Start time of simulation begins at scram time in order to take into account its effects on the plant thermal-hydraulic state, mainly on rod temperatures. From simulation start point through the instant of GOBV apertures, cladding temperatures decrease remarkably, while hydraulic variables remain nearly constant.

4.2.1. Exit flows

When QOBVs open, system pressure drops suddenly due to the subcooled flow through the breaks. Gode slightly overestimates $(\sim 7 \ \%)$ system pressure up to 16 s, when becomes lower than the observed one, partly because of the unplanned injection esistence. The final pressure in the blowdown phase is well calculated (see Fig 4.1).

Figures 4.2 to 4.5 show mass flow rates through the loops, and figures 0.6 to 4.9 the corresponding densities.

Sudden aperture of QGBVs in the broken loop drives the fluid, initially subcooled, to flow out at high velocity, higher in the cold leg, a way with a lower resistence. As pressure continues decreasing, fluid in the broken loop suffer saturation conditions, reaching critical velocity and reducing the mass flow rate. Simultaneously in the intact loop, flow decreases but at lower rate so there is a net positive mass inventory in vessel, causing a bottom-up quench, starting at 4.5-5 s in simulation time (1 s less in real experiment time) (see Fig 4.10 for CORE).

Mass flow rate in the ILHL shows a good agreement with FR- PC-205 detector measurements up to 7 s, when code calculates a back flow from the pressurizer and steam generator. Total mass implied in this flow is about 500 Kg in 18 s, which causes a top-down guench. Fig 4.6 is a plot of the density in ILHL showing two peaks, one for each mentioned back flows (pressurizer and steam generator). First peak is underestimated and delayed, but the second one is simulated properly.

In the ILCL, there is no reference data, because detectors have been removed in this experiment.

Agreement of mass flow rates in BLHL with experimental data is exceptionally good, matching the peaks caused by the men-_ tioned quenches.

Code underestimates the mass flow rate in the BLCL during the initial phase, causing a greater mass inventory and, consequently, a greater pressure as Fig 4.1 has showed (always in the range of the experimental data uncertainties).

Vessel liquid fraction for upper plenum, core and lower plenum may be seen in Fig 4.10, where all the referred initial hydraulic effects can be observed in timing and relative magnitude.

4.2.2 Initial quenches

Loss of coolant and depressurization have as a direct consequence the interruption of fission processes and a drastic fall in the capability of cooling the fuel rods, from now on producing only decay heat.

Figures 4.11 to 4.14 show the evolution of cladding temperatures for the simulated 6 % fuel rods 13, 14, 15 and 16, at heights 0., 0.305, 0.533, 0.762, 1.219 and 1.676 m, during the blowdown phase. Fig 4.15 to 4.18 show, for the same rods and heights, the evolution in the whole transient (blowdown, heatup and reflood phases).

The explanation of the behaviour in cladding temperatures, can be derived from the comparison between this TRAC calculated variables and the corresponding measurements, such as in figures 4.19 and 4.20.

Code calculates an initial rod dry-out beginning at about 3 s (depending on the level). This first heat-up brings cladding temperatures up to the minimum stable film boiling temperature (MSFBT) or beyond, for almost the whole rod surface. A first (bottom-up) guench stops the rise in temperatures in the bar, but ign't able to destroy the film, as the experiment has showed.

After this slight cooling, temperature grows again (in film boiling regime) through the second quench (top-down at 16 s), which rewets all the bar, remaining yet in the same heat transfer mode, while experimental data show a second quench dropping the cladding femperature to saturation. Code predicts

a maximum temperature 2 or 3 s earlier than in the experiment.

Thermocouples remain at saturation several second, but a third dry-out occurs, irregular in timing and magnitude. An unexpected injection, actually non-homogeneous and asymmetric ends this phase. Code responds to the simulated injection only decreasing slowly cladding temperatures and, in some cases (as the 4 % fuel rods in central ring and 6 % fuel rods in cell 3) quenching the whole rod and getting the saturation temperature in the surface, when the MSFBT is reached, but in times delayed up to 40 s, compared with the measured in the experiment.

4.2.3 Heat-up

After the blowdown phase and under the effects of a decreasing unexpected injection, calculated cladding temperatures for rewetted rods begins to departure from nucleate boiling in time very near to the observed. Several thermocouples - (such as 5GO8 or 5IO5) undergoes particular guench situations reaching the DNB point very late. Code, of course, cannot predict these special cases because simulated injection is defined to be symmetric.

DNB point is exceptionally well matched in rods 5G08, 5111, 5E09 and 4G14, all of them starting from saturation.

Calculated mean heating rate, from DNB to reflood point, for 6 % fuel rods is about 3 K/s at peak power elevation, being 4-5 K/s a typical value for the initial rate. Calculated values are very near to measured data.

In those cases when cladding is in film boiling regime, the slope is new ly the same or lower, but starting at temperature res 200-300 K higher (see figure 26).

The effects of a second peak of injected water at 270 s. which provides about 12 Kg of coolant, are seen as a little decrease of 10-15 K in cladding temperatures. Actually, this was distributed in a very chaotic way, such as several thermocouples showed (including those in guide tubes).

Heat-up follows steadily from this point through the simultaneous injection from accumulators A and B at 345 s. Table 4.2 resumes the maximum cladding temperatures reached in the TRAC simulated rods at peak power elevation (27 inch). Marked values correspond to those rods which remain in film boiling regime during the whole transient. Fig 4.23 to 4.25 show the behaviour of those instrumented 6 % fuel rods which ruptured, compared with the corresponding TRAC calculations. In the case of 5G11, the agreement is exceptionally good, because of heat-up starts from saturation.

For peripheral rods (Fig 4.26), when the simulated rod has descended from film boiling regime, the fitting in the final hest-up phase is successful.

Thermocouples cited above, show succesful fits between calculations and measured data along the final heat-up phase. In the case of 5G08 (4 % enriched fuel rod), predicted cladding temperature is lower than the registered during the final heat-up phase, so it's possible that the actual temperature in central element during the rod rupture period were slightly higher than the calculated one. This comment is derived from only one 4 % enriched rod and must be seen as an hypothesis.

4.2.4. T/H conditions during rod rupture period

Results from TRAC shows that all the hydraulic variables were nearly constant during the period in which, eight 6 % fuel rods ruptured (325-345 s).

A small quantity of water from accumulator B line was falling over the element during this phase as some detectors showed (see Fig 3.8 for TE-5UP-004). We are feeding the system with 0.5 Kg/s of coolant in this period, which flows down among the rods, vaporizing partly.

Tables 4.3 to 4.4 resume the mean (ring averaged) vapor and liquid behaviour during the rod rupture period, when eight 6 % fuel rods failed. Fig 4.27 shows the flow patterns (also during rupture period, when 8 - 6 % fuel rods failed. Figure averaged per ring) through the vessel.

One may see two possible and alternative paths for the generated fission products, both starting at peak power elevation (where there is a stagnation point) through BLHL:

- Ascending from this point to the upper plenum
- Descending from peak power elevation to the lower plenum and then, ascending through the peripheral bundles in ring 3.

Vapor in the upper plenum has a very asymmetric behaviour (Fig 4.28 and 4.29), which may be explained by the presence of the hot legs. Those cells near to the cold legs have near identical values.

In second ring (inner parts of peripheral bundles), vapor is nearly stagnant during this period.

4.2.5. Combined injection

From 345 s on, both accumulators inject coolant for system recovery. Injection caused dramatic oscillations in all plant variables, except on cladding temperatures which drop steadily to the moment when the MSFBT is reached and the film is destroyed. Quenching is nearly instanteneous but 'appens with a great delay respect to the measured final quench times. Enriched fuel rods (6 %) doesn't have completed the rewetting phase at 400 s in TRAC calculations.

Some other characteristics of the reflood period are:

- Core liquid fraction rise from 0. to 0.8 at a rate of 4 Kg/s (see figure 4.30).
- Vapor temperature in the core, decreases at a rate of about 6.5 K/s near the peak power elevation.

- Cooling rates for cladding temperatures are about:

7 K/s for 4 % enriched fuel rods in central element.
10 K/s for 6 % enriched fuel rods in central element.
10 K/s for 4 % enriched fuel rods in peripheral elements.

TABLE 4.1. Plant calculated steady state

	Measured	TRAC/PF1
Hot leg pressure (Mpa)	14.77 * 0.07	14.87
Hot leg temperature (K)	577.6 * 0.8	581.6
Cold leg temperature (K)	563.2 + 1.1	567.2
Mass flow in loop (Kg/s)	486.7 + 2.5	487.5
Steam generator secondary pressure (Mpa)	6.41 + 0.08	6.77
Pressurizer pressure (Mpa)	14.73 + 0.11	14.85
Pressurizer temperature (K)	616.2 + 5.8	614.3
Broken loop cold leg temperature (K)	561.4 + 1.5	562.0
Broken .oop hot leg temperature (K)	564.8 + 1.8	565.0

TABLE 4.2. Maximum cladding temperatures during rod rupture phase

	4% Rod	T(K)	5% Rod	T(K)
*******	*******	****	a and the set of the set of the set	
Ring 1	1 2 3 4	1025 1018 1018 1048	13 14 15 16	1254* 1238* 1167 1192
Ring 2	5 6 7 8	1076* 1173* 1165* 1176*		
Ring 3	10 11 12 13	950 933 940 952		
haveness			the set of the set of the set of	La a se se a a a

TABLE 4.3. Vapor axial velocity (m/s) in central ring during rod rupture phase

	1.1.1.1.1	CEL	J.L.	
LEVEL	1	2	3	4
4	-0.75	-0.61	-0.71	-1.36
5	-0.41	-0.30	-0 39	-0.71
6	0.03	0.01	0.03	0.02
7	0.73	0.52	0.70	1.33
8	1.08	0.89	1.06	1.35

TABLE 4.4. Liquid axial velocity (11/s) in central ring during rod rupture phase

*******	1	-	*		-		-	-	*	-	-	-		*	*	-		-	-	*	-	-	-		-	-				-		
	1															C	E	L	L													
	ŀ	-	-	**	-	-	÷	**	-	-	-	-	-	-	-	-	÷	**	-			-	ie.	-	*							
LEVEL	1				1								2								3								4			
	÷	-	-	*	**	*	-	+	-	-	-		*	**	**	-	-	-				-	÷ē.			60 s			-	-		
4	1		÷	3		6	Ø				-	3		6	0					3		6	0					3	1	6	0	
5	1		-	3		5	1					3		5	3					3		5	1			١,		3		5	0	
6	Ł		÷	3		4	5				-	3		4	7				-	3		4	5					3		4	0	
7	1		**	3		3	5				*	3		3	9					3		3	5				• 3	3		21	8	
8	-		**	3		2	б				-	3		2	9					3		2	6					3		2	2	
	1.		-	-	-		-				-	-	-	-	-		-				-						2.					

TABLE 4.5. Vapor temperature (K) in central ring during rod rupture phase

	1	CI	ELL	
LEVEL	1	2	3	4
* * * * * * * *				
4	502	498	499	548
5	628	621	625	666
6	640	636	637	660
7	598	596	597	617
8	498	491	497	522



AVERAGE PRESSURE (10**6 PA)

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12

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N.



and the second

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WASS FLOW (KG/SEC)



WASS FLOW RATE (KG/SEC)





Figure 4.5. Broken loop hot leg (cell 3) mass flow



1 1 1



DEMSILL CKCVH**3)





80.0 60°0 TIME (SEC) 40°0 20.0 0.0 -250.00 0.00 750.00 1000.001 500.00 250.00

(2**W/9X) ALISN30 Figure 4.9. Broken loop ...ot 'ag (cell 3) density

i

BLHL - CELL 3



VOLUME FRACTION





24 C 4

63



Figure 4.13. Simulated 6 % rod 15 at several heights Juring blowdown phase



TEMPERATURE(K)




Figure 4.16. Simulated 6 % rod 14 at several heights during the whole transient



Figure 4.17. Simulvied 6 % rod 35 at several heights during the whole transient



Figure 4.18. Simulated 6 % rod 16 at several heights during the whole transient

TEMPERATURE(K)





1

1.5

•



Figure 4.21. Cladding temperatures calculated for 5G08 (4 % fuel rod in central element)



Figure 4.22. Cladding temperatures calculated for 5G08 (4 % fuel rod in central element)



Figure 4.23. Cladding temperatures calculated for 5G11 (6 % ruptured fuel rod)









TIME (SEC)

Figure 4.26. Cladding temperatures calculated for fuel rods in peripheral bundles











Figure 4.28. Vapor axial velocity (m/s) from level 10 to 11 during rod rupture phase



Figure 4.29. Vapor radial velocity (m/s) in level 11 during rod rupture phase

Figure 4.30. Liquid fraction in core

CORE

TIME (SEC)



MOITSARE DIUDIA

5. RUN STATISTICS

In the nodalization defined we have used the following number of cells:

- Vessel and core 192

- Intact loop 54

- Broken loop 37

- Steam generator (secondary side) 19

Total number of cells = 302

Minimum and maximum time steps selected were:

		R	8	n	9	e		(8)			E	T	M	I	N		(8)		D	T	24	A	Х		(8)	1	
ľ	-	-	-0	*	* *	**	1		**	*	*	* *		1		Ē	1 1	5	*	+		÷	 *		*	# E	-	3	-	* *		6
			1				5							1	×	E	-	5						1		E		2				
			5				3	4	5					1		E	+	5						1		E		i,				

These maximum values haven't been roached in any phase as may be seen in Fig 5.1, where the time step evolution along the transient is shown.

Figure 5.2 reflects the cumulative CPU time used in calculating the transient. Clearly, we can distinguish two phases according to the time steps selected by the code:

Phase	Range (s)	Number steps t	CPU ime (s)	RS

& Heat-up	0 - 345	21500	624E3	96.1
Reflood	345 - 400	16000	576E3 1	19.2
***	******	$a_1 \equiv a_2 \equiv a_3 \equiv a_4 = a_4 \equiv a_4 $		$\cdots \rightarrow \cdots \rightarrow \cdots \rightarrow \cdots$

The last column, named RS, represents the calculated run statistics (CPU time in ms per cell and time step) in units of ms/(cell*step).

Machine used for this calculation was CDC Cyber (operating system NOS-BE) with reserved Core Memory = 376500 and Exten-* ded Memory = 500.







Figure 5.1. Time step evolution

- 6. CONCLUSIONS
 - Good agreement exists between calculated and experimental hydraulic variables during the blowdown, like pressure, mass flow rates and densities.
- ⁷ 2. TRAC-PF1 cannot simulate observed initial quenches and final quench time. If these delays were consequence of an incorrect value of MSFBT, introducing a multiplicative correcting factor greater than 1.12 in the correlation for MSFBT (only for the FP-1 case), the experimental quench time can be reproduced.
 - Good agreement is found between calculated and measured cladding temperatures for the 4 % enriched rods in central fuel assembly.
 - 4. Those simulated 6 % fuel rods which suffer quench during the blowdown phase (such as rod 15 in TRAC, close to ILCL), show the best fitting with thermocouple data. For the remaining 6 % and peripheral rods, higher temperatures are calculated in film boiling transfer regime.
 - 5. Three-dimensional behaviour is calculated, although unplanned upper plenum injection was defined to be azimuthally symmetric within each ring.
 - Flow patterns during rod rupture period show two possible paths for fission products in a non-dry phase.

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Table A.1. Nomenclature for LOFT instrumentation

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APENDIX A. LOFT system instrumentation

This section resumes the instrumentation nomenclature and location in the LOFT facility, contained in reference [5].

Figures show locations for the main instrumentation used for the FP-1 thermal-hydraulic study.

All experimental data plotted in this document are identified using the instrumentation nomenclature explained in Table A.1, which is also used for the related variables. The DIRC report resumed, shows the gualified and failed data in the experiment, recorded at 50 ε mples per second, except in the cases which are noted.

TABLE A.1. Nomenclature for LOFT instrumentation

TF-3811-28

)1 -



Figure A-L. LOFI Mujor Components



Figure A-2. LOFI Piping Schematic with Instrumentation











Figure A-5. Instrument Locations - Broken Loop Differential Pressure Measurements

U-P004-008 VALVE P05-5C3 37EAM FL09 U-P004-010 VALVE P05-5C3 37EAM FL09 V-P004-010 VALVE P05-5C3 37EAM FL09 V-P1004-010 VALVE P05-5E0MATER FL09 V-P138-011 VALVE P05-5E0MER L00P H V-P138-011 VALVE P05-5E0MER L00P H V-P138-010 VALVE P05-5E0MER L00P H V-P138-010 VALVE P05-5E0MER L00P H V-P138-011 VALVE P05-5E0MER L00P H V-P138-010 VALVE P05-5E0MER L00P H V-P138-010 VALVE P05-5E0MER L00P H	M COMTROL 0 IN CONTROL 1 I 008Y 0 I 408Y 1	-03-55 BUAL IF 160 -31-64 BUAL IF 160 -31-64 QUAL IF 160 -31-64 QUAL IF 160		
P-P004-010 VALVE P05-5C5 37EAR FL0 V-P004-090 MAIM 57EAM 87PA55 VALVE V-P004-091 MAIM 57EAM 87PA55 VALVE V-P138-001 VALVE P05-580KEM L009 H V-P138-001 VALVE P05-580KEM L009 H V-P138-013 VALVE P05-580KEM L009 H V-P138-014 VALVE P05-580KEM L009 H V-P138-010 VALVE P05-580KEM L009 H V-P138-014 VALVE P05-580KEM L006 H V-P138-010 VALVE P05-580KEM L007 K	M CONTROL 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
 PF001-090 MAIM STEAM STPASS VALVE PF001-091 MAIM FEED SYPASS VALVE VF138-001 VALVE PDS-SRDKEM LOOP M V-P138-001 VALVE PDS-SRDKEM LOOP M V-P138-0103 VALVE PDS-SRDKEM LOOP M V-P138-0104 VALVE PDS-SRDKEM LOOP M V-P138-0114 VALVE PDS-SRDKEM LOOP M 	0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1-03-05 QUALIFIED 1-31-04 QUALIFIED 1-03-05 QUALIFIED		
 P-F001-091 MAIM F&ED BYPA25 VALVE V-F136-001 VALVE PD5-BRDKEN LD0P H V-F136-015 VALVE PD5-BRDKEN L00P H V-F136-070A VALVE PD5-BLDVDUMM SYST V-F136-071A VALVE PD5-BLDVDUMM SYST 	1 1 408V 0 41 408V 1	2-31-84 QUALEFEED		
F136-001 VALVE POS-BROKEN LOOP C P136-015 VALVE POS-BROKEN LOOP N P136-070A VALVE POS-BLONDOWN SYST P136-071A VALVE POS-BLONDOWN SYST BL-COLA VALVE POS-BLONDOWN SYST AL-COLA CHORDAL DENSITY-BROKEN	1. 408V 0	1-03-85 QUALIFIED		
V-F136-015 MALME POS-BRUKEN LUOP H V-P136-070A VALME POS-BLUNDUMM SYST V-P136-071A VALME POS-BLUNDUMM SYST E-BL-DOLA VALME POS-BLUNDUMM SYST	4 908 A			
V-P138-070a VALVE PGS-BLOVDOWN 5757 b-P136-071A VALVE PGS-BLOVDOWN 5757 E-BL-DOLA VALVE PGS-BLOVDOWN 3757		2-31-64 QUALIFIES		
<pre>b-P138-0714 WALVE P05-6L09004M STST E-8L-001A CHORDAL DEMSETY-\$80AEM</pre>	TEN RABY CH & 1	2-31-84 QUALIFIED		
E-BL-DOLA CHORDAL DENSITY-BROKEN	TEN RABN CH B 1	2-31-04 GUAL IF 18.0		
MANDAR-ALISMAN DEMONST	1004 01	1-08-85 GUALIFIED		
	1000 (1 0	1-03-85 OUALEFIED		
E-BL-001C CHORDAL DEMSITT-BROKEN	100P Ci 0	1-96-85 QUALIFIED	13 65 550 0803	
E-BL-002A ENGROAL DEMSETT-BROKEN E-BL-002A ENGROAL DEMSETT-BROKEN E E E	100% HF	1-03 QUALIFIED	EU 45 56C0M05	
E-BL-0028 CHORDAL DENSIF-BROKEN	0 W 4007	1-03 UAL 3F 1E0	20 43 \$60 Camps	

SURENENE SEFICATIO	REASONERENT NEASONERENT DESCRIPTSON	QUAL QUAL BATE STATUS	0UAL 2F YENG STATEMERT (5) '
11-0020	CHORDAL DEMSITY-BRUKEN LOOP HI	01-05-65 GUAL IF IE S	to as seconds
11-0020	GR [33 GANSA BUG/BROKEN LOOP N.	01-29-65 QUALIFIED	TREND DATA ONLY, BU SAMPLES FER SECOND DATA
11-105	AVERASE DEMSITY-BROKEN LOOP CL	01-11-89 044115150	AFTER 13 SECONDS SPUREOUS SPINES
402-1	AVERAGE DENSITT-BROKEN LOOP HL	01-11-89 QUALIFIED	TO 45 SECONDS
C-001A	CHORDAL DEWSITY-INTACT LODP CL	01-08-85 204117168	SPURIOUS SPIRES
\$100-3	CHOF-UAL BENSING-INTACT 1000 CL	01-08-85 QUALIFIED	SPURIOUS SPIRES
C-001C	CHURDAL DEWSITT-INTACT LOOP CL	01-08-83 QUALIFIED	Sympton States Subjanas
C - 00.24	CM300AL 05M5137-1M1AC7 L00P ML	01-09-09 904135160	85-PC-0010 U560 FOR BACKGROUND CORRECTION
¢-0628	CHORDAL DENSITY-INTACT LOOP HE	01-03-85 0031.2F180	10 45 SECONDS
3200-3	CHORDAL DENSITY-INTACT LOOP NL	01-09-85 FAILES	
C-002D	GROSS GAMMA BAG/INTACT LUTP M.	01-29-85 004417158	FREMD DATA DWLT
101-3	AVERAGE DEMSIIY - INTACI LOOP CL	01-11-05 GUAL [F160	
622-3	WE TOMBED AND DENSITY IL ML	03-11-85 GUAL IF 169	TO 45 SECOMPS

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AS ABOVE UPPER END BOX 01-09-05 GUALIFIED UMERRECTIONAL OURATE, SADXEN LOOP HL 01-14-99 GUALIFIED TO 45 SECONDS. MASS FLOW AFTER 65 SECONDS OURATE, BROKEN LOOP HL 01-22-09 GUALIFIED TO 45 SECONDS. MASS FLOW AFTER 65 SECONDS RATE HL DD00ENS LOOP HL 01-22-09 GUALIFIED TO 22 SECONDS. MASS FLOW AFTER 65 SECONDS FALE HL DD00ENS LOOP HL 01-22-09 GUALIFIED TO 22 SECONDS. MASS FLOW AFTER 65 SECONDS FLOW STEAR LOOP HL 01-03-09 GUALIFIED TO 22 SECONDS. MASS FLOW AFTER 65 SECONDS C DBAG BISC IN CALCULATION C DBAG BISC IN CALCULATION C DBAG BISC IN CALCULATION C FLOW STEAN ULMASUMLC B 01-03-05 GUALIFIED
OWBATE, DROKEN LOOP HL OL-22-05 QUALIFIED TO 420 SECONDS. MASS FLOW AFTER AS SECONDS RATE HL DD+DEHK LOOP HL OL-22-05 QUALIFIED TO 22 SECONDS. B DRAS DISC SUBSTITUTED FOR TEAM FLOW CONDENSER IN 01-03-05 QUALIFIED IMITIAL COMBITIONS DM.T
ITEAR FLOW COMDENSER IN 01-03-05 QUALIFIED IMITIAL COMDITIONS DWLT I FLOW SIEAR UNITASUMIC & 01-03-05 QUALIFIED

	M REASUREMENT M DESCREFTEOM	GUAL UAL UAL UAL STATUS	QUALSFYENG STATERENT (53)
-P-094-724	FLOWPATE-SCS FEEDWATER	01-00-#5 QUALIFIED	INITIAL CONDITION UNLY
	FL B4RATE-SCS 萨瑟克勒城画家意家	01-09-09 QUALIFIED	INSTIAL COMPETIONS GALT
\$120-012	FLONRATE-LPIS PUMP & BISCHARGE	01-01-03 QUAL [FIED	NO DÍMER REASUREMENT FOR DIRECT CORPARISON
-7120-085	FLORRAIG-LP25 PUMP & DESCHARGE	01-03-65 QUALARIED	NG GIMSE MEASURERIFOR DIRECT CONFARISON
P128-U85	FLOWPATE-HPIS PUMP & DISCHARGE	01-09-55 QUALIFIED	NG GTMER MEASUREMENT FOR DIRECT COMPARISON
\$128-104	FLOWERTE-NPIS PUMP A DISCHARGE	01-16-PS QUALIFIED	NG GTMGR MEASURENENT FOR DIRECT COMPARISON
\$139-27-1	FLOWBATE-INTACT LOOP COOLANT	01-08-85 QUAL IF 160	EMETSAL COMDITION ONLY
2-22-6614	FLOWRATE-INTACT LUOP CODLANT	01-08-03 0044 25 160	EMETERL COMDITION ONLY
119-27-3	FLUNBATE-INTACT LOOP COOLANT	01-08-25 QUALIFIED	INITIAL COMBITION ONLY
P141-022	FLOWBAJE-TUTAL PCC	01-03-#2 BUAL BE 159	MO OTHER REASURENEMT FOR DERECT COMPARISON
P139-006	120120 LEVEL-PRESSURIZER CH A	12-31-64 QUAL IF LED	ENERTAL COMBIFICMS CMLY
P139-007	LEGUZD LEVEL-PRESSURIZER CN 8	22-31-04 UUALIF3ED	EMITIAL COMPITIONS OMLY
F139-008	LIGNIO LEYEL-PRESSURIZER CH C	32-31-84 FAILED	

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$(10010 \ (1010 \ (1010 \ (1011)))$ $(1010 \ (1010 \ (1011)))$ $(1010 \ (1011 \ (1011)))$ $(10010 \ (1011 \ (1011)))$ $(1010 \ (1011) \ (1011)))$ $(1010 \ (1011) \ (1011)))$ $(1010 \ (1011) \ (1011)))$ $(1-101)$ $(1010 \ (1011 \ (1011) \ (1011))))$ $(1-1-1) \ (1011) \ (1011)))$ $(1011 \ (1011) \ (1011))))$ $(1-101)$ $(001 \ (1011 \ (1011) \ (1011) \ (1011)))))$ $(1-1-1) \ (1011) \ (1011) \ (1011))))))))))))))))))))))))))))))))))$	NA ASURE NENT DEMTIFICATION	1 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1	OUAL QUAL STATUS	·····································
(r/2) - 1/2 - 10 $(r/2) - 1/2 - 10$ $(r/2) - 1/2 - 1/2 - 10$ $(r/2) - 1/2 - 1$	161-54-161	110010 LEVEL-85T	01-18-05 20413F360	IMERIAL AND FIMAL COMDITIONS CONT
Li-ticc-uix Actonuix/TOR & L[BUID L[P-15] DO INÉE MAXIMÉMER FOR DERECT COMPARISON Li-LIC COULART LEGL-ULEL AST LLOC FIQ 0:10-10-9 WL/LIGS - Li-N-3-AFFA-LI-11/LIALED Li-LIS1-OLD COULART LEGL-ULEL AST LLOC FIQ 0:10-10-9 WL/LIGS FALLED STIMES - Li-N-3-AFFA-LI-11/LIALED Li-LIS1-OLD COULART LEGL-ULEL AST LLOC FIQ 1:2-21-40 WL/LIGS FALLED STIMES - Li-N-3-AFFA-LI-11/LIALED Li-LIS1-OLD COLART LEGL-UREL AST LLOC FIQ 1:2-21-40 WL/LIGS FALLED STIMES - Li-N-3-AFFA-LI-11/LIALED Li-LIS1-OLD COLART LEGL-UREL AST LLOC FID 1:2-21-40 WL/LIGS FALLED STIMES - Li-N-3-AFFA-LI-11/LIALED Li-LIS1-OLD COLART LEGL-UREL AST LLOC FID 1:2-21-40 WL/LIGS FALLED STIMES - Li-N-3-AFFA-LI-11/LIALED Li-LIS1-OLD COLART LEGL-UREL AST LLOC FID 1:2-21-40 WL/LIGS FALLED STIMES - LI-N-3-AFFA-LI-11/LIALED Li-LIS1-OLD COLART LEGL-UREL AST LLOC FID 1:2-21-40 WL/LIGS FALLED STIMES - LI-N-3-AFFA-LI-11/LIALED Li-LIS1-OLD COLART LEGL-UREL AST LLOC FIL 1:2-21-40 WL/LIGS FALLED STIMES - LI-N-3-AFFA-LIALED Li-LIS1-OLD COLART LEGL-UREL AST LLOC FIL 1:2-21-40 WL/LIGS FALLED STIMES - LI-N-3-AFFA-LIALED Li-LIS1-OLD	16896-58-261	1200150 155451-037	01-19-63 004115150	INTEES AND FEMAL CONDITIONS ONLY
(-1^{1}) $(00, \text{MT} (16^{1}) - (10^{1}, 1357 100, fr) (-2^{2}) - 0 (00, \text{MT} (16^{1}) - (16^{2}) - 16^{2}) (-1^{2}) - 16^{2} (-1^{2}) - 16^{2} (-1^{2}) - 16^{2} - 16^{2$	8.E-ECC-01A	ACCUMULATOR A LIGUID LEWEL	01-11-23 2014114163	NO DIHER MEASUREMENT FOR DERECT CONFARISON
$(-15) - 001$ $(001 \text{ and} 1 \text{ (cwll-ink) in Stalk 1 \text{ b})$ $(2-7) - 64$ $001 \text{ ink 1 (cwll-ink) in Stalk 1 \text{ b})$ $(-15) - 002$ $(001 \text{ and} 1 \text{ (cwll-ink) in Stalk 1 \text{ b})$ $(2-2) - 64$ $001 \text{ alt 1 (swll-ink) in Stalk 1 \text{ b})$ $(2-3) - 62$ $(-1) - 16$ $(001 \text{ ant 1 (cwll-ink) in Stalk 1 \text{ b})$ $(2-2) - 64$ $001 alt 1 B S 1 106 S - 1 + 25 3 - 5 - 3 - 5 - 5 - 5 - 5 - 5 - 5 - 5 $	1.8-1110	COOL ANT LEVEL-FUEL 2357 1 106 F10	01-03-52 607 12 150	萨拉莱文奖码 名亨克铜石名 一 直水气力努力的力才力的办理和意志了为主有加美的加美的主要
($t-151-002$ ($t001$, mt) ($tevtl-1mt$) ($t-27-64$ ($unlifted$) $talled 511865 - 1-2.05$ ($t-3f10$ ($c001$, mt) ($tevtl-1$, $uel(1, 510)$ ($t-27-64$ ($unlifted$) $talled 511865 - 1.25.544556194$ ($t-319-001$ ($c001$, mt) ($tvel-1$, $vete(1, 1552)$ ($t-3166$ $talled 511865 - 1.25.5644556619$ ($t-319-001$ ($c001$, mt) ($tvel-1$, $vete(1, 1552)$ ($t-3166$ $talled 511865 - 1.25.564455669$ ($t-310-001$ ($c001$, mt) ($tvel-1$, $vete(1, 1552)$ ($t-27-64$ ($uulifted 511865 - 1.25.564455669$ ($t-310-001$ ($c001$, mt) ($tvel-1$, $vete(1, 1552)$ ($t-27-64$ ($uulifted 511865 - 1.75.564455667$ ($t-310-001$ ($toule 1 tevt(-1-veted 716818)$ ($t-27-64$ ($uulifted 511865 - 1.75.5644556677$ ($t-310-001$ ($toule 1 tevt(-1-veted 716818)$ ($t-27-64$ ($tulifted 61186677$ ($tunifted 6118677$ ($t-310-001$ ($toule 1 tevt(-1-veted 716818)$ ($t-1-6-56$ ($tunifted 61186677$ ($tunifted 61186677$ ($t-70-118-001$ ($t tunifted 61186677$ ($t tunifted 61186677$ ($t tunifted 61186770$ ($t tunifted 61186770$ ($t tunifted 61186767$ ($t tunifted 6118676700000000000000000000000000000000$	100-121-31	COOLANT LEVEL-INSTR STALK 2 LP	22-27-84 QUALIFIED	
Lie JF10 COG.AMT LEVEL-FUEL ASSY 5 LUC FJ0 $12-77$ -94 QUALIFIEB FAILED STIM65 - 2-344954654 Lie JUP-001 COD.AMT LEVEL-UPPER PLENUN 01-03-45 QUALIFIED FAILED STIM65 - 14-2534456659 Lie JUP-001 CODLAMT LEVEL-UPPER PLENUN 01-03-45 QUALIFIED FAILED STIM65 - 14-2534456699 Lie JUP-001 CODLAMT LEVEL-UPPER PLENUN 12-277-94 QUALIFIED FAILED STIM65 - 14-2534456699 Lie JUP-001 CODLAMT LEVEL-UPPER PLENUN 12-277-94 QUALIFIED FAILED STIM65 - 14-2534456699 Li JUP-0101 LI JUP-113-010 LI JUP-114 12-277-94 QUALIFIED FAILED STIM65 - 14-2534456699 Li JUP-113-010 LI JUL LEVEL-UPPER PLENUN 12-277-94 QUALIFIED FAILED STIM65 - 14-25344456699 FAILED STIM65 - 14-25344456699 Li JUP-113-010 LI JUL LEVEL-UPPER PLENUN 12-77-94 QUALIFIED MI STIAL AND FIELL STIM65 - 14-2534456699 Li JUP-113-010 LI JUL LEVEL-UPPER PLENUN 12-77-94 QUALIFIED MI STIAL AND FIELL STIM65 - 14-253445669 Li JUP-113-010 LI JUL LEVEL-UPPER PLENUN 12-77-94 QUALIFIEL MI STIAL AND FIELL STIM65 - 14-253445669 Li JUP-113-010 SI SEAS COMP 01-11-95 QUALIFIEL 01-114-95 QUALIFIEL MI STIAL AND FIELL SUPER JUPER JUP	1.6-153-002	COOLANT LEVEL-INSTR STALK 1 DC	12-27-84 0141.15160	FAILED STINGS - 1+2+3
LE-3UP-001 CODLANT LEVEL-UPPER PLENUR 01-03-65 GUAL FFIED Failde STIMGS - Lofainable LE-9E11 COBLANT LEVEL-FUEL ASSY 5 LOC E II 12-27-66 GUAL FFIED Failde STIMG - 17 LE-911 COBLANT LEVEL-FUEL ASSY 5 LOC E II 12-27-66 GUAL FFIED Failde STIMG - 17 LE-9120-030 LIGUID LEVEL-VERMIN 12-27-66 GUAL FFIED MG GFMER MERSIAMMERT FOE DIRECT COMPARISON LIT-P120-030 LIGUID LEVEL-VERMIN 01-11-65 GUAL FFIED MG GFMER MERSIAMMERT FOE DIRECT COMPARISON LIT-P136-033 51 GENS CORP 01-11-65 GUAL FFIED MG GFMER MERSIAMMERT FOE DIRECT COMPARISON LID-P138-033 631 GENS CORP 01-11-65 GUAL FFIED MG GFMER MERSIAMMERT FOE DIRECT COMPARISON LID-P138-036 631 GENS CORP 01-11-65 GUAL FFIED MG GFMER MERSIAMMERT FOE DIRECT COMPARISON	14-3910	COD. ANT LEVEL-FUEL ASSY 3 LOC F10	12-27-84 QUAL LFEED	FASLED 372065 - 2×3+4+5×7+23+54+24+25
Lif-5E11 COOLAMY LEVEL-FUEL ASY 5 LOC E II IZ-27-04 OUAL NFED FAIL68 SIIAG - 17 Lif-5UP-001 COOLAMY LEVEL-UPPER PLENUN IZ-27-04 OUAL NFED NU DIRER AGASUANENT FOR PLENUN Lif-5UP-003 LifoUID LEVEL-UPPER PLENUN IZ-27-04 OUAL NFED NU DIRER AGASUANENT FOR PLENUN Lifo-P130-033 LifoUID LEVEL-ACCUMULTOR B 01-11-05 OUAL NFED NU DIRER AGASUANENT FOR PLECT COMPARISON Lifo-P130-033 SI DENS CORP 01-11-05 OUAL NFED 01-11-05 OUAL NEED NU DIRER AGASUANENT FOR PLECT COMPARISON Lifo-P130-033 SI DENS CORP 01-11-05 OUAL NEED NU DIRER AGASUANENT FOR PLECT COMPARISON Lifo-P130-033 SI DENS CORP 01-11-05 OUAL NEED NU DIRER AGASUANENT FOR PLECT COMPARISON	16-300-001	CODLANT LEVEL-UPPER FLEMUR	01-03-45 QUALIFIED	FAILED STINGS - Lo Zo Bodo 9x504
L6-5UP-0G1 (ODA.ANT LEVEL-UPPER FLENUN 12-27-84 GUALIFIES L3T-F120-030 LIGUID LEVEL-GPER FLENUN L10-F136-033 AST DEMS CORP L10-F136-038 AST DEMS CORP L10-F136-056 BST DEMS CORP L10-F136-056 BST DEMS CORP 210-F136-056 BST DEMS CORP 210-F136-056 BST DEMS CORP 210-F136-056 BST DEMS CORP	16-9611	COSLAMT LEVEL-FUEL ASSY 5 LOC E II	12-27-84 0444.1615.0	Falt50 51146 - 17
LIT-PI20-DIO LIQUID LEVEL-ACCUMUITOR & DI-LI-BS QUALIFIED NG DIMER MEASURIMENT FOR DIMECT COMPANISON LTD-PI30-D33 NST DEMS COMP COMP OF 01-19-B3 QUALIFIED INTIAL AND FINLL COMDITIONS DNLT LTD-PI30-D36 BST DEMS COMP 01-10-B3 QUALIFIED ZUALIFIED ZUATIAL AND FINLL COMDITIONS DNLT	100-405-51	CODLANT LEVEL-UPPER PLEMUN	12-27-84 GUAL SFIES	
LTO-F138-035 AST DEMS CORP 01-18-89 QUALIFIED INITIAL AND FIMIL COMDITIONS ONLY LTO-F138-036 BST DEMS CORR 01-18-89 QUALIFIED EMITIAL AND FIMIL COMDITIONS ONLY	131-9120-030	LIQUID LEVEL-ACCUMUITOR &	01-11-85 QUALLF [60	MU UTMER REASURINEWIFOR DIRECT COMPARISON
LID-PI36-050 851 95%5 CORR 01-18-89 QUALIFIED BMITIAL AND FINAL CONDITIONS ONLY	LT0-F138-033	451 DEMS CORP	01-18-85 QUALIFIED	INIESAL AND FINLL COMDITIONS DALY
	110-#136-058	851 BENS CORR	01-18-85 QUALIFIED	EMETEAL AND FEMAL CONDITIONS ONLY
「「日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日	REAJUREMENT	Dist assesses and a second	A REAL AND A	
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	N DESCRIPTION	047E 3747US	OUALERYENG STATEMENTESS,	
T-P 00 4- 008 A	STEAP GENERATOR LEVEL MARPON RANGE	01-14-05 20412F2EB		
1-2004-045	CONDENSATE RECEIVER LEVEL	12-31-04 QUAL IF5EB		
-P00 064A	STEAM GEN LEWEL MARRON RANGE	01-11-51 6041 [F168		
1-9138-033	LEGUID LEVEL - THE A	01-18-85 QUALIFIED	INSTEAL AND FEMAL CONDITIONS ONLY	
-7138-058	LIQUID LEVEL-857 &	01-18-69 QUAL 3F169	FNIFIAL AND FIMAL COMBITIONS ONLY	
-\$1-001A	NUM FLUIS GL-is BUTS HIGH RANGE	01-18-85 9046 19168	TO 45 SECONDS	
-81-0018	MON FLUX, BL-1, MISOLE, MIGH RANGE	01-18-85 QUALIFIEB	TO 45 36COM05	
-3L-001C	MON FLUK, BL-1, TOP, MIGH RANGL	01-18-03 GUAL 15260	TO AS SECONDS	
100-10-	AVERAGE MOR FLUX BROKEN LOOP CL	21-18-85 GUALIFIED	TO as seconds	
-8L-602a	NOMENTUM FLUX-BROKEN LOOP HL BUITON O	1-1 8-85 QUAL IF 180		
\$F-0028	6.2.4.E.WTUM FLUX-BROKEN LOOP HI MIDDLE D	1-10-35 CUALIFIED		
\$E-0026	0.045M1UM FLUX-BRUKEN LOOP WL TOP 0	1-18-85 QUALIFIED		
r 200-19	IVERAGE MON FLUE BROWEN LOOP NL 01	1-18-85 GUAL IFIED		

QUALEFYENC STATEMENTESS ?	TO 22 SECONDS	TO 22 SECONDS		TO 22 SACGMDS. B DRAG DISC SUBSTITUTED FOR C GRAG DISC EN CALCUMATION			UMFEL 10 34% AMD AFTER 70 SECOMDS UMCOMPEMSATED TEMPERATURE SEMISITIVETY BETWEEM 10 6 70 5						
UAL QUAL ATE STATUS	-22-85 QUALIFIED	-22-05 QUALIFIED	-1 8-85 FAILED	09E32700 69-22-	-22-05 FAELED	-22-05 FAILED	-22-65 QUAL 2FEED	-31-64 QUALIFIED	-31-64 QUALIFED	03:311400 NB-16-	-03~#5 QUAL IF EED	-03-45 QUALIFIED	
neasurereat o Descaleright 0	L'RENTUR FLUX-INTACE LOOP HL SOITON DI-	UNENTUM FLUZ-INTACT LOOP HL MIDDLE 01-	CNEWTUM FLUX-INTACT LOOP HI TOP 01-	VE NOMENTUM FLUX-ENTACT LOOP HE. 01-	UDMENTUM FLUX-INSTR STALK 2 DC 01-	IOMENTUM FLUX-INSIR STALK 1 DC 01-	UNENTUR FLUX-FAS A& UPPER END BOX 01-	HAUTCON DETECTOR IN CORE FAR2 32-	EUTRON DETECTOR IN CORE FABA 12-	EUTRON DETECTOR IN CORE FARE 12-	ELTA P-BL COLD LEG BPH PLANE 01-	ELTA P-BL ACROSS SG SIM IN FING 01-	
ME A SURE MENT I DE MTIFICATION	RE-PC-002A M	RE-PC-0028 N	W 3200-34-3N	ME-PC-002 A	n€-131-001 N	₩€-151-002 M	RE-50F-002 M	ME-2M08-26 M	M 5-4 MO 8-2 0	NE-6H08-26	6 600-16-304	g 900-78-304	

ENTIFICATION		818-5.5.438.859.858.85 166.24.2928.804	GUAL GUAL GUAL	ининовичение положение и и и и и и и и и и и и и и и и и и
200-85-3	SUPPRESSION	PSSSEL LEVEL	01-13-99 QUALIFIED	BRITIAL AND FINAL COMDITIONS ONLY
1#139-27-1	ANTACT LOOP	RASS PLOW BOLTA P	01-08-95 GUAL IFIED	INEERAL CONDETION ONLY, TREND THEREAFTER
2-12-05148	INTACT LOOP	MASS FLOW BELTA P	01-08-85 GUALIFIED	INGTEAL CONDITION ONLY, TREND THENEAFIER
12-51-51-3	INTACT LOOP	MASS FLOW DELTA P	01-08-25 6046 17160	EMETIAL CONDITION ONLY. TREND , WEREAFTER
1-1004-072	DIFF PRESS F	EEDWATEN FLOW DRIFICE	01-09-85 GUAL IFIED	INSTEAL CONDITIONS ONLY
4060-4614-1	DELTA P-PRIM	ARY COOLANT PURP	01-03-85 QUAL [F [ED	BMETEAL COMPETIONS ONLY
-1139-0308	DELTA P-INTA	CT 100P 36	四年一四年一日5 年初年6 2年注意的	ZMETIAL CONDITION UNLT. SKEND THEREAFTER
-6139-030	06114 P - 86	AC TOP Y 45 3 6 1	01-03-85 304115350	UMEDERCTIONAL
102-18	印度空气动的 化化化化	IEN LOOP COLD LES	22-27-54 904138580	
200-18	P8655U46-8008	150 LGDP HOT 125	12-27-84 QUALIFIED	
PC- C02	PRE5368E-2674	CT 100P HOT 156	12-21-84 QUALIFIED	
600-34	萨赖曼马岛切埃美一盗贼贫者	CT 100P REF.	84 0044 IF [E0	
MC - 30 6	PRE35URE~3NTA	CT LOOF REF.	10-01-01-01-01-01-01-01-01-01-01-01-01-0	

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F.0454 PRESSURE F.1254 PRESSURE	0€5C a 1 PT I DH	DUAL QUAL DATE STAFUS	QUALEFTING STATEMENTISS :
F12-5# PRE53URE	SHITCH FA 85	01-11-45 QUALIFIED	5423CM ACIIVA365 AT #20 2MTERMAL PRESSURE OF 450 +-20 P1
PB 65 53 88 98 55 518 9	SWITCH. FA #5		SMETCH ACTEVATES AT 800 INTERNAL PRESSURG OF 950 20 PJ
	SWITCH FA 45	CI-II-85 QUALIFIED	SWITCH ACT WATES AT 800 THTERNAL PREISURE OF 190 4-20 PI
105-5W PRESSURE	LWETCH FA 85	031311900 68-11-10	SMITCH ACTIVATES AT 800 INTERNAL PRESSURE UF 450 4-20 P.
JIZ-SW PRESSURF	SWITCH FA 85	01-11-62 OUALIF160	3423CN ACTIVATES AT 800 INTERNAL PRESSURE OF 450 +-20 PS
004-0104 P#ESSUBE	-SCI ID ENCH LINE FROM SC	12-27-84 00AL [F380	
004-022 CONDENSA	is asceraea passome.	12-2 P-84 QUAL IF 169	
004-034 PRESSURE	-565 FEEDWATER	12-21-as qualified	
094-085 PBE55URE	-SCS 12 INCH CONDENSOR IN	12-27-84 FAILED	
120-029 99653086	-ECCS ACCUMULATOR B	12-27-81 QUAL IF 160	
120-043 PRESSURE	-ECC3 ACCUMULATOR A	01-16-05 BUALIFIED	
128-102 46-7-48	DESCMARGE PRESS	01-08-65 FAILED	
128-103 AC-P-42	DISCHARGE PRESS	01-09-55 0041 15160	

IFICATI G	14955 7 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5	BATE DATE	GUAL STATUS GUALEFUERS STATEMENTISH ;
550-951	PRESSURE-BST W(POB SPACE CH A	01-03-85 QUA	4.1F2E0
138-050	FRESSURG-851 BAPGE SPACE CH B	61-03-84 GUA	LIF16D
138-051	PRESSURE-831 VAPOR SPACE CH C	01-03-05 GUAN	L IFIED
700-411	PRESSURE-INTAL & LOOP HAT LES CH A	12-31-84 GUAL	LIFSED RESPONSE LERITED BURING THE SUS COLED BLONDUM
139-003	PRE'SING NIACT LOOP HOT LEG CH 8	12-31-64 994	LIFIED RESPONSE LIMITED DURING THE SUS COOLED BLONDOWN
139-304	PRET URR-INTACT 100P HOT LEG CH C	12-31-64 GUAL	LEF260 RESPONSE LINITED BURING THE SUR COOLED BLONDOWN
139-041	PRESSURE CONTAINRENT CHAR A	12-27-86 FAIL	160
390-042	PRESSURE CONTAINRENT CHAN B	12-27-94 90.61	137261
139-043	PRESSURE CONTAINNENT CHAM C	12-31-64 QUAL	15160
1-60-61	即死害 含 5 让政府一些做这 2 5 5 8 8 2 2 6 8 4	12-27-84 BUAL	137360
-77-142	MES-POMES RANGE CHANNEL A LEVLL	01-11-55 QUAL	15160
242-22-	พรร-คยพยล ลุลพธย เพลพพยน ซ เยีซถ์เ	01-11-65 QUAL	27 169
	1945 - Printe Manuel Communes C 15 M61	01-11-69 GUAL	IFIED

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P-CABM2-1C	#00 F05-400	2 THANS	COMMEREN	12-31-64	QUAL IF IED	FUR SCRAM EVENT TIME DMLY
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51-81-002 JAI THAP-ARIURE SEDURM LOOP AL 01-06-95 GUALIFIED 51-FC-002 JAIURATION TEAP, JAIACT LOOP, ML 01-06-95 GUALIFIED 51-FC-003 JAIURATION TEAP, JAIACT LOOP, ML 01-06-95 GUALIFIED 51-FC-003 JAIURATION TEAP, JAIACT LOOP, ML 01-06-95 GUALIFIED 51-FO-0010 JAIURATION TEAP - SC5 56 10 IN LINE 01-06-95 GUALIFIED 71-FO04-0106 JAIURATION TEAP - SC5 56 10 IN LINE 01-06-95 GUALIFIED 71-FO04-0106 JAIURATION TEAP - SC5 56 10 IN LINE 01-06-95 GUALIFIED 71-FO04-0106 JAINE TEAP - SC5 56 10 IN LINE 01-06-95 GUALIFIED 71-FO04-0106 JAINE TEAP - SC5 56 10 IN LINE 12-21-94 FAILED 71-FO04-0101 JUE TEAP - MEDICEN LOUP CL NOL 12-21-94 GUALIFIED 71-FO04-0116 JUE TEAP - MEDICEN LOUP CL NOL 12-21-94 GUALIFIED 71-A-0012 JOULART TEAP - MEDICEN LOUP CL NOL J2-21-94 GUALIFIED 71-A-0012 JUE TEAP - MEDICEN LOUP CL NOL J2-21-94 GUALIFIED	53-81-001	SAT TEMPERATURE BRUKEN LOOP CL	01-08-83 00412F160	
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IC-5010-27 IEMP FUEL CEMTERIENE/FAS FIN DIO 27 01-03-85 GUALIFIED FAILED PRE-LOCE TEST IE-8L-001A COCLANT TENP-BRDKEN LOOP CL BOTTON 12-27-84 GUALIFIED POSSIBLE NOT MALL BFFECTS IE-8L-001B COOLANT TENP-BRDKEN LOOP CL BOTTON 12-27-84 GUALIFIED POSSIBLE NOT MALL BFFECTS IE-8L-001C COOLANT TENP-BRDKEN LOOP CL TOP 12-27-84 GUALIFIED POSSIBLE NOT MALL BFFECTS	16-3005-27	TENP FUEL CENTERLINEFIAS PIN D6 27"	12-27-94 FAILES	
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16-84-0018 (0014MT 1EMP-8RDKEN 100P C1 M150LE 12-27-84 GUALIFIED PO3558LE NOT MAIL EFFECTS 16-84-001C C0014MT 3EMP-8RDKEN 100P CL 50P 32-27-84 GUALIFIED F05518LE NOT MAIL EFFECTS FAGE 00012 ED	16-81-0014	COCLAMF REMP-SROKEN LOOP CL BGITON	主卫一卫了一番名 经初点支撑员医的	POSSIBLE NOF MALL SFFECTS
1 E-BL-OOLC COOLANT 3EMP-BROKEN LOOP CL TOP 32-27-84 GJAL3F3ED POSSABLE MOT MALL EFFECTS PAGE 00032 D	\$E-BL-0018	COOLANY TEMP~880KER LOOP CL MIDDLE	1 12-27-89 QUALIFIED	PO331015 MOT SALL EFFECTS
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E-F141-094 PCCS MEAT (E-F141-095 MATER TERP E-56-001A CODLART TE E-56-001 COOLART TE	ERCH M. TERP 	2-23-84 QUAL 37220 2-27-84 QUAL 37220 2-03-65 QUAL 27260	
E-FLiL-005 MATEA TENP E-S6-001A COOLAME TE E-S6-001 COOLAME TE E-S6-002A COOLAME TE		2-27-84 GUALIFIEB 1-03-65 GUALIFIEB	
E-SG-001A COOLARS TE E-SG-001 COOLARS TE E-SG-002A COOLARS TE	MP-11 56 ENLET PLEMUN 0	1-03-65 6041 14168	
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E-S6-003 LIGUID TEN	19-5C3 56 004HC3HER	2-27-84 FASL50	
E-56-004 LIGUED IEM	tr-scs se bowecarer	2-27-84 QUALIFIES	
E-3 #-001 LIGUID TEM	14-851 57ALK 1-107+5	22764 QUAL 2F280	
E-SV-006 LIQUID TEM	19-855 STALK 1-14.7	2-23-84 4114635268	
E~SV-007 LIQUID 72M	19-857 STALK 2-107.2	2-27-84 QUALEF128	
-5V-011 LIGUID IEM	16-858 STALK 2-39.8	2-27-84 GUAL IF 160	

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-54-012	LIQUID IEHP-655 3785 8-2407	12-27-64 GUAL IF1ED	
-1035-002	百匹的产品及为了以此是一亿的的百名美的船墩的节 点的希兰圣的字	12-27-54 0044.3F160	NO DIMER REASURSHERS FOR DERECT COMPARISON
-1411-030	1EMP-CLADDING JFAL PIN ALL 20 IN-	01-22-83 QUALIFIED	SAMPLE RATE IS 2.9 SAMPLES PER SECOND
-1810-037	TEMP-CLADPING/FAI FIN 810 37 IN.	01-22-85 QUAL 2F 260	5AMPLE RATE 55 2.5 SAMPLES PER SECOND
-1211-025	TEMP-CLADDING/FAL PEN BAL 28 IN.	01-22-55 30 21 15 15 8	SAMPLE RATE 22.9 SAMPLES PER SECOND
-1811-032	TEMP-CLADDING/FAL PIN BIL 22 IN+	01-22-83 GUAL 2FEED	医病的产生菌 强点等化 医盖 之心的 医麻醉化蛋白 严暴的 驾驶口的地位
- 1011-021	TEMPCLADDIM6/FAI PIN CII 21 IM+	01-22-85 60441 27568	名成的产生素 化白垩色 百名 足。多 医成的产生医多 多曼素 医骨化口的目
-1631-039	TEMP-CLADDING/FAI PIN CII 39 IN.	01-27-09 WAA IF 580	医病肺乳菌 原点百倍 蓝雾 之。9 医病种生物的 甲醛酸 医氯化乙烯酚
-1501-015	TEMP-CLAUDING/FAL PIN F7 19 IN.	01-22-85 %JALIFIED	5.4MPLS #438 is 2+5 SAMPLES PSE SECOND
-1607-026	百乐的产业CLAD的名词名子乐画书 公兰的 夯子 卫乐 医侧口	01-22-85 QUAL [F 268	SAMPLS RAYE IS 2.09 SAMPLES PER SECOND
-151-001	COOLANY 76MP-RV 2M53R 55ALK 1 DC	12-27-84 QUALIFIED	POSSCALE HOS MALL RFFECTS
-151-002	COOLANY IENS-RY INSTR STALN 1 DC	12-27-84 OUAL IF 150	POSSIBLE MOT WALL EFFECTS
		Comptend of the second	#055.818.140% HALL EFFECTS

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00 COGLMAT FEMP-NE MASTR FIAM L 2-21-BA DUAL FFF2CTS 00 COULMAT FEMP-NE MASTR FIAM L P	50	1001 AN F	TENP-91	103.76	STALE	1 36	12-23-61	QUAL IFIED	POSSIBLE HOT WALL	BFFSCT5
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KEA SURLINE MT	REASURENT DESCREFTEDN	OUAL QUAL DATE STATUS	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
- 109 -005	1-011-31 110 MD-431 1 1MF 1000	12-27-84 DUAL IF LED	POSSIBLE MOT WALL RFFECTS
- 109-006	P. FAL TERP-SUPPORT COLUMN FAL	12-27-84 904155380	
-100-007	METAL TEMP-SUPPORT COLUMN FAI	12-22 44 QUAL IFIED	
-2608-043	12MP-CLADD106/FA2 PIN E8 45 IN.	01-22-89 BUAL 3F1-50	SAMPLA RATE IS 2.5 SAMPLES PER SECOMO
-2607-013	TEMP-CLADDING/FAZ PIN F* 15 IM.	03-22-93 9041 17350	34MPLE RATE IS 2.5 34MPLES PER 29COMP
-2608-032	\$EMP-CLABDING/FA2 PIN F8 32 IN.	01-22-85 QUAL IFIED	5.4MPLE RATE IS 2+3 5.4MPLES PER SECOND
- 2709-026	32MP-CLADDING/FA2 PIN F9 26 IN.	61-22-83 GUAL IF EEG	多成级外汇的 使在背貌 正言 正。与 当我们伊人最多 严谨做 医骨爪门的的
110-1132	TEMP-CLADDING/PAZ PIN GIN 21 IN.	2 2-2 7-84 GUAL 25 360	
-2614-030	JEMP-CLADDING/FA2 FIN GA4 30 INc	12-27-64 0441.25380	
- 2614-045	TEMP-CLADUING/FAZ FIN GIA 45 IN-	12-27-84 OMAL IF 160	
-2 M0 20 2 8	TEMP-CLADDING/FAZ FIN NZ 28 IN.	05-22-8 9 0011 IFE 60	SAMPLE RATE 2.5 2.5 SAMPLES PER SECOND
-2 MI 3-02 I	TEMP-CLABDING/FAZ FIN HIS 21 IN.	031-51-84 PNAL 1F160	
2H13-649	\$\$849-CLADD1MG1F42 #10 1123 49 2M.	01-03-84 GUALIFIED	



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TE-2H34-028	3EM9-CLADDING08A2 #38 M24 26 2M.	12-27-81 QUALIFIED		
14-2414-032	TEMP-CLADDING/FA2 #10 MIA 32 IN.	12-22-94 QUALEF180		
8E-2415-026	王董州尹→CL成位的变纳谷JF成记 伊亨纳 树立字 之为 页明+	12-17-84 64413F1ED		
TE-2H1 5-04 1	百匹的脸—CLACDE的GJF成之 学员的 纳亚马 小员 负M。	12-27-84 QUAL 3F150		
16-2114-021	TEMP-CLADDING/FA2 PiN 314 22 8N.	12-27-84 QUALIFIED		
18-2114-039	3EAP-CLADDING/FA2 PIN II4 39 IN.	12-27-84 QUALICIED		
FE-21P-001	COOLANI IEM9-LONER END BOX	12-27-84 QUALIFIED	POSSIBLE Mun WALL EFFELTS	
18-215-002	COGLANT TERP-LOWER CHD BOX	12-27-8- 9046.2f180	POSSERIE MOT WALL BFFECTS	
76-218-033	COOLANT TESP-LONER END BOX	12-27-84 904187160	PO3SIFLE NOT MALL RFFECTS	
16-208-001	COOLAMS TEMP-UPPES END BOX	12-27-04 QUALIFEED	POSSIBLE NOT WALL BFFECTS	
16-200-002	COOLANT LIMP-UPPER END BUX	12-27-44 04415550	\$0531816 NOE P1.1 855512	
1 E- 2010-003	化公疗上面的胃 胃医指产一位命令论说 医阴道 痛因者	12-27-64 QUALIFIED	PQ55EBL& MDT WALL &FF&CTS	
¥6318304	MESAL SEMP-SUPPORT COLUMN FAC	12-27-84 CUAL IF 160		

ne se	11 11 11 11 11 11 11 11 11 11 11 11 11	60.41. 00.41. 547E 374703	QUALEFYEME STATERENTESF
15-208-003	METAL TEMP-SUPPORT COLUMN FA2 ***	32-27-84 GUAL IF \$60	
060-1146-31	T*#P-CLADSENG##83 #EM A11 30 24	u 01-22-85 QUAL EFEE®	SAMPLE RATE 25 2.5 SAMPLES PER SECOND
(€ 3#11-02 #	TEMP-CLADDENGAPA3 PIN BIL 28 IN	. 01-22-85 QUALIFIED	SAMPLE RATE 23 :
18-3811-032	TEMP-CLADDING/FAS PIN B11 32 IN	· 01-22-85 QUALIFIED	SAMPLE RATE IS 2.0% SAMPLES PER SECOND
14-3611-021	TEMP-CLADBING/FA3 PIN C12 21 IN	. 01-22-03 OUAL IF LED	当点指护让龙 张点背匠 当多 2。5 多点指护让乐劣 护管靴 笃瓷CGMD
16-3011-039	TEMPCLADUING/FAS PIN CL1 39 IN	· 01-22-85 QUALIFIES	名山狮萨让乐 段点洋毯 35 2。9 3点例户礼售3 户资税 3蛋化的粉的
1 E-3 F07-02 b	TERP-CLABBING/FA3 FIN F7 26 IN-	01-22-85 QUALIFIED	3 AMPLE RATE 13 2.9 SAMPLES PE SECOND
16-308-001	CODLANT JERP-UPPER END BOX	12-27-84 904427280	POSSIBLE NOT WALL SFECTS
16-308-006	RE321 TEMP-SUPPORT COLUMN FA3	五百一百十一百七 化化双瓦尔 医药 医前面	
1£-30P-008	TEMP-CODLANT LLT ABOVE FA3	12-27-64 QUAL IF 180	POSSIBLE NOT WALL BFrECTS
16-340-010	TEMP-COOLANY LLF ADOVE FA3	12-27-84 QUAL IF 160	PO353816 MO7 MALL BFFECTS
16-309-011	TEMP-COPLANT LLT ABOVE FA3	12-27-84 9046 25 280	PUSSIBLE NOT WALL EFFECTS
16-30#-012	3EMP-COOLANS LLY ABOVE FA3	፤ደደን-ፅሳ ዓሪ ዳሲ ፪፻፭ ፪ ፅ	POSSIFLE NOT WALL EFFECTS

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- 309 -013	EERP-COOLANT LEF ABOVE FA3	12-27-84 QUALIFIED	POSSIBLE HOF WALL EFF	ECEN
+18-906-14	害在狗?~仁仍们上点做罢 克克軍 成態問題區 琴众当	12-27-84 QUALIFIED	POSSIBLE HOT WALL RFF	403
- 308-013	REMP-CJOLANS LLT ABOVE FAB	12-27-84 QUALLFED	POSSIBLE MOT WALL EFF	÷6C3.3
E- 30 P-01 6	TEMP~COOLANT LLY REOVE FA3	12-27-84 904156360	P0551818 MOF WALL &FF	acts
E-4E08-045	TERP-CLACDING/FA4 PIN E8 45 IN.	01-22-05 0014636160	SAMPLE RATE ES 2.5 34	AMPLES PER SECOND
E-4F07-015	TEMP-CLADDING/FA+ PIN F7 15 14.	01-22-85 QUALIFIED	54MPL8 8ATE IS 2+9 51	ARPLES PER SECOND
E-4F08-032	TEMP-CLADDING/FA4 PIN F9 32 IN-	JI-22-85 90413F360	5 AMPLE RATE 2.5 2.5 31	AMPLES PER SECOND
8-4608-021	16MP-CLADDING/FA4 PIN 68 21 IN-	12-27-84 GUALIFIED		
6-4614-011	TEMP-CLADDING/FA4 PIN G24 11 IN.	12-27-84 94412F1E0		
E-4614-030	TEMP-CLA.DIMG/FA4 PIN GI4 30 EN	12-27-84 FAILED		
E-4614-045	TERP-CLABDINGFFA4 PIN GI4 45 IM.	12~27-8% QUAL IF 160		
¢ 10 −€ 1 H5 − ?	TEMP-CLADDING/FA4 FIN H13 25 14.	12-27-84 GUAL SF 180		
180-8119-91	TEMP-CLADDIMG/FA€ PIM H13 37 IM.	12-27-84 QUALIFIED		

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16-5610-032	TERP-GUIDE TUUE FAS LOC CLO 32 IM	12-27-04 OUAL IFIED		
\$\$~3\$U3~032	୪୩୬୬-୧୦୦୭୦୫ ଅଭିକ୍ତ ଜଣ୍ଡ ଅଭିକ୍ ୫୦ ୫୪	12-2 1-84 GUAL IFIED		
920-4036-33	王长院华一亿人成的路景明记过了成为 伊莱姆 医下 齐备 互纳	医龙一足了一份分 确切病是是尽害圣怨		
6-5687-032	TEMP-CLAUDINS/FAS #IN 23 32 8H	ንደደች-ቁፋ ቁሀፋቲቆዮጀፀወ		*
6-9607-039	FEMP-CLADBING/FAS PIN E7 30 IN	કરે-ગ7-64 હપત્રો દેદ દુદ્દ છ		
8-3807-043	FERPCLADDING/PAS PIN E7 42 IN	55-51-64 OK WY EB 158		
£-3£09-003	TEMP-CLADDINGJFAS FIN 69 3 3N	12-27-84 QUAL FIES		
€-5€0¢-010	TEMP-CLABDING/FAS PEN EP LO SM	12-27-44 6UAL2F:88		
6-3E0-010	፻፪೫ዮ-ሮ೭ሓይቆ፪%6/۶ዳラ ም፤ዝ ଝቱ ኒል ፤ዝ	12-27-84 0014135245		
E-3E09-023	7699-CLAB03866/FA3 PEN 69 21 IM	ደ2ን-ፅሳ ዓህልኒያዮያይያ		
-5603-045	8899-004106 7086 FAS 105 F3 49 IN 2	2—23—84 GUAL IFIEB		
-5f13-068	15AP-QUIDE TUBE FAS LOC FL3 56 2N 8	2-27-84 044114360		
-3603-023	TEMP-CLADBINC/FAS PIN 63 27 IN 0	1-03-95 GUAL LFIED		
	1			PA66 00022 2

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2 6-5608-006	IEMPCLADD3MGJFAS PIN 66 5 84	12-27-84 GUALIFIED	
16-9608-012	百百万户	12-27-84 9041.15160	
12-5608-0294	TEMP-CLADDING/FAS PIN 68 29 IN	12-27-84 QUALIFIED	
16-9608-0298	¥EMP-CLADDING/FA5 PIN 68 29 IN	12-27-84 9444.2F250	
36-3623-027	TEMP-CLADDING/FAS PRN 611 27 IN	12-27-64 QUALIFIED	
16-5103-023	JENP-CLADDING/PAS PIN 23 27 IN	12-21-04 GUALIFIED	
38-9111-027	TERP-CLABDING/FAS FIN 222 2N	12-27-04 90415F160	
24-9415-049	TEMP-GUIDE TUBE FAS 10C JI3 43 IN	12-27-84 604125128	
12-3807-048	TEMP-CLABBING/FAS PIN RT 48 IN	当之一之子一都头 书为圣人圣马	
7E-3K07-055	3EMP-C&ABDIMG/FA5 PIM R7 39 IN	12-27-24 01462552	
18-5407-000	JEMP-CLADDING/FAS FIN KT 60 IN	12-27-84 904115150	
TE-5807-065	TERP-CLADDINGJEAS PIN N.7 65 IN	12-27-84 GUAL3F1ED	
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6-5809-026	TENP-CLADB	166/FAB PBM K\$ 26 14	22-27-84 455468	
-3809-032	18MP-CLASBI	146.455 PSI K9 32 24	£2-27-84 0UALE	186
660-6035-	38RP-CLAPB3	MG#FAS P2M R\$ 39 EM	22-27-64 304621	160
265-30 %-	30100-0431	TUBS FAS LOC LA 32 EN	12-27-84 91488	169
- 5806-045	30109-4421	1086 F45 10C M4 43 2H	32-27-84 QUALES	119
~5%3.0~068	1545-60196	1086 FAS LOC RLO 40 IN	12-21-04 017722	189
-916-004	COOLANT 15M	PUPPER EMP 801	22-27-94 94425	IED POSSIBLE MOS MALL RFFECES
\$00-205-	COGLANE 74.04	r-uppea end aca	医龙一名子一的的 经结理运营者	188 POSSSBLE MOT HALL BFFBCTS
- 309 - 005	COULANT TENP		52-27-84 0345.25	EB POSSIBLE HOT WALL GFFBCTS
- 208-001	ANGE ENGROUT		12-27-84 GHALIFI	89 P0152818 MOF WALL RFFECTS
3 600- ans-	OCLANT TENP	~UPPER END BOX	12-27-84 QUALIF	ED POSSIBLE HOT MALL SFFECTS
-30P011 C	0055.ANT 1.EMP	-49958 540 501	12-31-64 GUALEFE	2.3 P9351818 H07 MALL 8FFECTS
-3UP-012 C	OOLANT TEMP-	-UPPER END 802	12-31-84 GUAL SFE	ED POSISBLE MOT MALL DESERVES

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MEASUREMENT MEASUREMENT DEMYTEECATEOM		CUAL DATE	GUAL STATUS	QUALSFYSMS STATERENTES 1 1
E- 50P-021	COOLARS 16AP-UPPER 246 802	\$ \$8~2-23	UAL 3F 3 ED	POUSTIBLE NOT WALL EFFECTS
6-509-022	COOLANI ISMP-UPPER 3HB BUX	12-27-86 8	UALIFIED	POSS384.6 HOT MALL 8FFECTS
E-508-171A	26FFAL SURPACS TEMPERATURE UPPER END	12-27-94 0	UAL 25 2 60	
8127-806-33	7AL SURFACE TERPERATURE UPPER END	12-27-34 9	03131190	
\$6-206-23	METAL SURFACE TEMPERATURE UPPER END	12-27-84 9	1944 IFIED	
1E-548-212	METAL SURFACE TEMPERATURE UPPER END	12-31-84	IGAL LF LEO	
062-306-31	METAL SURFACE TEMPERATURE UPPER END	12-27-84	UAL 37 160	
16-6608-045	TEMP-CLADDING/FAb PIN E8 45 IN:	63-22-20	2041.17360	SAMPLE RATE IS 2.05 SAMPLES PER SECOND
16-0607-037	JEMP-CLADD3M6/FAG PIN F7 37 8H+	08-22-80	3631.3F280	医血栓杆头管 最高等层 正言 乙。5 多点的种气管的 伊若爾 医蛋白的的
16-6609-041	了医内产	01-03-84	C3532 TROP	
16-0608-039	TEMP-CLABDING#FA6 PIN 58 39 IN.	18-22-21	00AL 1F 560	
TE-6614-011	$3 \in M^{2} - CLADD3M6JFAb P3M 614 23 2M^{o}$	12-21-84	01141 3F 160	
		12-27-84	OUAL 19120	

REASUREMENT ICENTIFICATION	MEASUMERENT DASCRIPTION	BUTE BUAL BATE STATUS	OUALEFTERS STATENENTS +	**************
36-4614-043	FEMP-CLADBENGJEDD PER CIA 45 IN.	01-03-83 QUALIFEED		
16-6M1 3-015	TENP-CLADDING\$9940 PIN N32 19 24.	12-27-44 0032351580		
1 E- 6H1 3-03 P	3.E.H.P	12-27-84 444135160		
1 E-6H14-028	等着的第一它上点的白了锅窗对字画的 伊吉姆 利亚名 正面 复独。	12-77-34 સ્પ્રેસ્ટ્રિક્ટિઉઉ		
1 E-6H1 4-032	36AP-CiADD3NG/FA& P3N NS+ 32 IN.	12-27-84 844126250		
3 E-611 5-02 6	368PCLADD396/PAG PIN N29 26 14.	077-10 58-50-10		
16-6116-021	3EKP-CLABDING/#24 PIN 234 23 [Me	12->1-34 QUAL IF 160		
16-0114-039	TEMP-CLADBINGNFAS FIN IL4 39 INc	وعاجع بالممل والاوج		
100-419-31	COULANT TEMP-LONER END BOX	12~27-34 GUAL 3F 268	POSSERLE MOT MALL BFFSCTS	
16-618-652	CUDLANT JERP-LOUKS CH& 80X	22-27-84 GUAL 3F28D	POSSEBLE HOT HALL BFFBCTS	
18-617-003	COOL WI TENP-LOVER END BGA	22~27~84 BUAL SF3ED	P032381& M05 MALL 8PPECTS	
100-409-3	COOLAP* SEMP-UPPER END BOX	12-57-64 0NAL 2F 250	P0251845 H0F WALL EFFECTS	
200-409-3	(()){ ##1 [[] ##	1 1 - 1 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		

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17-P139-032 GOLAMF TEMP-IMTACT .OUP HOT LLG 12-27-44 GUALIFIED INFTIAL COMDITIONS ONLY 17-P139-033 GOLAMF TEMP-IMTACT LOOP HOT LEG 12-27-64 GUALIFIED INFTIAL COMDITIONS ONLY 13-P139-034 GOLAMP TEMP-IMTACT LOOP HOT LEG 12-27-64 GUALIFIED INFTIAL COMDITIONS ONLY	11-1120-062	LIQUID IEMP-ECCS CI	L ENJECT POINT	01-03-35 GUALFEE	D RESPONSE LIMITED	
11-F139-033 COMANT TEMP-MIACT LOOP NOT LEG 22-27-64 QUALIFIED INITIAL COMDITIONS ONLY T-P119-034 COOLANT TEMP-ENTACT LOOP NOT LEG 12-27-64 QUALIFIED INITIAL COMDITIONS ONLY T-P119-034 COOLANT TEMP-ENTACT LOOP NOT LEG 12-27-64 QUALIFIED INITIAL COMDITIONS ONLY	260-8614-11	COOLANT TERP-INTACI	1 .007 101 116	12-27-84 GUAL 3F2E	BRETAL CONDITIONS ONLY	
11-F139-034 COOLARY TEMP-INLACT LOOP HOT LES 12-27-64 QUALIFIED INTEL CONDITIONS ONLY	ECO-6E14-11	COLANE TENP-INFACT	1 LOOP HOT 255	22-27-84 QUAL IFIE	D INITIAL COMPITIONS ONLY	
	¥E0-8E14-23	COOLARY TEAP-ENTACT	1 LOOP HOT LEG	12-27-84 90462926	BMETIAL COMDITIONS OMLT	

TABLE 3.2. Input deck listing for plant steady state

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"要我你我我这些是是我的人们不会不是我们这个这些你们,你会会会认为你的你?"你你不会不会?你你你的你?"
LIFT POST-TEST LPHERHI STEALY STATE DECK FOR TRAC-PRI/MODI
* JATA BASED ON L2-3 DECK FROM LAND FOR TRAC-PRI/MODI AND DY
* LANT JECH FROM ARE-ALVERTING, LHANGED TO FRALE AUGUST 85
 CHANGES ALREADY IN TRAC-PUB-DECKI UPPER PLENUM ECCS: INNER CORE
PING FA-PER.D TRUDE SHRUTDE BLCL VALVE
ADDITIDHAL CHANGEST COPE 131 MM LUNER
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4 407 PJDS IN CELL 1.2.3.4.8.17
* ATPASS _ THEN PLENUS - UPPER PLENUS => & TERS (PATH 1.2. ERSUIDE TUBES).
* PYPAKS UPPIR PLETUM - DUWNCOMER #2 FARR IN LEVEL 11 (PAIN 344,51)
 PYPASS FACY (INCREASED).
  CPTAR, RTX #2 RINJ AREAS.
 ENVIRONMENTAL HEAT LUSSES, HTC DUT: PUS FIFING . 6.6 #/MARR K
PRESSURIZER . 2.0 #/MARR K
                                    SG SEC. SIDE # 1.6 #/ M##2 K
* CARSES INCORPORATED IR. R. BLS
* POS F.D. OFSISTANCE REDUCED. RESISTANCE ADDED FOP ... -CDRE.CDRE.UP
* FAR-MAY FRICTION FALTORS USED FOR PCS. FPICKO NUT ALLOHED
 CHRYMES TO VESSLE FLUID VOLUME AND FLUM AREA FRACTIONS.
 MHANNES IN VESSEL HEAT SLABS
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*	DATA CHANSED I	1 AUTER #174	ONTROL LOGIC	IN FP-1		
ę	VALVE IS OPEN	WATLE THIP LO	HES ON			
÷	THEN VALVE 15	CLUSFO USING	A TABLE ITIME .	RELATIVE POSITI	(¥ C	
0	THEN VALVE 15 TKIP 7 , SV	CLUSED USING	A TABLE (TIME .	RELATIVE POSITI	0 M)	
6 7 9	THEN VALVE 15 TELP 7 , 54	C_35F3 USING 1	A TABLE (TIME)	RELATIVE POSITI	0 M)	
* * * * *	THEN VALVE IS TKIP 7 + 54 VF	C_JSFJ USING 1 23	a 143LE (TI*E. 23 ST	RELATIVE POSITI	0 N)	
* * * * * * L	THEN VALVE IS TKIP 7 + 54	C_JSFJ_USING 1 23 0	a 143LE (TI*E) 23 51 22	RELATIVE POSITI EAN LINE VALVE 26	0 ¥) 7	*LN 02
¢ ↑ ↑ ∧ L	THEN VALVE 15 TKIP 7 + 5V VF	C_JSFJ_USING 1 23 0 0	A 143LE (TI*E* 23 ST 22 3	RELATIVE POSITI EAN LINE VALVE 26 5	3×) 0	*LN 02 *CN 03
* * * * * * L	THEN VALVE IS TKIP 7 + 5V VF 1 7 0	C_JSFJ_USING 1 23 0 0 1	A 143LE (TI*E* 23 ST 22 3 6	RELATIVE POSITI EAM LINE VALVE 26 5 0	0 ¥) 0 0	本しN 02 東行村 03 東行村 04 東行村 04
ه ۴ ۶ ۲ ۸ ۲	THEN VALVE 15 TKIP 7 + 5V VF 1 7 0 1.0F+20	C_JSFJ USING 1 23 0 0 1 0 0.0	A 143LE (TI*E* 23 51 22 3 6	RELATIVE POSITI EAM LINE VALVE 26 5 0	2 ¥) 2 0 0	*6N 02 *6N 03 *6N 04 *6N 04 *6N 05 *6N 05
ه ۲ ۲ ۸ ۲	THEN VALVE 15 TKIP 7 + 5V VF 0 1.0F+20 3.1214	C_JSFJ USING 1 23 0 0 1 0 0.0 0.0	a 143LE (TI*E) 23 51 22 3 6 0.0 1.0	RELATIVE POSITI EAN LINE VALVE 26 5 0 1.0 1.5	305.37	*LN 02 *CN 03 *UN 04 *UN 04 *UN 06 *UN 06 *UN 05
ه ب ۲ ۸ ۲	THEN VALVE 15 TKIP 7 + 5V VF 0 1.0F+20 0.1214 304.37	C_JSFJ_USING 1 23 0 0 1 0 0.0 1 0.0 151 4.53292E=2	A 143LE (TI*E* 23 ST 22 3 6 0.0 1.0 0.242900	RELATIVE POSITI EAN LINE VALVE 26 5 0 1.0 1.5 0.451	305.37	*LN 02 *CN 03 *UN 04 *UN 04 *UN 06 *UN 06 *UN 07 *UN 09
8 9 7 A L 8	THEN VALVE 15 TKIP 7 + 5V VF 1,0F+20 3,1214 305,37	C_JSFJ USING 1 23 0 0 1 0 1 0.0 1 0.0 1 0.0 1 0.0 1 0.0 1 0.0 1 0.0 1 0.0 1 0.0 1 0.0 1 0.0 1 0.0 1 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0.	A 143LE (TI*E* 23 ST 22 3 6 0.0 1.0 0.242900	RELATIVE POSITI EAN LINE VALVE 26 5 0 1.0 1.0 1.5 0.451	305.37	*LN 02 *CN 03 *CN 04 *CN 04 *CN 04 *CN 05 *CN 09
* * * * * L *	THEN VALVE IS TKIP 7 + 5V VF 1.0F+20 3.1214 305.37 5.01191F	C_JSFJ USING 1 23 0 0 1 0 1 0 0.0 1 0.0 1 0.0 1 0.0 1 0.0 1 0.0 1 0.0 1 0.0 1 0.0 1 0.0 1 0.0 1 0.0 0 0 0	a 143LE (TI*E* 23 51 22 3 6 0.0 1.0 0.242900	RELATIVE POSITI EAN LINE VALVE 26 5 0 1.0 1.5 0.451	305.37	*UN 02 *CH 03 *UN 04 *UN 06 *UN 06 *UN 05 *UN 05 *UN 09 *UX
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F F 53 TEF 2 * *4(N TJBF 0 0.10795 300.0 0.0 * \$10t TJ8F	78 3.09 4 4 2 0.02858 0.0 0.02858 0.0 0.02858	6 7 7 0.0 0.0 1.0E20	0.0 0.0 1.0E20 1.0	*T# *CONC *S *P#PTR *P#PR; *OP3TP *CP3RF *CP3RF *ICHP* 1 0 300.0 1.0	*CND2 *C.3 *CNU4 *CN05 *CN06 *CN06 *CN08	•••
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0. F 5.9791F+02F 5.15389+02F F 1.5294E+07E F 0.5 E	-1.2015E-05E -1.2015E+05E				 YL YY TL TY PA UPPP MATID TW CONC S POWTB1
					*POWRF1 *UP3T#1 *OP38
* * * * * * * * * * * * * * * * * * * *	************	***********		**********	*******
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0.1575					*CNUP
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FILL	67	51	JPPER	PLENUM IN	JECTION	
67	ð.					*CH05
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2.50000000	2.4124306-013	0.0			3.0800005+02	* 0 10 4
41.40000F+05	0. 0.				3400000000000	CNU5
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	ing the state of			1.	a salara da	*CN10
0+0	U+0	4.43	5 J. B	0.05	a Aw18	
78.0	1 * 6	100.1		0.05		
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272.0	0.50	345 .	U	0.505		
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* * *	APRAT DATA						
	2.4004306400F 2.41245403F 9.64974404F 0. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5.						* Dx * VOL * FA * FRIC * FRIC * GRAV
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	272.0	9.40	345.0		0.505		
	3*8.0	20.0	363.0		18.25		
	375.0	10.9	400.0		10.05		
	1000.0	0.08	47040		0105		
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							*CN05
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240.0	0.0	200 × 0		.805	
272.0	0.50	345.0	2.	505	
347.0	31.0	152.0		0.05	
164.0	20.0	163.0		25+0	
3.25.0	16.9	400.0	44	0.05	
445.0	4.0	450.0		0.05	
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	*8 + U 70 - 0	7.42	40.0		5.95		
	210.0	0.67	100+0		0.05		
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	272.0	(1.50	345.0		1.535		
	347.0	31.0	352.0		30.05		
	318.0	20.0	343.0		18.25		
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e	AKRAY DATA						
	2.50002+000						
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	0.0	0.0	1.0		0,05	# VHTR	
	38.0	2.2	40.0		5.25		
	78.0	6.6	122.0		0.55		
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	347.40	21.0	37649		20423		
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11 11111111111111111111111111111111111	1 U 05200F+02 72000F+02 9RAY DATA •5000F+00F •412*E*03F •412*E*03F •5000F+00F •612*E*02F •612*E*02F •6150F=06F	2 0 0 3.5550000E=03 0. 0.0 0.0 1.0E20 0.0 0.0 0.0 1.0E20 *1.2557E=05E *1.2557E=05E	92 72 0 1.0	0.	92	7 3.072000€+02	*CNU2 *CNU3 *CNU5
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	U + 050F 2 + 742E = 04E 1 + 041F = 03E 0 + 05 0 +	18 TU 60 FR(M 50 APRAIS HAVE AC-F22(MOU1)	BEEN PEPLACED	<pre></pre>	
	- VIMAX SET THE COLLOWING 1.02000 1.02000 1.0200 1.0200 1.0200 1.0200 1.0200 1.0200	1E TU 50 FR(1M 50 APRA(5 MA/E AC-F)2(MOU1)	DEEN PEPLACED ANALYSIS	<pre></pre>	
	U + 050F 2 + 742E = 04F 1 + 04F = 03E 0 + 05 0 + 05 0 + 05 0 + 05 1 + 0371E 0 1 F 0 + 05 0	18 TU 60 FROM 50 APRAYS MAYE AC-FD2(MOU1)	BEEN PEPLACED	<pre></pre>	
	U.050F 2.742E-04F 1.041F-03E 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.0	18 TU 60 FR(IM 50 APRAIS HAVE AC-F02(MOU1)	BEEN PEPLACED ANALYSIS	<pre></pre>	
	U + 050F 2 + 742E = 04F 1 + 04F = 03E 0 + 05 0 + 0	18 70 60 FR()M 50 40 FR()M 50 40 FR()M 50 40 FR()M 50	BEEN PEPLACED	<pre></pre>	
	U + 050F 2 + 742E = 04E 1 + 041F = 03E 0 + 05 0 +	18 TU 60 FR()M 50 APRAYS HAYE &C-FD2(MOU1)	DEEN PEPLACED ANALYSIS	<pre></pre>	
	U + 050F 2 + 742E = 04F 1 + 04F = 03E 0 + 05 0 + 05 0 + 05 0 + 05 1 + 0 + 05 0 + 05 0 + 05 1 + 0 + 05 0 + 0	18 TU 60 FROM 50 APRAIS MAYE AC-FO2(MOU1)	BEEN PEPLACED ANALYSIS	<pre></pre>	
"" "" "" "" "" "" "" "" "" "" "" "" "" "	U + 050F 2 + 742E = 04F 1 + 04F = 03E 0 + 05 0 + 0	18 TU 60 FROM 50 APRAIS HAVE AC-FD2(MOU1)	DEEN PEPLACED ANALYSIS	<pre></pre>	
	U + 050F 2 + 742E = 04F 1 + 04F = 03E 0 + 05 0 + 0	1E TU 50 FR(1M 50 APRAIS HAVE AC-FD2(MOU1)	BEEN PEPLACED ANALYSIS	<pre></pre>	
	U + 050F 2 + 742E = 04E 1 + 041F = 03E 0 + 05 0 + 05 0 + 05 0 + 05 1 + 0 + 05 0 + 05	18 TU 60 FR()M 50 APRAIS HAVE AC-F02(MOU1)	BEEN PEPLACED ANALYSIS	<pre></pre>	
一日,一日,一日,一日,一日,一日,一日,一日,一日,一日,一日,一日,一日,一	U + 050F 2 + 742E = 04E 1 + 041F = 03E 0 + 05 0 +	18 70 50 FR(1M 50 APRA(5 MA/6 AC-F)2(MOU1)	DEEN PEPLACED ANALYSIS	<pre></pre>	
一日,一日,一日,一日,一日,一日,一日,日日日日,日日,一日,一日,一日,一日	U + 0506 U + 0506 2 + 742E = 04E 1 + 04E 1 + 04E 0 + 05 0	18 TU 60 FROM 50 APRA(5 HAVE AC-F92(MOU1)	BEEN PEPLACED ANALYSIS	<pre></pre>	

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*AKSLO DA /PD21A/_...*./L2+3/CDN1/L2+31ND wITH FDLL2-ING MUDIFICATIONS:
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*
 301/43¥ 1987. 113
 + INCOMPORATE DISTRUBUIED HEAT SLABS
4
  + CHANGE INITIAL HETY'S FRUN 5/3 K TU 570 K TO HELP INHIBIT
12
  FILM POILING AT START OF STEADY STATE RON
- MINJR CHENSE TO LEVEL & JOANCOMER FA-T AND 2 (TO .375)
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 001 1983, PTO
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  - REVISE AXIAL FUMER SHAPE PEP PC & TK
 AUG 1285, ULS
  - REFISE ELEVATION OF COMES 0.13 M LUNEP
* SEP 1905; J.BINCHLEY
 + INCLUDE FRICTION FACTOR VALUES FOR ENTRY INTO, THRUUGH
¥.
   AND EFTT FROM LOKE
    REVISE FLUTU VILUME AND AREA FRACTIONS
                                                           28 #1VSSBF#
                                            A PHESRA
                                                                           U *CARD 2
            12 #184.20
                             在 中国美国发展
# 465x#
                                                                           3 *CAKO 3
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            12 +1001*
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             3 +1605PA
#1CPR#
                                                                               +CARD 5
                            U TNEETA
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             D SNAFER
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                             D BRUNKS
                                            0 #NRTS#
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AIRPHTYP
             7 #1.DUX#
                                                                              #CARD 7
                                                            0 #HRPHRF#
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*100x12* 100 $1x0.5**
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                                           25 #NRPHSY#
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                             1 +NZPATE*
U #12PASY#
                                                            L +NZMAX*
                                                                               CARD 9
                                            1 #NFC1L#
                                                                           60
           101 PAMARXO
                             1 444-014
O TRETRO
                                                                               +CARD 10
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                            10 480085*
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            TE ANUDESA
                            0.*** # 01 F*=1.820 *RRP#***1.830 *RP#SCL* 1.0
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           D. AINEUIR
* PEACTR
                         0. SZPHOFF* D. *KZPHMX* 0.
U. TPURAT* 1.335 *FUCKAC* 0.7 *HCAPO*1.3E*3
                                                                               #CARD 12
*** DIR 1 * 37. 05 5 4 2 P w1 10
                                                                               #LAKD 13
 #54471.V# "** ##110K#
                                                                               *CARD 14
 *D1*H1(1)*4.0 *J1xH1(2)*50. *D24H1*1.01-3
                                                                               *CARD 15
  *****
                                                                               4LAND 16
  RASKIPPENRA
                                                                               +CARD 17
  BASKIPPEDAR
 4
                                                                   # 2
                                         1.2485
          0.527
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                         1.7815
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                                         1 .9245
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                         4.8465
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 . VESSEL SOURCE LEXOS
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                                                                   * BLCL
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		12	1	10	4	ABABS
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1,016	1 - 136	OR 3	0.330F			420F44
S THE EULLONING (DATA 15 F	UR FM-1				
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R 4 1,4856F 4	1.2035	7 R 4	0.72456			ACCONS
		6	3		15	*10R00
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elouwayte 1 nc	1+0431	*	1-23575			* X P X P
0.1500	1.24	14 I	1.6546 5			PIPHID
1.4995	1.0	3.17	0.0477 -			070 JTR
R 4 33.108 4	121	7.18 4	154.55			PDX
0.0	7.7447E.	-4 1.5	4846-35			PRADED
2.32356-3	3.04796.	-35				PRADRD
3.172*5-3	4.64764.	-3 4.7	420E-35			RADRD
5,05080-3	5.3540E	-3E				PRADRD
P 5 1		38.2	2 E			PMATRO
0.0	37+1126		0.3	32.42566	\$	RPWTB
	9.07481	6	1.28	5.5142E	5 5	* RPHTB
1.30	3.7970	5.5	1 + 40	3.27856	5 5	*RPHTB
1 * 40	2 33301	5 D	1+36	2.54805	0 5	* KPNIS
	2 1567	FD	1.01	2 4 6 7 1 6 6	2 3	*KF#15
4.0	1.9673	SO EA	5.0	1,87515	2 2 4	epputs
.0	1.7419	Fb	10.0	1.72515	6 5	PRPATE
15.0	1,6047	Eb	20.0	1.51836	6 5	* KPWTB
30.0	1.3462	E6	40.0	1.30856	6 5	*RPWTB
60.0	1.1357	65	100.0	1.07008	5 5	* RPNTB
200.0	0.7500	Fb .	300.0	0.8400E	6 5	* KPWT8
100000.	5. 3560	E4 b				* KP HTB
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5 15						* Y F A X
F 0.01F						0 P P U U Z
D. RIDIDE-1	0.0	1.010305-0	1.7830	06-3	0.0	ACHIX
7.130106-3	0.05	1 0 0 4 9 9 0 5 - 6	4,4,10,25	05-0		+CHIX
P. P1010E-1	0.0	1,010306-2	1.7830	08-3 (0.0	PGMIX
7.039106-3	0.05					*GMIX
9.81010E-1	0.0	1.010306-2	1.7830	00E-3 (0.0	*GMIX
7.099106-3	0.05					*G41x
9.81010E-1	0.0	1.010306-0	1.783/	006-3	0.0	PGMIX
7.039106-3	0.05					*GMIX
2. AT 21 DE -1	0.0	1.010308-	1.7830	DOE - 3	0.0	* G M I X
7.033106-3	0.05	1 ALTERNA				00414
3. "IJI0E~1	0.0	1.010306*	3 1.783	005+3	3*0	# G M 1 X
3 910105-3	0.00	1.010111	1 763	105 - 1	0.0	ACHIX
2.030107	0.05	1.010305-	c 1703	0003	0.4.9	#CMIX
9.810106-1	0.0	010305-	2 1.783	005-3	0.0	acaty
7.029105-3	0.05					e G M T X
9,810106-1	0.0	1.01040E-	2 1.78-	008+3	0.0	*CHIX
7.079108-3	0.05					*GHIX
9.410106-1	0.0	1.010308-	2 1.783	005-3	0.0	*SM[X
7.099106-3	0.05					*GM1X
7.81010E-1	0.0	1.010308-	2 1.783	008-3	0.0	¢GMIX
7.039106-3	0.25					#GM1X
9.01010E-1	0.0	1.010308-	2 1.783	005-3	0.0	*GMIX
1.03910E-3	0.0E					*GM1X
F 1.0E						*GMLES
E 4 2+4100E+6	N B I	6+12008+5	8			IPGAP1

YCH	5760.10	620+0	\$10F0	0*0	
YCUA	024010	20070	2/0*0	ă*2	
XSHE	\$260 0	640.0	\$1010	010	
XSHa	52e0*C	\$80*0	\$20*0	0*0	
XSHA	5200*0	S80*0	\$10*0	0*0	
XSHW	\$760°C	500*0	520°0	0.0	
XSHA	2:0355	580*0	S20*0	0 * 0	
XSH#	\$260°C	580*0	160*0	0*0	
XSHO	\$260°C	280.0	:0*0	0.0	
XSH#	5200°C	\$00*0	10*0	0.40	
XSHO	2500.C	\$80*0	10*0	0*0	1.2353
AZHQ				3 9201.0	7 0
AZHO				5 0 0	5 0
ACHT				c 0*0	4 8
8 5 17 8					
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NVde				0*0E	2
ti d to				3530-071	1111
NTLE				30 10 9	
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7 = N 1 A =				40*0	4
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N=NAA#				30°0	3
7-1.440				50*0	
I-NAA¢				0*06	2
NULA				9 C * C	5
SHIAMA				39	5
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8-0H\$				31*0	4
2-0на				31.0	3
1-UH#				21.0	141 04
0-¥39 7-8-10				4011	
1 = 2 < 6				4011	
TOAN				3911*1	1.1.2.2
+CE 54-1				3015	
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- A7 3 3*				30.40	3
4-7730e				10.0	3
(→ 7243¢				30*0	
1=1230*		10010	A LOCAL DATE	40*0	9
XSHA	9200-0	980-0	\$20°0	0.0	
X SHIP	5260110	540×0	51010	0.0	
XCHA	\$260*0	SH0*0	670*0	0*0	
XSHe	5260*0	\$80*0	\$10*0	0*0	
XSHe	5260*0	480*0	\$20*C	010	
XSHe	5200°C	500*0	\$10 *0	0.0	
XSHO	\$26C°C	S#0*0	\$20*0	0*0	
хбна	5590.C	580*0	\$10*C	0.40	
Xia	5260°C	5.00 * 0	620 * 6	0*0	
XSNR	5266-6	880.0	42010	0.* 0	
2744	5200-0	980°C	NC 0 * C	0.10	
Y CH-	526070	480.0	970-0	0.40	
YELLA	5260*0	CHOPO	510*0	0.10	
YSHA	17.0*0	CANEN	610*0	010	
VSHe			4 6 1 9	3 96013	12 N
WSH#				\$ 1640*6	
VSHO				5 6660.0	7 8
VSHA				\$ 110000	4 5
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and the second s					

	44.5	15 . 15 7 6	0. 1. C. C.	A	
	0.0	1 11 11 7 K	0.000	313763	# 115 X
	0.0	04013	0.085	0.0052	# +1 5 X
	0.40	2+075	0.085	0.0925	* H5 X
	0.40	0.075	0.085	2.0925	RHSX
	0.0	0.075	D.DAS	3.092E	# H S X
¥	0.04				#7 5 2 1 - T
£	0.05				ACC 21 - 2
2	0.05				* 1 7 2 1 - 2
	0.05				ACETER
2	USUE				*CFZY=T
	0 + 0 E				*CF2V-2
2	0.05				CFZV=R
	1.1188				WYOL
F	1.0F				45 4-7
212	.4098 4	.5826			*5.4 - 7
RH 1.0 3	4 1.0 P4 U.0 F				A.C.A
	1.5				***
1911 - 14 A	10				a 110 = 1
	4.4.5				***0***
200 B 100	435				*H0-R
- E	570.0F				CHSTV
P	bF				*HATHS
F	0.05				PALPN
4	0.05				BVVN-T
6	0.05				
E.	0.05				* * * * * * *
1000	0.00				* X X X + K
2	0.04				9 Y L N = 1
5.00	0.05				*VLN-Z
. F	0.07				* YLN+R
(#13), 11 h	615.0F				4 T V N
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1					
a rea	5L 3				
RA	0.1341 S				ASHA
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	444597 5	A			ANDA
	0.0	0.000	0.010	0.01535	WHSX
	0.0	0.005	0.010	0.01535	#HSX
	0.0	0.005	0.010	0.01535	THSX
	0.0	0.005	0.010	0.01535	*HSX
	0.0	0.005	0.010	2.01535	*HSX
	0.0	0.005	0.210	2.01535	A HISY
	0.0	0,005	0.010	2.01535	4260
	0.0	3.405	11-010	3 01535	A
	0.0	0.005	0.010	0.01233	THON .
	0.0	0.010	0.010	1.01223	* M 3 A
	U.C.U.	0.000	0.010	2.01535	AWZX
	5.0	0.005	0.010	2.01535	AHZX
	0.0	0.003	0.010	0.01535	奉 H S X
	0.0	0.025	0.035	2.0405	*HSX
	0.0	0.025	0.032	0.0405	7 HSX
	0.0	0.025	0.035	3.0405	ALLEY
	0.0	0.025	0.035	3 3455	4.45.4
	0.0	Vevez	0.033	0.0406	*427
	Ueur				*CF2L+1
K 7.5	2.26 4	0.05		* F F # 5 * 5	*CFZL-2
- F	0.06				¢CFZL+R
F.	0.08				*CFZV-T
R12	5.58 4	0.05		* # # # # # # # # # #	*CF7V-7
F	0.05			and a second	SCE2V-D
812	6560 A	11.5835			AUDI
013	10308 9	UN DREE			
K1C	4/9 4	* 2 M K K			* F A = 1
515	0.4488 4	.5828			#FA-Z
R8 0.7	24 0.0 R4 0.0 1	£			#FL-R
212	1+278-iR 4	U.100E			*HD.T
912	1 222 - 1 4	0.100F			200-2
212	1.225-20 1	ULIDOF			4-10-0
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1	TIVIUP				#HSTN
	e, E				SHTAME
	0.05				PALPN

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12.1

1.0	4.1				= 4 4 4 4 = 1
2	U. GF				3 X X X = 1
	0.05				0 Y Y Y + H
÷.	0.0=				
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F.	145.4455				apy
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2 4	0.0.8				9.H5A
8.4	0,0 ;				9.H 5 A
8.4	2.1703 5				# H 3 B
8.9	- 1.2410 ±		A 144	D. DELES	8.45V
	0+0	0.010	0.000	3 114455	# LL C Y
	5+5	0.000	0.000	3 04465	CHC V
	0.0	0.070	V.UBU	3.000000	8 J C V
	2.0	0.050	0.040	3.04665	6 H S X
	0.0	0.070	0.040	1.06685	8 H S X
	0.0	5 550	0.050	3.06655	8 H S X
	0.0	0.000	0.050	1-04655	*H5¥
	0 * 0	V + J 7 V	0.000	3.06655	BHCY
	0.0	0.000	0.050	2.0440.0	*HSX
	0.0	0.000	0.000	3 06665	A HSY
	0.0	0.020	0.000	3.06665	6-45 Y
	0.0	0.070	0.000	2040.0	8 H S X
	0.0	V x V C 2	0.002	2.0405	RHSX
	0.0	0.070	0.039	1.0405	* H S Y
	0.0	0.025	0.035	3.0405	ONSX
	0.0	0.062	0.000	010101	CETL-T
	0.01	0 N.E			*CE21-7
675	0.05	UAUE			*CE21-8
	0.04				*CE7V-T
P	0.04	C. A. M.			ACEZV-Z
414	0.00	UNUC			CETV-R
	1.200	6026			+VOL
×1/	1104 1	6.6.76			¢ F Δ ↔ T
	U.C. 1				* F A - Z
34	0.004	1.26164	0.084	0.06	$\alpha \in \Delta = R$
01.0	1.225 - 2 6	1) - 1 (5/5)			*HD = T
013	1 375 - 28 4	0.1005			*HD-Z
013	1,276-28 4	0.100F			9H0-R
	570.05				PHSTN
1.0	6.6				*MATH5
1.1	0.05				ALPN
	0.05				4 V V N - T
	0.05				* 4 4 4 - 2
	0.0F				$\phi \land \land \land \lor \lor$
r.	0.0F				#VLN-T
	0.0F				QVLN=Z
1.1	0.05				*YLN-R
	515.05				ALAA
2	503.05				#TLN
1.1	148-4555				0 P N
	0.05				PAN
	0400				
	16.021 5				
	0.0.0				*HSA
	0.0.5				*HSA
0 4	0.1223 2				*HSA
	0 00222 2				OHSA
	0 + 7 E 1 1 E	5-050	0.050	0.06655	*HSX
		0.050	0.060	2.06655	4 ×1 5 X
	0.0	0.4050	0.050	3.06655	0 H S X
	4.4	0.050	0.080	0.06555	*H5X
	1 × 1	V. 8. V. 1 M.			

7-04-			12124		1.1.1
1-740			3746*	5 0H27 L	210
TOAR			3286*	N 8976*	21×
*- A Z 3) *				10*0	
2-A7330			30.0	39°0	210
1-11-10				30°0E	3
\$~7730*				10*0t	2
2=12:334			30*0	30.0	51.
XCU1 7-11334	30-010	12.540	12010	30*0	3
X SH #	50+0+0	560.0	52010	0.0	
XSHo	SC+0°C	SE0 *0	62010	0*0	
XSHe	5050°C	SEC*0	620*0	010	
XSHe	\$\$990*C	090*0	0.000	0*0	
XSH#	55990°C	090*0	05010	0*0	
XSHe	5 5 9 9 0 ° C	C9C*N	020*0	0*0	
XSHe	\$\$\$40°C	090*0	090*0	0.0	
XSHA	2 4 9 4 0 * C	0.00.0	0 = 0 = 0	0.0	
XSHø	24940*C	0.000	060.0	0*0	
XSH¢	55990°C	090*0	060*0	C * 0	
XCHA	28400-0	04010	0.0.0	0.0	
X CH A	22200110	04010	0.0.0	0.0	
XSEL	56990*0	040 0	0.0.0	0*0	
XSHe	0*04922	0.400	040*0	010	
. VSHO			1/213 0	= 142610	
VSHO				S 5121 °C	0 3
VSHe				S 0°0	6 0
$V \subseteq H \Rightarrow$				S 0*0	5 3
					0
				9 13431	\$
NVde				40*0	*
h d e				3636*661	
NJIO				30"865	- Q.
N.A.1.#				3D*SI9	3
8-NJYA				30.0	d
Z-NAA				30*0	5
1 -N 1A 4				30*0	3
				30.0	4
1=1.4.4.6				30.0	5
NdTVa				30.0	3
SHLVWS				40	3
NISHO				30.012	
a+OH+			3001*0	5 82-322 t	215
2 = CH +			0*100E	b dZ=322*1	618
1 - CH +			0.1C3E	n 02+322*1	815
9 E V ~ 5	90.0	*40*0	#a142*0	70°0	73
1-430			3785*	b a3bb'C	615
70.44			3784	V 8152*0	213
+CETA-B			3 C M H	9 0×2 9 1	c10
7-1740+			2010	10*0	
+CE5A=1			2.0	30*0	6.1.0
*CESF-6				10.0	
2=12=0*			30 * 0	37°0	615
1-1233*				0.06	
XZM¢	30 90 * 0	SEC'O	95040	C*0	
XSHA	5040*0	SEO'0	620*0	0.9	
X C H A	5040*0	SEC.0	920°0	010	
XSHA	5699010	090*0	92010	010	
XSHe	56640*0	04040	0-0*0	010	
XSite	55940*0	050*0	040*0	610	
XSHe	\$4440*0	C\$0*0	050*0	0.0	
XSHO	\$\$990°C	04010	0.40.40	0*0	
XSHO	55940°C	040*0	050*0	C*0	
A H S K	55990°C	050.0	0.50.10	0*0	
X 2 H S	eeanu.c	696+6	C+0+6	C * 14	

24	1. 10 h	10.511.6		1. A. 116	26.4.4.2
212	1.275-25 4	3.1006			Restlem 1
312	1.226+25 4	0.1005			0+0-1
\$12	1.228-25 4	N. 100F			8-D-P
F	570.0F				ALSTN
a	hF				CHATHE
	0.0F				CALEN
2	0.0F				0 V V V = T
2	0.0F				5.99N-1
18	0.05				*****
2.2	0.05				WINHT
4	0.05				OVLN=1
¢	0.08				AVLVER
÷	5.5.UF				*1 V N
1.4	523.05				#TL 4
1 F	148.4555				0 P V
÷ .	0.0F				APAN
e	LEVEL 7				
· ·					1.1.1.1
2 6	0.0 5				PHSA
	0.0 3				*HSA
8.8	3 46226 3				eH20
1.1	1.7515 :	and the second			PHSA
	0.0	0.050	0.050	2.06655	PHSX
	0.0	0.000	0.050	2.05555	* H S X
	0.0	0.040	0+050	2.000055	PHSX
	0.0	0.070	0.000	1.00000	AHZX
	0.0	0.070	0.050	0.00075	* H S K
	0.0	0.050	0.040	2.00000	ANDA
	0.0	0.000	0.050	J. 04693	ALEY
	0.0	0.050	0.040	1.00000	A C P A
	ŏ • 0	0.040	0.040	3.00000	A CIUS
	3.0	0.0.0	0+050	2.00000	ACHO
	0.0	0.000	0.000	J * U 0 5 3 3	ACPA
	0.0	0.070	0.035	1+00000	eH2X
		0.027	0.035		A CEN
	0.0	0.020	0.035	3.0405	* M S X
	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	0 + 0 5 2	0.032	3.0405	THSA
	0.0	0.063	01030	VAUNUE	4 M S A
212	0.65	0.05			ACC1
2	0.07	0.00			00521-1
	0.05				
612	0.65	0.01			ACEIV-
	0.05				4CE14-1
512	4788 4	5825			ev.01
012	0.2515 4	5826			SE A .T
212	0.4488 4	S.R.F			OCA-1
64	0.024	0.25100	0.584	0.05	+ C A - D
012	1.225	0.1005	0.014	VevE	AND - T
315	1,225,20 6	0.1005			*H0-1
013	1 226-20 6	0.1005			AND -2
2 2 2	A . CC - C . 4	0.1006			410 44
	5. ÷07				411213
1.200	0.05				*******
	0.05				MAL PN
	0.05				******
1923	0.00				
- 2 -	0.05				*****
	0.05				**LU=1
1.1	0.00				# ¥ L N # Z
	CAUP				AAC NAK
	010+08				4144
1.1	543.0F				Ø I L N
	140-4606				# P N
	0+08				#P & N
	iture a				
	Lever -				
1.1	A 4 7				
	1.4 3				ACHA

5 5	and the second				A 118 4
2 4	5.3561 5				4054
5 4	1.9514 5				11130
	0.0	a state of the			
	0.0	94040	0.050	2.00000	A H P X
	0.5	0.0.0	0.050	3.04555	# 11 5 X
	0.0	0.040	0.340	2.00055	• H S X
	Q * Q	0.040	0.050	0.06555	* H S X
	0+0	0.040	0+050	2.06555	*HSX -
	0.0	0.050	0.050	2.04655	#HSX
	0.0	0.050	0.050	0.06555	PHSX
	0.0	J=040	0.050	2.06555	*HSX
	0.0	0.040	0.365	0.06655	€ H S X
	0.0	0.050	4.050	3-116655	* H 5 Y
	1.0	3.050	1. 140	3.04454	ALCH
		1.060	4.404	2.000000	*H3X
	0.0	4.070	0.000	2:00023	eH2X
		0.020	0.035	0.0405	CH2X
	× 0.00	0.010	0+035	0.0405	#HSX
	5.0	0.025	0.035	2:0405	* H S X
	0.40	0 - 0 2 5	0.035	2.040E	* -4 S X
F	0.0E				*CF2L-T
P12	0.6F	U.OE			*CFZL-Z
. F	0.0F				*CF21~R
F	0.0F				*CF2Y-T
912	0.65	0.01			ACEZV-Z
2	0.05				0/E / V - D
012	6785 4	6626			ACT TANK
0.1.0	0.3630 4	12065			-YUL
1.4.5	0.271* *	+ 2P4 E			41-7-1
4.1.1	0.490* 9	* 2 H 2 E			6 F V = 7
94	0.004	0+25184	0.084	30+0	¢F∆=R
812	1.276-29 9	0.100E			*HD = T
\$15	1.278-29 4	N.1008			*HD = Z
573	1.27E-20 4	U.100E			*H0 -R
ε	570.0F				*HSTN
5	5.5				#MATHS
p	0.05				#ALPY
ε	0.05				AVVN-T
0	0.05				6 V V V - /
	0.05				AUUU-D
2.13	22 No. 1				- + + /y - K
	0.05				a A [" V = 1
	0.01				* * L N = L
1.0	O.OF				* Y _ N = R
15 11	515.0E				e L A A
G. 1	573.0.				OTLN
F.	148.4E5F				PN
F	3.05				* P A Y
0					
	LEVEL P				
à.					
R 6	0.2100 S				PHSA
5 4	0.9060 S				0 4 5 A
2 4	0.5172 5				*HSA
6 4	1.9370 F				#HSA
	3.3	+00250	.00500	+ 00715	#HSX
	0.0	10250	.00500	.00715	# HSY
	0.0	10260	0.05.00	00715	A H S Y
	0.0	.00290	0500	00713	* 11 C V
	0.0	+00270	.00500	100713	+113 A
	0.0	+ 00200	.00500		****
	0.0	+00240	.00500	.00715	4M2X
	0.0	.00250	.00500	.00715	@K2X
	0.0	.00250	.00500	. 00715	#HSX
	0.0	.02000	.03000	+ 0341S	e H S X
	0.0	* 35000	.03000	.0341S	MHSX
	0 . 0	.02000	.03000	. 33415	*H5X
	0.0	.02000	.03000	.03415	ØHSX
	0.0	. 325	.035	.040 5	#HSX
	0.0	.025	.035	+040 S	+HSX
	0.0	124	.035	-040 5	#HSX
	0.0	025	.035	.040 6	4 H 5 K
	0.05	1062	1000	1040 C	0/571-7
	0.00		0.80.4	0.05	+C5/1-1
N . 19	0.00 4	1+25 9	0 4 2 K 4	Vave	the factor of the

E 0.07 a 4 0.07 a 5 0 0.	U + D E + C F 2 V + Z + C F 2 V + K + V U L + F A + T + F A + Z + F A + P + V C - Z	
2 4 0.00 4 1.22 4 0.27 5 0.00 5 0.3455 4 .2825 5 4 0.755 4 .2825 5 4 0.755 1 0.3455 4 0.58205 5 3 3.355 4 0.3 54 0.0 5 5 12 1.225 - 28 4 0.1005 3 12 1.225 - 28 4 0.1005	*CF2V=+ *VUL *F&=T *FA=2 *FA=2	
0.00 0.00 012 0.9356 4 0.9826 013 0.3666 4 0.9826 013 0.566 4 0.9826 013 0.566 4 0.98206 013 0.566 4 0.98206 013 0.566 4 0.98206 013 0.566 4 0.98206 013 0.100 6 0.1006 012 0.226 - 28 4 0.1006	5 ¥ U L 4 F & = 1 5 F A + 2 5 F A + P	
12 13 14 14 15 14 14 15 15 15 15 15 15 15 15 15 15	* F & = T * F & = Z * F & = P	
E 4 0.75P 1 U.JA6R 4 0.5820F PS 0.365 x4 0.0 F4 U.U E E12 1.22E-2R 4 U.100F E12 1.22E-2P 4 U.100F	* F A + Z * F A + P	
P3 0.365 x4 0.5 F4 0.0 E F1P 1.22E-2R 4 0.100E R1P 1.22E-2P 4 0.100E	* F & + P	
\$12 1.22E+2R 4 U.100E 212 1.22E+2R 4 U.100E		
212 1.22E-29 4 U.100E	****	
	*HU=2	
ETS 1*53E=56 # 0*100E	0 H S T N	
F 570.0E	* MATHS	
	TALPN	
5 U 405	0 ¥ ¥ N = T	
e 0.01	* V V V - Z	
4 0.0F	• V V N = R	
¢ 0.0F	* V L N - T	
¢ 0.0¢	* V L N - Z	
F 0.0F	#YLN=R	
f 515.0f	* T ¥ ¥	
= 5°3.0E	4 J L N	
F 148.485E	APAN	
¢ 0.0 ¢		
LEVEL 10		
5 A 1.0940 S	0 H 5 A	
e 6 4.2018 S	* H S A	
2 4 1,3344 5	# 115 A	
S & 5."R40 E	*H5A	
0.0 .0010 .002	.003045 *H5X	
0.0 .001u .002	+ 003045 *H5X	
0.0 .0010 .002	×244 240000	
0.0 .0010 .002	003045 #HSX	
0.0 .0010 .002	.003045 *HSX	
0.0 .0010 .002	.003045 *HSX	
0.0 .0010 .002	.003045 *HSX	
0.0 .0200 .030	.034105 *HSX	
0.0 .0200 .030	.334105 *HSX	
0.0 .02h0 .030	.034105 *HSX	
0.0 .0200 .030	.034105 *HSX	
0.0 .0.50 .035	. 24005 *H5X	
0.0 .0250 .035	.04005 M58	
0.0 .0250 .035	04002 2424	
0.0 .0250 .035	*C F Z L	- 1
F 0.0F	* C F 2 L	-1
F O.DF	*CF21	- 8
	*CF2	1-1
	*CFZ	1-2
0.0F	*CFZ	4-9
515 0.885P 4 .715E	*YDL	
5 4 1.00 9 U.OR 4 .7150F	¢ΕΔ	1
P 4 3.35P 4 0.0K 4 .2505	0 F A +-	5
0.981 0.444 0.481	0.449E *FA-	2
R8 0.0 R4 0.0 R4 U.U E	*FA **	R. T
0.100E	* HU *	2
\$17 1.22E-28 4 U.100E	4HD-	R
R12 1.22E-2P 4 0.100E	*HST	N
F 570.0E	**AT	HS
F UE	461.9	N
F 0.0E	e y y n	1-T
() () () () () () () () () () () () () (4 V V V	1-2
F D.OF	9 Y Y Y	$i = k_i^2$
F 0.0F	0 V L V	1 = K 1 = T
F 0.0F F 0.0F F 0.0F	8 4 4 4 8 4 L 4 8 4 L 4	4 = K 4 = T 4 = Z

XSHe	SOINEC*	CEC*	0020*	010	
XSHe	\$01980*	080*	0.020*	C 10	
XSHe	500000*	2001	0100*	n+0	
X 5140	500000	200*	10010	0*0	
XSH¢	540600*	* 0.05	0100*	0*0	
XSHe	\$40600 *	* 0.0 5	0100*	0.0	
XSH*	200300*	\$0.02	0100*	0*0	
XSHW	\$ \$0 2 0 0 *	\$00*	0100*	0*0	
XSHO	540600*	200*	0100*	0.0	
A SHIP	240500.	\$00*	00100*	0*0	
ADUS				8 O*O	8 9
VCHA				2 9547.0	9 0
VSHA				2 1262.5	7 a
				2 4588.0	4 3
				CEAER IS	ę
NVdø				30°0	1
Nde				148*4586	d .
NTLO				30*605	5
NALE				30.210	3
7-1-74-2				30.0	3
I=N JAA				30.0	
HANAAR				10.0	2
7 - N A A #				30.*0	4
1=KAAe				20.0	3
NdTVe				40*0	3
SHIVHO				10	. 2
NISHE				30*0/5	
9-OHP		3001.0	* 892700*0	h 02-322*1	88
Z= CH+			0*T00E	1 -528-70 4	210
1-GH¢			n*107F	1*526-56 4	615
3-836		30 * 0	49240.0	0*31190	63
1 = 2 4 4			3000 *	* 364E*C	é T S
70.4.9			4745*	4 946.0	512
+CESA-8		3010	34611	" als6"0	cī č
7-AZ30+			2400 UAT	V30-0	80
ACETA-1				2010	
*CE56-8		3.06	# 300*651	50.11	
2-7230+				10.0	4
1=11934				30*0	1.9
XZHA	30040.	480*	0570*	0*0	
A 2 H 4	50040*	SE0*	0.450.+	0*0	
YCUA Y	50070	SEC*	0.650 *	a*o	
XSHe	501650*	520	0 % 2 C *	0.0	
XSHA	501000	000	0.070*	0.0	
XSHA	SOTHEO *	050*	0020*	0.40	
XSHO	501980*	OFO*	0.027 *	0.10	
XSHe	\$ \$0600 *	200*	0100*	0.0	
XSHO	540600*	2001	0100*	0*0	
XSH#	\$ #0 € 0 6 *	* 0.05	0100*	0*0	
XSHO	540600 *	500+	0100*	0.0	
XZHO	240500 *	20C+	0100*	C*0.	
XSHe	590600*	200*	0100*	0.0	
X SHO	5 402 60 *	200*	0100*	C*0	
W SHIE	240600.	800+	0100*	C*0	
VSHE				9 9691*1	0 3
VSHO				5 66941	7 8
V S H a				5 6972*	5 0
				a date	* 3
				11 75497	*
VAGe.				aC*0	4
1.714				9510*251	#
1 .				au*£u4	5
				201 4 St. 4 St. 1	2

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		* D2000	.030	. 204105	- #115X
	1	. 32/813		. 234105	\$ H S X
	6.0	1284		. 04005	6 H S Y
	A 11	134.1	1135	26005	0.15.4
	V * V	106.04		0 0 4 7 0 2 0 - 0 0 F	
	4.4.1	10620	4033	* UNUUS	1113A
	9.4	10250	1035	*0.40.0E	eH3Y
1.2	0.0F				9 C F Z L = T
	0.9E				*C*11+1
	0,0F				* C F 2 L + R
£	3.05				*CF24-1
. <u>F</u>	U.OE				*CF2V-2
\$	3.08				#CFZY=R
\$12	C. RARD 4	U. U00F			AVOL
212	3.3168 4	-0. UOU¥			05 A - T
\$12	1. 3035 4	1.0004			PEA-J
0.4	0. 366 U.C. 0. 0. 0. 0. 0.	U . V . V . V .			# 5 A - 0
	0.000 KA U.U. IA U.	U C			***
× 1 ×	1 + 6 6 5 - 6 4 4	0+1005			4 21 () = 1
115	1.225-21 4	0.1006			#HD-7
E75	1.278-28 4	0.1004			*HD+R
P	570.08				* HSTN
6	6 ¢				*MATHS
Ę.	0.UE				CALPN
F	0.07				QYYN=T
¢	0.05				# ¥ ¥ N = 2
	0.01				BUVN-D
5	0.05				#VIN-T
	0.00				AVI. U7
-211					
- Č	0.04				a A L' H = K
- F	015.05				0 T V N
E.	523.61				TLN
5	149.4656				* P N
1	0.0F				OPAN
. 0					
	PUR DATA				
	0.05				CRURN 1
	480.05				4007V 1
-	017.05				ADUDA 3
	0.05				* 90 KM 2
	242405				AKDIA S
P	0.04				*BUEN 3
F	559.OF				CROIN 3
÷.	0.0F				POURN 4
8	557.(*				ARUTN 4
F	0.0F				*BURN 5
ç.	559.05				*RDIN 5
5	0.04				*BURN 6
1	559.05				* 8 D T N 6
	0.05				CALIEN
1.2.1					V100
1.1	224.05				******
	0=0E				*BUKN C
P I	559.05				ANDINS
R.	0.05				ABURN
F	559.0F				*ROTN
E	40.0				#BURNI(
Ę.	559.DF				RUTHI
. F	0.05				#BUKN1
c	559.05				*RDIN1
	0.05				ARTIN 1
1.5					405791
	004*05				
F	O.OE				-BUKN1
F	559.08				AKOIA1
F	O.OE				*BUKNI
F	559. CE				*RDIN1
£	0				*BURN1
Ę	552.05				*RDIN1
					BURNI
	223 12				REDINI
	377.VE				631(64)
F	3*01				+DUR41
6	554 a (E				*RDINI
6	0.05				690BN1

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TABLE 3.5. Input deck listing for transient

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	۴.																																						
- 1	14	* *		* 1		1.0	- 1	* 1		* 9	4.4	1.27	9.4	n a 1	6.4.1	e u	÷ ¢	* *		0 *		2. \$									2.4								
1	. 1	= 1		P. "	51	-	16	51		4	÷÷÷	F.	-1	11	R.A.I	13	1 t	51	2	ECI	1. 5.	30	1.	14.5		2.0	11	4.510	1										
		200	S	T.A	31	F - 1	F K	3.	1	T.K.	QR	5.1	τ. ι	LAS	51	н.	εL	(18	0	TF.	ST	έA	UY.	51	41	Γē.	12	J.V.											
		A 8	F	ğ, ζ	\$	4	1,1	4	0	ΩŲ	15.()	14.1	t Γ.	1k.	4	4	CT.	14	83																				
		3.8	No.	ά×	1	1	10	11	1	J N	5	11	ħΚ.ł	PN.	++	1	Μ.	ST.	ξá	74	57	A.T.	÷ .																
	0	7.9	*	0.0		1.2	* *	2.4	4	8.9	8.0			101		0	0.5	0.5	8.0	0.0.1	1.0.0	4.4	5.0.0	i e a	0.0				* *	ė ą	6.0		0.1						
17		* 2	÷.1	2.4	44		. 0	4.4	1	P 9	¢ 5	8.7	5 14 1	ME	1.1	5	τ.	D'A.	Γá	30.8		6.8.1	0.0.1	12.8	10.0			\$ e e	0.8		2.0.1	6.6.6							
	5	1.8	31	P.T	Ş.,	11	٦F	10	H	4.Z.		64	4/4.)	12:	1.	ų.		Çн	5.14	2=1). a B	6.4	NU	141	R a	10.	6.0	r be	OM.	3 =	14	W.	.1 .	1.8					
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