LOCKHEED MARTIN ENERGY RESEARCH LIBRARIES

3 4456 0449297 5

ORNL-5940

ornl

OAK RIDGE NATIONAL LABORATORY

UNION CARBIDE

Field Tests of a Vertical-Fluted-Tube Condenser in the Prototype Power Plant at the Raft River Geothermal Test Site

R. W. Murphy

OAK RIDGE NATIONAL LABORATORY
CENTRAL RESEARCH LIBRARY
CIRCULATION SECTION
4500N ROOM 175
LIBRARY LOAN COPY
DO NOT TRANSFER TO ANOTHER PERSON
If you wish someone else to see this report, send in name with report and the library will arrange a loan.

OPERATED BY
UNION CARBIDE CORPORATION
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

Printed in the United States of America. Available from
National Technical Information Service
U.S. Department of Commerce
5285 Port Royal Road, Springfield, Virginia 22161
NTIS price codes: Printed Copy A07; Microfiche A01

This report was prepared as an account of work sponsored by the United States Government. Neither the United States nor the [illegible] thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

ORNL-5940
Dist. Category UC-66d

Contract No. W-7405-eng-26

Engineering Technology Division

FIELD TESTS OF A VERTICAL-FLUTED-TUBE CONDENSER IN THE PROTOTYPE POWER PLANT AT THE RAFT RIVER GEOTHERMAL TEST SITE

R. W. Murphy

Date Published — April 1983

Prepared by the
OAK RIDGE NATIONAL LABORATORY
Oak Ridge, Tennessee 37830
operated by
UNION CARBIDE CORPORATION
for the
DEPARTMENT OF ENERGY

LOCKHEED MARTIN ENERGY RESEARCH LIBRARIES

3 4456 0449297 5

CONTENTS

Page

LIST OF FIGURES v
LIST OF TABLES vii
NOMENCLATURE ix
ACKNOWLEDGMENTS xi
ABSTRACT 1
1. INTRODUCTION 1
2. EQUIPMENT AND FACILITIES 3
2.1 Prototype Power Plant 3
2.1.1 Surface evaporator 5
2.1.2 Direct-contact evaporator 5
2.1.3 Brine pump 6
2.1.4 Preflasher 6
2.1.5 Isobutane pumps 6
2.1.6 Turbine/generator 7
2.1.7 Vent condenser 7
2.1.8 Cooling tower 7
2.2 Vertical-Fluted-Tube Condenser 7
2.2.1 Shell 9
2.2.2 Water head 10
2.2.3 Tube bundle 10
2.2.4 General vessel information 13
2.2.5 Installation 14
2.2.6 Design point 14
2.3 Raft River Geothermal Test Site 17
3. INSTRUMENTATION AND SAMPLING 20
3.1 Prototype Power Plant 20
3.2 Condenser 20
3.2.1 Temperature 22
3.2.2 Pressure 22
3.2.3 Flow 22
3.2.4 Liquid level 23
3.3 Sampling 23
4. OPERATING PROCEDURES 24
4.1 Routine Procedures 24
4.2 Supplemental Procedures 25
5. DATA REDUCTION 27

Page

6. TEST RESULTS 28
   6.1 Surface Evaporator Operating Mode 28
   6.2 Comparison with Horizontal-Smooth-Tube Condenser 34
   6.3 Direct-Contact Evaporator Operating Mode 35
7. CONCLUSIONS 46
REFERENCES 47
APPENDIX A. CONDENSER FIELD TEST DATA 49
APPENDIX B. LABORATORY TEST DATA 119

LIST OF FIGURES

Figure		Page
1	Flow schematic of prototype power plant	4
2	Sketch of vertical-fluted-tube condenser	8
3	Sample fluted tube length	11
4	Enlarged fluted tube cross section — type E profile ..	12
5	Condenser with instruments before installation	15
6	Prototype power plant with condenser installed	16
7	Map of Raft River Geothermal Test Site	18
8	Site 1 complex at Raft River	19
9	Condenser instrument arrangement	21
10	Condenser design performance locus	29
11	Condenser test performance, surface evaporator mode, shakedown	30
12	Vapor temperature profile, surface evaporator mode, shakedown	31
13	Condenser test performance, surface evaporator mode, after contaminant removal	33
14	Vapor temperature profile, surface evaporator mode, after contaminant removal	34
15	Condenser test performance, direct-contact evaporator mode, venting	37
16	Vapor temperature profile, direct-contact evaporator mode, venting	38
17	Condenser test performance, direct-contact evaporator mode, recovery from venting	39
18	Vapor temperature profile, direct-contact evaporator mode, recovery from venting	40
19	Condenser test performance, direct-contact evaporator mode, preflash variation	41

Figure		Page
20	Vapor temperature profile, direct-contact evaporator mode, preflash variation	42
21	Condenser test performance, direct-contact evaporator mode, venting with chemical analysis	43
22	Vapor temperature profile, direct-contact evaporator mode, venting with chemical analysis	44

LIST OF TABLES

Table		Page
1	Operating parameter ranges for vertical-fluted-tube condenser tests at Raft River, September 1980–October 1981	28
2	Comparative condenser design and operating parameters	36
3	Condenser vapor space chemical composition determined from sample analysis by gas chromatograph during October 21, 1981, operation in direct-contact evaporator mode	43
B.1	Summary of experimental conditions and results from Wilson plots for R-600a condensing on vertical tube E	120

NOMENCLATURE

Symbols

c	specific heat at constant pressure
$\dot{m}$	mass flow rate
Q	heat load
T	temperature

Subscripts

in	inlet
lm	log mean
out	outlet
sat iso	saturation isobutane
w	water

ACKNOWLEDGMENTS

This work was part of a general program at Oak Ridge National Laboratory (ORNL) concerning power plant heat rejection undertaken for the U.S. Department of Energy (DOE), Division of Geothermal Energy. Clifton McFarland and Raymond LaSala served as program managers for DOE; John Michel and Harry Arnold were program managers for ORNL.

Other organizations in this cooperative effort included Idaho National Engineering Laboratory (INEL) as operator (through contractor EG&G Idaho, Incorporated) of the Raft River Facility and Patterson-Kelley Company (Division of Taylor Wharton Company — HARSCO Corporation) as subcontractor for equipment fabrication. Special recognition goes to Greg Mines of EG&G, Idaho, who, as prototype plant engineer, coordinated the related INEL activities. George Llewellyn of ORNL served in many capacities as required to expedite design and fabrication aspects of the project. Others, too numerous to name here, from ORNL, INEL, and Patterson-Kelley made important contributions to the team effort required to meet the project goals. The author expresses his thanks to all who played a part in their attainment.

FIELD TESTS OF A VERTICAL-FLUTED-TUBE CONDENSER IN THE PROTOTYPE POWER PLANT AT THE RAFT RIVER GEOTHERMAL TEST SITE

R. W. Murphy

ABSTRACT

A vertical-fluted-tube condenser was designed, fabricated, and tested with isobutane as the shell-side working fluid in a binary prototype power plant at the Raft River Geothermal Test Site. After shakedown and contamination removal operations were completed, the four-pass water-cooled unit (with 102 outside-fluted Admiralty tubes) achieved performance predictions while operating with the plant surface evaporator on-line. A sample comparison shows that use of this enhanced condenser concept offers the potential for a reduction of about 65% from the size suggested by corresponding designs using conventional horizontal-smooth-tube concepts. Subsequent substitution of a direct-contact evaporator for the surface evaporator brought drastic reductions in system performance, the apparent consequence of high concentrations of noncondensible gases introduced by the brine/working-fluid interaction.

---

1. INTRODUCTION

That heat exchangers play a significant role in determining the economic feasibility of producing power from geothermal sources has been established by earlier studies.[1] For moderate temperature resources, optimizations using conventional component models suggest that (1) plants using a binary cycle are most likely to be cost-effective and (2) such plants require relatively large heat exchangers. The attractiveness of reducing the associated equipment investment led to an examination of heat transfer enhancement techniques. Oak Ridge National Laboratory (ORNL) tests showed that the use of vertical-fluted tubes offered the potential for major improvements in condenser performance with working fluids applicable to the binary cycle.[2,3] However, it had not been demonstrated experimentally that such performance could be achieved in sizes and field situations more characteristic of practical geothermal power plants.

This report describes the design, fabrication, installation, and first-year operation of a vertical-fluted-tube condenser for a prototype geothermal power plant. Performance characteristics and parametric effects are examined, and sample data are used to generate a comparison between enhanced and conventional condensers.

2. EQUIPMENT AND FACILITIES

The test condenser was designed for and installed in a geothermal prototype power plant of the binary-cycle type located in south central Idaho. This section gives details of condenser design and fabrication, specifications of other primary components of the prototype power plant, and a description of the test site.

2.1 Prototype Power Plant

The prototype power plant was built by Idaho National Engineering Laboratory (INEL) for the U.S. Department of Energy (DOE) to investigate concepts that have the potential to enhance the commercial production of electrical power from moderate temperature geothermal resources.[4] The modular nature of the plant allowed various components to be replaced by alternate components that perform equivalent functions but have unconventional or advanced design features. In this way, selected concepts could be tested in an operational environment that would, in many respects, resemble a practical power plant situation without incurring full-scale costs.

Designed for a nominal electrical output of 60 kW with isobutane as the primary working fluid, the plant was first operated in April 1978. After checkout testing, baseline runs were conducted to assess equipment capabilities in October and November 1978. Some automatic controls were then added, and trial continuous operation tests were conducted in November 1978. After further modification for automatic control and shutdown under hazardous conditions, the plant operated in automatic run mode from August 1979 to January 1980.[5] Following system alterations, the original condenser was replaced by an enhanced condenser (described in Sect. 2.2), and a direct-contact evaporator was installed in parallel with the original surface evaporator in preparation for the tests (begun September 1980) reported here.[6,7]

The plant provided for continuous circulation of and interaction among the brine, cooling water, and isobutane streams. Major components of the plant (Fig. 1) included surface and direct-contact evaporators,

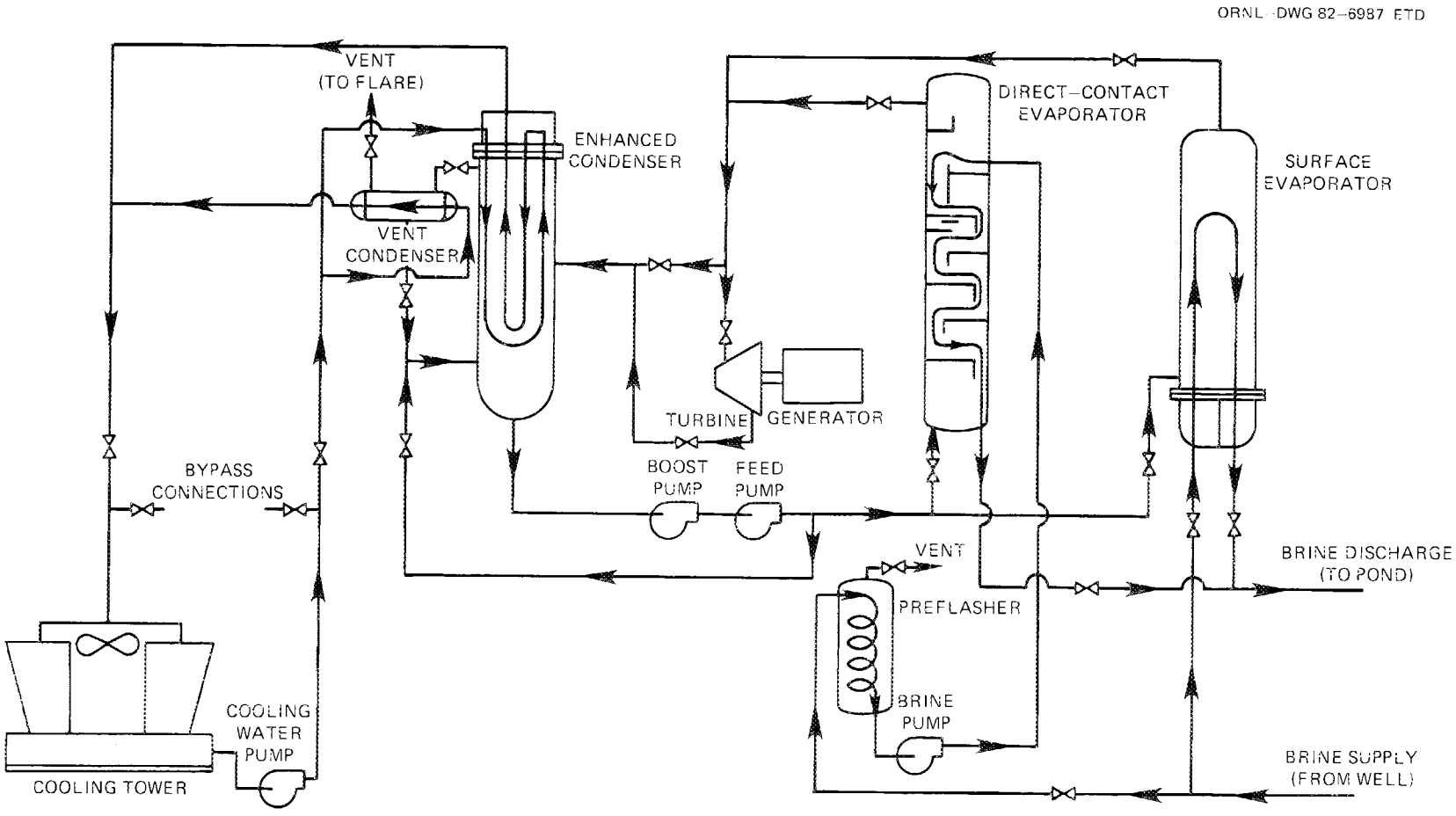

Fig. 1. Flow schematic of prototype power plant.

brine and isobutane pumps, a preflasher, a turbine/generator, a vent condenser, and a cooling tower.

Isobutane liquid was pumped to the evaporator, where it was vaporized with heat from the brine. The vapor was then expanded, condensed, and returned for recycle.

Hot brine was pumped from the well to the evaporator, where heat was removed to vaporize isobutane. The spent brine then traveled to a holding pond for later pumping to reinjection wells.

Cooling water obtained from the cooling tower basin was pumped to the condenser. After absorbing heat from the condensing isobutane, the cooling water returned to the upper portion of the cooling tower to be cooled by the ambient air.

2.1.1 Surface evaporator

The surface evaporator was a shell-and-tube unit with 33 axially finned 0.75-in. U-tubes installed in the vertical position with U-bends up. Brine flow was on the tube side with both inlet and outlet at the bottom of the unit. Isobutane flow was on the shell side with the liquid inlet just above the tube sheet and the vapor outlet at the top of the unit. The shell and nozzles were made of carbon steel, the tube bundle of Admiralty, and the tube sheet of Muntz metal. Previously used as an aftercooler for a large air compressor, the unit had shell-side and tube-side pressure ratings of 2.69 and 1.14 MPa (390 and 165 psi), respectively, at 422 K (300°F).

2.1.2 Direct-contact evaporator

The direct-contact evaporator was a sieve tray column* with an inside diameter of 300 mm (12 in.) and an overall height of about 5 m (16 ft).

Brine was introduced near the top of the unit and flowed as the continuous medium (directed by baffles) toward a drain near the bottom of the unit. Isobutane entered the lower portion of the evaporator and rose through the brine — periodically encountering perforated plates (trays)

---

*Designed by E. Wahl of Wahl Company, Claremont, California.

intended to collect the liquid isobutane and release it in dispersed droplet form for heating and vapor generation as the stream moved toward the outlet near the top of the unit. Seventeen preheater trays, two evaporator trays, and one drawoff tray were installed in the column. The perforation size was 3.18 mm (0.125 in.).

2.1.3 Brine pump

The pump used to boost the brine to the evaporator operating pressure during direct-contact mode operation had a rating of 2.84×10^{-3} m^3/s (45 gpm) at a head of 347 m (1140 ft). The associated motor was a 30-hp Westinghouse Mill and Chemical Life Line T-MAC (3 phase, 60 Hz, 3535 rpm, 460 V, and 36 A).

2.1.4 Preflasher

During direct-contact mode operation, a flash separator (Pennsylvania Separator Company model 1456) installed upstream of the brine pump was used as a brine preflasher in an attempt to control the dissolved gas concentration of the brine entering the evaporator.

2.1.5 Isobutane pumps

Two pumps, a boost pump and a feed pump, were arranged in series to provide the required liquid isobutane flow to the evaporators. The boost pump was a multistage centrifugal pump (Gould Pumps P/N BP7035-SC-03) rated originally at 3.41×10^{-3} m^3/s (54 gpm) at 2400 rpm and 32.9 m (108 ft) with a net positive suction head of 0.91 m (3.0 ft) but modified (by removing two of five stages) to provide a head of 19.8 m (65 ft) at rated conditions. This pump was driven by a belt reducer from the shaft connecting the turbine/gearbox to the motor/generator.

The feed pump was a Sundstrand Model LMW-322 rated at 2.71×10^{-3} m^3/s (43 gpm) at 17,100 rpm and 597 m (1,960 ft). The driver for this pump was a 50-hp Reliance explosion-proof motor (3 phase, 60 Hz, 230/460 V, and 120/60 A) with gearbox conversion from 3,550-rpm motor speed to 17,100-rpm pump speed.

2.1.6 Turbine/generator

The turbine was an axial flow unit fabricated specifically for the plant by Barber-Nichols Engineering Company. Its rated gross output was 79.8 kW at 2.158-MPa (313-psia) inlet pressure, 0.365-MPa (53-psia) outlet pressure, and 1.64 kg/s (1.30×10^4 lb_m/h) saturated (inlet) isobutane flow driving the induction motor/generator through a gearbox (Model EGG-501TGB). The associated electrical/mechanical energy conversion unit was a 100-hp Marathon Electric motor/generator (explosion proof, fan cooled, 3 phase, 60 Hz, 3560 rpm, 230/460 V, and 230/115 A).

2.1.7 Vent condenser

The vent condenser was an American Precision Industries (Basco Division) shell-and-tube heat exchanger connected to the vent line leading from the condenser. The single-pass Type 500 unit used for these tests had an Admiralty tube bundle with an outside area of 2.14 m^2 (23 ft^2). Cooling-water flow was on the tube side [about 1.26×10^{-3} m^3/s (20 gpm)] and working-fluid flow was on the shell side. The purpose of the vent condenser was to remove as much isobutane as possible from the condenser vent stream and to return it as liquid to the sump section of the condenser shell.

2.1.8 Cooling tower

A Marley mechanical-draft cross-flow cooling tower (Serial 13-1-600) was used to reject heat from the circulating cooling water to the ambient air. The tower fan was powered by a 5-hp motor (3 phase, 60 Hz, 1740 rpm, 220/440 V, and 13.7/6.85 A). The tower sump was fitted with a Johnston vertical turbine pump driven by a 30-hp General Electric motor (3 phase, 60 Hz, 1750 rpm, 230/460 V, and 77/38.5 A) to provide the cooling-water flow required for plant operation. Local shallow wells supplied makeup water as required.

2.2 Vertical-Fluted-Tube Condenser

The design for the vertical-fluted-tube condenser (Fig. 2) was based on earlier ORNL concepts and experiments but modified to satisfy constraints imposed by INEL for operation of the prototype power plant.

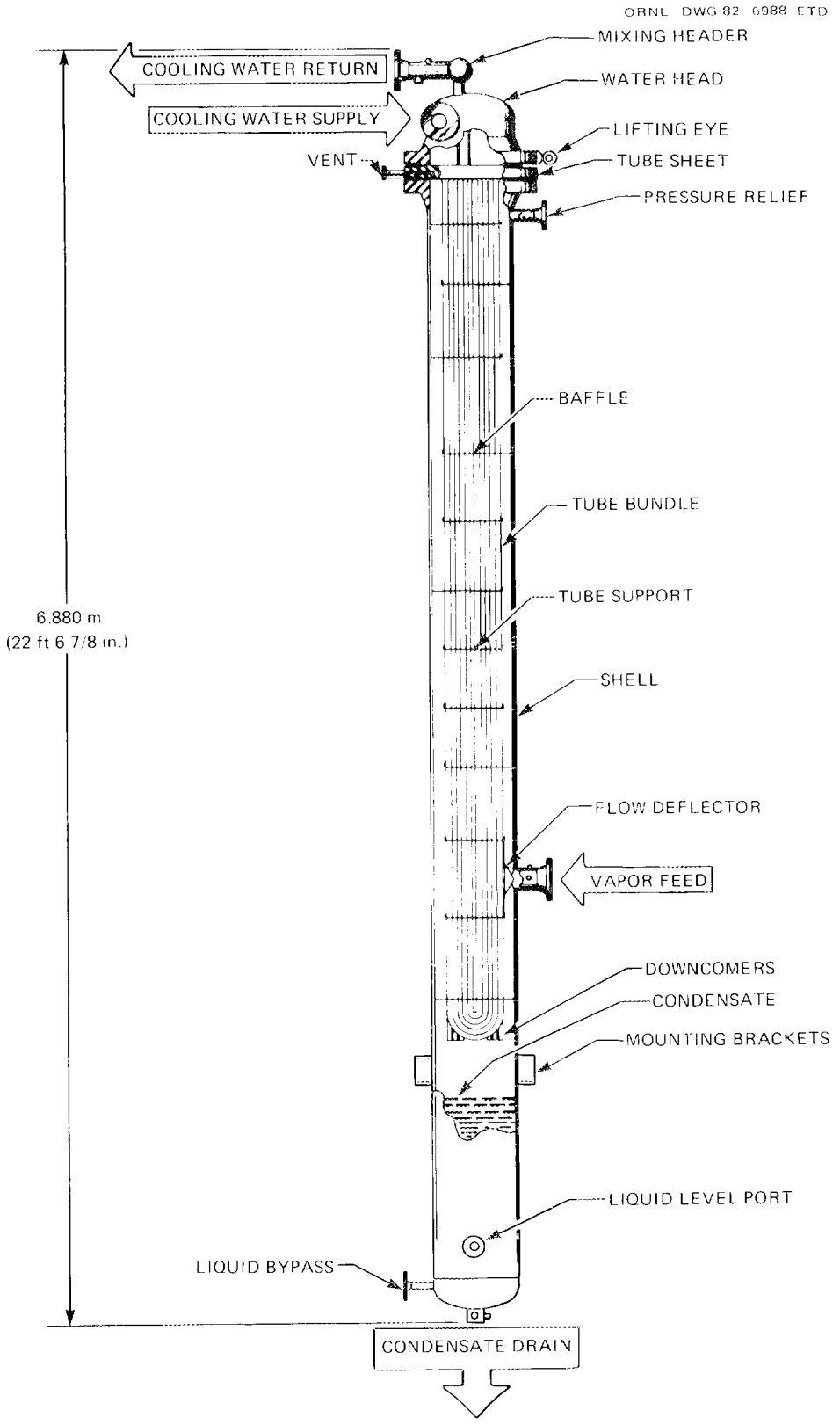

Fig. 2. Sketch of vertical-fluted-tube condenser.

Overall length and diameter restrictions resulted from a desire to minimize major structural changes by using the existing mounting configuration of the original condenser (a unit virtually identical to the surface evaporator described previously). Materials for construction were specified based on previous INEL compatibility tests. Penetrations were located so as to minimize interference with existing equipment.

A U-tube configuration was employed with cooling water on the tube side and working fluid on the shell side. The cooling-water flow arrangement was four passes from inlet to outlet — both through a water head at the top of the unit. Isobutane vapor entered the lower portion of the shell (crossing the tube bundle up to seven times), condensed on the outside tube surfaces, drained as liquid to the sump, and exited through the bottom of the shell.

2.2.1 Shell

The condenser shell was fabricated from 18-in. sched-40 SA-53 Grade B steel pipe with an 18-in. SA-234 steel weld cap welded to the bottom end and an 18-in. 300-lb SA-105 steel weld neck flange welded to the top end. Five shell penetrations with 300-lb SA-105 steel weld neck flanges provided for vapor entry (4 in.), pressure relief (2 in.), liquid bypass (2 in.), and liquid level measurement (two 1-1/2 in.). A port in the bottom cap fitted with 3-in. SA-53 Grade B steel pipe served as the condensate drain. Eight additional shell penetrations fitted with 1/4-in. 6000-lb steel full couplings provided access for ORNL shell-side temperature and pressure measurements. Two other 1/4-in. couplings, one each installed in the vapor entry port and the condensate drain, were employed for ORNL inlet and outlet working-fluid temperature measurements. Three 1/2-in. 6000-lb steel full couplings, one in the vapor entry port and two in the condensate drain were provided for instrument or other use by INEL. Mounting brackets made from 1/2-in. SA-515 steel plate were welded to the lower portion of the shell to match with the existing support fixture on the prototype power plant test stand. Lifting lugs were welded to the upper portion of the shell to facilitate installation of the unit.

2.2.2 Water head

The water head was made by welding an 18-in. SA-234 steel weld cap to an 18-in. 300-lb SA-105 steel weld neck flange. The 3/8-in. SA-515 Grade 70 steel plates were welded inside the cap to serve as pass partitions. A 3-in. 300-lb SA-105 steel weld neck flange with attached SA-53 Grade B steel pipe was used as the connection to the water supply penetration in the side wall of the cap. Four 1-1/2-in. SA-53 Grade B steel pipes connected the final pass plenum to a mixing header fabricated of 4-in. SA-53 Grade B steel pipe with 4-in. SA-234 steel weld caps. The water return connection to the mixing header consisted of a 3-in. 300-lb SA-105 steel weld neck flange with attached SA-53 Grade B steel pipe. Two 1/4-in. 6000-lb steel full couplings, one each installed in the water supply and water return connections, were employed for ORNL inlet and outlet water temperature measurements. Two 1/2-in. and three 1-in. 6000-lb steel full couplings were provided at various points in the water head assembly for instrument or other use by INEL. A forged steel Crosby No. 5 pad eye was welded to the 18-in. flange edge to facilitate water head assembly operations.

2.2.3 Tube bundle

The tube bundle was composed of 110 lengths of annealed Admiralty (ASME SB-111) tubing. Of these, 104 were externally fluted (by Grob, Inc.), 1-in.-OD, 16 BWG tubes with type E profiles (Figs. 3 and 4) intended to be the primary heat transfer surfaces. The remaining 6 positions, all on one side of the bundle, contained smooth, 1-in.-OD, 18 BWG tubes to serve as downcomers to channel condensate from the six upper baffles to the liquid sump area in the bottom section of the shell. The tube arrangement was triangular pitch on 1-1/4-in. centers.

Seven baffles fabricated from 3/8-in. SA-515 Grade 70 steel plate were arranged along the bundle length to guide the working-fluid vapor flow on its shell-side passes. The top six of these had 1/8-in. tapered steel edge strips to direct condensate flow to their respective downcomers and prevent condensate overflow to the sections below. Five tube support plates of 3/8-in. SA-515 Grade 70 steel were added along the bundle length to strip condensate from the tubes and reduce the potential for tube vibrations.

ORNL–PHOTO 7551–81

Fig. 3. Sample fluted tube length.

ORNL-DWG 81-15255

Fig. 4. Enlarged fluted tube cross section — type E profile.

The fluted tubes were fabricated with smooth intervals (see Fig. 3) corresponding to the baffle and support plate locations. During assembly, each tube was light-rolled with a long-reach tube expander into each baffle and support plate. Fifty-two of the fluted tubes had extra long smooth sections at one end to form the U-bends required to connect to the remaining 52 fluted tubes. After trimming and beveling, the tube pairs were silver-soldered to complete the connections. Six tie rods of 3/8-in. steel were spaced near the bundle periphery, threaded to mate with the tube sheet, and welded to each baffle and support plate to further strengthen the bundle assembly. The tube sheet was a 2-3/16-in.-thick, 28-in.-diam, SA-516 Grade 70 steel disk with grooved tube holes for roll-expander sealing. A 13/16-in. hole in the tube sheet served as a vent port leading to a length of 3/4-in. SA-106 steel pipe with associated 3/4-in. 300-lb SA-105 steel weld neck flange welded to form the interface required for installation. Two forged steel Crosby No. 5 pad eyes were welded to the periphery of the tube sheet to facilitate tube bundle insertion and removal operations. A 6-in.-diam 1/4-in. perforated steel plate was suspended from two 1/2-in. steel rods between the bottom two support plates to act as a flow deflector opposite the vapor inlet port of the shell when the condenser was asembled. Shrouds formed from 1/8-in. steel plate were placed on two sides of the bundle between each consecutive pair of baffle/support plates to minimize vapor bypass around the edges of the tube array. An Elliott 1-in. brass tube plug was placed in each of the six downcomer positions in the tube sheet to prevent leakage between the shell and tube sides. One 1/2- by 1-in. drainage slot was made in the downcomer side of each support

plate to channel condensate from that section down to the next lower one. Three similar 1/2- by 1-in. drainage slots were made in the bottom baffle to channel condensate to the liquid sump area because this bundle section was not served by a downcomer.

2.2.4 General vessel information

Two 1/16-in. Durabla asbestos gaskets, one between the water head and the tube sheet and one between the tube sheet and the shell, were used to prevent isobutane or cooling-water leakage to the surroundings. Twenty-four 1-1/4-in. SA-193 B-7 bolts with SA-194 2-H nuts made the flange and gasket assembly connections. Leak testing of the bundle after tube rolling operations showed that one U-bend between the third and fourth water-side passes had developed a leak. An Elliott 1-in. brass tube plug was placed in each end of the defective U-section to prevent leakage between the shell and tube sides of the condenser. This action effectively reduced the total working heat transfer area by 1.9% and increased the cooling-water velocity by 4.0% on the third and fourth water-side passes. The plugged bundle was then pressure-tested to 1.03 MPa (150 psi) with no further signs of leakage. Five gallons of Immunol, a rust inhibitor, was put in the shell before filling with water for hydrotesting. The shell was pressurized to 3.93 MPa (570 psi) with no evidence of leakage. The outside of the unit was given one primer coat (3.6 mils) of Speedhide Machinery and Equipment Primer and two finish coats (3.6 mils) of Lavax Semi-Gloss Machinery Enamel (Light Gray 23-61). Condenser construction was specified according to the American Society of Mechanical Engineers (ASME) 1977 Code with ASME certificate, national board registration, and Tubular Exchanger Manufacturers Association R standards. Estimated empty mass of the condenser was 2700 kg (6000 lb_m). The vessel name plate read as follows:

MAX PRES SHELL 375 PSI @ 300°F	.562 TK
MAX TEMP SHELL 300°F @ 375 PSI	.562 TK
MAX PRES TUBE 100 PSI @ 300°F	R=15
MAX TEMP TUBE 300°F @ 100 PSI	
BUILT 1980 SERIAL 256971	
NATIONAL BOARD NO. 45139	

2.2.5 Installation

After inspection and instrumentation port checks (Fig. 5), the condenser was lifted into position beside the surface evaporator and fastened to the main test stand of the prototype power plant (Fig. 6). The unit was mounted slightly off vertical (~1°) with the top tilted slightly to the east to promote the flow of condensate from the baffles toward the bundle downcomers. Isobutane system connections were made to the vapor inlet, condensate return, pressure relief, and vent flanges. Cooling-water system connections were made to the inlet and outlet water head flanges. Instruments were attached at appropriate ports. Electrical heaters were then strapped to the outside shell wall to provide freeze protection during cold weather operation. Next, a 3-in. layer of insulating cement was applied to the outside of the shell and covered with a layer of sheet metal. To complete the installation, the instrument leads were run to the power plant control room.

2.2.6 Design point

Design heat load, cooling-water flow, and cooling-water inlet temperature were chosen to be 586.1 kW (2.000×10^6 Btu/h), 1.893×10^{-2} m^3/s (300.0 gpm), and 297.039 K (75.00°F), respectively. With the intended four-pass water-side arrangement, the assigned water flow was distributed among 27 working (heat transfer) tubes on the first and second passes [flow average velocity = 1.8194 m/s (5.969 ft/s)] and 24 working tubes (25 total − 1 plugged) on the third and fourth passes [flow average velocity = 2.0468 m/s (6.715 ft/s)]. The working heat transfer (fluted) length of the bundle was 4.061 m (13.32 ft), giving an effective shell-side heat transfer area of 52.604 m^2 (566.2 ft^2) and a corresponding tube-side heat transfer area of 28.821 m^2 (310.2 ft^2) with design heat fluxes of 1.1135×10^4 W/m^2 (3532 $Btu/h \cdot ft^2$) and 2.0323×10^4 W/m^2 (6447 $Btu/h \cdot ft^2$), respectively. The chosen heat load, cooling-water flow, and cooling-water inlet temperature implied a temperature rise of 7.428 K (13.37°F), an outlet temperature of 304.467 K (88.37°F), and an average temperature of 300.753 K (81.69°F) for the cooling water. From laboratory data[2] with R-600a condensing on the outside of Tube E, it was estimated

ORNL-PHOTO 7536-81

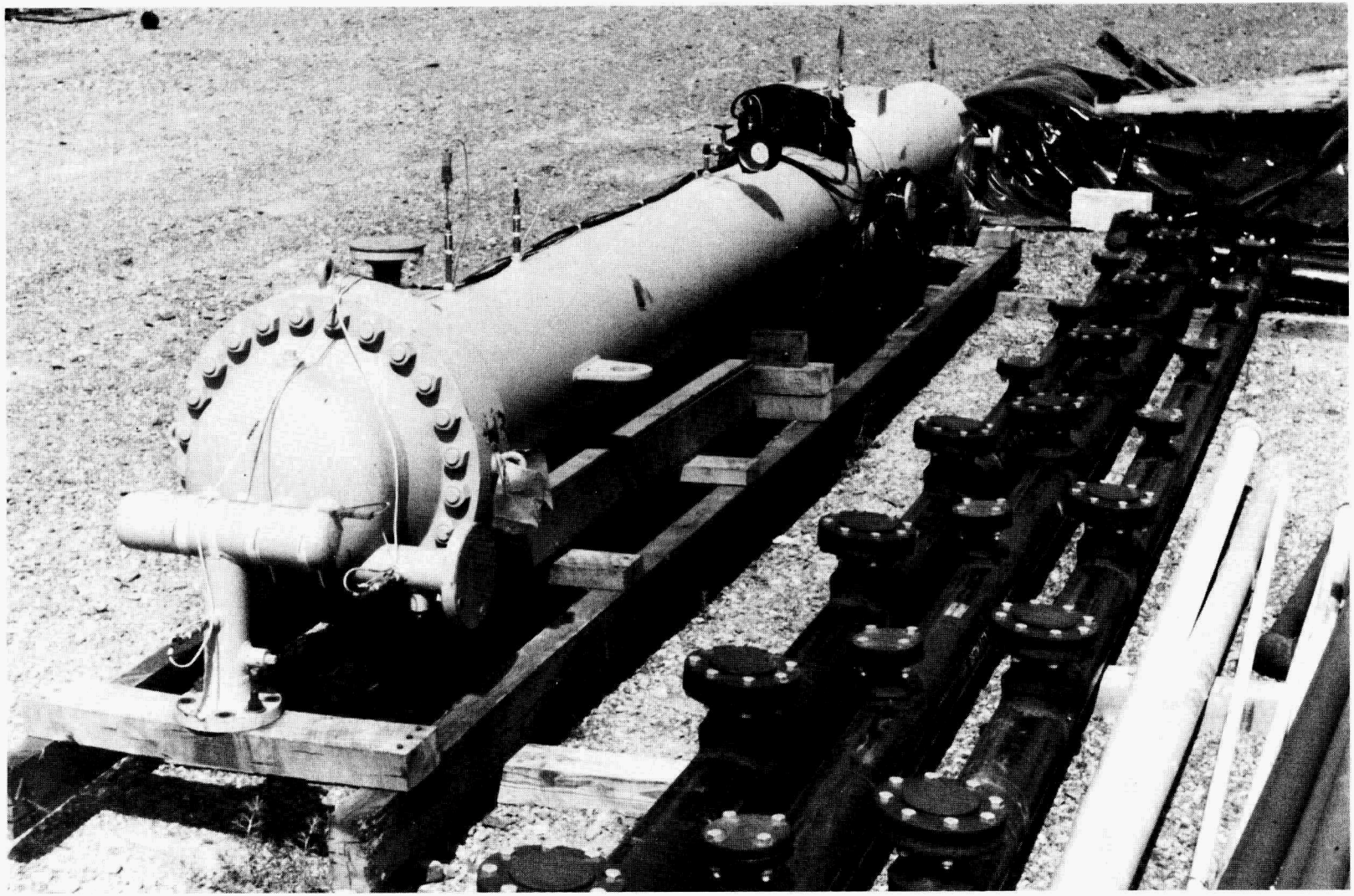

Fig. 5. Condenser with instruments before installation.

ORNL–PHOTO 7538–81

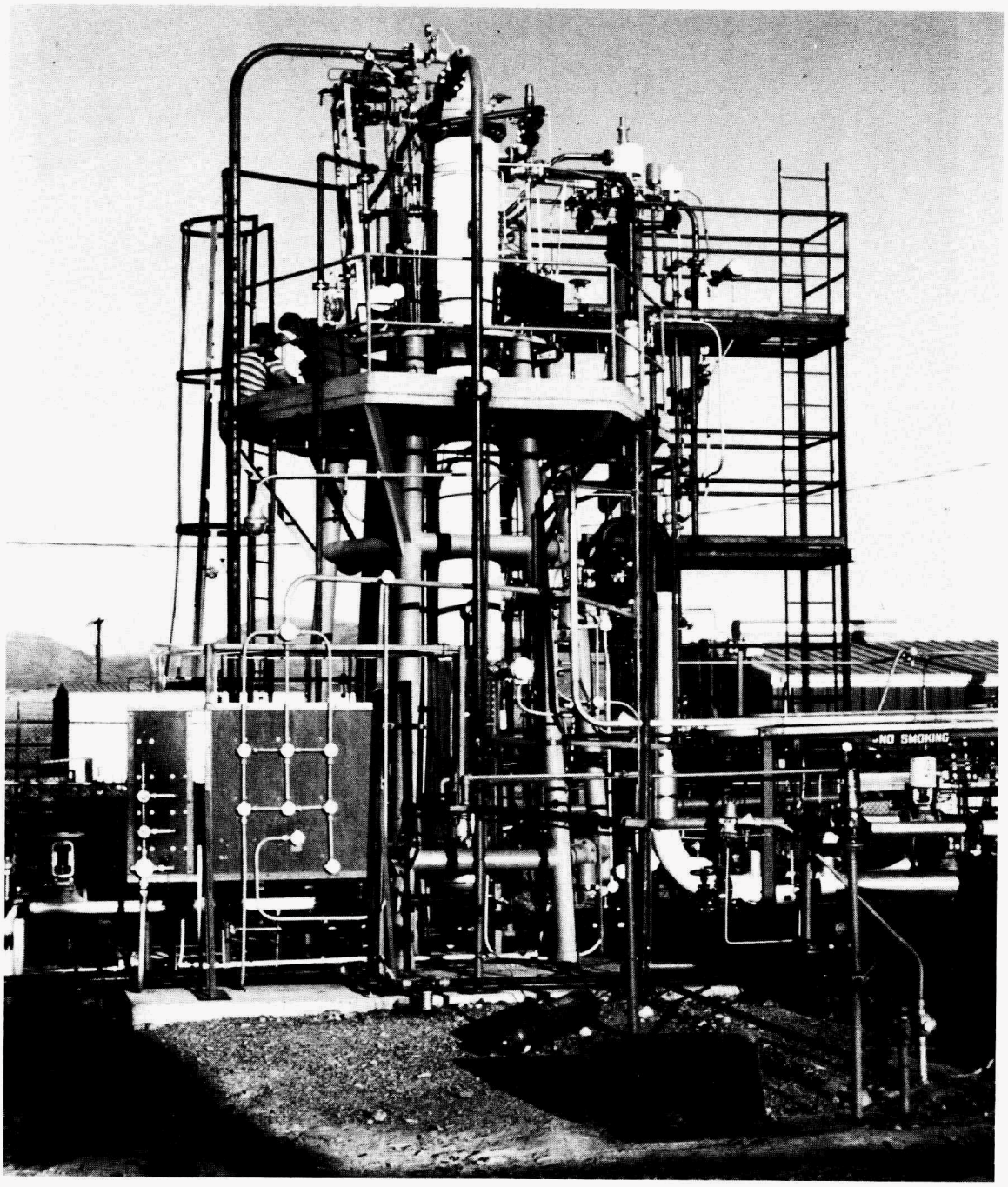

Fig. 6. Prototype power plant with condenser installed.

that the composite condensing heat transfer coefficient (shell side) for the design situation was 4610.9 $W/m^2 \cdot K$ (812.6 $Btu/h \cdot ft^2 \cdot {}^oF$). From the Dittus-Boelter correlation,[8] it was estimated that the correpsonding turbulent forced-convection heat transfer coefficient (tube side) was 7385 $W/m^2 \cdot K$ (1301 $Btu/h \cdot ft^2 \cdot {}^oF$). Thus, the overall heat transfer conductance (with no allowance for fouling or contaminants) at the design point was estimated to be 1.1344×10^5 W/K (2.150×10^5 $Btu/h \cdot {}^oF$) corresponding to an overall heat transfer coefficient of 2155.1 $W/m^2 \cdot K$ (379.8 $Btu/h \cdot ft^2 \cdot {}^oF$) based on shell-side heat transfer area or 3933.4 $W/m^2 \cdot K$ (693.2 $Btu/h \cdot ft^2 \cdot {}^oF$) based on tube-side heat transfer area. Such performance implies a log mean temperature difference of 5.167 K (9.30°F), shell-side temperature of 306.780 K (92.53°F), and related (saturation) condenser pressure of 444.06 kPa (64.41 psia) for design conditions.

2.3 Raft River Geothermal Test Site

The Raft River Geothermal Test Site, located near Malta, Idaho (Fig. 7), and operated for DOE by EG&G Idaho (as contractor at INEL), provided test pad space, geothermal brine and cooling-water access, utilities, and various support services during the experiments described in this report. Figure 8 gives a general view of the Site 1 complex including control and office building, well head, and prototype power plant test pad areas. The primary brine source well was RRGP-1, but occasionally, because of other brine supply system requirements, it was necessary to use brine from wells RRGP-2 and RRGP-5. Brine supply temperatures ranged from 391 to 410 K (245 to 278°F) during the test period.

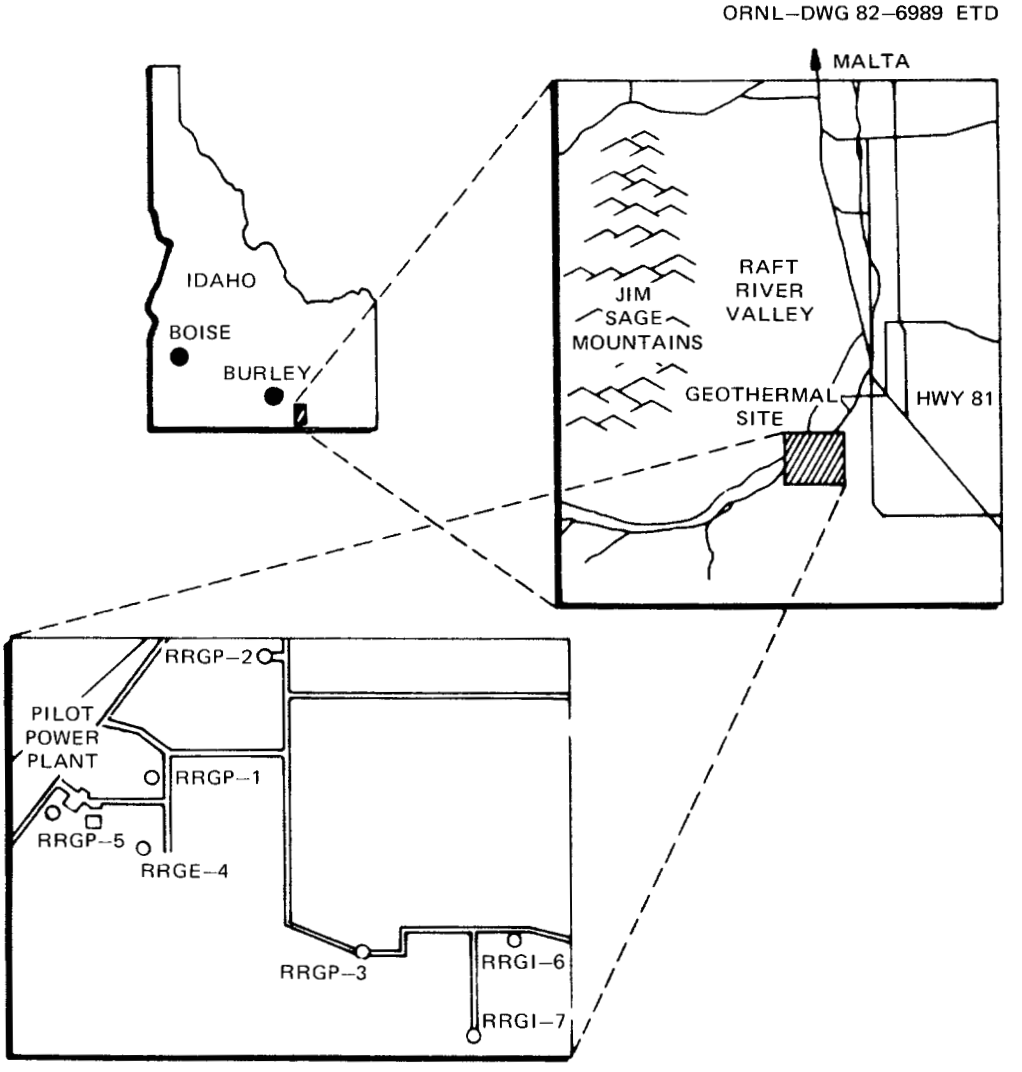

Fig. 7. Map of Raft River Geothermal Test Site.

ORNL-PHOTO 8434-82

Fig. 8. Site 1 complex at Raft River.

3. INSTRUMENTATION AND SAMPLING

The main emphasis in instrumentation for the tests described here was placed on measurement of variables required to determine condenser heat transfer performance under various operating conditions. Additional measurements were taken to characterize particular system conditions adequately and to document detailed parametric profiles, which might lead to mechanistic interpretations of observed performance trends.

3.1 Prototype Power Plant

Most measurements taken from the prototype power plant were of secondary importance in determining condenser performance. However, certain readings provided the opportunity to corroborate independently individual temperature, pressure, and flow measurements associated with the condenser. In addition, combinations of these variables were used to (1) generate heat balance comparisons, (2) ensure proper operation of plant components, (3) monitor safety-related conditions, and (4) judge the achievement of steady-state operation.

Temperature sensors included iron-constantan thermocouples and dial thermometers. Both mechanical dial gauges and electrical transmitter arrangements were employed as pressure monitors. Flowmeters included orifice, venturi, and turbine types.

3.2 Condenser

Instruments associated with the condenser (Fig. 9) were intended to provide data for heat transfer performance evaluation. Working-fluid pressure, cooling-water flow, and cooling-water temperatures were the primary measurements used to determine such performance. Secondary measurements of working-fluid vent flow, liquid level, and local temperatures were used to characterize particular operating conditions more completely.

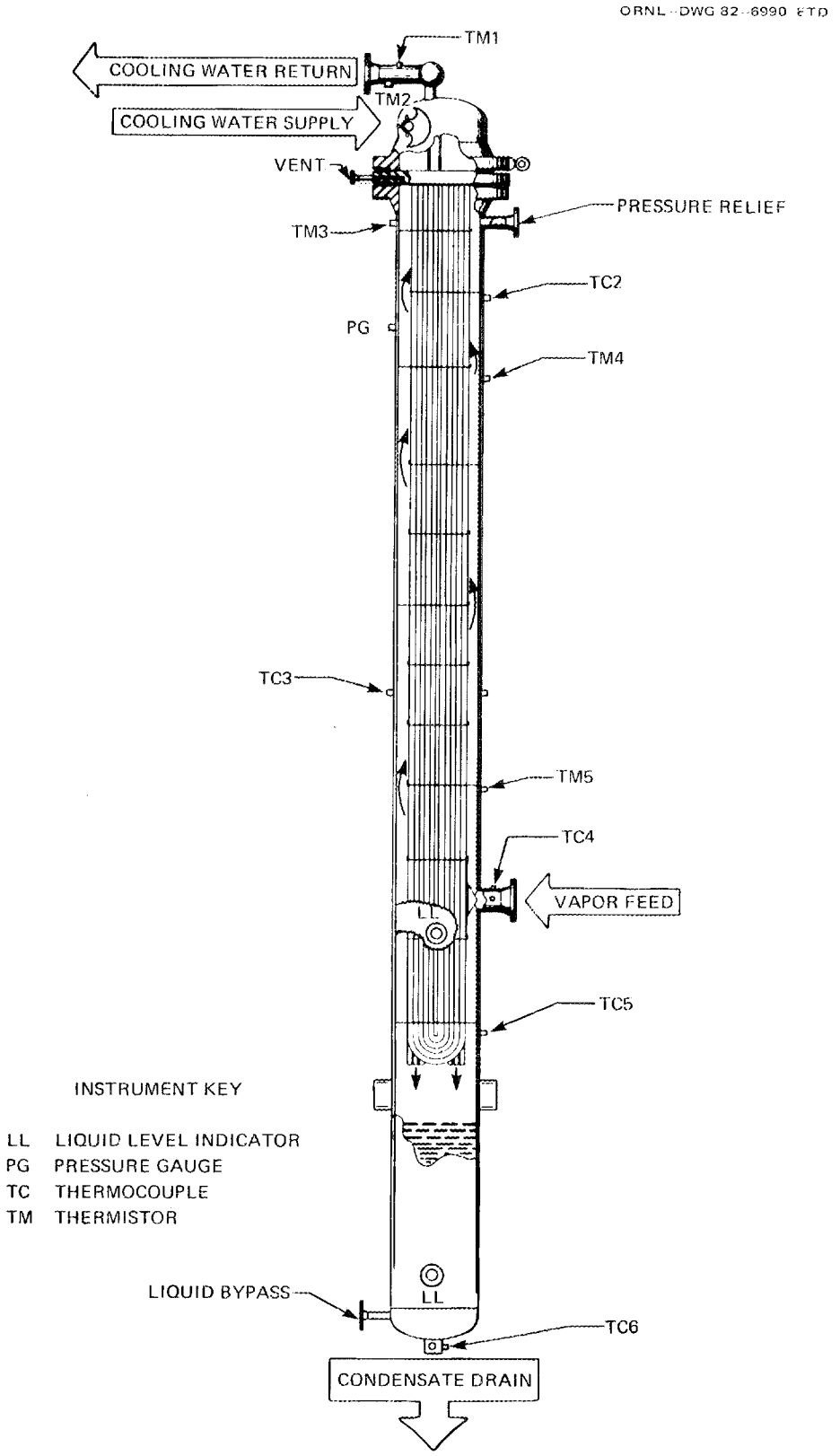

Fig. 9. Condenser instrument arrangement.

3.2.1 Temperature

Two thermistors (Thermometrics Part S-10-4-wire) were intended for primary measurement [outlet (TM1) and inlet (TM2) water temperatures] during the condenser tests. Both the original units, 128 and 184, failed and were replaced before the end of the test period by units 281 (May 5, 1981) and 253 (October 20, 1981), respectively. Three other similar thermistors penetrated the condenser shell wall and provided temperature monitoring in selected parts of the vapor space. One (TM3) was positioned at the very top of the space, near the vent port (after seventh vapor flow pass). The second (TM4) was 180° around the shell and three baffles below the first, near the vapor flow turn between the fourth and fifth vapor flow passes. The third (TM5) was installed on the same side of the shell as the second but just beneath the third baffle below it, near the vapor inlet. All thermistors were wired to a switch box that permitted individual resistance readouts on a digital multimeter, Hewlett-Packard Model 3465A, in the control room.

Five Chromel-Alumel thermocouples were employed as secondary monitoring instruments — one (TC4) in the vapor inlet, one (TC6) in the condensate return, and three in the shell vapor space. Of the three shell thermocouples, one (TC2) was just beneath the second baffle from the top (180° from vent port), one (TC3) was between the first and second baffles above the vapor inlet (same side as vent port), and one (TC5) was just under the bottom baffle (180° from vent port). All thermocouples were connected to a Honeywell-Brown recorder for readout purposes.

3.2.2 Pressure

Working-fluid pressure was sensed through a pressure tap in the upper shell wall. The pressure indicator (PG) was a 0- to 200-psig Solfrunt U.S. Gauge unit.

3.2.3 Flow

Cooling-water flow was determined from measurements of pressure drop across a 5.77-cm (2.27-in.) orifice installed in the 3-in. line leading to

the condenser inlet. The resulting signals were conditioned and transmitted to the control room for readout.

An Erdco Seeflo Type 6SL2604 flowmeter was installed on the upper shell-side outlet of the vent condenser to monitor net working-fluid vent flow. This vane-type variable-orifice unit was factory-calibrated for a gas with a specific gravity of 10.28 at 83.5 psig, 60°F.

3.2.4 Liquid level

Because the bottom portion of the condenser shell served as a sump for the isobutane boost pump, it was necessary to maintain a liquid level high enough to meet the pump requirement for net positive suction head but low enough to avoid immersion of the tube bundle. An Ernst Gage Company Model E5-1128 liquid level indicator was attached to lower shell ports (LL) to provide the required monitoring capability. A Fisher transmitter was used to send the resulting signal to the control room readout station.

3.3 Sampling

During the operation in the direct-contact evaporator mode, a number of working-fluid samples were taken in an attempt to characterize the chemical composition of gas occupying the condenser vapor space under chosen conditions. For this purpose, stainless steel sample cylinders were attached to the condenser vent line. When the plant reached the selected operating point, the cylinder inlet and outlet valves were opened, purging the vent line and cylinder of their previous contents. With purging complete, the sample of vapor space gas was trapped by closing the cylinder valves.

Chemical analysis of the samples was accomplished using a Hewlett-Packard Model 5880A gas chromatograph. After calibration with known standards, the unit processed a portion of each sample to determine its detailed hydrocarbon, nitrogen, oxygen, water, and carbon dioxide content. Reproducibility checks of additional portions of a given sample showed good consistency.

Samples from certain other parts of the plant were taken and analyzed as needed to meet particular system assessment goals.

4. OPERATING PROCEDURES

A prerequisite for the acquisition of meaningful data for performance assessment of the vertical-fluted-tube condenser was proper operation of the prototype power plant. Procedures to accomplish this were developed as a combination of methods confirmed in earlier INEL experience with the plant and practices necessitated by system modification or particular test goals.

4.1 Routine Procedures

In general, the routine procedures employed in the tests reported here were very similar to those used during previous operation of the prototype power plant. The start sequence from standby condition began with checking the status of all auxiliary systems and preparing the brine and cooling-water supply systems for operation. After ignition of the flare pilot, the cooling tower fan and the cooling-water pump were activated, and the resulting flow adjusted to a nominal value of 1.89×10^{-2} m^3/s (300 gpm). Next the isobutane boost and feed pumps were started with the associated flow initially bypassing the evaporator and returning to the sump in the bottom portion of the condenser shell. With the turbine isolated, a valve was opened slightly to begin hot brine feed to the evaporator. Then valves were adjusted to begin liquid isobutane feed to the evaporator and to reduce the complementary bypass flow. Brine and isobutane flows were increased gradually until the desired evaporator conditions were reached. When all plant systems were operating correctly, the cooling-water flow rate was adjusted to the desired test run value.

If test plans called for turbine operation, the turbine outlet valve was then opened and the turbine inlet valve opened very slightly, allowing a small flow of gas to warm up the turbine and associated piping. Next, the turbine inlet valve was gradually opened to full-open position as the turbine bypass was restricted until fully closed. As the turbine accelerated to operating speed, a clutch engaged to connect the shaft to the generator for power production.

After the plant settled out at the resulting point, small adjustments in the flows of brine, isobutane, and/or cooling water were made as required to more closely approximate the desired test situation. The plant was allowed to restabilize before a data set was taken.

Primary data included the following:

1. inlet and outlet water temperatures,
2. cooling-water flow, and
3. shell pressure.

Secondary data included the following:

1. shell temperatures (thermistors);
2. shell temperatures (thermocouples);
3. condensate return temperature;
4. vapor-feed temperature;
5. liquid level;
6. vent flow;
7. various temperature, pressure, and flow readings associated with the plant; and
8. local weather observations.

After the relevant data were recorded, appropriate system adjustments were made to bring the plant to the next desired operating point, and the data sequence described in the preceding paragraph was repeated.

Normal plant shutdown procedures started with isolation of the turbine (if in operation) followed by a gradual decrease in brine flow. Other operating parameters were adjusted manually to maintain plant balance until brine flow had ceased and isobutane flow was limited to the bypass. Next the isobutane pumps were shut down and the evaporator and condenser liquid levels allowed to equalize. Finally, the cooling-water pump and cooling tower fan were shut down.

4.2 Supplemental Procedures

The tests reported here were performed after major modifications of the prototype plant. In preparation for the test runs, the isobutane system piping and most components were hydrotested, flushed, and drained.

Next nitrogen was used to purge oxygen from the isobutane system and then to pressurize the underground isobutane storage tank to fill the plant liquid full (while venting each component at its high point). Then, after closing the vents, the condenser and evaporator were drained to operating levels by venting excess pressure from the storage tanks and turning on the vessel heaters. Finally, the drain valves were closed to complete the filling procedure. The plant was then started to check out the isobutane feed and control systems prior to the start of the test runs.

5. DATA REDUCTION

During some of the tests, partial data reduction was carried out in the field using a Hewlett-Packard Model 97 programmable calculator to give rough guidance for troubleshooting and trend assessment activities. Subsequently, all data were subjected to a more detailed and complete reduction using computer programs developed specifically to facilitate run-to-run performance comparisons (Appendix A).

Raw data were converted using instrument calibrations to give the fundamental quantities (temperatures, pressures, and flow rates) required for further manipulation. These fundamental quantities were then combined with fluid property values to put the results in forms (heat loads, temperature differences, or heat transfer coefficients) amenable to performance comparisons.

For the results presented in Chap. 6, the primary variables used for condenser performance comparisons are heat load and log mean temperature difference. Better performance implies a bigger heat load for a given temperature difference or a smaller temperature difference for a given heat load. Condenser heat load is determined from water-side measurements using the relation

$$Q = \dot{m}_w c_w \left(T_{w_{out}} - T_{w_{in}}\right) , \tag{5.1}$$

where the symbols are defined in the Nomenclature list at the beginning of this report. The appropriate (overall) working-fluid-to-water temperature difference is taken to be the log mean, that is

$$\Delta T_{lm} = \left(T_{w_{out}} - T_{w_{in}}\right) \Big/ \ln\left[\left(T_{sat\ iso} - T_{w_{in}}\right) \Big/ \left(T_{sat\ iso} - T_{w_{out}}\right)\right] , \tag{5.2}$$

where $T_{sat\ iso}$ is the pure isobutane (R-600a) saturation temperature associated with the measured shell pressure.[9,10]

Estimated overall accuracies associated with the reduced data are $\pm 3\%$ heat load and ± 0.56 K (1.0°F) log mean temperature difference.

6. TEST RESULTS

Because of the difficulty in completely characterizing any given field test situation and the large volume of data taken, an attempt has been made to distill, by example, the most consistent and important results into a relatively concise summary. Individual discussions are divided into two main groups according to the respective evaporator mode, surface or direct contact, because this distinction proved to be the most significant one encountered during the tests. Detailed data listings are relegated to Appendixes A and B. General operating ranges are summarized in Table 1.

Table 1. Operating parameter ranges for vertical-fluted-tube condenser tests at Raft River, September 1980–October 1981

Parameter	Range
Shell pressure, kPa (psia)	255–772 (37–112)
Isobutane saturation temperature, K (°F)	288.2–328.7 (59–132)
Average water temperature, K (°F)	284.3–311.5 (52–101)
Heat load, kW (Btu/h)	120–640 (0.4–2.2 x 10^6)
Log mean temperature difference, K (°F)	2.2–22.2 (4–40)
Water flow, m^3/s (gpm)	0.461–1.987 x 10^{-2} (73–315)

6.1 Surface Evaporator Operating Mode

In the surface evaporator operating mode, the working fluid is physically separated from the geothermal brine. Condenser design performance predictions were, of course, based on operation in this "clean" mode (i.e., one without water noncondensible gas contamination from the brine). Figure 10 shows the condenser design point prediction, ΔT_{lm} = 5.167 K (9.30°F) at a heat load of 586.1 kW (2.000 x 10^6 Btu/h), with a water flow of 1.893 x 10^{-2} m^3/s (300 gpm) and a water inlet temperature of 297.039 K (75.00°F). The locus of other predicted Q – ΔT_{lm} combinations for these fixed water flow and water inlet temperature conditions is also shown. As

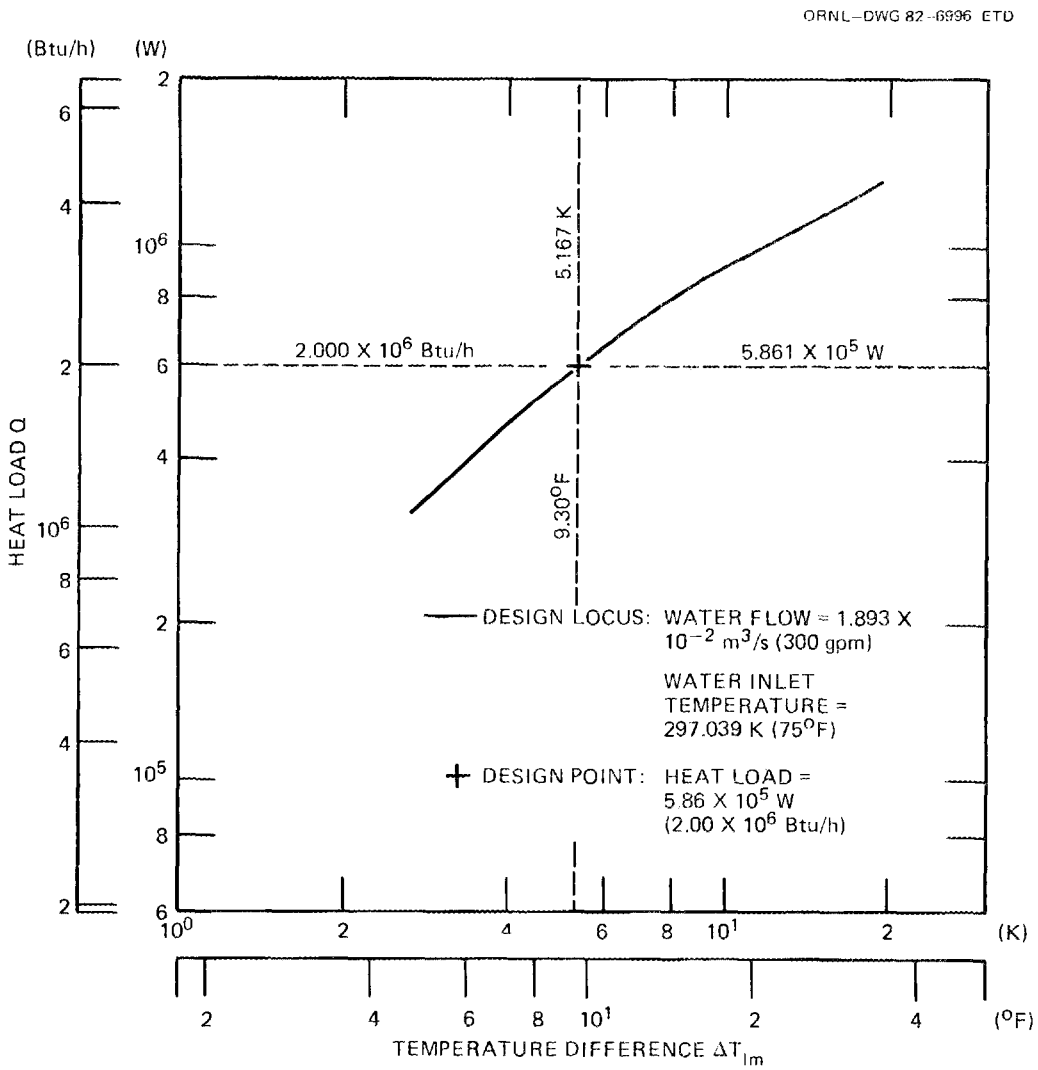

Fig. 10. Condenser design performance locus.

noted earlier, these predictions are based on (1) laboratory data[2] for R-600a condensing outside tube E (Appendix B) and (2) the Dittus-Boelter forced-convection correlation[8] — with no allowance for fouling or working-fluid contaminants. Water property values for viscosity, specific heat, and thermal conductivity were taken from Ref. 11, and those for density were taken from Ref. 12.

Three distinct periods were devoted to tests in the surface evaporator mode: September—October 1980, December 1980, and March 1981.

The first period was intended to be a shakedown sequence to map out operating ranges of heat load and water flow for the modified prototype

power plant and to permit instrument and turbine checkout. Typical early data (Fig. 11) indicated that measured condenser performance was poorer than predicted by the method outlined previously. In particular, at a heat load of 590 kW (2.0×10^6 Btu/h), the experimental log mean temperature difference was 8.3 K (15°F) as compared with a predicted value of 5.2 K (9°F). A second experimental observation was that upper vapor space temperatures were somewhat lower than the pure isobutane saturation temperatures corresponding to measured shell pressures. Sample data from vapor

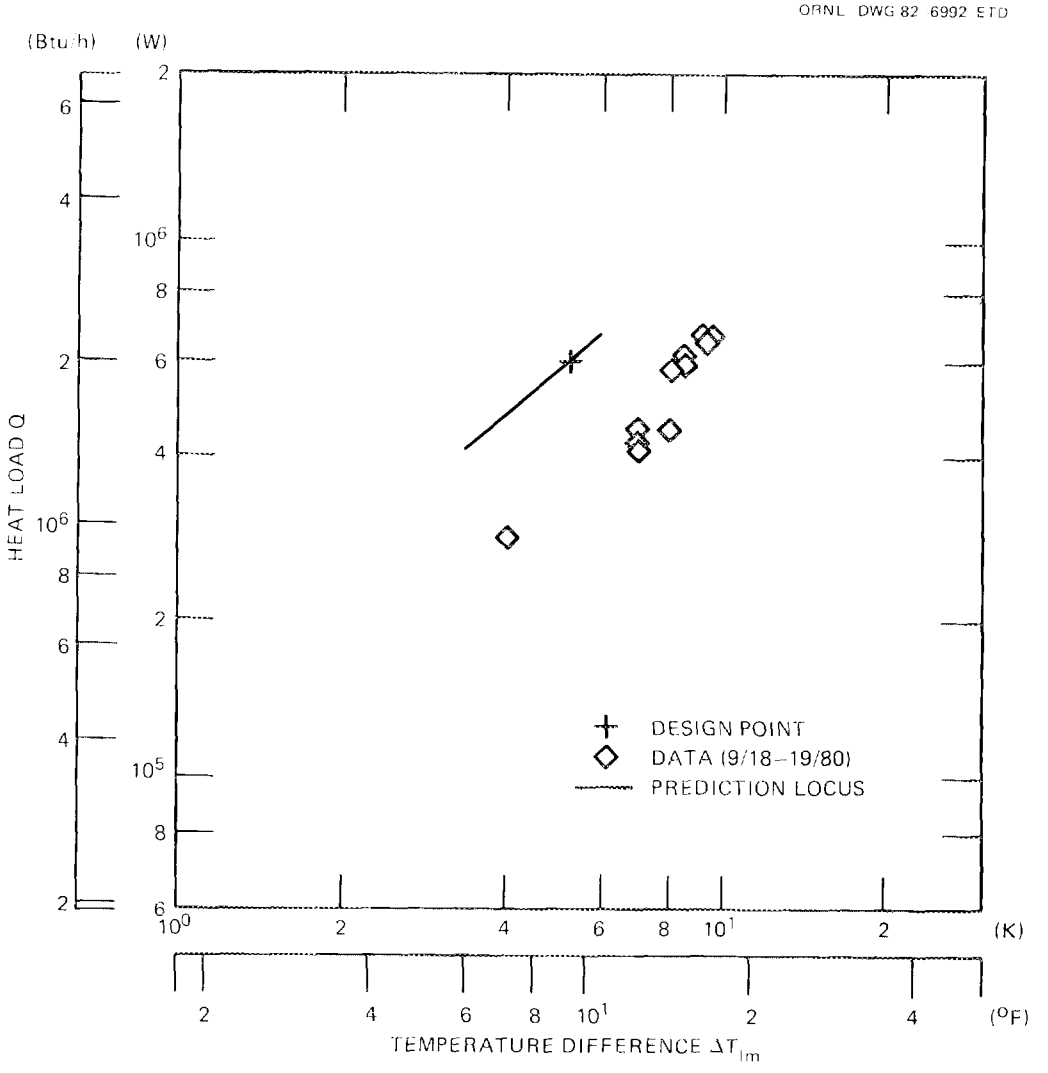

Fig. 11. Condenser test performance, surface evaporator mode, shakedown.

space thermistors are presented in Fig. 12 as a plot of vapor superheat vs axial position in the condenser vapor space. From this plot it is clear that, while the lower vapor space approached the saturation temperature, the upper vapor space ran 2.8 to 5.0 K (5 to 9°F) below it. Such trends

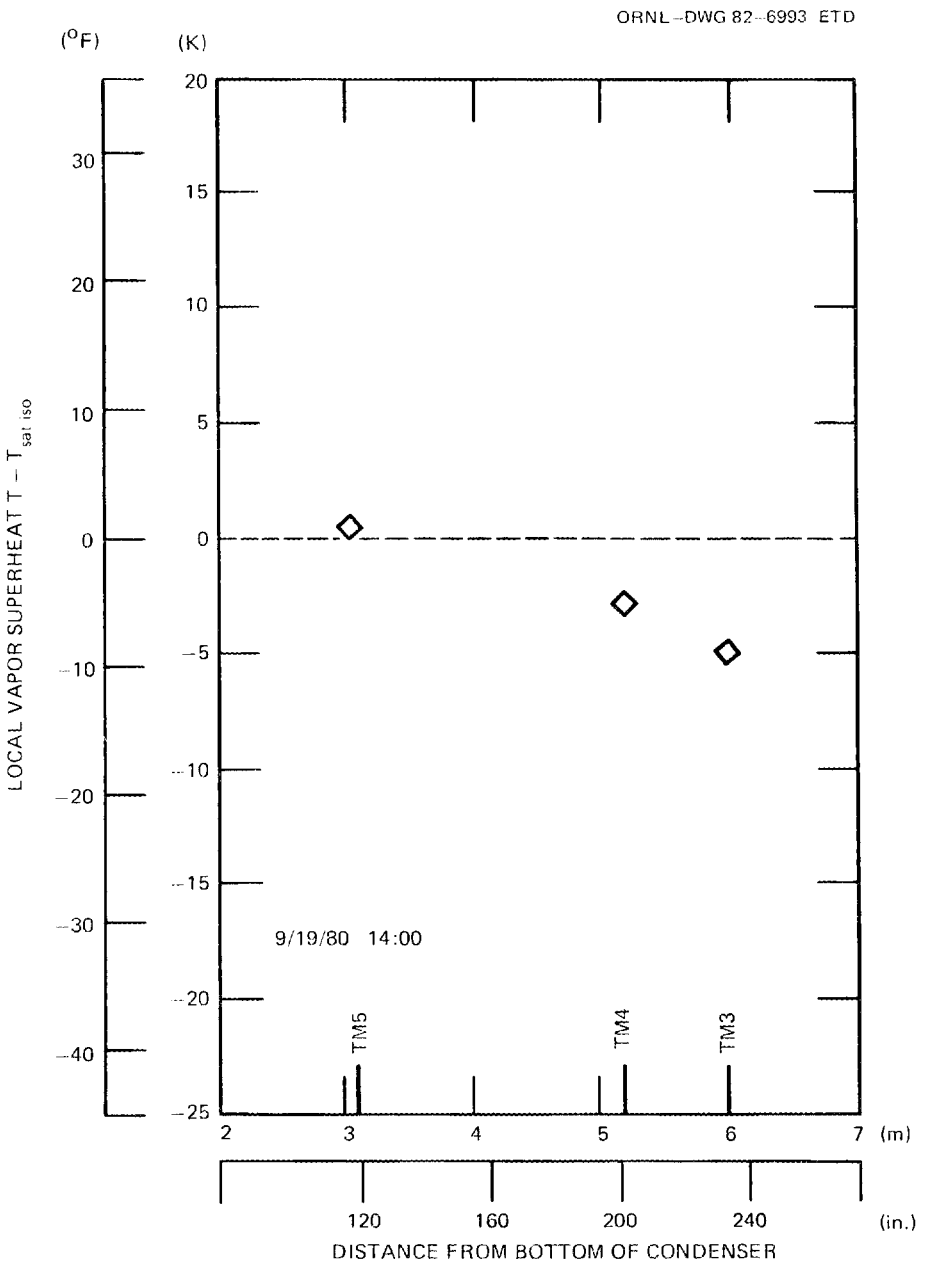

Fig. 12. Vapor temperature profile, surface evaporator mode, shakedown.

may indicate the presence of noncondensible gases in the upper section of the condenser.

Other early observations included the presence of oil and water in the plant working-fluid traps. Limited periodic venting of the condenser and draining of the traps were undertaken to reduce the potential for working-fluid impurities to affect condenser performance.

The amount of oil found in the traps decreased gradually with time, but the amount of water remained fairly consistent. The net variation of noncondensible concentration with time was difficult to judge because of the competing effects of venting and working-fluid addition at irregular intervals. The latter operation led to the introduction of additional noncondensibles because the fill procedure required direct-contact pressurization of the isobutane storage tanks with nitrogen gas. Late in the first period (October 9–10, 1980), an attempt was made to remove any remaining oil, "washing" the outside of the condenser tube bundle by pumping liquid isobutane into the vent line at the top of the unit.

Although somewhat difficult to discern because of the wide range of parameter variations, the general trend of condenser performance seemed to be one of gradual improvement from September to October 1980.

The second period of surface evaporator mode operations occurred in December 1980. For this sequence the plant was supplied with a complete new charge of isobutane before startup, and no further additions were made during the period. A preliminary 1-h condenser vent procedure was undertaken to minimize noncondensible concentrations in the vapor space. Examination of the plant traps showed some water but no oil.

All performance data taken during this period are presented in Fig. 13. It is clear from the plot that the data cluster closely around the prediction locus — a distinct improvement over the first period results. Typical second period data from the vapor space thermistors are given in Fig. 14. These measurements vary little from the corresponding pure isobutane saturation temperature at any point.

After an initial hookup and trial of the direct-contact evaporator in January 1981, a third period of testing in the surface evaporator mode was conducted in March 1981 to map out plant operating ranges with the turbine running. Unfortunately, the outlet water thermistor gave erratic readings

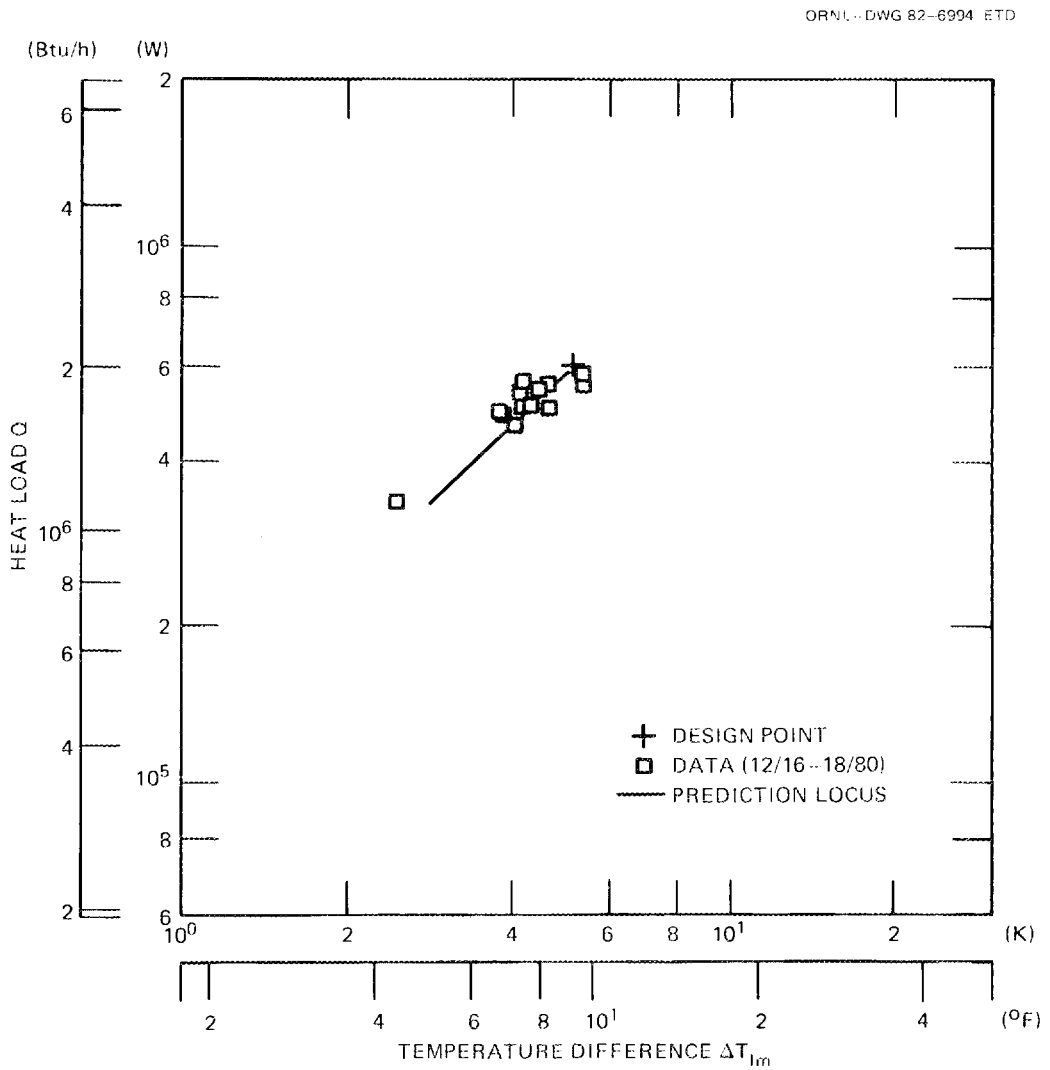

Fig. 13. Condenser test performance, surface evaporator mode, after contaminant removal.

(later found to be caused by a cracked sheath) during this period. However, estimates from other plant instrumentation indicated that condenser performance was good but slightly below predicted levels. Vapor space thermistors showed the upper portion to be somewhat subcooled relative to the corresponding pure isobutane saturation temperature. During this period, the maximum electrical power output of 65 kW was achieved by the prototype power plant.

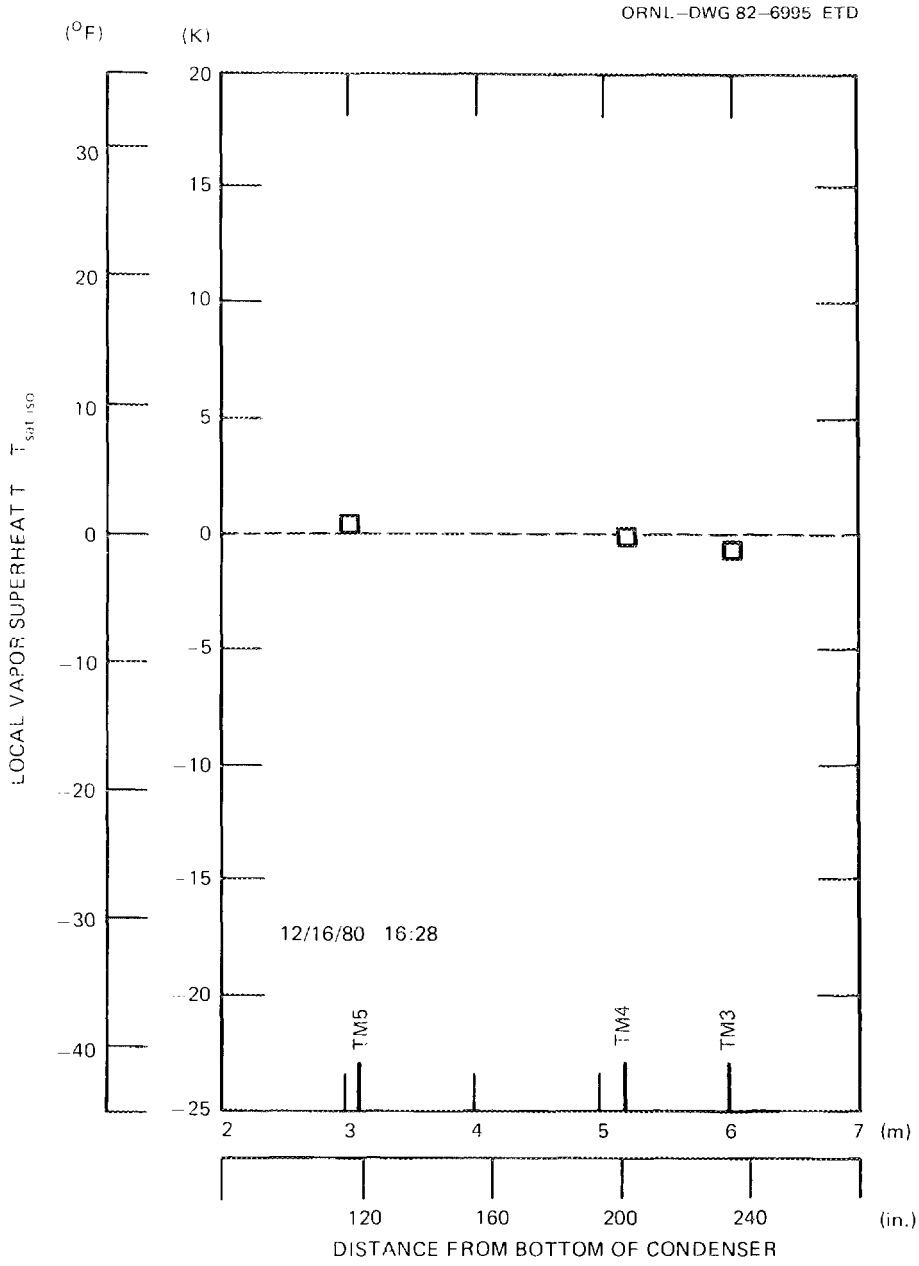

Fig. 14. Vapor temperature profile, surface evaporator mode, after contaminant removal.

6.2 Comparison with Horizontal-Smooth-Tube Condenser

As an illustration of the performance potential of the vertical-fluted-tube condenser demonstrated in the surface evaporator mode, a sample comparison with conventional heat exchanger practice was made based on

actual field conditions. Table 2 summarizes this comparison. The first column of the table gives as-built design parameters and sample data taken during December 1980 experiments involving the vertical-fluted-tube condenser. For comparison purposes, a conventional horizontal-smooth-tube condenser design was chosen with parameters in the first three table groups fixed at actual values for the vertical-fluted-tube condenser test. With the "heat exchanger duty" specified in this manner, the required size of the horizontal-smooth-tube condenser was calculated using the methods of Ref. 8. The final table group reflects this calculation. A comparison of the two table columns indicates that, for the conditions given, the horizontal-smooth-tube design is nearly three times the size of the vertical-fluted-tube design. In other words, the vertical-fluted-tube concept offers the potential of a 65% reduction in condenser size for the stated conditions. Although other comparison bases may be chosen, this example demonstrates clearly the promise of vertical-fluted-tube condensers under realistic power plant conditions.

6.3 Direct-Contact Evaporator Operating Mode

A first try at operating the plant in the direct-contact evaporator mode was made in January 1981. However, shakedown operation in this mode was not undertaken until April 1981. During this period, heat loads varied over a wide range, as emphasis was placed on determining column flooding points for the direct-contact evaporator. It was established that the plant would be limited to considerably less than design heat load if intolerable rates of isobutane carry-under were to be avoided in the evaporator. Although the outlet water thermistor continued to give erratic readings during this period, other plant instrumentation indicated that condenser performance was much poorer than the levels found in the surface evaporator mode tests. Subcooling of the upper vapor space was also generally much greater.

The second period of direct-contact operation, May-July 1981, included an examination of the effects of venting and brine preflash on condenser performance. Typical data (with the defective thermistor replaced)

Table 2. Comparative condenser design and operating parameters

Parameters	Vertical-fluted-tube condenser	Horizontal-smooth-tube condenser
Number of tubes	102	102
Number of water-side passes	4	4
Bundle pitch arrangement	Triangular	Triangular
Tube material	Admiralty	Admiralty
Tube inside diameter, mm (in.)	22.15 (0.872)	22.15 (0.872)
Tube outside diameter, mm (in.)	25.91 (1.020)	25.91 (1.020)
Shell size	18 in., sched. 40	18 in., sched. 40
Water flow, m^3/s (gpm)	1.897×10^{-2} (301)	1.897×10^{-2} (301)
Water inlet temperature, K (°F)	289.02 (60.6)	289.02 (60.6)
Water outlet temperature, K (°F)	294.77 (70.9)	294.77 (70.9)
Shell pressure, Pa (psia)	333.0×10^3 (48.3)	333.0×10^3 (48.3)
Heat load, W (Btu/h)	456×10^3 (1.56×10^6)	456×10^3 (1.56×10^6)
Isobutane saturation temperature, K (°F)	296.59 (74.2)	296.59 (74.2)
Log mean temperature difference, K (°F)	4.05 (7.3)	4.05 (7.3)
Heat transfer conductance, W/K (Btu/h·°F)	1.13×10^5 (2.1×10^5)	1.13×10^5 (2.1×10^5)
Tube length, m (ft)	4.06 (13.3)	11.71 (38.4)
Bundle water-side area, m^2 (ft^2)	28.82 (310)	83.14 (895)
Bundle isobutane-side area, m^2 (ft^2)	52.60 (566)	97.26 (1047)
Overall heat transfer coefficient		
Based on water-side area, $W/m^2 \cdot K$ ($Btu/h \cdot ft^2 \cdot °F$)	3900 (690)	1350 (240)
Based on isobutane-side area, $W/m^2 \cdot K$ ($Btu/h \cdot ft^2 \cdot °F$)	2140 (380)	1160 (200)

given in Fig. 15 indicate that vapor space venting did significantly improve condenser performance, but that even several hours of vent operation did not achieve predicted ("clean") levels. Specific results show a reduction in log mean temperature difference from 22.2 to 5.0 K (40 to 9°F) at a heat load of ~410 kW (1.4 x 10^6 Btu/h). Corresponding changes in the vapor space temperature profiles are demonstrated in Fig. 16. Before venting began and early in the venting period, significant superheats of ~8.3 K (15°F) were noted in the lower vapor space, while even greater subcoolings

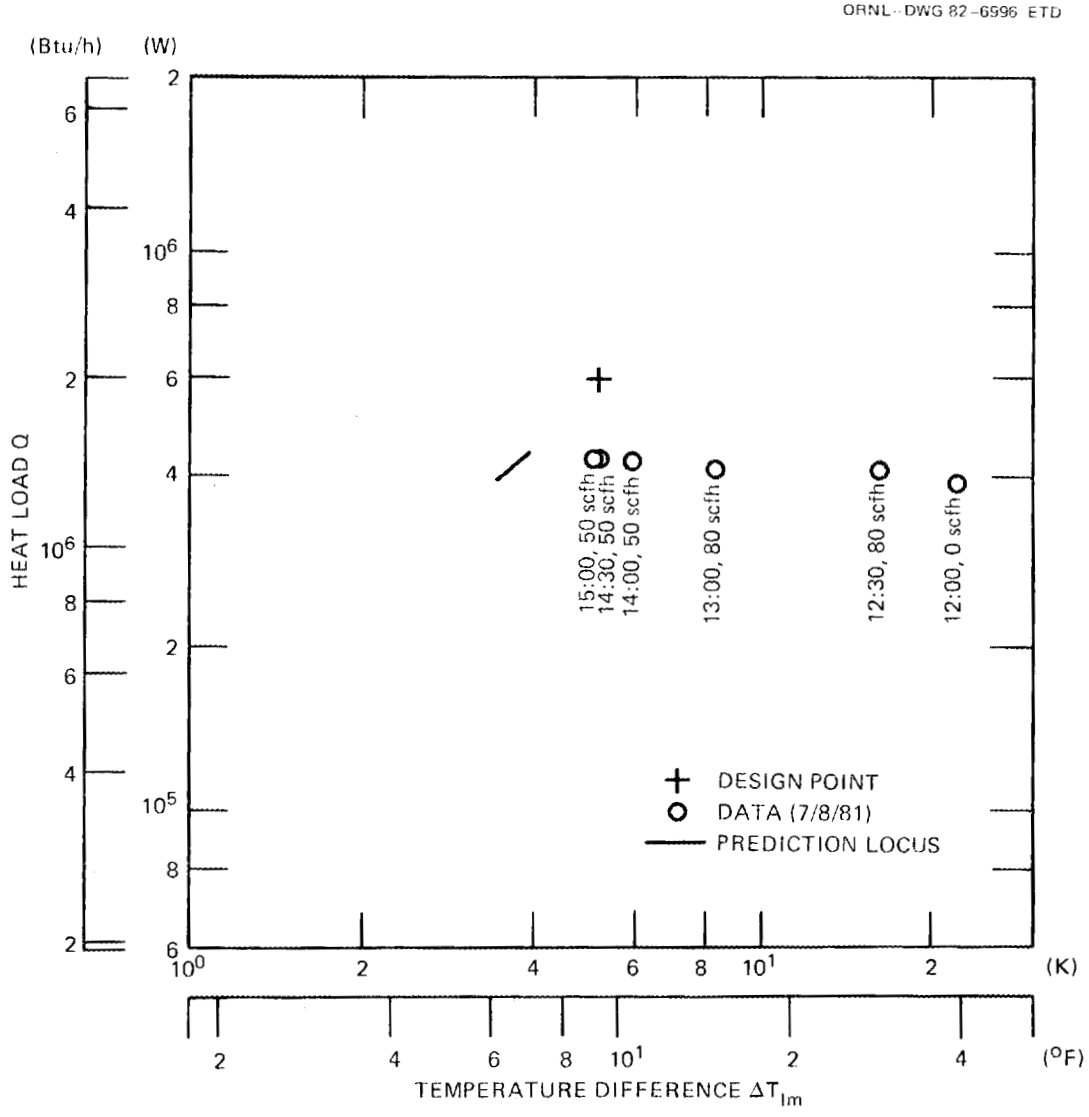

Fig. 15. Condenser test performance, direct-contact evaporator mode, venting.

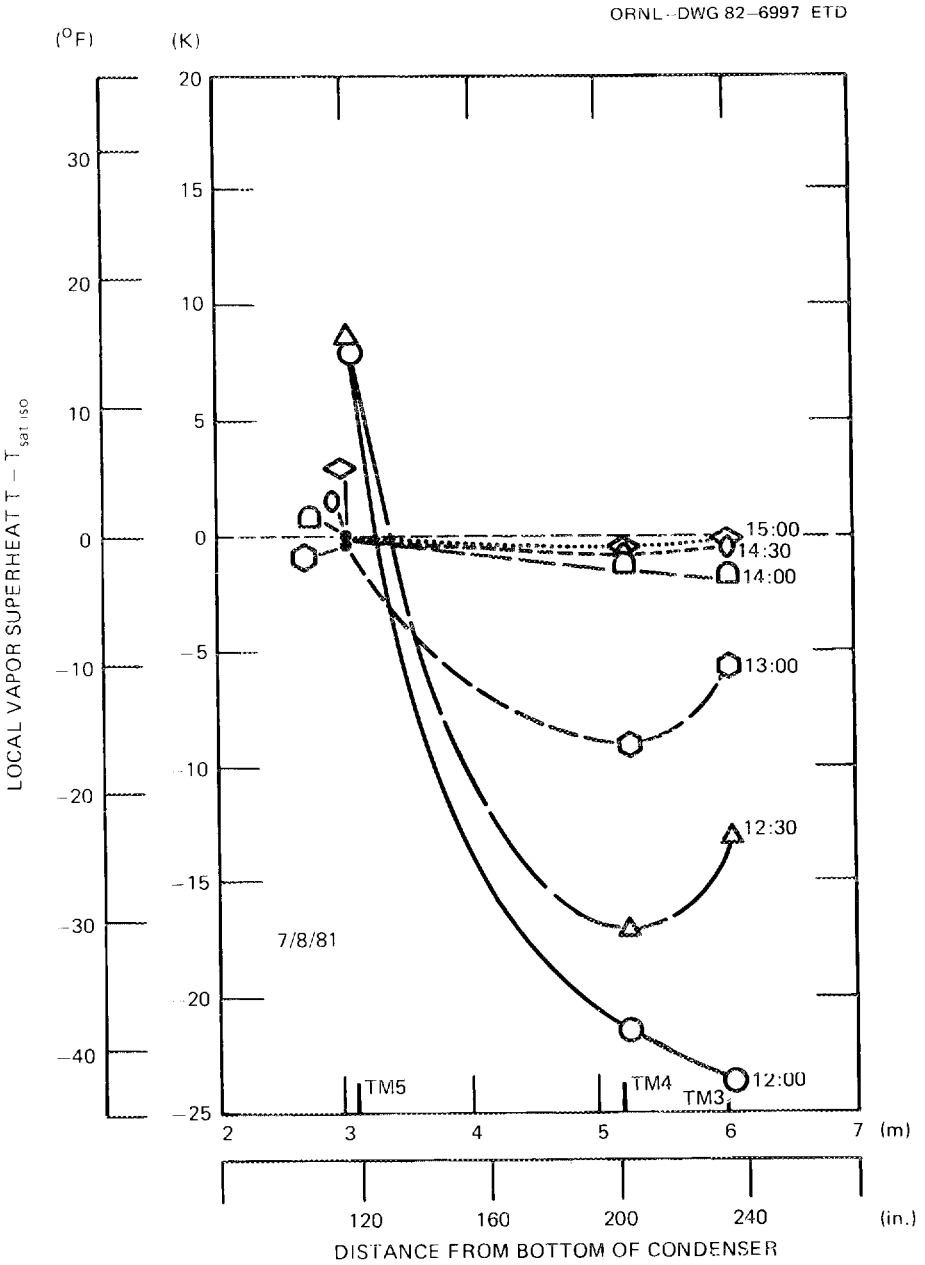

Fig. 16. Vapor temperature profile, direct-contact evaporator mode, venting.

were found in the upper vapor space. Such a pattern may indicate that the presence of noncondensible gases during the period was sufficient to degrade heat transfer performance enough to prevent removal of the vapor superheat in early shell-side passes. Later in the venting period, with the presumed decrease in noncondensible gas concentration, performance

improved and all vapor space temperatures more closely approached the pure isobutane saturation temperature.

The reverse of the preceding process, which is "recovery" (actually degradation) of the condenser following the termination of venting operations, is illustrated in Figs. 17 and 18. Specific performance results in Fig. 17 show an increase in log mean temperature difference from 4.4 to 18.3 K (8 to 33°F) at a heat load of ~350 kW (1.2 x 10^6 Btu/h) over a 7-h

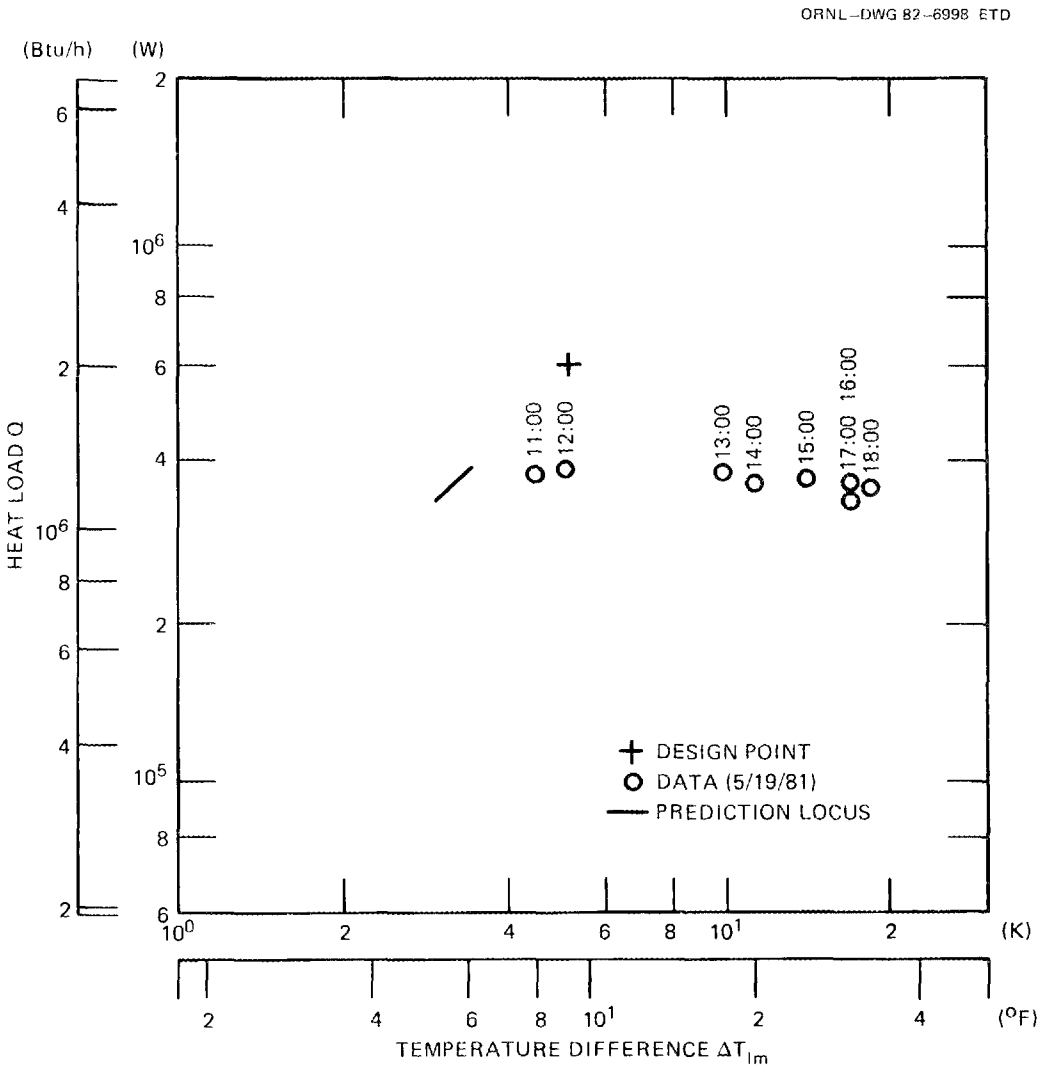

Fig. 17. Condenser test performance, direct-contact evaporator mode, recovery from venting.

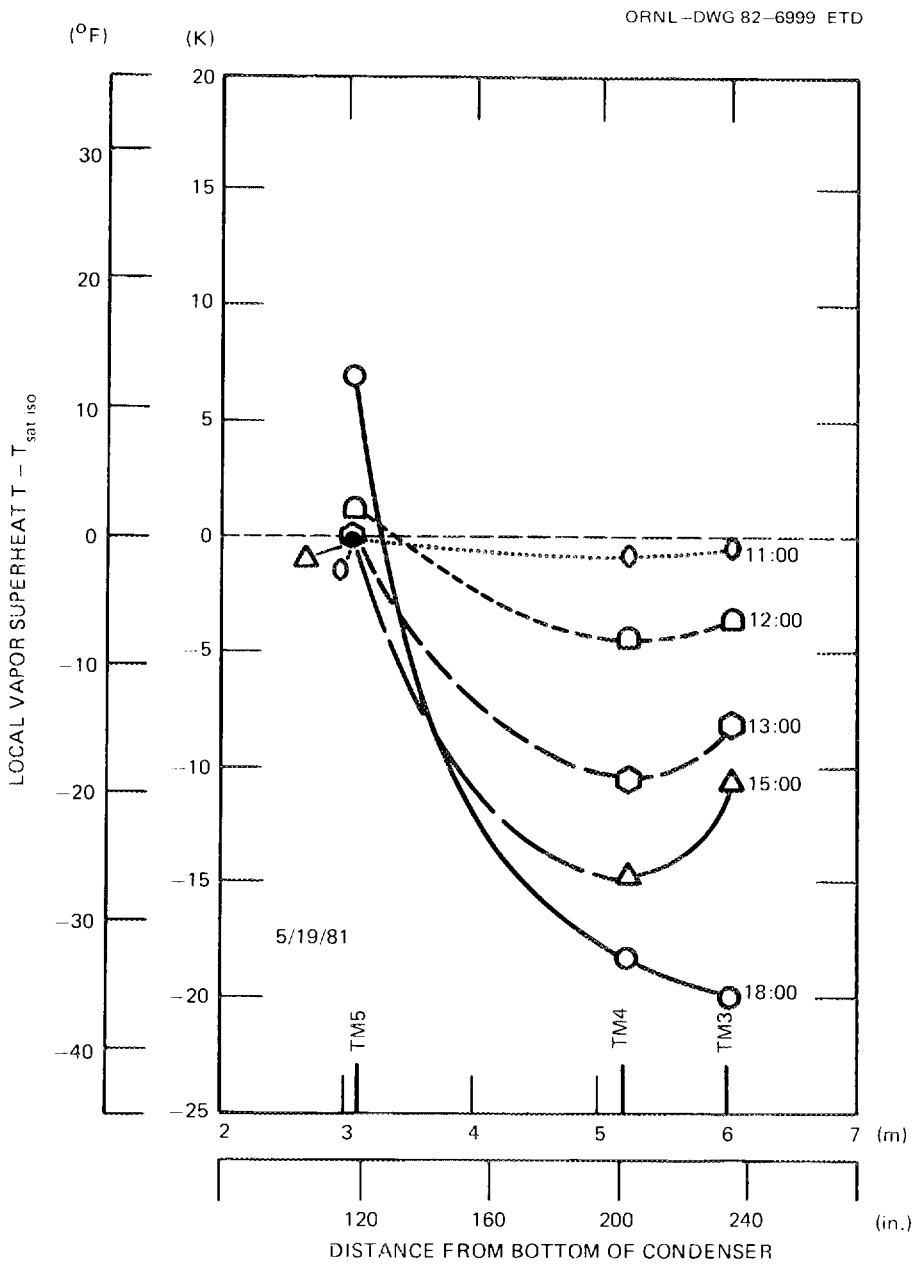

Fig. 18. Vapor temperature profile, direct-contact evaporator mode, recovery from venting.

period. Figure 18 indicates a corresponding reversion in vapor space temperature profile.

Effects of various brine preflash pressure levels on condenser performance and vapor space temperatures are illustrated in Figs. 19 and 20. Figure 19 indicates that log mean temperature differences decreased from

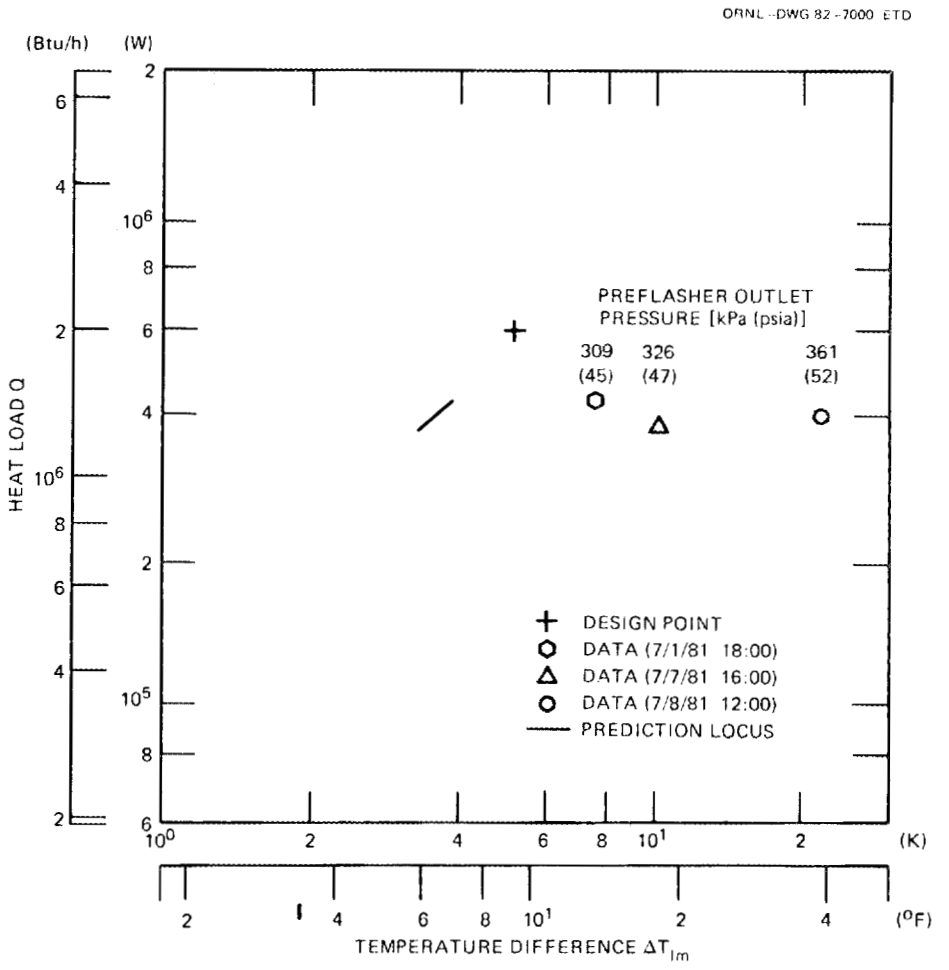

Fig. 19. Condenser test performance, direct-contact evaporator mode, preflash variation.

22.2 to 7.8 K (40 to 14°F) at a heat load of ~380 kW (1.3 x 10^6 Btu/h) as increased brine throttling dropped preflasher outlet pressures from 361 to 309 kPa (52 to 45 psia). The associated data in Fig. 20 show that lower preflasher outlet pressures brought vapor space temperatures closer to the corresponding pure isobutane saturation temperatures.

The third period of direct-contact operation (October 1981) involved continued examination of condenser venting effects but with the addition of vapor sampling and composition analysis to ascertain more accurately the amounts of contaminants present. Data from two sample runs, the earlier just before condenser venting began and the later after 30 min of venting, are presented in Figs. 21 and 22. As noted in earlier figures,

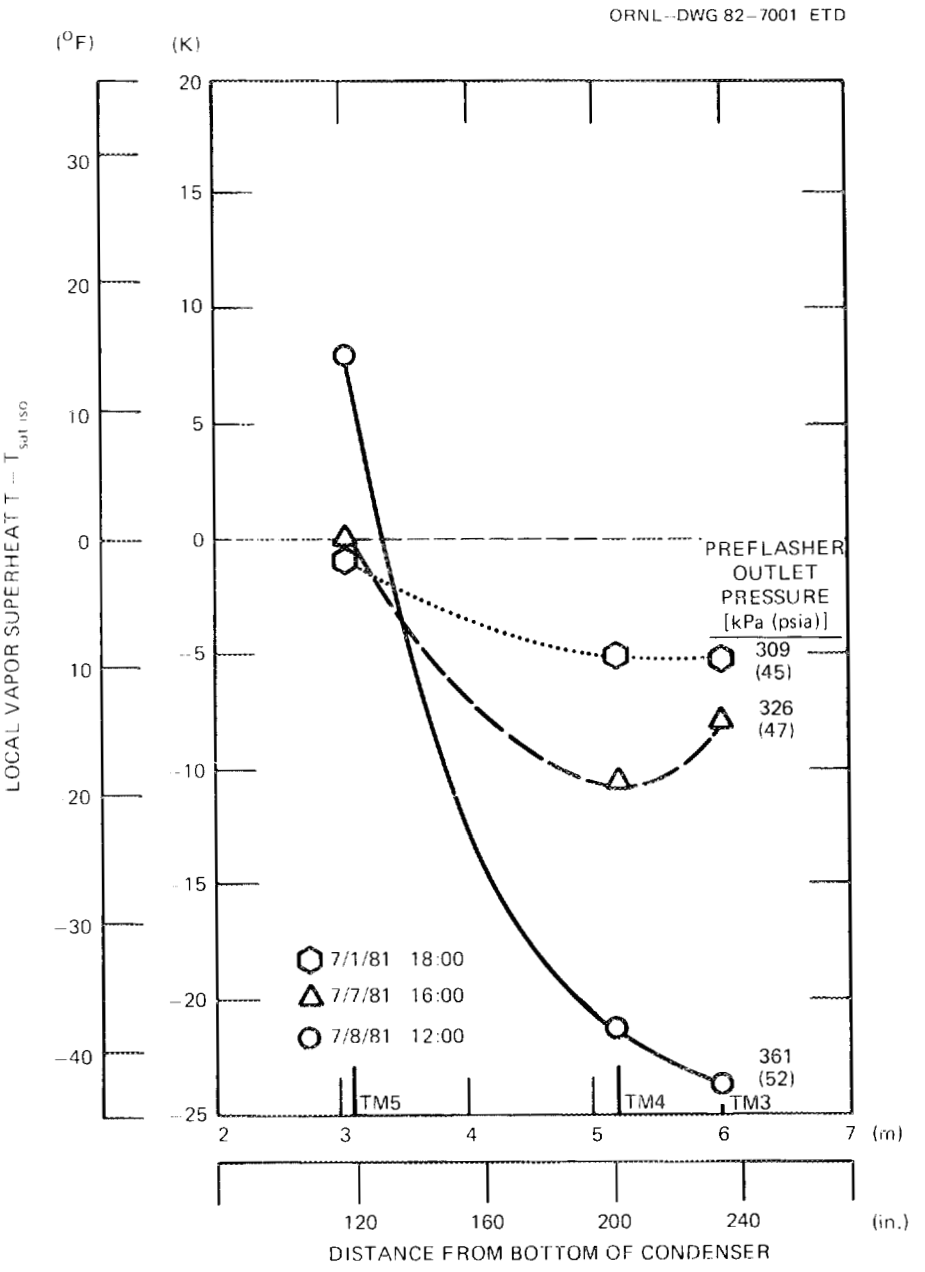

Fig. 20. Vapor temperature profile, direct-contact evaporator mode, preflash variation.

venting brought about improved performance and more uniform vapor space temperatures. The corresponding vapor compositions, as determined from samples taken from the vent flow line, are listed in Table 3. This information clearly indicates that the pre-vent period of relatively poor performance and nonuniform vapor temperatures coincided with the period of

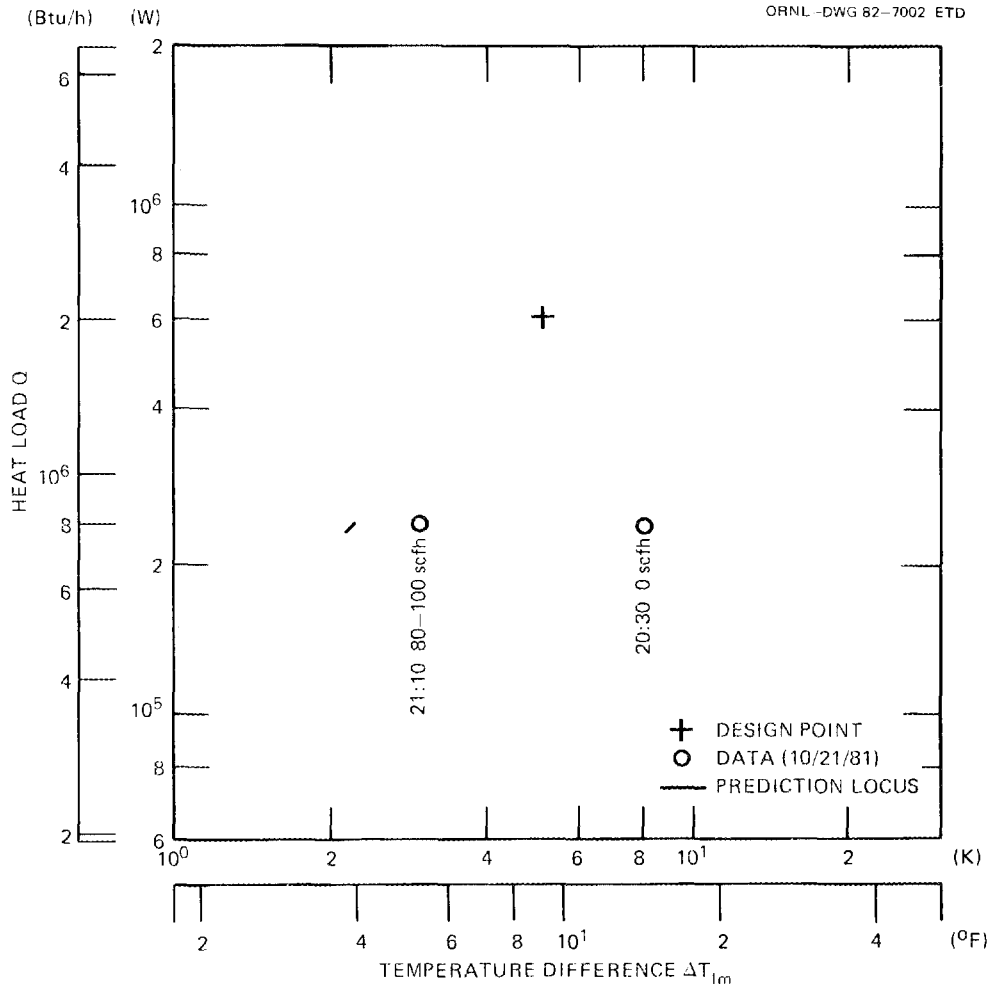

Fig. 21. Condenser test performance, direct-contact evaporator mode, venting with chemical analysis.

Table 3. Condenser vapor space chemical composition determined from sample analysis by gas chromatograph during October 21, 1981, operation in direct-contact evaporator mode

Species	Before vent[a] (wt %)	After 30-min vent[b] (wt %)
N_2	12.841	0.017
CO_2	5.422	0.040
H_2O	0.584	0.910
C_3	0.720	0.384
C_4	1.302	2.049
$i-C_4$	79.130	96.448

[a]Sample time is 20:30.

[b]Sample time is 21:10.

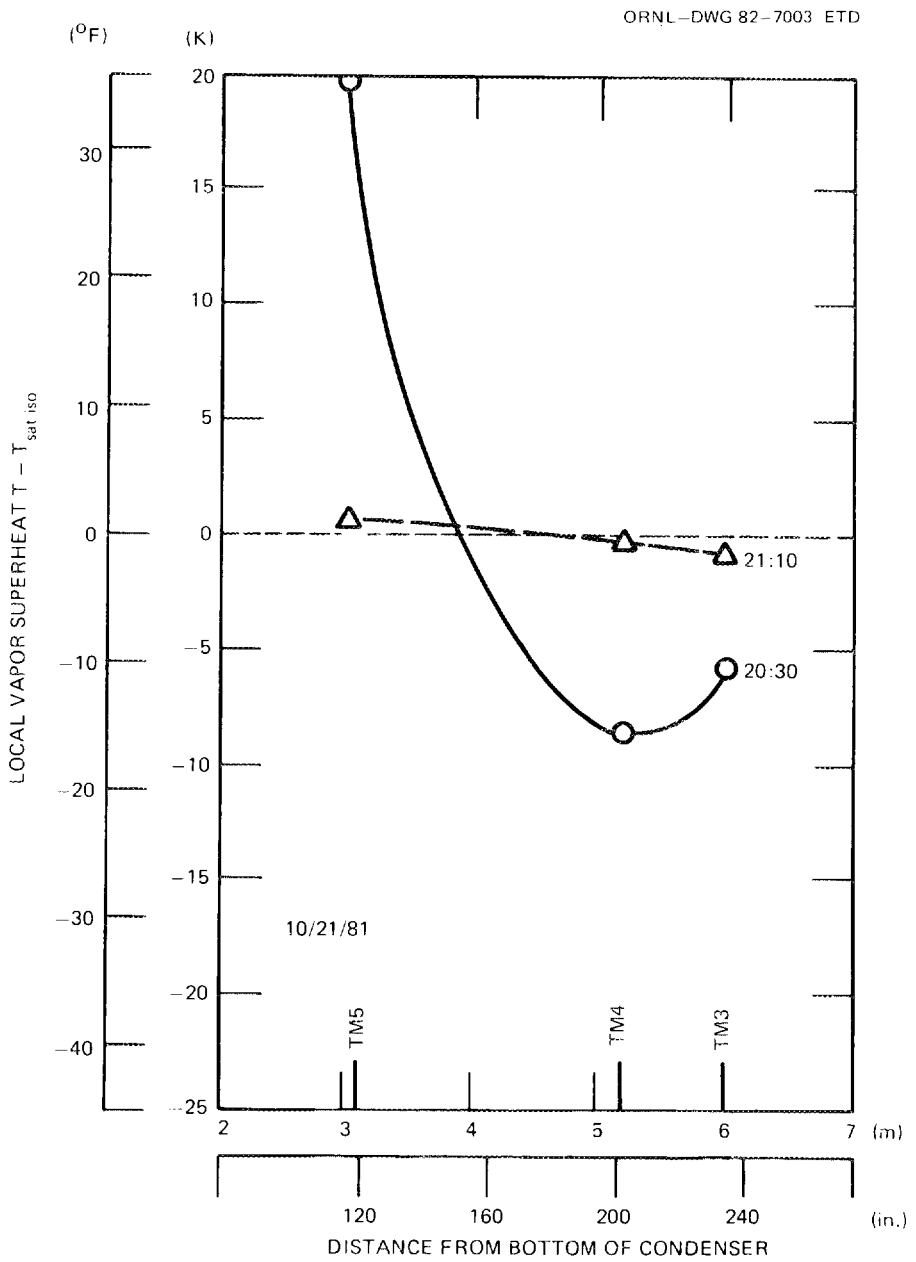

Fig. 22. Vapor temperature profile, direct-contact evaporator mode, venting with chemical analysis.

high noncondensible (nitrogen and carbon dioxide) concentrations and that the (relatively vigorous) venting procedure undertaken before the second point brought about reduced noncondensible concentrations as it improved condenser performance and vapor temperature profiles. Such results provide strong cause-and-effect evidence that noncondensible gases were important contributors to the generally poor direct-contact mode performance observed and that vigorous venting served to reduce significantly both their quantity and impact in the condenser.

7. CONCLUSIONS

From first-year field tests of a vertical-fluted-tube condenser designed and fabricated specifically for use in the prototype power plant at the Raft River Geothermal Test Site, the following major conclusions may be drawn:

1. In the surface evaporator mode, predicted performance levels were achieved after preliminary shakedown, and contaminant removal activities were undertaken.
2. Based on resulting data, a sample comparison shows that use of the vertical-fluted-tube concept in place of conventional horizontal smooth-tube design practice could reduce condenser size by 65%.
3. In the direct-contact evaporator mode, performance was much poorer.
4. Noncondensible gases apparently introduced into the system by the direct-contact evaporator collected in high concentrations in the condenser and were probably a major factor in the observed performance degradation.
5. Condenser venting reduced these concentrations and improved performance significantly.
6. Increased brine preflash also coincided with noticeable performance improvement.

REFERENCES

1. S. L. Milora and J. W. Tester, *Geothermal Energy as a Source of Electric Power*, The MIT Press, Cambridge, Massachusetts, 1976.

2. S. K. Combs, G. S. Mailen, and R. W. Murphy, *Condensation of Refrigerants on Vertical Fluted Tubes*, ORNL/TM-5848 (August 1978).

3. N. Domingo, *Condensation of Refrigerant-11 on the Outside of Vertical Enhanced Tubes*, ORNL/TM-7797 (August 1981).

4. G. L. Mines, "Performance and Operational Experience of a Prototype Binary Geothermal Power Plant," pp. 1328–1333 in *Proceedings of the 16th Intersociety Energy Conversion Engineering Conference*, Atlanta, Georgia, August 9–14, 1981, Vol. 2, American Society of Mechanical Engineers, New York.

5. G. L. Mines, *Prototype Geothermal Power Plant Summary of Operation for Automatic-Run Test Phase*, EGG-2078 (February 1981).

6. G. Mines, *INEL Raft River Prototype Power Plant Test Program*, PG-G-80-040 (October 1980).

7. G. L. Mines, *Description of Testing for Evaluation of the ORNL Fluted-Tube Condenser at the Raft River Geothermal Site*, PG-G-80-042 (July 1981).

8. W. M. Rohensow and J. P. Hartnett, *Handbook of Heat Transfer*, McGraw-Hill, New York, 1973.

9. F. D. Rossini et al., *Selected Values of Physical and Thermodynamic Properties of Hydrocarbons and Related Compounds*, Carnegie Press, Pittsburgh, 1953.

10. L. N. Canjar and F. S. Manning, *Thermodynamic Properties and Reduced Correlations for Gases*, Gulf Publishing, Houston, 1967.

11. *Thermophysical Properties of Refrigerants*, American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., New York, 1976.

12. J. H. Keenan and F. G. Keyes, *Thermodynamic Properties of Steam*, John Wiley and Sons, Inc., New York, 1963.

Appendix A

CONDENSER FIELD TEST DATA

A.1 Data Reduction Program

PROGRAM VARIABLES
(* DENOTES RAW MEASUREMENT INPUTS)

A------THERMISTOR CONSTANTS
B------THERMISTOR CONSTANTS
C------THERMISTOR CONSTANTS
D------ISOBUTANE TSAT CONSTANTS
E------ISOBUTANE TSAT CONSTANTS
F------WATER DENSITY CONSTANTS
G------WATER SPEC HEAT CONSTANTS
H------COMPOS COEFF CONSTANTS
I------INDEX
J------INDEX
N------INDEX
O------WATER VISCOSITY CONSTANTS
P------WATER THER COND CONSTANTS
*R------THERMISTOR RESISTANCES
BL-----BELOW LAB RANGE MESSAGE
EG-----EG&G HEAT USED MESSAGE
PI-----3.141592654
PR-----PREFLASH MESSAGE
SA-----SAMPLE TAKEN MESSAGE
*TC-----THERMOCOUPLE TEMPS (GENL)
*TE-----THERMOCOUPLE TEMPS (EG&G)
TM-----THERMISTOR TEMPS
TU-----TURBINE ON MESSAGE
VE-----VENT MESSAGE
AESE---TUBE E AREA
AREI---BUNDLE INSIDE AREA
AREO---BUNDLE OUTSIDE AREA
BELO---BELOW LAB RANGE MARKER
CNDW---WATER THERM CONDUCTIVITY
DIAI---TUBE INSIDE DIAMETER
DNSW---WATER DENSITY
EG&G---EG&G HEAT USED MARKER
EQHT---TUBE E EQUIV HEAT LOAD
FLOM---WATER MASS FLOW
*FLOV---WATER VOLUME FLOW
FLTH---BUNDLE FLUIDED LENGTH
HCMP---COMPOSITE COEFFICIENT
HOUR---TIME OF DAY
HTLD---HEAT LOAD
HWSB---WATER-SIDE COEFFICIENT
MODE---EVAPORATOR MODE
ONES---DATE SECOND DIGIT

PABS---SHELL ABSOLUTE PRESSURE
PATM---ATMOSPHERIC PRESSURE
PERB---PASS INSIDE PERIMETER
PERF---PERFORMANCE RATIO
PERI---TUBE INSIDE PERIMETER
PERO---TUBE OUTSIDE PERIMETER
*PGAG---SHELL GAUGE PRESSURE
PRAN---WATER PRANDTL NUMBER
*PREF---PREFLASH MARKER/PRESSURE
REYN---WATER REYNOLDS NUMBER
SAMP---SAMPLE TAKEN MARKER
SHPW---WATER SPECIFIC HEAT
TCTS---THERMOCOUPLE SUPERHEATS
TDLM---LOG MEAN TEMP DIFFERENCE
TENS---DATE FIRST DIGIT
THAV---EG&G AVERAGE WATER TEMP
THRS---EG&G WATER TEMP RISE
THTS---EG&G SUPERHEATS
TIME---COMBINED TIME MARKER
TMTS---THERMISTOR SUPERHEATS
TSAT---ISOBUTANE SATURATION TEMP
TUBE---NUMBER OF TUBES IN BUNDLE
TURB---TURBINE ON MARKER
TWAV---AVERAGE WATER TEMP FAHREN
TWRS---WATER TEMPERATURE RISE
UAEX---MEAS HEAT TRANS CONDUCT
UAPR---PRED HEAT TRANS CONDUCT
*VENT---VENT MARKER/FLOW
VISW---WATER VISCOSITY
YEAR---CALENDAR YEAR
ANTWN--ISOBUTANE TSAT FUNCTION
CALTM--THERMISTOR TEMP FUNCTION
CHTM1--THERMISTOR 1 CHANGE
CHTM2--THERMISTOR 2 CHANGE
CUBIC--ISOBUTANE TSAT FUNCTION
EXPFT--WATER VISCOSITY FUNCTION
MONTH--MONTH OF YEAR
PLACE--LOCATION
POLFT--POLYNOMIAL FUNCTION
SMITH--WATER DENSITY FUNCTION
TWAVK--AVERAGE WATER TEMP KELVIN
UNST1--THERMISTOR 1 UNSTABLE

```
ISN 0002          IMPLICIT REAL*8(A-H,O-Z)
ISN 0003          INTEGER TENS,ONES,YEAR,HOUR,VENT,PREF,TURB,SAMP,EG&G,BELO
ISN 0004          DIMENSION R(5),A(7),B(7),C(7),D(3),E(5),F(8),G(5),H(4),O(3),P(4),
                 1 TM(5),SC(6),TH(4),VE(2),PR(2),TU(4),SA(4),EG(4),BE(4),TMTS(5),
                 1 TCTS(5),THTS(4)
ISN 0005          UNST1=810128000 0D0
ISN 0006          CHIM1=810505000 0D0
ISN 0007          CHIM2=811020000 0D0
ISN 0008          PATM=12.3D0
ISN 0009          DATA A/-4.336734907D0,-4.228678565D0,-4.059011068D0,
                 1 -4.272363183D0,-4.164037485D0,-4.162269080D0,-4.113977660D0/
ISN 0010          DATA B/ 3927.372065D0, 3892.594094D0, 3911.466872D0,
                 1  3908.235143D0, 3933.640653D0, 3940.039585D0, 3925.546997D0/
ISN 0011          DATA C/-14379218.96D0,-14143718.47D0,-14414684.95D0,
                 1 -14385347.05D0,-13550485.22D0,-14158724.90D0,-14179391.52D0/
ISN 0012          DATA D/882.80D0,6.74808D0,240.00D0/
ISN 0013          DATA E/882.80D0,5.03447D0,-33.16D0,292D0,3.22D-6/
ISN 0014          DATA F/374.11D0,3.1975D0,-.3151548D0,-1.203374D-3,7.48908D-13,
                 1 .1342489D0,-3.946263D-3,.0160185D0/
ISN 0015          DATA G/17.6611D0,-.147914D0,6.08619D-4,-1.11867D-6,7.80297D-10/
ISN 0016          DATA H/0.1674066748D+04,-0.3107774996D+00,0.4052749389D-04,
                 1 -0.2273085140D-08/
ISN 0017          DATA O/0.030185D0,-2191.60D0,6.38605D5/
ISN 0018          DATA P/-0.61694D0,7.17851D-3,-1.16700D-5,4.70358D-9/
ISN 0019          DATA VE/'        ','VENT    '/
ISN 0020          DATA PR/'        ','PREFLASH'/
ISN 0021          DATA TU/'        ','        ','TURBINE ','ON      '/
ISN 0022          DATA SA/'        ','        ','SAMPLE T','AKEN    '/
ISN 0023          DATA EG/'        ','        ','EG&G HEA','T USED'/
ISN 0024          DATA BE/'        ','        ','BELOW LA','B RANGE '/
ISN 0025          ARMC=1.605D0
ISN 0026          TUBE=102.D0
ISN 0027          FLTH=159.875D0/12D0
ISN 0028          PERC=5.000D0/12D0
ISN 0029          ALLO=TUBE*FLTH*PERC
ISN 0030          DIAI=.872D0/12D0
ISN 0031          PI=3.141592654D0
ISN 0032          PERI=PI*DIAI
ISN 0033          TERM=PERI*26D0
ISN 0034          ARFI=TUBE*FLTH*PERI
ISN 0035        5 *RITE(6,2000)
ISN 0036     2000 FORMAT(1H1,128('-'))
ISN 0037          N=0
ISN 0038        6 READ(5,1000) PLACE,MONTH,TENS,ONES,YEAR,HOUR,MODE,R,PGAG,FLOV,
                 1 VENT,PREF,TURB,SAMP
ISN 0039          IF(MONTH.EQ.0) GO TO 30
ISN 0041     1000 FORMAT(A3,I2,X,2I1,I3,I5,A3,5F5.0,2F6.1,I4,I3,2I2)
ISN 0042          READ(5,1100) TC,TH
```

```
ISN 0043        1100 FORMAT(19X,10F6.1)
ISN 0044             PABS=PGAG+PATM
ISN 0045             IF(PABS.LE.42.0600D0)  TSAT=ANTWN(PABS,D)
ISN 0047             IF(PABS.GT.42.0600D0)  TSAT=CUBIC(PABS,E)
ISN 0049             TIME=HOUR*1D3+ONES*1D4+TENS*1D5+MONTH*1D6-YEAR*1D8
ISN 0050             DO 100 I=1,5
ISN 0051             J=I
ISN 0052             IF(I.EQ.1.AND.TIME.GT.CHTM1)  J=6
ISN 0054             IF(I.EQ.2.AND.TIME.GT.CHTM2)  J=7
ISN 0056             TM(I)=CALTM(R(I),A(J),B(J),C(J))
ISN 0057             TMTS(I)=TM(I)-TSAT
ISN 0058         100 CONTINUE
ISN 0059             DO 400 I=1,6
ISN 0060             TCTS(I)=TC(I)-TSAT
ISN 0061         400 CONTINUE
ISN 0062             DO 500 I=1,4
ISN 0063             THTS(I)=TH(I)-TSAT
ISN 0064         500 CONTINUE
ISN 0065             IF(TIME.LT.UNST1.OR.TIME.GT.CHTM1) GO TO 10
ISN 0067             EGSG=1
ISN 0068             TM(1)=TM(2)+TM(1)-TM(2)
ISN 0069             GO TO 11
ISN 0070          10 EGSG=0
ISN 0071          11 TWRS=TM(1)-TM(2)
ISN 0072             THRS=TH(1)-TH(2)
ISN 0073             TDLM=TWRS/DLOG((TSAT-TM(2))/(TSAT-TM(1)))
ISN 0074             DNSW=SMITH(TM(2),F)
ISN 0075             FLOM=DNSW*FLOV*60D0*3.785412D-3/2.8316846D-2
ISN 0076             TWAV=(TM(1)+TM(2))/2D0
ISN 0077             THAV=(TH(1)+TH(2))/2D0
ISN 0078             TWAVK=(TWAV+459.67D0)/1.8D0
ISN 0079             SHPW=POLFT(TWAVK,G,5)/4.184000D0
ISN 0080             HTLD=FLOM*SHPW*TWRS
ISN 0081             UAEX=HTLD/TDLM
ISN 0082             EQHT=HTLD*AREE/AREO
ISN 0083             IF(EQHT.GE.3053D0)  BELO=0
ISN 0085             IF(EQHT.LT.3053D0)  BELO=1
ISN 0087             HCMP=POLFT(EQHT,H,4)
ISN 0088             VISW=EXPFT(TWAVK,O,3)/.4133789D0
ISN 0089             REYN=4D0*FLOM/VISW/PERE
ISN 0090             CNDW=POLFT(TWAVK,P,4)/1.729577D0
ISN 0091             PRAN=VISW*SHPW/CNDW
ISN 0092             HWDB=.023D0*CNDW/DIAI*REYN**.8D0*PRAN**.4D0
ISN 0093             UAPB=1D0/(1D0/HCMP/AREO+1D0/HWDB/AREI)
ISN 0094             PERF=UAEX/UAPB
ISN 0095             WRITE(6,2100) PLACE,MONTH,TENS,ONES,YEAR,HOUR,MODE
ISN 0096        2100 FORMAT(1H ,2X,A3,I2,'-',2I1,I3,I5,A3,'    WATER   WATER   WATER    WA
                    1TER    WATER     WRKFL   WRKFL   WRKFL   WRKFL    INST WRKFL   WRKFL')
```

```
ISN 0097          WRITE(6,2200)
ISN 0098     2200 FORMAT(1H ,25X,'FLOW   TEMPIN   TEMPEX   TEMPRS   TEMPAV    PRESS   TMPS
            1T   TMPIN   TMPEX    IDNT TEMPSH SUPHT')
ISN 0099          IF(VENT.LE.1) WRITE(6,2300) VE(VENT+1),FLOV,TM(2),TM(1),TWRS,TWAV,
            1 PGAG,TSAT,TH(3),TH(4),TH(3),TMTS(3)
ISN 0101     2300 FORMAT(1H ,3X,A8,13X,F5.1,4(2X,F6.2),3X,F5.1,3(2X,F5.1),'    TH3',
            1 F6.1,F7.1)
ISN 0102          IF(VENT.GT.1) WRITE(6,2350) VENT,FLOV,TM(2),TM(1),TWRS,TWAV,PGAG,
            1 TSAT,TH(3),TH(4),TH(3),TMTS(3)
ISN 0104     2350 FORMAT(1H ,3X,'VENT =',I4,11X,F5.1,4(2X,F6.2),3X,F5.1,3(2X,F5.1),
            1 '    TH3',F6.1,F7.1)
ISN 0105          IF(PREF.LE.1) WRITE(6,2430) PR(PREF+1),TM(5),TMTS(5)
ISN 0107     2400 FORMAT(1H ,3X,A8,33X,'TM5',X,F6.2,X,F5.1)
ISN 0108          IF(PREF.GT.1) WRITE(6,2450) PREF,TM(5),TMTS(5)
ISN 0110     2450 FORMAT(1H ,3X,'PREFLASH =',I3,78X,'TM5',X,F6.2,X,F5.1)
ISN 0111          WRITE(6,2500) TU(TURB*2+1),TU(TURB*2+2),TM(4),TMTS(4)
ISN 0112     2500 FORMAT(1H ,3X,2A8,75X,'TM4',X,F6.2,X,F5.1)
ISN 0113          WRITE(6,2600) SA(SAMP*2+1),SA(SAMP*2+2),TM(3),TMTS(3)
ISN 0114     2600 FORMAT(1H ,3X,2A8,6X,'HEAT      SAT       MEAS        WATER     WATER   C
            1OMP      PRED      PERFO     TM3',X,F6.2,X,F5.1)
ISN 0115          WRITE(6,2700) EG(EGEG*2+1),EG(EGEG*2+2),TM(4),TMTS(4)
ISN 0116     2700 FORMAT(1H ,3X,2A8,6X,'LOAD      LMTD      UA        REYN NO   COEFF   C
            1OEFF      UA      RATIO     TM4',X,F5.1,2X,F5.1)
ISN 0117          WRITE(6,2800) BE(BELO*2+1),BE(BELO*2+2),HTLD,TDLM,UADX,REYN,HWDB,
            1 HCMP,UAPR,PERF
ISN 0118     2800 FORMAT(1H ,3X,2A8,4X,1PD9.3,X,0PF5.1,2X,1PD8.2,2X,D9.3,2X,0PF5.0,
            1 2X,F5.0,2X,1PD8.2,2X,0PF5.3)
ISN 0119          WRITE(6,2900)
ISN 0120     2900 FORMAT(1H ,128('-'))
ISN 0121          N=N+1
ISN 0122          IF(N.EQ.6) GO TO 5
ISN 0124          GO TO 8
ISN 0125       30 WRITE(6,2999)
ISN 0126     2999 FORMAT(1H1)
ISN 0127          STOP
ISN 0128          END
```

```
ISN 0002          FUNCTION CALTM(R,A,B,C)
ISN 0003          IMPLICIT REAL*8(A-H,O-Z)
ISN 0004          PI=3.141592654D0
ISN 0005          X=-B/C
ISN 0006          Y=(DLOG(R)-A)/2D0/C/(X*X*X/27D0)**.5D0
ISN 0007          Z=DARCOS(Y)/3D0+240D0/180D0*PI
ISN 0008          CALTM=1.8D0/DCOS(Z)/(X/3D0)**.5D0/2D0-459.67D0
ISN 0009          RETURN
ISN 0010          END
```

```
ISN 0002          FUNCTION ANTWN(X,A)
ISN 0003          IMPLICIT REAL*8(A-H,O-Z)
ISN 0004          DIMENSION A(3)
ISN 0005          X1=DLOG10(X*6894.757D0/133.3224D0)
ISN 0006          Y=A(1)/(A(2)-X1)-A(3)
ISN 0007          ANTWN=Y*1.8D0+32D0
ISN 0008          RETURN
ISN 0009          END
```

```
ISN 0002          FUNCTION CUBIC(Z,C)
ISN 0003          IMPLICIT REAL*8(A-H,O-Z)
ISN 0004          DIMENSION C(5)
ISN 0005          Z1=DLOG10(Z)
ISN 0006          P=C(3)-C(4)*2D0
ISN 0007          Q=C(4)*C(4)-C(4)*C(3)*2D0+(C(2)-Z1)/C(5)
ISN 0008          R=C(3)*C(4)*C(4)+(C(3)*(C(2)-Z1)-C(1))/C(5)
ISN 0009          A=(Q*3D0-P*P)/3D0
ISN 0010          B=(P*P*P*2D0-P*Q*9D0+R*27D0)/27D0
ISN 0011          TEST=B*B/4D0+A*A*A/27D0
ISN 0012          CAPA=(-B/2D0+TEST**.5D0)**(1D0/3D0)
ISN 0013          CPB=-B/2D0-TEST**.5D0
ISN 0014          IF(CPB.GE.0D0) CAPB=CPB**(1D0/3D0)
ISN 0016          IF(CPB.LT.0D0) CAPB=-(-CPB)**(1D0/3D0)
ISN 0018          X=CAPA+CAPB
ISN 0019          Y=X-P/3D0
ISN 0020          CUBIC=(Y-273.16D0)*1.8D0+32D0
ISN 0021          RETURN
ISN 0022          END
```

```
ISN 0002          FUNCTION SMITH(X,A)
ISN 0003          IMPLICIT REAL*8(A-H,O-Z)
ISN 0004          DIMENSION A(8)
ISN 0005          X1=(X-32D0)/1.8D0
ISN 0006          Y=A(1)-X1
ISN 0007          UP=A(2)+A(3)*Y**(1D0/3D0)+A(4)*Y+A(5)*Y**4D0
ISN 0008          DN=1D0+A(6)*Y**(1D0/3D0)+A(7)*Y
ISN 0009          SMITH=DN/UP/A(8)
ISN 0010          RETURN
ISN 0011          END
```

```
ISN 0002          FUNCTION POLFT(X,A,M)
ISN 0003          IMPLICIT REAL*8(A-H,O-Z)
ISN 0004          DIMENSION A(M)
ISN 0005          POLFT=0D0
ISN 0006          DO 200 K=1,M
ISN 0007          POLFT=POLFT+A(K)*X**(K-1)
ISN 0008      200 CONTINUE
ISN 0009          RETURN
ISN 0010          END
```

```
ISN 0002          FUNCTION EXPFT(X,A,M)
ISN 0003          IMPLICIT REAL*8(A-H,O-Z)
ISN 0004          DIMENSION A(M)
ISN 0005          Y=0D0
ISN 0006          DO 300 K=1,M
ISN 0007          Y=Y+A(K)*X**(1-K)
ISN 0008      300 CONTINUE
ISN 0009          EXPFT=DEXP(Y)
ISN 0010          RETURN
ISN 0011          END
```

A.2 Output Format

TEST RUN IDENTIFIER

```
RR----------------RAFT RIVER LOCATION
XX-XX-XX----------DATE (MONTH-DAY-YEAR)
XXXX--------------MILITARY LOCAL TIME (HOUR,MINUTE)
XX----------------OPERATING MODE:  SE--SURFACE EVAPORATOR
                                   DC--DIRECT-CONTACT EVAPORATOR
```

CONDITION MESSAGES

```
VENT(= XXX)-------CONDENSER VENT OPERATING(AT VAPOR FLOW = XXX SCFH)
PREFLASH(= XX)----BLIBE PREFLASHER OPERATING(AT OUTLET PRESS = XX PSIG)
TURBINE ON--------POWER TURBINE OPERATING
SAMPLE TAKEN------WORKING FLUID SAMPLE TAKEN FROM CONDENSER VENT LINE
EG&G HEAT USED----EG&G WATER TEMP RISE USED BECAUSE OF TM1 INSTABILITY
BELOW LAB RANGE---BUNDLE HEAT FLUX LESS THAN MINIMUM OF LAB TESTS
```

OUTPUT VARIABLES

```
WATER FLOW--------WATER VOLUME FLOW (GPM)
WATER TEMPIN------INLET WATER TEMPERATURE (DEG F)
WATER TEMPEX------OUTLET WATER TEMPERATURE (DEG F)
WATER TEMPRS------WATER TEMPERATURE RISE (DEG F)
WATER TEMPAV------AVERAGE WATER TEMPERATURE (DEG F)
WRKFL PRESS-------SHELL PRESSURE (PSIG)
WRKFL TMPST-------PURE ISOBUTANE SATURATION TEMPERATURE (DEG F)
WRKFL TMPIN-------INLET WORKING FLUID TEMPERATURE (DEG F)
WRKFL TMPEX-------OUTLET WORKING FLUID TEMPERATURE (DEG F)
INST IDNT---------INSTRUMENT IDENTIFICATION SYMBOLS:  TM3--INLET
                                                      TM5--LOWER BUNDLE
                                                      TM4--UPPER BUNDLE
                                                      TM3--TOP BUNDLE
                                                      TM4--OUTLET
WRKFL TEMPSH------WORKING FLUID TEMPERATURES (DEG F)
WRKFL SUPHT-------WORKING FLUID SUPERHEATS (DEG F)
HEAT LOAD---------WATER-SIDE HEAT LOAD (BTU/H)
SAT LMTD----------LOG MEAN TEMPERATURE DIFFERENCE (DEG F)
MEAS UA-----------MEASURED HEAT TRANSFER CONDUCTANCE (BTU/H/DEG F)
WATER REYN NO-----WATER REYNOLDS NUMBER
WATER COEFF-------WATER-SIDE HEAT TRANSFER COEFFICIENT (BTU/H/FT2/DEG F)
COMP COEFF--------COMPOSITE HEAT TRANSFER COEFFICIENT (BTU/H/FT2/DEG F)
PRED UA-----------PREDICTED HEAT TRANSFER CONDUCTANCE (BTU/H/DEG F)
PRED RATIO--------RATIO OF MEASURED TO PREDICTED CONDUCTANCE
```

A.3 Data Listing

RR 9-17-80 1320 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
300.0	56.91	57.10	0.19	57.00	26.0	60.4	82.0	*****

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
2.807D 04	3.4	8.22D 03	3.613D 04	1114.	1650.	2.52D 05	0.033

BELOW LAB RANGE

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	82.0	21.6
TM5	63.48	3.1
TM4	58.82	-1.6
TM3	66.59	6.2
TH4	*****	*****

RR 9-17-80 1350 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
300.0	60.98	61.06	0.08	61.02	28.0	63.4	82.0	*****

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.155D 04	2.4	4.88D 03	3.836D 04	1145.	1664.	2.58D 05	0.019

BELOW LAB RANGE

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	82.0	18.6
TM5	65.21	1.8
TM4	61.97	-1.4
TM3	68.01	4.6
TH4	*****	*****

RR 9-17-80 1655 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
315.0	65.29	72.85	7.57	69.07	42.0	81.5	128.0	*****

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.191D 06	12.1	9.86D 04	4.518D 04	1255.	1002.	2.31D 05	0.427

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	128.0	46.5
TM5	82.56	1.0
TM4	68.60	-12.9
TM3	76.93	-4.6
TH4	*****	*****

RR 9-17-80 1705 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
315.0	67.87	75.83	7.96	71.85	46.0	86.1	131.0	*****

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.252D 06	13.8	9.05D 04	4.693D 04	1276.	983.	2.31D 05	0.391

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	131.0	44.9
TM5	85.54	-0.5
TM4	71.53	-14.5
TM3	79.57	-6.5
TH4	*****	*****

RR 9-17-80 1735 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
310.0	71.68	81.78	10.10	76.73	52.0	92.4	119.0	*****

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.562D 06	15.1	1.03D 05	4.927D 04	1298.	901.	2.25D 05	0.459

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	119.0	26.6
TM5	92.21	-0.2
TM4	82.32	-10.1
TM3	82.55	-9.9
TH4	*****	*****

RR 9-17-80 1755 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
305.0	72.16	81.30	9.13	76.73	52.0	92.4	115.0	*****

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.390D 06	15.2	9.12D 04	4.847D 04	1281.	944.	2.28D 05	0.400

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	115.0	22.6
TM5	91.25	-1.2
TM4	81.40	-11.0
TM3	82.51	-9.9
TH4	*****	*****

RR 9-17-80 1850 SE	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
VENT	310.0	73.08	83.09	10.01	78.09	52.0	92.4	116.0	*****	TH3	116.0	23.6
										TM5	93.13	0.7
										TM4	83.26	-9.2
	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO		TM3	82.23	-10.2
	1.549D 06	13.7	1.13D 05	5.014D 04	1308.	904.	2.26D 05	0.498		TH4	*****	*****

RR 9-17-80 1915 SE	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
VENT	315.0	72.31	82.72	10.41	77.51	52.0	92.4	116.0	*****	TH3	116.0	23.6
										TM5	92.33	-0.1
										TM4	83.40	-9.0
	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO		TM3	80.26	-12.2
	1.636D 06	14.3	1.14D 05	5.058D 04	1321.	884.	2.25D 05	0.508		TH4	*****	*****

RR 9-18-80 1055 SE	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
	310.0	61.58	62.24	0.66	61.91	29.0	64.8	69.0	66.0	TH3	69.0	4.2
										TM5	64.08	-0.8
										TM4	62.01	-2.8
	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO		TM3	64.69	-0.1
BELOW LAB RANGE	1.024D 05	2.9	3.52D 04	4.016D 04	1182.	1587.	2.60D 05	0.135		TH4	66.0	1.2

RR 9-18-80 1230 SE	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
	315.0	68.58	74.55	5.97	71.56	40.0	79.2	129.0	80.0	TH3	129.0	49.8
										TM5	81.11	1.9
										TM4	72.07	-7.1
	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO		TM3	77.07	-2.1
BELOW LAB RANGE	9.393D 05	7.2	1.30D 05	4.674D 04	1274.	1092.	2.41D 05	0.540		TH4	80.0	0.8

RR 9-18-80 1320 SE	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
	310.0	72.66	82.44	9.78	77.55	52.0	92.4	141.0	91.0	TH3	141.0	48.6
										TM5	66.42	-26.0
										TM4	84.53	-7.9
	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO		TM3	84.18	-8.2
	1.513D 06	14.3	1.06D 05	4.979D 04	1304.	913.	2.27D 05	0.465		TH4	91.0	-1.4

RR 9-18-80 1350 SE	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
	307.5	76.69	89.57	12.88	83.13	59.0	99.3	147.6	96.0	TH3	147.6	48.3
										TM5	99.14	-0.2
										TM4	96.28	-3.1
	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO		TM3	86.77	-12.5
	1.974D 06	15.3	1.29D 05	5.301D 04	1338.	817.	2.19D 05	0.590		TH4	96.0	-3.3

RR 9-18-80 1415 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
300.0	77.49	90.35	12.86	83.92	59.0	99.3	148.7	97.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.923D 06	14.4	1.33D 05	5.222D 04	1318.	827.	2.18D 05	0.610

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	148.7	49.4
TM5	99.77	0.5
TM4	97.00	-2.3
TM3	88.36	-10.9
TH4	97.0	-2.3

RR 9-18-80 1605 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
311.6	70.79	79.61	8.82	75.20	48.0	88.2	143.7	86.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.372D 06	12.5	1.10D 05	4.855D 04	1291.	949.	2.29D 05	0.477

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	143.7	55.5
TM5	87.69	-0.5
TM4	77.67	-10.6
TM3	80.70	-7.5
TH4	86.0	-2.2

RR 9-18-80 1625 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
295.1	72.36	82.01	9.65	77.19	50.0	90.4	144.2	82.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.421D 06	12.6	1.13D 05	4.718D 04	1251.	936.	2.24D 05	0.505

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	144.2	53.8
TM5	90.40	0.0
TM4	80.84	-9.5
TM3	82.45	-7.9
TH4	82.0	-8.4

RR 9-18-80 1640 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
298.8	73.09	83.16	10.07	78.13	51.0	91.4	144.9	89.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.501D 06	12.6	1.19D 05	4.836D 04	1271.	915.	2.24D 05	0.532

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	144.9	53.5
TM5	91.97	0.6
TM4	82.39	-9.0
TM3	83.53	-7.9
TH4	89.0	-2.4

RR 9-19-80 1250 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
310.2	72.52	86.96	14.44	79.74	57.0	97.4	150.3	96.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
2.234D 06	16.6	1.34D 05	5.126D 04	1322.	771.	2.11D 05	0.635

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	150.3	52.9
TM5	97.82	0.4
TM4	95.48	-1.9
TM3	87.48	-9.9
TH4	96.0	-1.4

RR 9-19-80 1305 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
303.6	73.29	87.70	14.41	80.50	58.0	98.4	153.0	97.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
2.182D 06	16.8	1.30D 05	5.065D 04	1305.	780.	2.11D 05	0.613

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	153.0	54.6
TM5	98.93	0.6
TM4	94.09	-4.3
TM3	88.48	-9.9
TH4	97.0	-1.4

RR 9-19-80 1330 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
304.4	73.85	88.45	14.60	81.15	59.0	99.3	152.9	97.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	152.9	53.6
TM5	99.55	0.2
TM4	94.09	-5.2
TM3	89.39	-9.9
TH4	97.0	-2.3

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
2.216D 06	17.1	1.29D 05	5.120D 04	1313.	774.	2.11D 05	0.613

RR 9-19-80 1400 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
305.8	73.53	87.00	13.47	80.26	56.0	96.4	154.3	95.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	154.3	57.9
TM5	97.23	0.8
TM4	91.19	-5.2
TM3	87.41	-9.0
TH4	95.0	-1.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
2.055D 06	15.2	1.35D 05	5.087D 04	1311.	803.	2.15D 05	0.631

RR 9-22-80 1227 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
300.0	69.86	83.20	13.34	76.53	50.0	90.4	151.0	90.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	151.0	60.6
TM5	91.45	1.1
TM4	89.64	-0.7
TM3	83.63	-6.7
TH4	90.0	-0.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.998D 06	12.7	1.58D 05	4.757D 04	1263.	813.	2.12D 05	0.744

RR 9-22-80 1307 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
303.3	70.25	83.54	13.30	76.89	50.0	90.4	153.6	90.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	153.6	63.2
TM5	91.38	1.0
TM4	89.55	-0.8
TM3	84.19	-6.2
TH4	90.0	-0.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
2.013D 06	12.3	1.64D 05	4.832D 04	1277.	810.	2.13D 05	0.771

RR 9-22-80 1405 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
302.7	68.48	79.28	10.80	73.88	45.0	85.0	151.3	82.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	151.3	66.3
TM5	85.78	0.8
TM4	83.87	-1.1
TM3	80.57	-4.4
TH4	82.0	-3.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.632D 06	10.1	1.61D 05	4.635D 04	1252.	885.	2.19D 05	0.736

RR 9-22-80 1422 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
302.1	68.42	79.34	10.93	73.88	45.0	85.0	152.3	84.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	152.3	67.3
TM5	85.74	0.8
TM4	83.73	-1.2
TM3	80.66	-4.3
TH4	84.0	-1.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.648D 06	10.1	1.63D 05	4.625D 04	1250.	882.	2.18D 05	0.747

RR 9-22-80 1455 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
301.1	66.48	73.98	7.50	70.23	39.5	78.6	147.1	78.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	147.1	68.5
TM5	78.77	0.2
TM4	72.33	-6.3
TM3	75.17	-3.4
TH4	78.0	-0.6

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.128D 06	7.8	1.45D 05	4.388D 04	1219.	1023.	2.29D 05	0.636

RR 9-22-80 1510 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
302.0	65.29	72.62	7.33	68.96	38.0	76.8	145.6	76.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	145.6	68.8
TM5	77.51	0.8
TM4	70.89	-5.9
TM3	73.71	-3.0
TH4	76.0	-0.8

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.106D 06	7.2	1.54D 05	4.325D 04	1212.	1030.	2.29D 05	0.673

RR 9-22-80 1540 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
298.9	64.42	71.84	7.42	68.13	38.0	76.8	144.9	76.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	144.9	68.1
TM5	76.96	0.2
TM4	70.62	-6.1
TM3	73.17	-3.6
TH4	76.0	-0.8

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.108D 06	8.1	1.37D 05	4.232D 04	1196.	1029.	2.27D 05	0.606

RR 9-22-80 1635 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
300.0	59.45	63.94	4.48	61.70	30.0	66.2	136.0	67.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	136.0	69.8
TM5	84.84	18.6
TM4	61.97	-4.3
TM3	66.20	-0.1
TH4	67.0	0.8

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE 6.732D 05	4.2	1.62D 05	3.875D 04	1150.	1213.	2.35D 05	0.689

RR 9-22-80 1655 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
294.9	58.86	63.09	4.24	60.98	30.0	66.2	136.1	66.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	136.1	69.9
TM5	85.25	19.0
TM4	61.38	-4.9
TM3	65.37	-0.9
TH4	66.0	-0.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE 6.255D 05	5.0	1.26D 05	3.769D 04	1129.	1238.	2.34D 05	0.538

RR 9-22-80 1710 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
300.8	58.65	62.87	4.22	60.76	30.0	66.2	134.9	65.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	134.9	68.7
TM5	84.95	18.7
TM4	61.09	-5.2
TM3	65.16	-1.1
TH4	65.0	-1.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE 6.360D 05	5.2	1.22D 05	3.833D 04	1146.	1233.	2.35D 05	0.519

RR 9-22-80 1730 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
298.4	58.30	62.55	4.25	60.42	30.0	66.2	135.1	66.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	135.1	68.9
TM5	84.55	18.3
TM4	60.74	-5.5
TM3	64.88	-1.4
TH4	66.0	-0.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
6.352D 05	5.6	1.14D 05	3.783D 04	1136.	1233.	2.34D 05	0.488

BELOW LAB RANGE

RR 9-22-80 1830 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
151.9	69.21	96.33	27.12	82.77	63.0	103.0	155.5	100.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	155.5	52.5
TM5	103.76	0.7
TM4	101.16	-1.9
TM3	96.18	-6.8
TH4	100.0	-3.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
2.056D 06	16.7	1.23D 05	2.609D 04	760.	803.	1.55D 05	0.791

RR 9-22-80 1845 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
151.8	69.54	96.78	27.24	83.16	63.0	103.0	155.1	101.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	155.1	52.1
TM5	103.88	0.9
TM4	101.22	-1.8
TM3	96.90	-6.1
TH4	101.0	-2.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
2.063D 06	16.2	1.27D 05	2.620D 04	762.	803.	1.55D 05	0.819

RR 9-23-80 1305 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
151.5	69.99	89.54	19.55	79.76	54.0	94.4	152.8	92.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	152.8	58.4
TM5	94.57	0.1
TM4	92.92	-1.5
TM3	87.76	-6.7
TH4	92.0	-2.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.478D 06	12.2	1.21D 05	2.505D 04	745.	921.	1.60D 05	0.758

RR 9-23-80 1320 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
151.5	69.68	89.24	19.56	79.46	54.0	94.4	152.6	92.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	152.6	58.2
TM5	94.37	-0.1
TM4	92.70	-1.7
TM3	87.53	-6.9
TH4	92.0	-2.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.478D 06	12.5	1.18D 05	2.495D 04	744.	921.	1.60D 05	0.737

RR 9-23-80 1417 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
149.0	66.66	81.25	14.59	73.95	45.0	85.0	150.9	84.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	150.9	65.9
TM5	85.30	0.3
TM4	83.22	-1.7
TM3	79.45	-5.5
TH4	84.0	-1.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.086D 06	9.1	1.19D 05	2.284D 04	711.	1037.	1.60D 05	0.741

RR 9-23-80 1458 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
149.0	65.76	79.79	14.03	72.77	44.0	83.8	151.1	82.5

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	151.1	67.3
TM5	83.74	-0.1
TM4	81.42	-2.4
TM3	77.92	-5.9
TH4	82.5	-1.3

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.044D 06	9.4	1.11D 05	2.248D 04	705.	1052.	1.60D 05	0.696

BELOW LAB RANGE

RR 9-23-80 1511 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
149.0	65.93	79.96	14.03	72.95	44.0	83.8	150.2	82.5

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	150.2	66.4
TM5	83.87	0.0
TM4	81.46	-2.4
TM3	78.04	-5.8
TH4	82.5	-1.3

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.044D 06	9.2	1.14D 05	2.254D 04	706.	1052.	1.60D 05	0.712

BELOW LAB RANGE

RR 9-23-80 1655 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
147.0	59.99	67.78	7.79	63.89	34.0	71.7	165.3	70.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	165.3	93.6
TM5	80.40	8.7
TM4	65.01	-6.7
TM3	66.27	-5.4
TH4	70.0	-1.7

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
5.726D 05	7.1	8.07D 04	1.960D 04	660.	1267.	1.59D 05	0.507

BELOW LAB RANGE

RR 9-23-80 1710 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
147.0	59.81	67.60	7.79	63.71	33.5	71.0	134.5	70.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	134.5	63.5
TM5	74.98	4.0
TM4	64.83	-6.2
TM3	66.06	-5.0
TH4	70.0	-1.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
5.732D 05	6.6	8.74D 04	1.955D 04	659.	1267.	1.59D 05	0.550

BELOW LAB RANGE

RR 9-24-80 1040 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
75.0	73.98	127.11	53.13	100.55	100.0	131.7	154.1	127.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	154.1	22.4
TM5	131.98	0.2
TM4	130.32	-1.4
TM3	129.57	-2.2
TH4	127.0	-4.7

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.986D 06	21.0	9.44D 04	1.586D 04	476.	815.	1.12D 05	0.844

RR 9-24-80 1115 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
73.5	74.39	124.78	50.39	99.58	96.0	129.0	159.5	124.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	159.5	30.5
TM5	129.13	0.1
TM4	127.56	-1.5
TM3	126.80	-2.2
TH4	124.0	-5.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.846D 06	19.7	9.37D 04	1.538D 04	466.	841.	1.11D 05	0.845

RR 9-24-80 1250 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
73.5	71.64	110.22	38.58	90.93	75.0	113.3	158.7	110.0	TH3	158.7	45.4
									TM5	113.49	0.2
									TM4	111.90	-1.4
									TM3	111.03	-2.3
									TH4	110.0	-3.3

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.414D 06	14.8	9.54D 04	1.394D 04	445.	937.	1.10D 05	0.870

RR 9-24-80 1308 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
73.5	71.30	109.89	38.59	90.60	74.5	112.9	158.8	110.0	TH3	158.8	45.9
									TM5	113.25	0.3
									TM4	111.66	-1.2
									TM3	110.00	-2.9
									TH4	110.0	-2.9

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.414D 06	14.7	9.62D 04	1.388D 04	444.	937.	1.09D 05	0.880

RR 9-24-80 1403 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
73.5	67.55	94.64	27.09	81.10	57.0	97.4	152.2	94.5	TH3	152.2	54.8
									TM5	97.35	-0.0
									TM4	95.72	-1.7
									TM3	91.98	-5.4
									TH4	94.5	-2.9

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE 9.938D 05	11.4	8.75D 04	1.236D 04	421.	1071.	1.08D 05	0.813

RR 9-24-80 1530 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
73.0	64.13	79.17	15.04	71.65	42.0	81.5	138.0	80.0	TH3	138.0	56.5
									TM5	92.82	11.3
									TM4	79.28	-2.3
									TM3	76.30	-5.2
									TH4	80.0	-1.5

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE 5.485D 05	7.5	7.27D 04	1.085D 04	396.	1281.	1.05D 05	0.692

RR 9-24-80 1550 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
73.0	63.94	78.99	15.04	71.46	42.0	81.5	139.7	80.0	TH3	139.7	58.2
									TM5	90.17	8.6
									TM4	79.04	-2.5
									TM3	75.96	-5.6
									TH4	80.0	-1.5

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE 5.486D 05	7.8	7.04D 04	1.082D 04	395.	1280.	1.05D 05	0.671

RR 9-30-80 1450 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
VENT 234.0	78.86	95.16	16.31	87.01	60.0	100.2	153.5	98.0	TH3	153.5	53.3
									TM5	100.27	0.0
									TM4	99.07	-1.2
									TM3	98.52	-1.7
									TH4	98.0	-2.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
3.901D 06	11.3	1.68D 05	4.230D 04	1099.	831.	1.98D 05	0.847

RR 9-30-80 1540 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
234.0	79.30	95.49	16.19	87.39	60.5	100.7	153.3	98.0

VENT

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.887D 06	11.5	1.64D 05	4.249D 04	1102.	833.	1.98D 05	0.830

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	153.3	52.6
TM5	100.54	-0.2
TM4	99.37	-1.3
TM3	98.76	-2.0
TH4	98.0	-2.7

RR 9-30-80 1703 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
292.0	79.90	93.18	13.28	86.54	58.0	98.4	156.3	96.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.931D 06	10.4	1.85D 05	5.247D 04	1309.	825.	2.17D 05	0.851

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	156.3	57.9
TM5	98.70	0.3
TM4	97.48	-0.9
TM3	96.87	-1.5
TH4	96.0	-2.4

RR 9-30-80 1723 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
292.0	79.66	93.00	13.34	86.33	58.5	98.8	156.8	96.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.941D 06	11.2	1.73D 05	5.234D 04	1307.	823.	2.17D 05	0.799

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	156.8	58.0
TM5	98.50	-0.3
TM4	97.27	-1.6
TM3	96.69	-2.1
TH4	96.0	-2.8

RR 9-30-80 1808 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
292.0	78.87	92.22	13.36	85.55	57.0	97.4	156.2	95.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.943D 06	10.5	1.86D 05	5.185D 04	1302.	823.	2.16D 05	0.858

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	156.2	58.8
TM5	97.66	0.3
TM4	96.46	-0.9
TM3	95.87	-1.5
TH4	95.0	-2.4

RR 9-30-80 1822 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
292.0	78.98	92.29	13.31	85.63	57.0	97.4	156.5	95.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.937D 06	10.4	1.87D 05	5.190D 04	1302.	824.	2.17D 05	0.862

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	156.5	59.1
TM5	97.72	0.3
TM4	96.55	-0.8
TM3	95.93	-1.5
TH4	95.0	-2.4

RR 10-01-80 1008 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
291.0	73.04	83.43	10.40	78.23	46.5	86.6	160.4	86.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.509D 06	7.2	2.11D 05	4.716D 04	1245.	913.	2.21D 05	0.953

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	160.4	73.8
TM5	87.39	0.8
TM4	86.10	-0.5
TM3	85.65	-1.0
TH4	86.0	-0.6

RR 10-01-80 1024 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
291.0	73.27	83.62	10.35	78.45	46.5	86.6	160.4	86.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.503D 06	6.9	2.17D 05	4.729D 04	1246.	915.	2.21D 05	0.981

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	160.4	73.8
TM5	87.55	0.9
TM4	86.27	-0.3
TM3	85.87	-0.7
TH4	86.0	-0.6

RR 10-01-80 1120 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
49.5	71.79	122.48	50.69	97.14	90.0	124.8	168.5	120.5

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.251D 06	16.1	7.75D 04	1.008D 04	335.	983.	8.76D 04	0.884

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	168.5	43.7
TM5	125.32	0.5
TM4	123.64	-1.1
TM3	123.27	-1.5
TH4	120.5	-4.3

RR 10-01-80 1135 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
49.5	71.69	122.95	51.26	97.32	90.0	124.8	169.6	120.5

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.265D 06	15.2	8.32D 04	1.010D 04	336.	979.	8.77D 04	0.949

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	169.6	44.8
TM5	125.61	0.8
TM4	124.01	-0.8
TM3	123.65	-1.1
TH4	120.5	-4.3

RR 10-01-80 1242 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
18.0	70.93	153.87	82.95	112.40	142.0	156.7	177.7	151.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
7.445D 05	24.3	3.06D 04	4.312D 03	161.	1178.	4.64D 04	0.658

BELOW LAB RANGE

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	177.7	21.0
TM5	157.05	0.3
TM4	154.87	-1.8
TM3	154.37	-2.4
TH4	151.0	-5.7

RR 10-01-80 1258 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
18.0	71.01	154.13	83.12	112.57	142.0	156.7	178.3	151.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
7.460D 05	23.7	3.14D 04	4.320D 03	161.	1177.	4.65D 04	0.676

BELOW LAB RANGE

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	178.3	21.6
TM5	157.32	0.6
TM4	155.13	-1.6
TM3	154.63	-2.1
TH4	151.0	-5.7

RR 10-02-80 1026 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
290.0	72.12	85.36	13.23	78.74	50.0	90.4	156.5	90.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.915D 06	10.2	1.87D 05	4.731D 04	1245.	828.	2.12D 05	0.884

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	156.5	66.1
TM5	91.41	1.1
TM4	90.15	-0.2
TM3	89.52	-0.8
TH4	90.0	-0.4

RR 10-02-80 1044 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
290.0	73.06	86.31	13.25	79.68	51.0	91.4	156.5	90.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	156.5	65.1
TM5	92.12	0.7
TM4	90.93	-0.5
TM3	90.44	-1.0
TH4	90.0	-1.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.917D 06	10.3	1.85D 05	4.788D 04	1252.	828.	2.12D 05	0.873

RR 10-02-80 1153 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
290.0	72.01	82.64	10.63	77.32	47.0	87.2	123.0	86.0

TURBINE ON

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	123.0	35.8
TM5	87.30	0.1
TM4	85.95	-1.2
TM3	83.98	-3.2
TH4	86.0	-1.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.538D 06	8.8	1.75D 05	4.645D 04	1235.	907.	2.19D 05	0.798

RR 10-02-80 1201 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
290.0	71.97	82.61	10.64	77.29	47.0	87.2	122.8	86.0

TURBINE ON

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	122.8	35.6
TM5	87.29	0.1
TM4	85.94	-1.2
TM3	83.89	-3.3
TH4	86.0	-1.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.540D 06	8.8	1.75D 05	4.643D 04	1235.	906.	2.19D 05	0.796

RR 10-02-80 1240 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
290.0	73.36	84.87	11.52	79.12	49.5	89.8	125.7	89.0

TURBINE ON

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	125.7	35.9
TM5	89.99	0.2
TM4	88.67	-1.2
TM3	86.65	-3.2
TH4	89.0	-0.8

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.666D 06	9.6	1.74D 05	4.753D 04	1248.	878.	2.18D 05	0.798

RR 10-02-80 1348 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
290.0	75.11	86.94	11.83	81.02	51.5	91.9	126.8	90.0

TURBINE ON

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	126.8	34.9
TM5	92.15	0.2
TM4	90.78	-1.1
TM3	89.07	-2.8
TH4	90.0	-1.9

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.711D 06	9.7	1.76D 05	4.870D 04	1262.	868.	2.18D 05	0.808

RR 10-02-80 1428 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
290.0	75.52	87.40	11.88	81.46	52.0	92.4	127.2	90.0

TURBINE ON

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	127.2	34.8
TM5	92.32	-0.1
TM4	91.09	-1.3
TM3	90.79	-1.6
TH4	90.0	-2.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.717D 06	9.8	1.75D 05	4.896D 04	1265.	867.	2.18D 05	0.804

RR 10-02-80 1755 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
290.0	75.37	87.25	11.89	81.31	52.0	92.4	126.8	90.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	126.8	34.4
TM5	92.17	-0.3
TM4	90.95	-1.5
TM3	90.56	-1.9
TH4	90.0	-2.4

TURBINE ON

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.719D 06	10.0	1.73D 05	4.887D 04	1264.	867.	2.18D 05	0.792

RR 10-03-80 1115 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
291.0	75.03	88.13	13.10	81.58	53.0	93.4	157.0	91.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	157.0	63.6
TM5	93.57	0.1
TM4	92.38	-1.1
TM3	91.96	-1.5
TH4	91.0	-2.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.900D 06	10.5	1.80D 05	4.921D 04	1269.	831.	2.14D 05	0.841

RR 10-03-80 1310 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
291.0	75.58	87.34	11.76	81.46	51.5	91.9	126.9	90.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	126.9	35.0
TM5	92.04	0.1
TM4	90.88	-1.0
TM3	90.66	-1.3
TH4	90.0	-1.9

TURBINE ON

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.706D 06	9.2	1.85D 05	4.913D 04	1268.	869.	2.19D 05	0.845

RR 10-06-80 1127 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
290.0	73.59	85.64	12.05	79.62	52.0	92.4	197.0	92.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	197.0	104.6
TM5	93.71	1.3
TM4	90.51	-1.9
TM3	91.48	-0.9
TH4	92.0	-0.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.743D 06	11.8	1.48D 05	4.784D 04	1252.	862.	2.16D 05	0.683

RR 10-06-80 1300 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
290.0	76.46	89.55	13.09	83.01	54.0	94.4	154.7	94.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	154.7	60.3
TM5	95.27	0.8
TM4	93.91	-0.5
TM3	93.22	-1.2
TH4	94.0	-0.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.893D 06	10.1	1.88D 05	4.992D 04	1276.	832.	2.15D 05	0.875

RR 10-06-80 1440 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
290.0	75.10	86.78	11.68	80.94	51.0	91.4	126.6	90.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	126.6	35.2
TM5	91.87	0.5
TM4	90.57	-0.8
TM3	90.20	-1.2
TH4	90.0	-1.4

TURBINE ON

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.689D 06	9.3	1.82D 05	4.864D 04	1261.	873.	2.18D 05	0.835

RR 10-06-80 1550 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
290.0	74.71	85.99	11.28	80.35	50.0	90.4	125.5	89.0

TURBINE ON

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.631D 06	8.8	1.85D 05	4.628D 04	1257.	885.	2.19D 05	0.841

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	125.5	35.1
TM5	90.80	0.4
TM4	89.55	-0.8
TM3	89.69	-0.7
TH4	89.0	-1.4

RR 10-15-80 1340 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
300.0	65.56	76.83	11.28	71.20	44.0	83.8	125.2	83.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.690D 06	11.7	1.44D 05	4.431D 04	1223.	873.	2.15D 05	0.670

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	125.2	41.4
TM5	84.16	0.3
TM4	75.94	-7.9
TM3	76.05	-7.8
TH4	83.0	-0.8

RR 10-15-80 1505 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
300.0	65.09	77.15	12.05	71.12	44.0	83.8	124.9	83.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.807D 06	11.7	1.54D 05	4.427D 04	1222.	849.	2.12D 05	0.729

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	124.9	41.1
TM5	84.14	0.3
TM4	76.91	-6.9
TM3	76.14	-7.7
TH4	83.0	-0.8

RR 10-15-80 1620 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
300.0	65.81	77.36	11.55	71.58	44.0	83.8	126.5	82.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.731D 06	11.3	1.53D 05	4.454D 04	1226.	864.	2.14D 05	0.717

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	126.5	42.7
TM5	83.21	-0.6
TM4	81.38	-2.4
TM3	76.96	-6.9
TH4	82.0	-1.8

RR 10-15-80 1645 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
282.0	65.82	77.95	12.13	71.89	44.0	83.8	126.0	83.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.708D 06	10.8	1.58D 05	4.204D 04	1169.	869.	2.09D 05	0.755

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	126.0	42.2
TM5	84.08	0.2
TM4	82.32	-1.5
TM3	77.55	-6.3
TH4	83.0	-0.8

RR 10-16-80 1115 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
294.0	64.70	75.70	11.00	70.20	42.0	81.5	134.1	80.5

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.616D 06	10.4	1.56D 05	4.284D 04	1196.	889.	2.14D 05	0.729

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	134.1	52.6
TM5	82.04	0.5
TM4	80.27	-1.3
TM3	74.99	-6.6
TH4	80.5	-1.0

RR 10-16-80 1243 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
294.0	65.63	77.30	11.67	71.46	43.0	82.7	130.2	82.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.714D 06	10.1	1.69D 05	4.358D 04	1205.	868.	2.12D 05	0.797

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	130.2	47.5
TM5	83.10	0.4
TM4	81.83	-0.9
TM3	74.98	-7.7
TH4	82.0	-0.7

RR 10-16-80 1400 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
294.0	66.51	78.55	12.04	72.53	44.5	84.4	126.0	84.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.768D 06	10.8	1.64D 05	4.421D 04	1213.	857.	2.12D 05	0.775

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	126.0	41.6
TM5	84.45	0.1
TM4	83.15	-1.2
TM3	78.28	-6.1
TH4	84.0	-0.4

RR 10-16-80 1510 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
294.0	66.58	78.08	11.50	72.33	43.8	83.6	129.4	83.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.688D 06	10.2	1.65D 05	4.410D 04	1212.	873.	2.14D 05	0.774

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	129.4	45.8
TM5	83.76	0.2
TM4	82.27	-1.3
TM3	77.77	-5.8
TH4	83.0	-0.6

RR 10-17-80 1240 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
294.0	61.25	70.41	9.16	65.83	38.0	76.8	131.7	75.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.347D 06	10.3	1.31D 05	4.031D 04	1163.	955.	2.16D 05	0.607

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	131.7	54.9
TM5	77.06	0.3
TM4	69.84	-6.9
TM3	69.09	-7.7
TH4	75.0	-1.8

RR 10-17-80 1340 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
294.0	62.64	71.87	9.23	67.25	39.0	78.0	131.4	78.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.357D 06	10.0	1.35D 05	4.113D 04	1174.	953.	2.17D 05	0.622

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	131.4	53.4
TM5	78.45	0.5
TM4	71.35	-6.6
TM3	70.69	-7.3
TH4	78.0	0.0

RR 10-17-80 1410 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
294.0	62.61	71.77	9.15	67.19	39.0	78.0	131.2	78.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.345D 06	10.1	1.33D 05	4.109D 04	1173.	956.	2.18D 05	0.612

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	131.2	53.2
TM5	78.33	0.3
TM4	71.20	-6.8
TM3	70.65	-7.3
TH4	78.0	0.0

RR 12-16-80 1204 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
301.0	62.55	73.80	11.25	68.17	38.5	77.4	140.0	74.1

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.693D 06	7.9	2.14D 05	4.265D 04	1203.	872.	2.13D 05	1.007

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	140.0	62.6
TM5	78.37	1.0
TM4	77.46	0.1
TM3	76.29	-1.1
TH4	74.1	-3.3

RR 12-16-80 1223 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
301.0	62.46	73.66	11.20	68.06	38.5	77.4	140.3	76.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.685D 06	8.1	2.09D 05	4.258D 04	1202.	874.	2.13D 05	0.984

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	140.3	62.9
TM5	78.21	0.8
TM4	77.30	-0.1
TM3	76.18	-1.2
TH4	76.0	-1.4

RR 12-16-80 1400 SE

VENT

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
280.6	62.99	74.71	11.72	68.85	38.5	77.4	141.2	74.3

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.644D 06	6.9	2.37D 05	4.014D 04	1142.	883.	2.07D 05	1.142

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	141.2	63.8
TM5	78.81	1.4
TM4	78.02	0.7
TM3	77.08	-0.3
TH4	74.3	-3.1

RR 12-16-80 1425 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
300.0	62.67	73.85	11.18	68.26	38.0	76.8	141.6	73.8

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.677D 06	7.1	2.37D 05	4.256D 04	1201.	875.	2.13D 05	1.113

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	141.6	64.8
TM5	78.09	1.3
TM4	77.26	0.5
TM3	76.51	-0.2
TH4	73.8	-3.0

RR 12-16-80 1537 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
300.6	63.75	76.17	12.42	69.96	40.0	79.2	139.1	77.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.865D 06	7.6	2.45D 05	4.366D 04	1215.	838.	2.10D 05	1.167

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	139.1	59.9
TM5	81.01	1.8
TM4	80.20	1.0
TM3	79.65	0.5
TH4	77.2	-2.0

RR 12-16-80 1628 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
300.7	60.56	70.92	10.36	65.74	36.0	74.3	143.8	70.7

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.558D 06	7.3	2.12D 05	4.118D 04	1184.	902.	2.14D 05	0.994

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	143.8	69.5
TM5	74.71	0.5
TM4	73.94	-0.3
TM3	73.01	-1.3
TH4	70.7	-3.6

RR 12-16-80 1720 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
300.6	54.91	62.34	7.43	58.63	28.5	64.1	140.8	61.1

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.118D 06	4.5	2.48D 05	3.711D 04	1129.	1026.	2.18D 05	1.134

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	140.8	76.7
TM5	64.95	0.8
TM4	64.06	-0.1
TM3	63.08	-1.0
TH4	61.1	-3.0

RR 12-17-80 1052 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
300.0	62.07	73.20	11.13	67.64	38.5	77.4	140.0	73.5

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.670D 06	8.6	1.95D 05	4.219D 04	1196.	877.	2.12D 05	0.918

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	140.0	62.6
TM5	77.69	0.3
TM4	76.63	-0.7
TM3	75.85	-1.5
TH4	73.5	-3.9

RR 12-17-80 1226 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
153.9	66.10	89.70	23.60	77.90	52.5	92.9	186.8	88.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.813D 06	11.2	1.62D 05	2.485D 04	747.	848.	1.56D 05	1.040

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	186.8	93.9
TM5	94.29	1.4
TM4	93.34	0.4
TM3	92.28	-0.7
TH4	88.0	-4.9

RR 12-17-80 1343 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
153.8	63.99	83.65	19.66	73.82	46.0	86.1	148.2	83.1

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.511D 06	8.9	1.70D 05	2.354D 04	728.	913.	1.57D 05	1.082

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	148.2	62.1
TM5	86.98	0.9
TM4	86.24	0.2
TM3	85.46	-0.6
TH4	83.1	-3.0

RR 12-17-80 1420 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
154.3	61.30	75.83	14.53	68.56	38.0	76.8	144.8	75.1

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.121D 06	5.2	2.17D 05	2.199D 04	707.	1025.	1.59D 05	1.362

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	144.8	68.0
TM5	78.20	1.4
TM4	77.46	0.7
TM3	76.67	-0.1
TH4	75.1	-1.7

RR 12-17-80 1542 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
300.0	66.18	79.07	12.89	72.63	44.0	83.8	108.7	80.6

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.932D 06	9.8	1.96D 05	4.518D 04	1234.	825.	2.10D 05	0.933

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	108.7	24.9
TM5	84.50	0.7
TM4	83.67	-0.2
TM3	82.64	-1.2
TH4	80.6	-3.2

RR 12-17-80 1625 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
298.7	64.64	75.89	11.25	70.27	40.0	79.2	130.2	76.3

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.679D 06	7.6	2.22D 05	4.356D 04	1212.	875.	2.14D 05	1.038

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	130.2	51.0
TM5	79.88	0.7
TM4	79.13	-0.1
TM3	78.28	-0.9
TH4	76.3	-2.9

RR 12-18-80 958 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
304.2	62.06	74.26	12.21	68.16	40.0	79.2	137.2	74.6

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.857D 06	9.8	1.90D 05	4.310D 04	1213.	839.	2.10D 05	0.903

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	137.2	58.0
TM5	78.88	-0.3
TM4	78.12	-1.1
TM3	77.11	-2.1
TH4	74.6	-4.6

RR 12-18-80 1132 SE

VENT

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
287.5	66.76	79.17	12.41	72.96	42.5	82.1	135.9	78.6

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.782D 06	7.5	2.37D 05	4.349D 04	1195.	854.	2.10D 05	1.129

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	135.9	53.8
TM5	83.24	1.1
TM4	82.55	0.4
TM3	82.05	-0.1
TH4	78.6	-3.5

RR 12-18-80 1300 SE

VENT

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
289.0	66.76	79.28	12.51	73.02	43.0	82.7	138.9	79.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.806D 06	8.1	2.22D 05	4.375D 04	1200.	849.	2.10D 05	1.060

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	138.9	56.2
TM5	83.36	0.7
TM4	82.68	-0.0
TM3	82.25	-0.4
TH4	79.4	-3.3

RR 12-18-80 1430 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
297.9	66.74	78.97	12.24	72.86	43.0	82.7	138.1	79.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.821D 06	8.4	2.17D 05	4.500D 04	1228.	846.	2.12D 05	1.021

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	138.1	55.4
TM5	83.27	0.6
TM4	82.57	-0.1
TM3	82.03	-0.7
TH4	79.4	-3.3

RR 1-28-81 1510 DC

VENT
PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
260.4	49.20	55.80	6.60	52.50	48.5	88.8	176.8	82.1

EG&G HEAT USED
BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
8.620D 05	36.2	2.38D 04	2.926D 04	964.	1124.	2.03D 05	0.117

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	176.8	88.0
TM5	131.34	42.6
TM4	51.00	-37.8
TM3	47.13	-41.6
TH4	82.1	-6.7

RR 1-28-81 1550 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
260.4	52.06	60.06	8.00	56.06	54.0	94.4	164.5	85.6

PREFLASH

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	164.5	70.1
TM5	115.36	20.9
TM4	54.89	-39.6
TM3	50.74	-43.7
TH4	85.6	-8.8

EG&G HEAT USED
BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.044D 06	38.3	2.73D 04	3.092D 04	989.	1052.	2.02D 05	0.135

RR 3-17-81 1315 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
270.0	60.22	72.92	12.70	66.57	41.0	80.4	155.0	74.9

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	155.0	74.6
TM5	79.53	-0.8
TM4	78.13	-2.2
TM3	75.38	-5.0
TH4	74.9	-5.5

EG&G HEAT USED

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.715D 06	12.8	1.34D 05	3.741D 04	1092.	867.	2.00D 05	0.670

RR 3-17-81 1422 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
268.5	59.54	71.74	12.20	65.64	38.5	77.4	115.9	71.8

VENT

TURBINE ON

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	115.9	38.5
TM5	76.54	-0.8
TM4	75.30	-2.1
TM3	74.53	-2.8
TH4	71.8	-5.6

EG&G HEAT USED

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.639D 06	10.6	1.55D 05	3.672D 04	1080.	884.	2.01D 05	0.771

RR 3-17-81 1446 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
269.2	59.09	70.79	11.70	64.94	38.0	76.8	115.3	71.2

VENT

TURBINE ON

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	115.3	38.5
TM5	75.88	-0.9
TM4	74.69	-2.1
TM3	73.92	-2.8
TH4	71.2	-5.6

EG&G HEAT USED

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.576D 06	10.8	1.46D 05	3.645D 04	1078.	898.	2.02D 05	0.725

RR 3-17-81 1555 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
269.1	59.30	70.70	11.40	65.00	38.0	76.8	115.2	71.4

TURBINE ON

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	115.2	38.4
TM5	76.04	-0.7
TM4	74.86	-1.9
TM3	74.11	-2.7
TH4	71.4	-5.4

EG&G HEAT USED

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.535D 06	10.8	1.43D 05	3.647D 04	1078.	907.	2.03D 05	0.704

RR 3-18-81 1146 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
300.4	64.56	76.66	12.10	70.61	43.5	83.3	122.1	79.0

TURBINE ON

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	122.1	38.8
TM5	82.48	-0.8
TM4	79.96	-3.3
TM3	80.33	-2.9
TH4	79.0	-4.3

EG&G HEAT USED

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.816D 06	11.6	1.56D 05	4.402D 04	1220.	847.	2.12D 05	0.739

RR 3-18-81 1252 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
300.2	63.27	73.07	9.80	68.17	40.0	79.2	116.6	74.9

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	116.6	37.4
TM5	78.30	-0.9
TM4	76.27	-2.9
TM3	76.21	-3.0
TH4	74.9	-4.3

TURBINE ON

EG&G HEAT USED	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
	1.471D 06	10.2	1.44D 05	4.254D 04	1200.	923.	2.17D 05	0.661

RR 3-18-81 1351 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
299.2	59.67	66.87	7.20	63.27	33.5	71.0	105.5	66.6

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	105.5	34.5
TM5	70.20	-0.8
TM4	68.76	-2.3
TM3	66.67	-4.3
TH4	66.6	-4.4

TURBINE ON

EG&G HEAT USED	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
	1.078D 06	7.2	1.51D 05	3.954D 04	1160.	1040.	2.23D 05	0.674

RR 3-18-81 1549 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
152.6	57.59	70.69	13.10	64.14	36.0	74.3	106.1	69.6

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	106.1	31.8
TM5	73.97	-0.3
TM4	72.56	-1.7
TM3	71.37	-2.9
TH4	69.6	-4.7

TURBINE ON

EG&G HEAT USED BELOW LAB RANGE	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
	1.000D 06	8.5	1.18D 05	2.043D 04	681.	1068.	1.57D 05	0.752

RR 3-18-81 1647 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
152.9	61.72	82.32	20.60	72.02	46.5	86.6	121.0	82.4

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	121.0	34.4
TM5	86.12	-0.5
TM4	84.70	-1.9
TM3	83.79	-2.8
TH4	82.4	-4.2

TURBINE ON

EG&G HEAT USED	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
	1.574D 06	11.7	1.34D 05	2.285D 04	717.	898.	1.55D 05	0.868

RR 3-18-81 1718 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
153.1	63.62	86.82	23.20	75.22	52.0	92.4	127.1	87.6

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	127.1	34.7
TM5	92.03	-0.4
TM4	90.70	-1.7
TM3	89.86	-2.6
TH4	87.6	-4.8

TURBINE ON

EG&G HEAT USED	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
	1.774D 06	14.2	1.25D 05	2.387D 04	732.	855.	1.55D 05	0.809

RR 3-19-81 1201 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
301.3	65.57	76.57	11.00	71.07	42.5	82.1	119.3	77.5

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	119.3	37.2
TM5	81.53	-0.6
TM4	80.20	-1.9
TM3	76.00	-6.1
TH4	77.5	-4.6

TURBINE ON

EG&G HEAT USED	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
	1.656D 06	10.1	1.64D 05	4.442D 04	1226.	880.	2.16D 05	0.762

RR 3-25-81 1410 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
309.5	68.32	80.42	12.10	74.37	45.5	85.5	123.6	81.1

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	123.6	38.1
TM5	85.79	0.3
TM4	84.80	-0.7
TM3	83.94	-1.6
TH4	81.1	-4.4

TURBINE ON

EG&G HEAT USED	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
	1.870D 06	9.9	1.88D 05	4.770D 04	1278.	837.	2.16D 05	0.871

RR 3-25-81 1500 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
309.1	68.09	80.19	12.10	74.14	45.5	85.5	123.6	80.8

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	123.6	38.1
TM5	85.46	-0.1
TM4	84.44	-1.1
TM3	83.57	-1.9
TH4	80.8	-4.7

TURBINE ON

EG&G HEAT USED	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
	1.868D 06	10.2	1.83D 05	4.749D 04	1275.	837.	2.16D 05	0.848

RR 3-25-81 1606 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
309.1	68.08	80.88	12.80	74.48	46.0	86.1	125.4	81.5

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	125.4	39.3
TM5	85.85	-0.2
TM4	84.85	-1.2
TM3	83.96	-2.1
TH4	81.5	-4.6

TURBINE ON

EG&G HEAT USED	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
	1.976D 06	10.3	1.92D 05	4.771D 04	1278.	817.	2.13D 05	0.899

RR 3-25-81 1700 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
309.8	69.11	81.31	12.20	75.21	47.0	87.2	125.9	82.4

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	125.9	38.7
TM5	86.83	-0.3
TM4	85.82	-1.3
TM3	84.93	-2.2
TH4	82.4	-4.8

TURBINE ON

EG&G HEAT USED	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
	1.887D 06	10.8	1.74D 05	4.828D 04	1286.	834.	2.16D 05	0.807

RR 3-25-81 1757 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
309.2	68.81	81.21	12.40	75.01	46.5	86.6	126.1	82.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	126.1	39.5
TM5	86.52	-0.1
TM4	85.50	-1.1
TM3	84.62	-2.0
TH4	82.0	-4.6

TURBINE ON

EG&G HEAT USED	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
	1.914D 06	10.4	1.84D 05	4.806D 04	1282.	828.	2.15D 05	0.856

RR 3-25-81 1900 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
309.0	68.90	81.10	12.20	75.00	46.5	86.6	126.2	82.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	126.2	39.6
TM5	87.12	0.5
TM4	85.56	-1.1
TM3	84.67	-1.9
TH4	82.0	-4.6

TURBINE ON

EG&G HEAT USED	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
	1.882D 06	10.5	1.80D 05	4.802D 04	1281.	834.	2.16D 05	0.834

RR 3-25-81 2000 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
309.2	68.00	79.70	11.70	73.85	45.5	85.5	125.0	80.9

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	125.0	39.5
TM5	85.55	0.0
TM4	84.55	-1.0
TM3	83.65	-1.9
TH4	80.9	-4.6

TURBINE ON

EG&G HEAT USED

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.806D 06	10.6	1.70D 05	4.733D 04	1273.	849.	2.17D 05	0.786

RR 3-25-81 2100 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
309.1	67.39	79.49	12.10	73.44	45.0	85.0	124.7	80.6

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	124.7	39.7
TM5	85.02	0.1
TM4	84.07	-0.9
TM3	83.19	-1.8
TH4	80.6	-4.4

TURBINE ON

EG&G HEAT USED

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.868D 06	10.4	1.80D 05	4.705D 04	1270.	837.	2.15D 05	0.838

RR 3-26-81 900 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
304.0	64.11	76.61	12.50	70.36	43.0	82.7	122.1	78.2

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	122.1	39.4
TM5	82.79	0.1
TM4	81.65	-1.0
TM3	80.73	-2.0
TH4	78.2	-4.5

TURBINE ON

EG&G HEAT USED

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.899D 06	11.2	1.70D 05	4.440D 04	1230.	831.	2.11D 05	0.805

RR 3-26-81 1100 SE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
304.0	65.37	78.57	13.20	71.97	43.5	83.3	123.3	78.8

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	123.3	40.0
TM5	84.05	0.8
TM4	82.92	-0.3
TM3	82.03	-1.2
TH4	78.8	-4.5

TURBINE ON

EG&G HEAT USED

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
2.005D 06	9.9	2.03D 05	4.538D 04	1242.	812.	2.10D 05	0.970

RR 4-09-81 1348 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
295.4	52.72	57.52	4.80	55.12	35.5	73.6	134.1	67.9

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	134.1	60.5
TM5	95.33	21.7
TM4	55.16	-18.5
TM3	58.16	-15.5
TH4	67.9	-5.7

PREFLASH

EG&G HEAT USED
BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
7.107D 05	18.4	3.86D 04	3.457D 04	1086.	1194.	2.25D 05	0.172

RR 4-09-81 1416 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
296.2	55.83	61.63	5.80	58.73	40.0	79.2	145.0	73.7

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	145.0	65.8
TM5	79.42	0.2
TM4	59.42	-19.8
TM3	64.42	-14.8
TH4	73.7	-5.5

PREFLASH

EG&G HEAT USED
BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
8.604D 05	20.3	4.23D 04	3.662D 04	1116.	1125.	2.24D 05	0.189

RR 4-09-81 1446 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
297.4	57.56	63.96	6.40	60.76	42.5	82.1	160.4	77.0

PREFLASH

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	160.4	78.3
TM5	85.29	3.2
TM4	61.19	-20.9
TM3	66.06	-16.1
TH4	77.0	-5.1

EG&G HEAT USED BELOW LAB RANGE	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
	9.528D 05	21.2	4.49D 04	3.790D 04	1135.	1087.	2.24D 05	0.201

RR 4-13-81 1139 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
297.0	51.38	54.38	3.00	52.88	29.5	65.5	144.3	60.6

PREFLASH

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	144.3	78.8
TM5	65.49	-0.1
TM4	52.72	-12.8
TM3	52.14	-13.4
TH4	60.6	-4.9

EG&G HEAT USED BELOW LAB RANGE	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
	4.468D 05	12.6	3.54D 04	3.357D 04	1074.	1341.	2.32D 05	0.153

RR 4-13-81 1210 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
297.4	52.92	55.82	2.90	54.37	31.0	67.6	145.1	61.7

PREFLASH

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	145.1	77.5
TM5	99.52	31.9
TM4	54.34	-13.3
TM3	52.65	-15.0
TH4	61.7	-5.9

EG&G HEAT USED BELOW LAB RANGE	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
	4.323D 05	13.2	3.27D 04	3.441D 04	1086.	1350.	2.34D 05	0.140

RR 4-13-81 1248 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
297.7	54.46	58.46	4.00	56.46	32.0	69.0	168.5	63.5

PREFLASH

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	168.5	99.5
TM5	78.97	10.0
TM4	56.23	-12.8
TM3	53.88	-15.1
TH4	63.5	-5.5

EG&G HEAT USED BELOW LAB RANGE	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
	5.967D 05	12.4	4.80D 04	3.557D 04	1103.	1254.	2.31D 05	0.208

RR 4-13-81 1313 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
297.0	55.36	59.66	4.30	57.51	33.5	71.0	155.2	64.4

PREFLASH

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	155.2	84.2
TM5	70.68	-0.3
TM4	56.94	-14.1
TM3	55.99	-15.0
TH4	64.4	-6.6

EG&G HEAT USED BELOW LAB RANGE	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
	6.397D 05	13.4	4.78D 04	3.605D 04	1109.	1231.	2.30D 05	0.207

RR 4-13-81 1339 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
296.7	56.46	61.76	5.30	59.11	35.0	73.0	162.0	66.0

PREFLASH

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	162.0	89.0
TM5	72.28	-0.7
TM4	61.65	-11.3
TM3	57.31	-15.7
TH4	66.0	-7.0

EG&G HEAT USED BELOW LAB RANGE	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
	7.875D 05	13.7	5.75D 04	3.689D 04	1121.	1158.	2.27D 05	0.253

RR 4-13-81 1407 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
VENT	281.4	58.07	64.77	6.70	61.42	35.0	73.0	162.5	67.3
PREFLASH									

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
EG&G HEAT USED								
BELOW LAB RANGE	9.437D 05	11.2	8.41D 04	3.621D 04	1091.	1090.	2.19D 05	0.385

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	162.5	89.5
TM5	72.66	-0.3
TM4	60.67	-12.3
TM3	58.73	-14.2
TH4	67.3	-5.7

RR 4-13-81 1444 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
VENT	282.3	60.45	67.95	7.50	64.20	35.0	73.0	167.3	67.0
PREFLASH									

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
EG&G HEAT USED								
BELOW LAB RANGE	1.059D 06	8.2	1.29D 05	3.782D 04	1114.	1047.	2.18D 05	0.591

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	167.3	94.3
TM5	72.50	-0.5
TM4	71.80	-1.2
TM3	60.50	-12.5
TH4	67.0	-6.0

RR 4-13-81 1526 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
PREFLASH	281.6	62.40	70.70	8.30	66.55	38.0	76.8	167.5	69.9

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
EG&G HEAT USED	1.169D 06	9.6	1.22D 05	3.900D 04	1129.	1009.	2.17D 05	0.560

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	167.5	90.7
TM5	75.91	-0.8
TM4	75.03	-1.7
TM3	62.59	-14.2
TH4	69.9	-6.9

RR 4-13-81 1558 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
PREFLASH	282.7	63.62	72.12	8.50	67.87	40.5	79.8	170.0	73.2

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
EG&G HEAT USED	1.201D 06	11.4	1.06D 05	3.989D 04	1142.	999.	2.18D 05	0.485

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	170.0	90.2
TM5	78.93	-0.8
TM4	72.27	-7.5
TM3	67.58	-12.2
TH4	73.2	-6.6

RR 4-13-81 1630 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
PREFLASH	282.1	63.78	73.08	9.30	68.43	43.0	82.7	172.5	75.7

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
EG&G HEAT USED	1.311D 06	13.7	9.54D 04	4.011D 04	1144.	965.	2.15D 05	0.443

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	172.5	89.8
TM5	81.47	-1.2
TM4	69.95	-12.7
TM3	64.01	-18.7
TH4	75.7	-7.0

RR 4-20-81 1230 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
PREFLASH	299.6	56.40	61.20	4.80	58.80	35.0	73.0	118.9	73.1

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
EG&G HEAT USED								
BELOW LAB RANGE	7.202D 05	14.0	5.13D 04	3.708D 04	1127.	1190.	2.30D 05	0.223

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	118.9	45.9
TM5	71.95	-1.0
TM4	58.39	-14.6
TM3	55.74	-17.2
TH4	73.1	0.1

RR 4-20-81 1330 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
299.2	59.07	65.87	6.80	62.47	42.0	81.5	133.8	81.9

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	133.8	52.3
TM5	80.16	-1.4
TM4	61.66	-19.9
TM3	66.88	-14.7
TH4	81.9	0.4

EG&G HEAT USED BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.018D 06	18.9	5.40D 04	3.909D 04	1154.	1062.	2.24D 05	0.241

RR 4-21-81 1055 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
278.7	54.22	57.82	3.60	56.02	42.0	81.5	128.7	78.6

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	128.7	47.2
TM5	79.99	-1.6
TM4	55.48	-26.1
TM3	63.58	-18.0
TH4	78.6	-2.9

EG&G HEAT USED BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
5.028D 05	25.5	1.97D 04	3.307D 04	1043.	1307.	2.25D 05	0.088

RR 4-23-81 1118 DC

VENT
PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
276.9	66.69	74.69	8.00	70.69	40.5	79.8	125.5	80.5

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	125.5	45.7
TM5	78.41	-1.4
TM4	77.96	-1.8
TM3	67.39	-12.4
TH4	80.5	0.7

EG&G HEAT USED

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.107D 06	8.5	1.31D 05	4.061D 04	1143.	1030.	2.21D 05	0.593

RR 4-23-81 1150 DC

VENT
PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
277.3	68.80	77.40	8.60	73.10	41.5	81.0	120.5	82.7

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	120.5	39.5
TM5	80.97	0.0
TM4	80.56	-0.4
TM3	79.97	-1.0
TH4	82.7	1.7

EG&G HEAT USED

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.191D 06	7.0	1.70D 05	4.201D 04	1162.	1002.	2.20D 05	0.772

RR 4-23-81 1244 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
276.6	70.20	79.50	9.30	74.85	46.5	86.6	117.1	87.3

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	117.1	30.5
TM5	85.57	-1.0
TM4	84.06	-2.6
TM3	70.89	-15.7
TH4	87.3	0.7

EG&G HEAT USED

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.284D 06	11.1	1.15D 05	4.289D 04	1172.	973.	2.19D 05	0.527

RR 4-23-81 1314 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
276.5	71.36	81.96	10.60	76.66	51.0	91.4	131.1	91.1

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	131.1	39.7
TM5	90.03	-1.4
TM4	82.83	-8.6
TM3	72.26	-19.1
TH4	91.1	-0.3

EG&G HEAT USED

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.463D 06	14.1	1.04D 05	4.391D 04	1184.	925.	2.16D 05	0.481

RR 4-23-81 1536 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
VENT	276.4	62.40	66.70	4.30	64.55	38.5	77.4	141.8	78.0	TH3	141.8	64.4
PREFLASH										TM5	102.67	25.3
										TM4	66.52	-10.9
	HEAT	SAT	MEAS	WATER	WATER	COMP	PRED	PERFO		TM3	64.11	-13.3
EG&G HEAT USED	LOAD	LMTD	UA	REYN NO	COEFF	COEFF	UA	RATIO		TH4	78.0	0.6
BELOW LAB RANGE	5.944D 05	12.7	4.68D 04	3.721D 04	1098.	1255.	2.30D 05	0.203				

RR 4-23-81 1604 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
	276.6	64.19	70.29	6.10	67.24	39.5	78.6	154.1	79.5	TH3	154.1	75.5
PREFLASH										TM5	77.20	-1.4
										TM4	68.56	-10.0
	HEAT	SAT	MEAS	WATER	WATER	COMP	PRED	PERFO		TM3	65.82	-12.8
EG&G HEAT USED	LOAD	LMTD	UA	REYN NO	COEFF	COEFF	UA	RATIO		TH4	79.5	0.9
BELOW LAB RANGE	8.435D 05	11.1	7.62D 04	3.868D 04	1118.	1133.	2.25D 05	0.339				

RR 4-23-81 1627 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
	277.3	66.69	74.89	8.20	70.79	42.5	82.1	144.3	81.5	TH3	144.3	62.2
PREFLASH										TM5	80.29	-1.8
										TM4	77.71	-4.4
	HEAT	SAT	MEAS	WATER	WATER	COMP	PRED	PERFO		TM3	67.60	-14.5
EG&G HEAT USED	LOAD	LMTD	UA	REYN NO	COEFF	COEFF	UA	RATIO		TH4	81.5	-0.6
	1.136D 06	10.8	1.05D 05	4.073D 04	1145.	1020.	2.20D 05	0.478				

RR 4-23-81 1737 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
	276.4	70.21	80.11	9.90	75.16	48.0	88.2	150.9	88.6	TH3	150.9	62.7
PREFLASH										TM5	87.14	-1.1
										TM4	77.84	-10.4
	HEAT	SAT	MEAS	WATER	WATER	COMP	PRED	PERFO		TM3	78.50	-9.7
EG&G HEAT USED	LOAD	LMTD	UA	REYN NO	COEFF	COEFF	UA	RATIO		TH4	88.6	0.4
	1.366D 06	12.4	1.10D 05	4.304D 04	1173.	950.	2.17D 05	0.506				

RR 4-27-81 1140 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
	276.5	56.88	61.08	4.20	58.98	33.0	70.4	111.1	72.2	TH3	111.1	40.7
PREFLASH										TM5	85.74	15.4
										TM4	58.86	-11.5
	HEAT	SAT	MEAS	WATER	WATER	COMP	PRED	PERFO		TM3	56.35	-14.0
EG&G HEAT USED	LOAD	LMTD	UA	REYN NO	COEFF	COEFF	UA	RATIO		TH4	72.2	1.8
BELOW LAB RANGE	5.815D 05	11.2	5.17D 04	3.431D 04	1058.	1262.	2.25D 05	0.230				

RR 4-27-81 1245 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
VENT	276.3	60.21	66.31	6.10	63.26	34.0	71.7	135.3	72.3	TH3	135.3	63.6
PREFLASH										TM5	70.07	-1.6
										TM4	69.03	-2.6
	HEAT	SAT	MEAS	WATER	WATER	COMP	PRED	PERFO		TM3	60.45	-11.2
EG&G HEAT USED	LOAD	LMTD	UA	REYN NO	COEFF	COEFF	UA	RATIO		TH4	72.3	0.6
BELOW LAB RANGE	8.433D 05	8.0	1.05D 05	3.652D 04	1088.	1133.	2.21D 05	0.475				

RR 4-27-81 1321 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
277.0	61.95	69.25	7.30	65.60	35.5	73.6	150.6	75.1

VENT
PREFLASH

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	150.6	77.0
TM5	72.92	-0.7
TM4	72.49	-1.1
TM3	71.90	-1.7
TH4	75.1	1.5

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
EG&G HEAT USED	1.011D 06	7.4	1.36D 05	3.785D 04	1107.	1064.	2.19D 05	0.622
BELOW LAB RANGE								

RR 4-27-81 1433 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
276.5	65.09	75.19	10.10	70.14	43.0	82.7	150.9	84.0

PREFLASH

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	150.9	68.2
TM5	81.61	-1.1
TM4	68.08	-14.6
TM3	65.28	-17.4
TH4	84.0	1.3

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
EG&G HEAT USED	1.395D 06	11.8	1.18D 05	4.026D 04	1138.	942.	2.12D 05	0.555

RR 4-27-81 1500 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
276.1	65.53	76.13	10.60	70.83	47.0	87.2	159.8	88.1

PREFLASH

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	159.8	72.6
TM5	86.43	-0.7
TM4	69.61	-17.6
TM3	75.04	-12.1
TH4	88.1	0.9

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
EG&G HEAT USED	1.462D 06	15.7	9.29D 04	4.056D 04	1142.	925.	2.11D 05	0.440

RR 4-28-81 1058 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
275.5	55.18	58.48	3.30	56.83	33.0	70.4	148.2	71.8

PREFLASH

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	148.2	77.8
TM5	110.19	39.8
TM4	56.76	-13.6
TM3	56.39	-14.0
TH4	71.8	1.4

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
EG&G HEAT USED	4.555D 05	13.5	3.39D 04	3.310D 04	1040.	1336.	2.26D 05	0.150
BELOW LAB RANGE								

RR 4-28-81 1151 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
276.1	57.62	62.32	4.70	59.97	38.5	77.4	158.5	78.2

PREFLASH

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	158.5	81.1
TM5	106.78	29.4
TM4	60.47	-16.9
TM3	58.72	-18.7
TH4	78.2	0.8

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
EG&G HEAT USED	6.497D 05	17.3	3.76D 04	3.477D 04	1064.	1225.	2.24D 05	0.168
BELOW LAB RANGE								

RR 4-28-81 1319 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
276.8	63.74	71.64	7.90	67.69	42.0	81.5	162.2	83.0

PREFLASH

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	162.2	80.7
TM5	80.78	-0.8
TM4	66.72	-14.8
TM3	71.79	-9.8
TH4	83.0	1.5

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
EG&G HEAT USED	1.093D 06	13.5	8.12D 04	3.895D 04	1122.	1035.	2.18D 05	0.372

RR 4-28-81 1406 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
276.4	65.79	74.59	8.80	70.19	46.5	86.6	165.4	87.5

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	165.4	78.8
TM5	86.09	-0.5
TM4	69.61	-17.0
TM3	74.73	-11.9
TH4	87.5	0.9

EG&G HEAT USED

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.215D 06	16.0	7.58D 04	4.026D 04	1138.	994.	2.17D 05	0.350

RR 4-29-81 1112 DC

VENT
PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
275.0	62.02	66.42	4.40	64.22	36.0	74.3	149.9	75.2

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	149.9	75.6
TM5	103.53	29.3
TM4	64.14	-10.1
TM3	66.77	-7.5
TH4	75.2	0.9

EG&G HEAT USED
BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
6.852D 05	9.9	6.13D 04	3.684D 04	1091.	1249.	2.29D 05	0.268

RR 4-29-81 1139 DC

VENT
PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
276.4	63.29	68.89	5.60	66.09	37.0	75.5	156.4	76.9

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	156.4	80.9
TM5	******	*****
TM4	66.23	-9.3
TM3	69.09	-6.4
TH4	76.9	1.4

EG&G HEAT USED
BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
7.739D 05	9.1	8.47D 04	3.803D 04	1109.	1164.	2.26D 05	0.375

RR 4-29-81 1212 DC

VENT
PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
276.3	65.58	72.78	7.20	69.18	41.0	80.4	163.5	81.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	163.5	83.1
TM5	79.01	-1.4
TM4	69.61	-10.8
TM3	67.12	-13.3
TH4	81.0	0.6

EG&G HEAT USED
BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
9.941D 05	10.6	9.21D 04	3.969D 04	1130.	1071.	2.22D 05	0.415

RR 4-29-81 1304 DC

VENT
PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
275.7	67.46	75.16	7.70	71.31	46.0	86.1	166.4	86.9

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	166.4	80.3
TM5	84.95	-1.1
TM4	70.89	-15.2
TM3	75.31	-10.8
TH4	86.9	0.8

EG&G HEAT USED
BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.060D 06	14.4	7.36D 04	4.078D 04	1144.	1046.	2.22D 05	0.332

RR 4-29-81 1348 DC

VENT
PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
276.5	68.26	76.56	8.30	72.41	49.5	89.8	166.5	90.5

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	166.5	76.7
TM5	88.64	-1.2
TM4	72.16	-17.7
TM3	77.51	-12.3
TH4	90.5	0.7

EG&G HEAT USED

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.146D 06	17.1	6.71D 04	4.151D 04	1154.	1016.	2.21D 05	0.304

RR 4-29-81 1429 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
VENT	276.2	69.69	76.39	8.70	74.04	52.5	92.9	166.0	93.9
PREFLASH									

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
EG&G HEAT USED	1.200D 06	18.6	6.47D 04	4.238D 04	1165.	999.	2.20D 05	0.293

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	166.0	73.1
TM5	91.75	-1.2
TM4	74.03	-18.9
TM3	79.16	-13.8
TH4	93.9	1.0

RR 4-29-81 1554 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
VENT	275.4	63.45	66.65	3.20	65.05	42.0	81.5	147.4	80.6
PREFLASH									

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
EG&G HEAT USED BELOW LAB RANGE	4.407D 05	16.4	2.68D 04	3.733D 04	1098.	1345.	2.35D 05	0.114

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	147.4	65.9
TM5	118.54	37.0
TM4	67.71	-13.8
TM3	65.25	-16.3
TH4	80.6	-0.9

RR 4-29-81 1630 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
VENT	275.5	63.60	67.40	3.80	65.50	44.0	83.8	149.4	82.5
PREFLASH									

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
EG&G HEAT USED BELOW LAB RANGE	5.235D 05	18.3	2.87D 04	3.759D 04	1102.	1295.	2.33D 05	0.123

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	149.4	65.6
TM5	118.03	34.2
TM4	67.51	-16.3
TM3	65.44	-18.4
TH4	82.5	-1.3

RR 4-29-81 1752 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
VENT	275.1	65.09	69.59	4.50	67.34	45.0	85.0	158.1	83.7
PREFLASH									

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
EG&G HEAT USED BELOW LAB RANGE	6.188D 05	17.5	3.53D 04	3.852D 04	1113.	1242.	2.32D 05	0.153

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	158.1	73.1
TM5	116.79	31.8
TM4	68.86	-16.1
TM3	66.99	-18.0
TH4	83.7	-1.3

RR 4-29-81 1824 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
VENT	276.0	66.15	71.25	5.10	68.70	46.0	86.1	161.5	84.4
PREFLASH									

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
EG&G HEAT USED BELOW LAB RANGE	7.034D 05	17.2	4.08D 04	3.938D 04	1126.	1198.	2.31D 05	0.177

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	161.5	75.4
TM5	114.10	28.0
TM4	69.78	-16.3
TM3	67.82	-18.2
TH4	84.4	-1.7

RR 4-29-81 1901 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
VENT	275.6	66.42	71.52	5.10	68.97	40.0	79.2	159.6	84.9
PREFLASH									

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
EG&G HEAT USED BELOW LAB RANGE	7.023D 05	10.0	7.03D 04	3.947D 04	1127.	1199.	2.31D 05	0.305

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	159.6	80.4
TM5	112.39	33.2
TM4	70.10	-9.1
TM3	68.08	-11.1
TH4	84.9	5.7

RR 5-12-81 1450 DC

VENT
PREFLASH

BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
279.9	60.79	67.69	6.90	64.24	43.0	82.7	163.5	80.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
9.658D 05	18.2	5.30D 04	3.751D 04	1107.	1082.	2.20D 05	0.241

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	163.5	80.8
TM5	82.86	0.2
TM4	63.38	-19.3
TM3	67.65	-15.0
TH4	80.0	-2.7

RR 5-13-81 1140 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
251.4	62.69	72.00	9.31	67.35	45.0	85.0	157.4	83.1

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.171D 06	17.2	6.81D 04	3.521D 04	1036.	1008.	2.06D 05	0.331

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	157.4	72.4
TM5	84.00	-1.0
TM4	66.29	-18.7
TM3	71.20	-13.8
TH4	83.1	-1.9

RR 5-13-81 1240 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
251.8	64.83	74.69	9.86	69.76	51.0	91.4	169.2	89.3

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.240D 06	21.3	5.83D 04	3.647D 04	1053.	987.	2.06D 05	0.283

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	169.2	77.8
TM5	91.23	-0.2
TM4	68.46	-22.9
TM3	73.27	-18.1
TH4	89.3	-2.1

RR 5-13-81 1340 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
251.6	65.44	74.87	9.43	70.16	54.0	94.4	169.2	92.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.185D 06	24.0	4.94D 04	3.664D 04	1055.	1004.	2.08D 05	0.238

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	169.2	74.8
TM5	94.73	0.3
TM4	69.57	-24.9
TM3	75.44	-19.0
TH4	92.2	-2.2

RR 5-18-81 1600 DC

VENT
PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
254.7	66.80	75.52	8.72	71.16	40.0	79.2	156.1	78.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.109D 06	7.2	1.55D 05	3.760D 04	1072.	1029.	2.12D 05	0.731

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	156.1	76.9
TM5	78.87	-0.3
TM4	78.36	-0.8
TM3	75.40	-3.8
TH4	78.4	-0.8

RR 5-18-81 1640 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	66.74	75.45	8.71	71.09	44.0	83.8	153.3	81.7

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.109D 06	12.2	9.07D 04	3.761D 04	1073.	1029.	2.12D 05	0.428

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	153.3	69.5
TM5	81.31	-2.5
TM4	71.76	-12.1
TM3	72.90	-10.9
TH4	81.7	-2.1

RR 5-18-81 1720 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	66.83	75.50	8.67	71.16	45.0	85.0	156.0	84.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.105D 06	13.3	8.29D 04	3.764D 04	1073.	1031.	2.12D 05	0.391

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	156.0	71.0
TM5	84.01	-0.9
TM4	70.55	-14.4
TM3	70.36	-14.6
TH4	84.0	-1.0

RR 5-18-81 1800 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.4	66.89	75.55	8.66	71.22	48.0	88.2	159.5	86.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.105D 06	16.6	6.64D 04	3.773D 04	1075.	1030.	2.12D 05	0.313

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	159.5	71.3
TM5	87.08	-1.2
TM4	69.57	-18.7
TM3	68.86	-19.4
TH4	86.0	-2.2

RR 5-19-81 1100 DC

VENT
PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
254.4	66.40	76.24	9.83	71.32	41.0	80.4	160.9	80.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.250D 06	8.1	1.55D 05	3.763D 04	1072.	984.	2.08D 05	0.743

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	160.9	80.5
TM5	79.91	-0.5
TM4	78.71	-1.7
TM3	79.58	-0.8
TH4	80.2	-0.2

RR 5-19-81 1200 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
254.4	67.41	77.52	10.12	72.46	43.0	82.7	164.5	85.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.286D 06	9.3	1.38D 05	3.822D 04	1080.	973.	2.08D 05	0.661

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	164.5	81.8
TM5	84.74	2.0
TM4	74.79	-7.9
TM3	76.16	-6.5
TH4	85.2	2.5

RR 5-19-81 1300 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
254.6	68.08	77.98	9.91	73.03	51.0	91.4	168.8	89.7

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.260D 06	17.9	7.03D 04	3.854D 04	1084.	981.	2.09D 05	0.336

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	168.8	77.4
TM5	90.07	-1.3
TM4	72.48	-18.9
TM3	76.80	-14.6
TH4	89.7	-1.7

RR 5-19-81 1400 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
254.2	66.93	76.44	9.52	71.69	52.5	92.9	153.7	91.1

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.208D 06	20.9	5.78D 04	3.779D 04	1074.	996.	2.10D 05	0.276

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	153.7	60.8
TM5	92.55	-0.4
TM4	70.99	-21.9
TM3	76.96	-16.0
TH4	91.1	-1.8

RR 5-19-81 1500 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
253.8	66.13	75.77	9.64	70.95	56.5	96.9	160.5	94.9

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.223D 06	25.7	4.76D 04	3.736D 04	1068.	992.	2.08D 05	0.229

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	160.5	63.6
TM5	96.17	-0.7
TM4	70.49	-26.4
TM3	77.71	-19.2
TH4	94.9	-2.0

RR 5-19-81 1600 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
254.7	65.55	75.05	9.50	70.30	61.0	101.2	162.0	97.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.209D 06	30.6	3.95D 04	3.716D 04	1067.	996.	2.09D 05	0.189

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	162.0	60.8
TM5	100.77	-0.4
TM4	70.25	-30.9
TM3	68.30	-32.9
TH4	97.4	-3.8

RR 5-19-81 1700 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
254.6	65.51	74.32	8.80	69.92	60.5	100.7	162.7	98.8

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.120D 06	30.6	3.66D 04	3.695D 04	1064.	1025.	2.10D 05	0.174

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	162.7	62.0
TM5	114.10	13.4
TM4	70.82	-29.9
TM3	67.34	-33.4
TH4	98.8	-1.9

RR 5-19-81 1800 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
254.8	66.26	75.50	9.24	70.88	64.5	104.4	165.3	101.1

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.176D 06	33.3	3.54D 04	3.747D 04	1071.	1007.	2.10D 05	0.168

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	165.3	60.9
TM5	116.65	12.3
TM4	71.56	-32.8
TM3	68.51	-35.9
TH4	101.1	-3.3

RR 6-10-81 1600 DC

PREFLASH

BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
233.8	63.73	71.22	7.49	67.47	36.0	74.3	187.1	72.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
8.760D 05	6.0	1.45D 05	3.280D 04	978.	1118.	2.05D 05	0.708

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	187.1	112.8
TM5	96.05	21.8
TM4	72.74	-1.5
TM3	72.36	-1.9
TH4	72.2	-2.1

RR 6-16-81 1100 DC

VENT
PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
234.6	65.27	74.75	9.48	70.01	44.5	84.4	166.5	82.7

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.112D 06	13.8	8.03D 04	3.409D 04	997.	1028.	2.02D 05	0.397

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	166.5	82.1
TM5	83.20	-1.2
TM4	69.51	-14.9
TM3	73.81	-10.6
TH4	82.7	-1.7

RR 6-16-81 1130 DC

VENT
PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
235.2	65.22	72.67	7.44	68.95	39.0	78.0	168.0	77.3

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	168.0	90.0
TM5	80.93	2.9
TM4	71.93	-6.0
TM3	72.07	-5.9
TH4	77.3	-0.7

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	8.749D 05	8.5	1.03D 05	3.368D 04	992.	1119.	2.07D 05	0.497

RR 6-16-81 1200 DC

VENT
PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
234.9	64.57	72.44	7.87	68.51	37.0	75.5	156.5	75.7

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	156.5	81.0
TM5	75.43	-0.1
TM4	74.62	-0.9
TM3	72.13	-3.4
TH4	75.7	0.2

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	9.239D 05	6.2	1.49D 05	3.344D 04	989.	1098.	2.05D 05	0.726

RR 6-16-81 1300 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
234.3	64.66	72.59	7.93	68.63	42.0	81.5	164.2	81.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	164.2	82.7
TM5	100.40	18.9
TM4	68.54	-13.0
TM3	74.02	-7.5
TH4	81.0	-0.5

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	9.289D 05	12.5	7.43D 04	3.343D 04	987.	1096.	2.05D 05	0.362

RR 6-16-81 1400 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
235.5	64.82	73.25	8.44	69.03	46.0	86.1	171.6	85.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	171.6	85.5
TM5	94.61	8.6
TM4	68.88	-17.2
TM3	73.62	-12.4
TH4	85.0	-1.1

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	9.928D 05	16.7	5.95D 04	3.377D 04	994.	1071.	2.04D 05	0.291

RR 6-16-81 1500 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
234.9	64.49	72.79	8.30	68.64	48.0	88.2	168.7	86.4

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	168.7	80.5
TM5	111.95	23.7
TM4	68.44	-19.8
TM3	73.26	-15.0
TH4	86.4	-1.8

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	9.748D 05	19.3	5.05D 04	3.350D 04	989.	1078.	2.04D 05	0.247

RR 6-16-81 1600 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
235.0	64.21	72.55	8.34	68.38	49.5	89.8	166.4	87.9

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	166.4	76.6
TM5	115.09	25.3
TM4	70.25	-19.6
TM3	67.48	-22.3
TH4	87.9	-1.9

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	9.802D 05	21.2	4.63D 04	3.339D 04	988.	1076.	2.04D 05	0.227

RR 6-16-81 1700 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
235.4	63.81	72.16	8.35	67.98	49.5	89.8	167.7	87.5

PREFLASH

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
9.823D 05	21.6	4.55D 04	3.326D 04	987.	1075.	2.04D 05	0.223

BELOW LAB RANGE

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	167.7	77.9
TM5	117.17	27.3
TM4	70.00	-19.8
TM3	66.87	-23.0
TH4	87.5	-2.3

RR 6-24-81 1100 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
268.1	59.73	65.82	6.08	62.78	43.5	83.3	165.0	81.2

PREFLASH

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
8.162D 05	20.3	4.01D 04	3.518D 04	1059.	1145.	2.18D 05	0.184

BELOW LAB RANGE

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	165.0	81.7
TM5	103.88	20.6
TM4	63.40	-19.9
TM3	66.41	-16.9
TH4	81.2	-2.1

RR 6-24-81 1130 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
267.9	63.51	72.92	9.41	68.21	50.0	90.4	171.5	88.4

PREFLASH

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.260D 06	21.8	5.78D 04	3.798D 04	1096.	980.	2.11D 05	0.274

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	171.5	81.1
TM5	91.23	0.9
TM4	68.84	-21.5
TM3	73.17	-17.2
TH4	88.4	-2.0

RR 6-24-81 1200 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
268.5	64.83	73.61	8.77	69.22	52.5	92.9	168.8	90.9

PREFLASH

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.177D 06	23.4	5.02D 04	3.860D 04	1105.	1006.	2.14D 05	0.235

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	168.8	75.9
TM5	92.87	-0.1
TM4	70.05	-22.9
TM3	76.12	-16.8
TH4	90.9	-2.0

RR 6-24-81 1230 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
268.2	64.40	75.48	11.08	69.94	50.5	90.9	175.2	88.9

VENT
PREFLASH

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.485D 06	20.4	7.26D 04	3.894D 04	1109.	919.	2.07D 05	0.351

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	175.2	84.3
TM5	92.82	1.9
TM4	70.55	-20.3
TM3	76.26	-14.6
TH4	88.9	-2.0

RR 6-24-81 1300 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
268.1	65.43	76.52	11.09	70.97	47.0	87.2	156.5	85.4

VENT
PREFLASH

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.486D 06	15.5	9.57D 04	3.948D 04	1116.	919.	2.08D 05	0.460

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	156.5	69.3
TM5	86.57	-0.6
TM4	71.82	-15.3
TM3	76.31	-10.9
TH4	85.4	-1.8

RR 6-24-81 1330 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
VENT	268.2	65.81	78.50	12.69	72.15	45.0	85.0	145.6	83.4	TH3	145.6	60.6
PREFLASH										TM5	84.29	-0.7
										TM4	76.26	-8.7
										TM3	77.25	-7.7
										TH4	83.4	-1.6

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.703D 06	11.7	1.46D 05	4.013D 04	1125.	870.	2.04D 05	0.713

RR 6-24-81 1400 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
VENT	268.1	66.42	77.90	11.48	72.16	45.0	85.0	169.2	82.8	TH3	169.2	84.2
PREFLASH										TM5	84.00	-1.0
										TM4	79.24	-5.7
										TM3	78.67	-6.3
										TH4	82.8	-2.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.537D 06	11.9	1.29D 05	4.012D 04	1124.	907.	2.08D 05	0.623

RR 6-24-81 1430 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
	267.5	67.15	78.10	10.95	72.62	45.0	85.0	180.1	83.0	TH3	180.1	95.1
PREFLASH										TM5	84.40	-0.6
										TM4	79.88	-5.1
										TM3	79.66	-5.3
										TH4	83.0	-2.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.463D 06	11.5	1.28D 05	4.028D 04	1125.	925.	2.09D 05	0.609

RR 6-24-81 1500 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
	268.4	67.81	79.10	11.28	73.46	47.5	87.7	168.2	85.8	TH3	168.2	80.5
PREFLASH										TM5	88.10	0.4
										TM4	74.69	-13.0
										TM3	78.97	-8.7
										TH4	85.8	-1.9

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.512D 06	13.5	1.12D 05	4.086D 04	1134.	913.	2.09D 05	0.537

RR 6-24-81 1530 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
	267.5	68.55	79.14	10.59	73.84	49.5	89.8	163.3	87.9	TH3	163.3	71.5
PREFLASH										TM5	92.82	3.0
										TM4	74.47	-15.4
										TM3	78.58	-11.2
										TH4	87.9	-1.9

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.414D 06	15.4	9.19D 04	4.094D 04	1134.	937.	2.12D 05	0.434

RR 6-24-81 1600 DC

	WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX	INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
	267.9	67.72	78.27	10.55	73.00	51.0	91.4	169.6	89.0	TH3	169.6	78.2
PREFLASH										TM5	93.57	2.2
										TM4	74.15	-17.3
										TM3	78.65	-12.7
										TH4	89.0	-2.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.411D 06	17.9	7.89D 04	4.054D 04	1129.	938.	2.11D 05	0.374

RR 6-24-81 1630 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
268.2	67.98	78.80	10.81	73.39	54.0	94.4	176.3	91.6

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.448D 06	20.6	7.04D 04	4.080D 04	1133.	928.	2.11D 05	0.334

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	176.3	81.9
TM5	96.27	1.8
TM4	74.47	-20.0
TM3	79.06	-15.4
TH4	91.6	-2.8

RR 6-24-81 1700 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
267.9	69.41	79.84	10.43	74.63	56.0	96.4	179.7	93.6

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.395D 06	21.4	6.53D 04	4.143D 04	1141.	942.	2.13D 05	0.307

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	179.7	83.3
TM5	104.95	8.5
TM4	75.06	-21.4
TM3	80.41	-16.0
TH4	93.6	-2.8

RR 6-24-81 1730 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
267.7	68.35	79.78	11.43	74.07	58.0	98.4	170.5	95.6

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.528D 06	23.8	6.41D 04	4.109D 04	1136.	909.	2.09D 05	0.307

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	170.5	72.1
TM5	104.59	6.2
TM4	75.25	-23.1
TM3	82.36	-16.0
TH4	95.6	-2.8

RR 6-24-81 1800 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
267.7	68.36	78.95	10.59	73.66	58.5	98.8	166.3	96.6

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.416D 06	24.8	5.71D 04	4.087D 04	1133.	937.	2.11D 05	0.270

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	166.3	67.5
TM5	108.50	9.7
TM4	75.13	-23.7
TM3	81.44	-17.4
TH4	96.6	-2.2

RR 6-24-81 1830 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
267.4	68.31	79.18	10.86	73.74	59.5	99.8	163.5	97.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.451D 06	25.7	5.65D 04	4.087D 04	1133.	928.	2.11D 05	0.269

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	163.5	63.7
TM5	115.41	15.6
TM4	75.32	-24.5
TM3	81.60	-18.2
TH4	97.2	-2.6

RR 6-24-81 1900 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
267.4	67.93	78.72	10.79	73.32	61.0	101.2	169.1	97.8

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.441D 06	27.5	5.24D 04	4.064D 04	1130.	930.	2.10D 05	0.249

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	169.1	67.9
TM5	117.60	16.4
TM4	75.78	-25.4
TM3	73.32	-27.9
TH4	97.8	-3.4

RR 6-25-81 1000 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
267.6	62.48	71.30	8.82	66.89	40.5	79.8	186.9	78.2

PREFLASH

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	186.9	107.1
TM5	116.03	36.2
TM4	67.52	-12.3
TM3	71.62	-8.2
TH4	78.2	-1.6

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.180D 06	12.4	9.54D 04	3.724D 04	1086.	1006.	2.12D 05	0.451

RR 6-25-81 1100 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
267.1	64.94	73.97	9.04	69.46	39.5	78.6	183.4	76.9

VENT
PREFLASH

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	183.4	104.8
TM5	111.32	32.7
TM4	73.42	-5.2
TM3	73.39	-5.2
TH4	76.9	-1.7

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.206D 06	8.3	1.45D 05	3.852D 04	1102.	997.	2.13D 05	0.680

RR 6-25-81 1145 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
264.4	66.05	75.22	9.17	70.64	38.5	77.4	184.0	76.2

VENT
PREFLASH

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	184.0	106.6
TM5	114.08	36.7
TM4	76.48	-0.9
TM3	75.90	-1.5
TH4	76.2	-1.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.211D 06	5.5	2.20D 05	3.875D 04	1101.	995.	2.13D 05	1.033

RR 7-01-81 1100 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
251.2	65.68	73.27	7.59	69.47	41.0	80.4	163.4	78.5

PREFLASH

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	163.4	83.0
TM5	112.33	32.0
TM4	70.36	-10.0
TM3	73.30	-7.1
TH4	78.5	-1.9

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
9.524D 05	10.4	9.12D 04	3.623D 04	1049.	1087.	2.13D 05	0.428

BELOW LAB RANGE

RR 7-01-81 1200 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
253.3	88.68	100.46	11.78	94.57	65.0	104.8	170.1	102.7

VENT
PREFLASH = 33

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	170.1	65.3
TM5	106.65	1.8
TM4	101.58	-3.2
TM3	100.11	-4.7
TH4	102.7	-2.1

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.483D 06	9.0	1.65D 05	4.998D 04	1219.	920.	2.19D 05	0.753

RR 7-01-81 1330 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.4	71.52	83.70	12.18	77.61	46.5	86.6	165.1	93.2

VENT
PREFLASH = 33

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	165.1	78.5
TM5	85.63	-1.0
TM4	84.94	-1.7
TM3	85.37	-1.2
TH4	93.2	6.6

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.534D 06	7.4	2.07D 05	4.058D 04	1107.	908.	2.06D 05	1.007

RR 7-01-81 1400 DC

PREFLASH = 33

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
251.5	71.10	82.67	11.58	76.89	48.5	88.8	169.2	93.7

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.453D 06	10.9	1.34D 05	4.006D 04	1099.	927.	2.07D 05	0.646

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	169.2	80.4
TM5	86.62	-2.2
TM4	86.08	-2.7
TM3	83.51	-5.3
TH4	93.7	4.9

RR 7-01-81 1430 DC

PREFLASH = 33

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	71.30	83.02	11.72	77.16	48.0	88.2	168.8	94.3

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.474D 06	9.9	1.48D 05	4.028D 04	1103.	922.	2.07D 05	0.717

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	168.8	80.6
TM5	86.63	-1.6
TM4	85.60	-2.6
TM3	81.39	-6.8
TH4	94.3	6.1

RR 7-01-81 1500 DC

PREFLASH = 33

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.2	70.87	82.83	11.97	76.85	48.0	88.2	175.9	94.3

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.506D 06	10.2	1.47D 05	4.015D 04	1101.	914.	2.06D 05	0.714

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	175.9	87.7
TM5	87.69	-0.5
TM4	86.17	-2.1
TM3	81.08	-7.2
TH4	94.3	6.1

RR 7-01-81 1530 DC

PREFLASH = 33

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
251.7	70.34	82.31	11.98	76.32	48.0	88.2	170.0	93.8

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.505D 06	10.8	1.39D 05	3.980D 04	1096.	915.	2.05D 05	0.677

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	170.0	81.8
TM5	87.49	-0.7
TM4	80.62	-7.6
TM3	80.40	-7.8
TH4	93.8	5.6

RR 7-01-81 1600 DC

PREFLASH = 33

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
251.7	70.54	81.93	11.38	76.24	49.0	89.3	166.9	95.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.430D 06	12.2	1.17D 05	3.975D 04	1096.	933.	2.07D 05	0.567

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	166.9	77.6
TM5	88.64	-0.7
TM4	81.29	-8.0
TM3	80.38	-8.9
TH4	95.0	5.7

RR 7-01-81 1630 DC

PREFLASH = 33

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.1	69.90	81.98	12.08	75.94	49.0	89.3	165.7	95.6

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.520D 06	12.4	1.23D 05	3.966D 04	1095.	911.	2.05D 05	0.598

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	165.7	76.4
TM5	88.55	-0.8
TM4	80.76	-8.5
TM3	81.55	-7.8
TH4	95.6	6.3

RR 7-01-81 1700 DC

PREFLASH = 33

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.3	69.98	81.26	11.29	75.62	48.5	88.8	167.2	95.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.421D 06	12.3	1.16D 05	3.953D 04	1094.	936.	2.07D 05	0.559

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	167.2	78.4
TM5	88.35	-0.4
TM4	80.69	-8.1
TM3	80.52	-8.3
TH4	95.0	6.2

RR 7-01-81 1800 DC

PREFLASH = 32

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.1	70.67	82.07	11.40	76.37	50.5	90.9	165.8	95.6

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.434D 06	13.7	1.04D 05	3.989D 04	1098.	932.	2.07D 05	0.505

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	165.8	74.9
TM5	89.04	-1.8
TM4	81.66	-9.2
TM3	81.35	-9.5
TH4	95.6	4.7

RR 7-06-81 1300 DC

PREFLASH = 39

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
259.6	73.87	84.84	10.97	79.36	57.0	97.4	167.8	92.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.420D 06	17.5	8.13D 04	4.268D 04	1144.	936.	2.13D 05	0.383

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	167.8	70.4
TM5	95.33	-2.1
TM4	79.27	-18.1
TM3	83.69	-13.7
TH4	92.0	-5.4

RR 7-06-81 1530 DC

VENT = 30
PREFLASH = 34

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
260.3	74.75	86.16	11.41	80.46	52.0	92.4	175.0	90.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.481D 06	11.0	1.35D 05	4.340D 04	1154.	920.	2.12D 05	0.635

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	175.0	82.6
TM5	91.49	-0.9
TM4	89.83	-2.6
TM3	89.34	-3.1
TH4	90.4	-2.0

RR 7-06-81 1600 DC

VENT = 30
PREFLASH = 34

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
259.6	75.90	86.20	11.20	80.60	51.5	91.9	172.0	89.8

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.450D 06	10.3	1.40D 05	4.336D 04	1152.	928.	2.13D 05	0.660

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	172.0	80.1
TM5	91.15	-0.8
TM4	89.56	-2.4
TM3	89.28	-2.6
TH4	89.8	-2.1

RR 7-06-81 1630 DC

VENT = 30
PREFLASH = 34

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
260.3	76.16	87.05	10.89	81.61	52.0	92.4	169.3	90.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.413D 06	9.8	1.44D 05	4.402D 04	1161.	938.	2.15D 05	0.669

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	169.3	76.9
TM5	91.70	-0.7
TM4	89.62	-2.8
TM3	89.90	-2.5
TH4	90.4	-2.0

RR 7-06-81 1700 DC

VENT = 30
PREFLASH = 34

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
260.0	75.98	87.25	11.27	81.61	51.5	91.9	172.2	90.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	172.2	80.3
TM5	92.62	0.7
TM4	90.02	-1.9
TM3	90.99	-0.9
TH4	90.0	-1.9

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.461D 06	9.2	1.59D 05	4.398D 04	1160.	925.	2.13D 05	0.747

RR 7-06-81 1730 DC

VENT = 30
PREFLASH = 34

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
260.2	74.61	86.31	11.70	80.46	51.0	91.4	185.6	89.2

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	185.6	94.2
TM5	93.40	2.0
TM4	89.45	-1.9
TM3	90.36	-1.0
TH4	89.2	-2.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.519D 06	9.8	1.55D 05	4.338D 04	1153.	911.	2.11D 05	0.733

RR 7-06-81 1800 DC

VENT = 30
PREFLASH = 34

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
260.0	75.73	86.56	10.83	81.14	51.0	91.4	180.4	89.7

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	180.4	89.0
TM5	95.33	3.9
TM4	89.58	-1.8
TM3	90.82	-0.6
TH4	89.7	-1.7

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.404D 06	9.2	1.52D 05	4.372D 04	1157.	940.	2.14D 05	0.710

RR 7-07-81 1300 DC

VENT
PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
260.8	66.69	76.87	10.17	71.78	41.0	80.4	159.8	80.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	159.8	79.4
TM5	79.48	-0.9
TM4	79.06	-1.3
TM3	78.94	-1.4
TH4	80.0	-0.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.325D 06	7.5	1.77D 05	3.882D 04	1097.	962.	2.09D 05	0.847

RR 7-07-81 1330 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
260.5	66.74	77.61	10.87	72.17	43.0	82.7	162.1	82.3

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	162.1	79.4
TM5	81.63	-1.1
TM4	80.59	-2.1
TM3	69.38	-13.3
TH4	82.3	-0.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.414D 06	9.5	1.49D 05	3.899D 04	1099.	937.	2.08D 05	0.717

RR 7-07-81 1400 DC

PREFLASH = 35

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
259.9	67.19	77.83	10.64	72.51	44.0	83.8	159.1	83.5

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	159.1	75.3
TM5	83.25	-0.6
TM4	76.05	-7.8
TM3	69.57	-14.3
TH4	83.5	-0.3

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.381D 06	10.4	1.32D 05	3.907D 04	1099.	946.	2.08D 05	0.636

RR 7-07-81 1430 DC

PREFLASH = 35

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
260.2	67.22	77.43	10.21	72.33	46.0	86.1	161.7	84.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.327D 06	13.1	1.01D 05	3.902D 04	1099.	961.	2.10D 05	0.484

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	161.7	75.6
TM5	84.34	-1.7
TM4	74.41	-11.7
TM3	69.42	-16.6
TH4	84.4	-1.7

RR 7-07-81 1500 DC

PREFLASH = 35

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
260.1	67.86	77.99	10.13	72.93	48.0	88.2	167.0	87.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.316D 06	14.7	8.93D 04	3.932D 04	1102.	964.	2.10D 05	0.425

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	167.0	78.8
TM5	87.42	-0.8
TM4	74.86	-13.4
TM3	69.83	-18.4
TH4	87.2	-1.0

RR 7-07-81 1530 DC

PREFLASH = 35

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
259.9	68.13	78.46	10.33	73.30	49.5	89.8	166.4	88.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.340D 06	16.0	8.39D 04	3.948D 04	1104.	957.	2.10D 05	0.400

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	166.4	76.6
TM5	88.90	-0.9
TM4	75.12	-14.7
TM3	70.08	-19.7
TH4	88.2	-1.6

RR 7-07-81 1600 DC

PREFLASH = 35

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
259.8	68.04	77.75	9.71	72.89	51.5	91.9	160.9	88.6

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.260D 06	18.6	6.77D 04	3.926D 04	1101.	981.	2.11D 05	0.320

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	160.9	69.0
TM5	92.15	0.2
TM4	72.83	-19.1
TM3	77.61	-14.3
TH4	88.6	-3.3

RR 7-07-81 1630 DC

PREFLASH = 35

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
259.9	67.93	78.80	10.87	73.36	52.0	92.4	179.5	90.5

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.411D 06	18.5	7.61D 04	3.952D 04	1105.	939.	2.08D 05	0.365

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	179.5	87.1
TM5	91.55	-0.9
TM4	75.24	-17.2
TM3	70.32	-22.1
TH4	90.5	-1.9

RR 7-07-81 1700 DC

PREFLASH = 37

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
260.0	67.42	77.97	10.54	72.70	52.0	92.4	167.9	90.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.369D 06	19.3	7.11D 04	3.918D 04	1101.	949.	2.09D 05	0.340

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	167.9	75.5
TM5	91.66	-0.8
TM4	74.90	-17.5
TM3	70.04	-22.4
TH4	90.2	-2.2

RR 7-07-81 1730 DC

PREFLASH = 37

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
260.2	67.31	77.44	10.13	72.38	53.5	93.9	161.3	90.9

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.316D 06	21.2	6.22D 04	3.905D 04	1099.	964.	2.10D 05	0.296

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	161.3	67.4
TM5	93.40	-0.5
TM4	72.17	-21.8
TM3	75.89	-18.1
TH4	90.9	-3.0

RR 7-07-81 1800 DC

PREFLASH = 37

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
260.0	67.46	77.52	10.06	72.49	54.0	94.4	159.4	91.7

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.307D 06	21.6	6.06D 04	3.908D 04	1099.	967.	2.10D 05	0.288

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	159.4	65.0
TM5	92.49	-2.0
TM4	71.81	-22.6
TM3	76.86	-17.6
TH4	91.7	-2.7

RR 7-08-81 930 DC

PREFLASH

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
259.8	55.90	66.10	10.20	61.00	58.5	98.8	186.8	94.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.327D 06	37.6	3.53D 04	3.322D 04	1021.	961.	2.00D 05	0.176

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	186.8	88.0
TM5	116.63	17.8
TM4	59.62	-39.2
TM3	54.37	-44.5
TH4	94.4	-4.4

RR 7-08-81 1000 DC

PREFLASH = 40

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
260.0	59.19	69.29	10.10	64.24	62.0	102.1	174.7	97.6

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.313D 06	37.6	3.49D 04	3.485D 04	1043.	965.	2.03D 05	0.172

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	174.7	72.6
TM5	116.75	14.6
TM4	63.72	-38.4
TM3	59.07	-43.0
TH4	97.6	-4.5

RR 7-08-81 1100 DC

PREFLASH = 40

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
260.0	60.80	70.59	9.78	65.69	64.5	104.4	169.3	99.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.272D 06	38.5	3.31D 04	3.558D 04	1053.	977.	2.05D 05	0.161

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	169.3	64.9
TM5	119.01	14.6
TM4	66.34	-38.0
TM3	61.98	-42.4
TH4	99.2	-5.2

RR 7-08-81 1200 DC

PREFLASH = 40

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
260.1	61.26	71.12	9.86	66.19	66.5	106.1	168.3	100.3

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.262D 06	39.7	3.23D 04	3.584D 04	1057.	974.	2.06D 05	0.157

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	168.3	62.2
TM5	120.39	14.3
TM4	67.54	-38.6
TM3	63.58	-42.6
TH4	100.3	-5.8

RR 7-08-81 1230 DC

VENT = 80
PREFLASH = 40

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
259.7	62.40	73.00	10.60	67.70	57.0	97.4	180.3	95.4

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	180.3	82.9
TM5	112.80	15.4
TM4	66.81	-30.6
TM3	73.72	-23.7
TH4	95.4	-2.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.376D 06	29.4	4.68D 04	3.656D 04	1066.	948.	2.05D 05	0.229

RR 7-08-81 1300 DC

VENT = 80
PREFLASH = 40

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
260.4	64.05	74.66	10.62	69.35	45.0	85.0	175.7	84.6

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	175.7	90.7
TM5	83.96	-1.0
TM4	68.79	-16.2
TM3	74.86	-10.1
TH4	84.6	-0.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.382D 06	15.0	9.23D 04	3.750D 04	1079.	941.	2.06D 05	0.448

RR 7-08-81 1400 DC

VENT = 50
PREFLASH = 40

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
259.5	65.46	76.52	11.06	70.99	43.0	82.7	177.7	80.9

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	177.7	95.0
TM5	82.25	-0.4
TM4	80.50	-2.2
TM3	79.46	-3.2
TH4	80.9	-1.8

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.433D 06	10.8	1.33D 05	3.822D 04	1087.	932.	2.06D 05	0.646

RR 7-08-81 1430 DC

VENT = 50
PREFLASH = 40

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
259.7	65.93	77.11	11.18	71.52	42.5	82.1	176.6	80.8

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	176.6	94.5
TM5	82.09	-0.0
TM4	80.60	-1.5
TM3	81.13	-1.0
TH4	80.8	-1.3

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.450D 06	9.5	1.52D 05	3.852D 04	1092.	928.	2.06D 05	0.738

RR 7-08-81 1500 DC

VENT = 50
PREFLASH = 40

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
259.1	66.83	77.96	11.13	72.39	43.0	82.7	175.6	81.5

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	175.6	92.9
TM5	82.83	0.1
TM4	81.38	-1.3
TM3	82.23	-0.5
TH4	81.5	-1.2

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.440D 06	9.2	1.56D 05	3.889D 04	1096.	931.	2.07D 05	0.757

RR 10-13-81 1235 DC

PREFLASH

BELOW LAW RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	50.54	57.72	7.18	54.13	31.0	67.6	160.0	71.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	160.0	92.4
TM5	68.80	1.2
TM4	64.93	-2.7
TM3	49.67	-18.0
TH4	71.0	3.4

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
9.072D 05	13.2	6.88D 04	2.905D 04	950.	1105.	2.00D 05	0.343

RR 10-13-81 1400 DC

PREFLASH = 48

BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	50.12	57.08	6.95	53.60	31.0	67.6	159.0	70.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
8.785D 05	13.8	6.39D 04	2.881D 04	947.	1117.	2.01D 05	0.319

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	159.0	91.4
TM5	68.43	0.8
TM4	54.64	-13.0
TM3	49.54	-18.1
TH4	70.0	2.4

RR 10-13-81 1415 DC

PREFLASH = 49

BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	51.81	60.13	8.32	55.97	35.0	73.0	166.0	75.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.051D 06	16.7	6.31D 04	2.989D 04	962.	1050.	1.99D 05	0.317

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	166.0	93.0
TM5	73.86	0.9
TM4	57.18	-15.8
TM3	49.79	-23.2
TH4	75.0	2.0

RR 10-13-81 1445 DC

PREFLASH = 50

SAMPLE TAKEN

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	53.06	61.63	8.56	57.35	38.0	76.8	169.0	77.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.081D 06	19.1	5.66D 04	3.052D 04	972.	1039.	1.99D 05	0.284

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	169.0	92.2
TM5	77.07	0.3
TM4	57.73	-19.0
TM3	51.03	-25.7
TH4	77.0	0.2

RR 10-13-81 1520 DC

PREFLASH = 51

BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	54.83	62.38	7.55	58.60	40.0	79.2	173.0	77.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
9.531D 05	20.3	4.68D 04	3.110D 04	980.	1087.	2.03D 05	0.230

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	173.0	93.8
TM5	78.55	-0.6
TM4	58.47	-20.7
TM3	52.04	-27.1
TH4	77.0	-2.2

RR 10-13-81 1540 DC

PREFLASH = 51

BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	54.36	62.49	8.13	58.43	41.0	80.4	176.0	78.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.026D 06	21.7	4.73D 04	3.102D 04	979.	1059.	2.02D 05	0.235

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	176.0	95.6
TM5	79.93	-0.4
TM4	58.80	-21.6
TM3	52.79	-27.6
TH4	78.0	-2.4

RR 10-13-81 1600 DC

PREFLASH = 52

BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	53.71	62.19	8.49	57.95	42.0	81.5	168.0	79.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.071D 06	23.3	4.59D 04	3.080D 04	976.	1042.	2.00D 05	0.229

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	168.0	86.5
TM5	81.26	-0.3
TM4	58.25	-23.3
TM3	53.48	-28.1
TH4	79.0	-2.5

RR 10-14-81 925 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	66.06	67.53	1.47	66.80	32.0	69.0	67.0	51.0

PREFLASH = 74

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.851D 05	2.1	8.70D 04	3.501D 04	1034.	1522.	2.34D 05	0.372

BELOW LAB RANGE

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	67.0	-2.0
TM5	68.22	-0.8
TM4	71.22	2.2
TM3	67.29	-1.7
TH4	51.0	-18.0

RR 10-14-81 955 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	66.15	67.69	1.53	66.92	32.0	69.0	67.0	51.0

PREFLASH = 74

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.931D 05	2.0	9.69D 04	3.507D 04	1035.	1516.	2.34D 05	0.415

BELOW LAB RANGE

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	67.0	-2.0
TM5	68.18	-0.8
TM4	70.82	1.8
TM3	67.71	-1.3
TH4	51.0	-18.0

RR 10-14-81 1245 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	52.42	57.59	5.17	55.00	32.5	69.7	173.0	70.0

PREFLASH = 55

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
6.529D 05	14.5	4.49D 04	2.944D 04	956.	1224.	2.08D 05	0.216

BELOW LAB RANGE

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	173.0	103.3
TM5	69.43	-0.3
TM4	57.15	-12.5
TM3	53.16	-16.5
TH4	70.0	0.3

RR 10-14-81 1310 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	53.54	61.12	7.58	57.33	37.0	75.5	193.0	75.0

PREFLASH = 56

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
9.569D 05	17.9	5.34D 04	3.051D 04	971.	1085.	2.02D 05	0.264

BELOW LAB RANGE

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	193.0	117.5
TM5	75.92	0.4
TM4	58.16	-17.4
TM3	54.41	-21.1
TH4	75.0	-0.5

RR 10-14-81 1335 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	54.73	62.18	7.45	58.45	37.5	76.1	186.0	75.0

PREFLASH = 57

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
9.409D 05	17.4	5.40D 04	3.103D 04	979.	1092.	2.04D 05	0.265

BELOW LAB RANGE

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	186.0	109.9
TM5	112.80	36.7
TM4	59.47	-16.7
TM3	54.25	-21.9
TH4	75.0	-1.1

RR 10-14-81 1400 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	55.05	63.50	8.44	59.27	40.0	79.2	171.0	78.0

PREFLASH = 55

SAMPLE TAKEN

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.065D 06	19.6	5.43D 04	3.141D 04	985.	1044.	2.01D 05	0.270

BELOW LAB RANGE

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	171.0	91.8
TM5	79.08	-0.1
TM4	60.61	-18.6
TM3	54.99	-24.2
TH4	78.0	-1.2

RR 10-14-81 1500 DC

PREFLASH = 56

BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	56.06	64.03	7.97	60.05	44.0	83.8	168.0	81.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.006D 06	23.6	4.27D 04	3.178D 04	990.	1066.	2.04D 05	0.210

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	168.0	84.2
TM5	83.50	-0.3
TM4	60.16	-23.7
TM3	56.13	-27.7
TH4	81.0	-2.8

RR 10-14-81 1530 DC

PREFLASH = 56

BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	56.59	63.92	7.33	60.26	45.0	85.0	181.0	82.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
9.255D 05	24.5	3.77D 04	3.187D 04	991.	1098.	2.06D 05	0.184

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	181.0	96.0
TM5	83.49	-1.5
TM4	60.51	-24.4
TM3	55.49	-29.5
TH4	82.0	-3.0

RR 10-14-81 1550 DC

PREFLASH = 54

BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	56.74	64.43	7.69	60.59	46.0	86.1	180.0	82.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
9.699D 05	25.3	3.84D 04	3.203D 04	993.	1080.	2.05D 05	0.187

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	180.0	93.9
TM5	84.98	-1.1
TM4	60.94	-25.1
TM3	56.14	-29.9
TH4	82.0	-4.1

RR 10-14-81 1625 DC

PREFLASH = 54

SAMPLE TAKEN

BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	56.31	63.92	7.61	60.11	40.0	79.2	176.0	78.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
9.598D 05	18.8	5.10D 04	3.181D 04	990.	1084.	2.05D 05	0.249

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	176.0	96.8
TM5	78.97	-0.2
TM4	59.91	-19.3
TM3	55.77	-23.4
TH4	78.0	-1.2

RR 10-14-81 1645 DC

VENT = 80

PREFLASH = 53

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	55.35	64.26	8.91	59.81	34.0	71.7	181.0	70.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.125D 06	11.3	9.96D 04	3.166D 04	988.	1024.	2.00D 05	0.497

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	181.0	109.3
TM5	70.91	-0.8
TM4	63.08	-8.6
TM3	56.87	-14.8
TH4	70.0	-1.7

RR 10-14-81 1715 DC

VENT = 80

PREFLASH = 53

BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	56.02	63.76	7.74	59.89	31.0	67.6	181.0	67.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
9.765D 05	7.1	1.38D 05	3.170D 04	989.	1078.	2.04D 05	0.678

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	181.0	113.4
TM5	67.62	-0.0
TM4	66.78	-0.9
TM3	65.63	-2.0
TH4	67.0	-0.6

RR 10-14-81 1730 DC

VENT = 80
PREFLASH = 54

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	55.50	63.74	8.25	59.62	31.0	67.6	181.0	68.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	181.0	113.4
TM5	89.57	21.9
TM4	65.88	-1.8
TM3	63.30	-4.3
TH4	68.0	0.4

BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.041D 06	7.3	1.43D 05	3.158D 04	987.	1053.	2.02D 05	0.709

RR 10-15-81 1000 DC

PREFLASH = 54

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	51.57	59.24	7.67	55.40	35.0	73.0	180.0	73.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	180.0	107.0
TM5	73.62	0.6
TM4	59.06	-13.9
TM3	52.64	-20.3
TH4	73.0	0.0

BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
9.690D 05	17.3	5.60D 04	2.963D 04	959.	1080.	2.00D 05	0.280

RR 10-15-81 1030 DC

PREFLASH = 54

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	52.18	60.20	8.02	56.19	38.0	76.8	179.0	75.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	179.0	102.2
TM5	76.59	-0.2
TM4	58.68	-18.1
TM3	52.38	-24.4
TH4	75.0	-1.8

BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.013D 06	20.3	4.99D 04	2.999D 04	964.	1064.	2.00D 05	0.250

RR 10-15-81 1045 DC

PREFLASH = 54

SAMPLE TAKEN

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	52.12	60.23	8.11	56.17	39.0	78.0	181.0	75.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	181.0	103.0
TM5	77.20	-0.8
TM4	57.96	-20.0
TM3	51.76	-26.2
TH4	75.0	-3.0

BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.024D 06	21.6	4.75D 04	2.998D 04	964.	1059.	2.00D 05	0.238

RR 10-15-81 1110 DC

PREFLASH = 54

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	52.88	60.53	7.65	56.71	36.0	74.3	180.0	72.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	180.0	105.7
TM5	74.90	0.6
TM4	58.36	-15.9
TM3	52.60	-21.7
TH4	72.0	-2.3

BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
9.661D 05	17.3	5.59D 04	3.022D 04	987.	1082.	2.01D 05	0.278

RR 10-15-81 1130 DC

PREFLASH = 54

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	52.78	60.29	7.51	56.53	36.0	74.3	180.0	73.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	180.0	105.7
TM5	110.19	35.9
TM4	57.43	-16.8
TM3	51.78	-22.5
TH4	73.0	-1.3

BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
9.484D 05	17.5	5.43D 04	3.014D 04	986.	1089.	2.02D 05	0.269

RR 10-15-81 1200 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
252.0	52.19	59.25	7.07	55.72	36.0	74.3	179.0	74.0

PREFLASH = 44

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	179.0	104.7
TM5	112.80	38.5
TM4	56.53	-17.7
TM3	50.57	-23.7
TH4	74.0	-0.3

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	8.923D 05	18.3	4.87D 04	2.977D 04	961.	1112.	2.02D 05	0.241

RR 10-19-81 1235 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	60.81	66.15	5.34	63.48	34.0	71.7	158.0	75.0

PREFLASH = 35

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	158.0	86.3
TM5	72.80	1.1
TM4	70.89	-0.8
TM3	61.22	-10.5
TH4	75.0	3.3

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	6.807D 05	7.9	8.62D 04	3.380D 04	1022.	1209.	2.17D 05	0.398

RR 10-19-81 1300 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	61.84	66.20	4.36	64.02	35.0	73.0	152.0	74.0

PREFLASH = 36

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	152.0	79.0
TM5	72.26	-0.7
TM4	67.03	-5.9
TM3	62.08	-10.9
TH4	74.0	1.0

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	5.558D 05	8.8	6.33D 04	3.406D 04	1026.	1276.	2.21D 05	0.287

RR 10-19-81 1320 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	62.00	66.64	4.64	64.32	35.0	73.0	164.0	75.0

PREFLASH = 36

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	164.0	91.0
TM5	73.00	0.0
TM4	66.50	-6.5
TM3	62.44	-10.5
TH4	75.0	2.0

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	5.921D 05	8.4	7.01D 04	3.421D 04	1028.	1256.	2.20D 05	0.318

RR 10-19-81 1500 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	63.22	70.26	7.03	66.74	40.0	79.2	162.0	80.0

PREFLASH = 35

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	162.0	82.8
TM5	79.51	0.3
TM4	69.38	-9.8
TM3	63.40	-15.8
TH4	80.0	0.8

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	8.967D 05	12.1	7.41D 04	3.541D 04	1044.	1110.	2.14D 05	0.347

RR 10-19-81 1530 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	65.44	72.98	7.53	69.21	43.0	82.7	175.0	81.0

PREFLASH = 35

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	175.0	92.3
TM5	81.54	-1.2
TM4	72.63	-10.1
TM3	65.79	-16.9
TH4	81.0	-1.7

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	9.598D 05	13.1	7.31D 04	3.665D 04	1060.	1084.	2.14D 05	0.341

RR 10-19-81 1610 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	67.15	76.72	9.57	71.93	50.0	90.4	203.0	89.0

PREFLASH = 50

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.219D 06	18.0	6.77D 04	3.804D 04	1079.	993.	2.10D 05	0.323

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	203.0	112.6
TM5	92.01	1.7
TM4	82.86	-7.5
TM3	68.18	-22.2
TH4	89.0	-1.4

RR 10-19-81 1645 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	65.18	73.05	7.87	69.12	44.0	83.8	188.0	83.0

PREFLASH = 56

BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
1.003D 06	14.4	6.98D 04	3.660D 04	1060.	1067.	2.13D 05	0.328

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	188.0	104.2
TM5	122.33	38.5
TM4	75.00	-8.8
TM3	66.75	-17.1
TH4	83.0	-0.8

RR 10-20-81 1420 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	61.06	68.17	7.11	64.62	46.0	86.1	197.0	83.0

PREFLASH = 34

BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
9.065D 05	21.2	4.27D 04	3.436D 04	1030.	1106.	2.12D 05	0.202

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	197.0	110.9
TM5	120.26	34.2
TM4	65.21	-20.9
TM3	61.49	-24.6
TH4	83.0	-3.1

RR 10-20-81 1500 DC

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	61.83	68.78	6.95	65.30	48.0	88.2	198.0	86.0

PREFLASH = 52

BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
8.869D 05	22.8	3.90D 04	3.470D 04	1034.	1114.	2.13D 05	0.183

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	198.0	109.8
TM5	123.63	35.4
TM4	64.80	-23.4
TM3	70.23	-18.0
TH4	86.0	-2.2

RR 10-20-81 1510 DC

VENT = 30
PREFLASH = 60

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	61.92	68.97	7.05	65.44	48.0	88.2	205.0	86.0

BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
8.996D 05	22.6	3.98D 04	3.477D 04	1035.	1109.	2.12D 05	0.187

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	205.0	116.8
TM5	124.76	36.5
TM4	64.93	-23.3
TM3	70.69	-17.4
TH4	86.0	-2.2

RR 10-20-81 1525 DC

VENT = 30
PREFLASH = 60

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	62.32	69.42	7.11	65.87	46.0	86.1	202.0	84.0

BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
9.064D 05	20.0	4.54D 04	3.498D 04	1038.	1106.	2.13D 05	0.213

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	202.0	115.9
TM5	124.51	33.4
TM4	65.92	-21.0
TM3	70.07	-16.0
TH4	84.0	-2.1

RR 10-20-81 1540 DC

VENT = 30
PREFLASH = 60

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	62.25	69.53	7.29	65.89	44.0	83.8	184.0	81.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	184.0	100.2
TM5	101.00	17.2
TM4	64.53	-19.3
TM3	69.47	-14.4
TH4	81.0	-2.8

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	9.290D 05	17.7	5.25D 04	3.499D 04	1038.	1096.	2.12D 05	0.248

RR 10-20-81 1600 DC

VENT = 30
PREFLASH = 55

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	62.08	68.87	6.79	65.48	42.0	81.5	180.0	80.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	180.0	98.5
TM5	79.71	-1.8
TM4	66.09	-15.5
TM3	63.45	-18.1
TH4	80.0	-1.5

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	8.660D 05	15.8	5.47D 04	3.478D 04	1035.	1123.	2.13D 05	0.256

RR 10-21-81 1130 DC

PREFLASH = 60

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	52.23	60.22	7.99	56.23	31.0	67.6	205.0	70.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	205.0	137.4
TM5	70.29	2.6
TM4	56.16	-11.5
TM3	52.70	-14.9
TH4	70.0	2.4

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	1.021D 06	10.9	9.34D 04	3.036D 04	973.	1061.	2.01D 05	0.465

RR 10-21-81 1200 DC

VENT = 45
PREFLASH = 60

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	53.66	61.63	7.98	57.64	32.0	69.0	210.0	70.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	210.0	141.0
TM5	71.07	2.1
TM4	58.30	-10.7
TM3	53.91	-15.1
TH4	70.0	1.0

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	1.019D 06	10.9	9.37D 04	3.102D 04	983.	1061.	2.02D 05	0.463

RR 10-21-81 1225 DC

VENT = 45
PREFLASH = 60

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	54.53	61.68	7.15	58.10	33.0	70.4	205.0	71.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	205.0	134.6
TM5	119.50	49.2
TM4	58.17	-12.2
TM3	61.62	-8.7
TH4	71.0	0.6

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	9.133D 05	11.9	7.68D 04	3.123D 04	986.	1103.	2.05D 05	0.374

RR 10-21-81 1245 DC

VENT = 45
PREFLASH = 50

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	54.95	62.42	7.47	58.68	33.0	70.4	213.0	70.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	213.0	142.6
TM5	82.99	12.6
TM4	59.86	-10.5
TM3	56.25	-14.1
TH4	70.0	-0.4

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	9.547D 05	11.3	8.48D 04	3.151D 04	990.	1086.	2.05D 05	0.414

RR 10-21-81 1305 DC

VENT = 45
PREFLASH = 50

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	55.63	63.12	7.49	59.37	32.0	69.0	215.0	69.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	215.0	146.0
TM5	79.91	10.9
TM4	63.49	-5.5
TM3	55.92	-13.1
TH4	69.0	-0.0

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	9.561D 05	9.1	1.05D 05	3.183D 04	995.	1036.	2.05D 05	0.510

RR 10-21-81 1330 DC

VENT = 80
PREFLASH = 50

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	56.12	63.10	6.98	59.61	30.0	66.2	213.0	66.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	213.0	146.8
TM5	99.87	33.6
TM4	65.16	-1.1
TM3	64.05	-2.2
TH4	66.0	-0.2

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	8.915D 05	6.0	1.49D 05	3.195D 04	996.	1112.	2.07D 05	0.720

RR 10-21-81 1345 DC

PREFLASH = 50

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	56.04	62.19	6.15	59.11	29.0	64.8	213.0	66.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	213.0	148.2
TM5	142.77	77.9
TM4	63.98	-0.9
TM3	61.29	-3.5
TH4	66.0	1.2

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	7.849D 05	5.1	1.53D 05	3.171D 04	993.	1159.	2.10D 05	0.732

RR 10-21-81 1400 DC

PREFLASH = 50

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	55.73	60.69	4.96	58.21	30.0	66.2	200.0	64.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	200.0	133.8
TM5	130.38	64.1
TM4	60.67	-5.6
TM3	60.61	-5.6
TH4	64.0	-2.2

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	6.332D 05	7.8	8.14D 04	3.128D 04	987.	1234.	2.13D 05	0.383

RR 10-21-81 1525 DC

PREFLASH = 55

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	52.99	58.58	5.59	55.78	31.0	67.6	171.0	68.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	171.0	103.4
TM5	73.52	5.9
TM4	56.52	-11.1
TM3	53.27	-14.4
TH4	68.0	0.4

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	7.140D 05	11.6	6.14D 04	3.015D 04	970.	1392.	2.08D 05	0.295

RR 10-21-81 1635 DC

VENT = 40
PREFLASH = 50

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	55.08	61.48	6.40	58.28	32.0	69.0	174.0	*****

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	174.0	105.0
TM5	69.52	0.5
TM4	58.79	-10.2
TM3	55.09	-13.9
TH4	*****	*****

	HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
BELOW LAB RANGE	8.173D 05	10.4	7.86D 04	3.132D 04	987.	1144.	2.08D 05	0.378

RR 10-21-81 1630 DC

VENT = 40
PREFLASH = 50
SAMPLE TAKEN
BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	55.67	61.77	6.10	58.72	31.0	67.6	171.0	66.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
7.795D 05	8.6	9.10D 04	3.152D 04	990.	1161.	2.09D 05	0.435

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	171.0	103.4
TM5	87.49	19.9
TM4	61.33	-6.3
TM3	61.18	-6.5
TH4	66.0	-1.6

RR 10-21-81 1700 DC

PREFLASH = 50
BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	55.57	61.63	6.06	58.60	31.0	67.6	163.0	68.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
7.743D 05	8.7	8.91D 04	3.147D 04	989.	1164.	2.09D 05	0.426

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	163.0	95.4
TM5	93.91	26.3
TM4	61.62	-6.0
TM3	61.48	-6.2
TH4	68.0	0.4

RR 10-21-81 1715 DC

PREFLASH = 50
BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	55.72	61.80	6.09	58.76	32.0	69.0	166.0	69.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
7.774D 05	9.9	7.82D 04	3.154D 04	990.	1162.	2.09D 05	0.373

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	166.0	97.0
TM5	93.91	24.9
TM4	61.62	-7.4
TM3	62.11	-6.9
TH4	69.0	-0.0

RR 10-21-81 1730 DC

PREFLASH = 50
SAMPLE TAKEN
BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	55.69	62.16	6.47	58.92	32.0	69.0	168.0	69.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
8.258D 05	9.7	8.49D 04	3.162D 04	991.	1140.	2.08D 05	0.407

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	168.0	99.0
TM5	73.52	4.5
TM4	59.23	-9.8
TM3	56.31	-12.7
TH4	69.0	-0.0

RR 10-21-81 1740 DC

PREFLASH = 50
BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	55.77	61.98	6.22	58.88	32.0	69.0	165.0	69.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
7.937D 05	9.8	8.09D 04	3.160D 04	991.	1155.	2.09D 05	0.387

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	165.0	96.0
TM5	72.52	3.5
TM4	59.97	-9.0
TM3	56.48	-12.5
TH4	69.0	-0.0

RR 10-21-81 1800 DC

PREFLASH = 50
BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	55.75	61.98	6.23	58.86	33.0	70.4	164.0	70.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
7.957D 05	11.2	7.10D 04	3.159D 04	991.	1154.	2.09D 05	0.340

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	164.0	93.6
TM5	77.98	7.6
TM4	59.82	-10.5
TM3	56.08	-14.3
TH4	70.0	-0.4

RR 10-21-81 1825 DC

PREFLASH = 45

SAMPLE TAKEN

BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	55.10	61.29	6.19	58.19	33.0	70.4	169.0	70.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
7.906D 05	11.9	6.65D 04	3.128D 04	987.	1156.	2.09D 05	0.319

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	169.0	98.6
TM5	95.33	25.0
TM4	59.42	-10.9
TM3	55.51	-14.8
TH4	70.0	-0.4

RR 10-21-81 1845 DC

PREFLASH = 50

BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	54.25	60.54	6.30	57.39	32.0	69.0	170.0	69.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
8.045D 05	11.3	7.10D 04	3.090D 04	981.	1150.	2.07D 05	0.342

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	170.0	101.0
TM5	91.23	22.2
TM4	58.36	-10.6
TM3	54.62	-14.4
TH4	69.0	-0.0

RR 10-21-81 1915 DC

PREFLASH = 50

SAMPLE TAKEN

BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	51.31	57.54	6.23	54.42	32.0	69.0	166.0	68.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
7.987D 05	14.4	5.55D 04	2.953D 04	961.	1154.	2.05D 05	0.271

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	166.0	97.0
TM5	104.95	35.9
TM4	53.80	-15.2
TM3	58.57	-10.4
TH4	68.0	-1.0

RR 10-21-81 1940 DC

PREFLASH = 50

BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	50.77	56.94	6.16	53.86	32.0	69.0	164.0	67.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
7.681D 05	14.9	5.27D 04	2.927D 04	957.	1157.	2.04D 05	0.258

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	164.0	95.0
TM5	103.19	34.2
TM4	53.16	-15.8
TM3	58.22	-10.8
TH4	67.0	-2.0

RR 10-21-81 2030 DC

PREFLASH = 50

SAMPLE TAKEN

BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	49.70	55.82	6.12	52.76	31.0	67.6	162.0	67.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
7.832D 05	14.7	5.34D 04	2.877D 04	950.	1160.	2.03D 05	0.262

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	162.0	94.4
TM5	103.19	35.5
TM4	52.28	-15.4
TM3	57.32	-10.3
TH4	67.0	-0.6

RR 10-21-81 2045 DC

VENT = 90

PREFLASH = 50

BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	49.84	56.19	6.35	53.02	29.0	64.8	163.0	62.0

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
8.119D 05	11.5	7.04D 04	2.889D 04	952.	1147.	2.03D 05	0.347

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	163.0	98.2
TM5	62.95	-1.9
TM4	52.11	-12.7
TM3	50.35	-14.5
TH4	62.0	-2.8

RR 10-21-81 2100 DC

VENT = 90
PREFLASH = 50

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	49.72	55.95	6.23	52.83	25.0	58.9	163.0	59.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	163.0	104.1
TM5	59.45	0.6
TM4	58.20	-0.7
TM3	57.09	-1.8
TH4	59.0	0.1

BELOW LAB RANGE

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
7.973D 05	5.5	1.45D 05	2.881D 04	950.	1153.	2.03D 05	0.716

RR 10-21-81 2110 DC

VENT = 90
PREFLASH = 50

SAMPLE TAKEN

BELOW LAB RANGE

WATER FLOW	WATER TEMPIN	WATER TEMPEX	WATER TEMPRS	WATER TEMPAV	WRKFL PRESS	WRKFL TMPST	WRKFL TMPIN	WRKFL TMPEX
255.0	49.78	56.00	6.21	52.89	25.0	58.9	164.0	59.0

INST IDNT	WRKFL TEMPSH	WRKFL SUPHT
TH3	164.0	105.1
TM5	60.10	1.2
TM4	58.28	-0.6
TM3	57.22	-1.7
TH4	59.0	0.1

HEAT LOAD	SAT LMTD	MEAS UA	WATER REYN NO	WATER COEFF	COMP COEFF	PRED UA	PERFO RATIO
7.947D 05	5.4	1.47D 05	2.883D 04	951.	1154.	2.03D 05	0.721

Appendix B

LABORATORY TEST DATA

Laboratory test results from experiments performed with isobutane (R-600a) condensing on the outside of a single vertical aluminum tube with type E flute profile are presented in Table B.1. Data were taken from Ref. 1. The Wilson-plot method[2] was used in determining composite condensing heat transfer coefficients and composite condensing temperature differences.

References

1. S. K. Combs, G. S. Mailen, and R. W. Murphy, *Condensation of Refrigerants on Vertical Fluted Tubes*, ORNL/TM-5848 (August 1978).

2. E. E. Wilson, "Basis for Rational Design of Heat Transfer Apparatus," *Trans. ASME* 37, 47 (1915).

Table B.1. Summary of experimental conditions and results from Wilson plots for R-600a condensing on vertical tube E

Series of runs	Condenser heat load [W (Btu/h)]		Difference (%)	Vapor temperature [K (°F)]	Condensing temperature difference [K (°F)]	Condensing heat transfer coefficient [W/m²·K (Btu/h·ft²·°F)]
	Q_c	Q_w				
R-600A-001E to R-600A-004E	895 (3,053)	914 (3,120)	-2.2	298.7 (78.0)	1.0 (1.8)	5,898.0 (1,040.2)
R-600A-005E to R-600A-008E	1,376 (4,696)	1,394 (4,757)	-1.3	299.9 (80.1)	1.8 (3.3)	4,988.6 (879.8)
R-600A-009E to R-600A-012E	1,720 (5,870)	1,736 (5,925)	-0.9	303.1 (86.0)	2.5 (4.6)	4,535.0 (799.8)
R-600A-013E to R-600A-016E	2,196 (7,496)	2,182 (7,446)	0.7	301.1 (82.3)	3.7 (6.7)	3,923.6 (692.0)
R-600A-017E to R-600A-020E	2,685 (9,162)	2,681 (9,149)	0.1	304.1 (87.8)	6.3 (11.3)	2,863.3 (505.0)
R-600A-021E to R-600A-024E	3,009 (10,269)	2,995 (10,222)	0.5	307.9 (94.5)	8.5 (15.2)	2,385.0 (420.6)
R-600A-025E to R-600A-028E	3,678 (12,553)	3,724 (12,711)	-1.3	313.9 (105.4)	12.8 (23.0)	1,931.7 (340.7)
R-600A-029E to R-600A-032E	3,338 (11,392)	3,332 (11,372)	0.2	311.7 (101.4)	10.9 (19.7)	2,047.9 (361.2)
R-600A-033E to R-600A-036E	2,459 (8,393)	2,453 (8,372)	0.2	303.6 (86.9)	4.9 (8.8)	3,366.7 (593.8)

ORNL-5940
Dist. Category UC-66d

Internal Distribution

1. H. G. Arnold
2. F. C. Chen
3. N. Domingo
4. W. Fulkerson
5. R. E. Goodson, Consultant
6. D. S. Griffith
7. T. J. Hanratty, Consultant
8. C. V. Hardin
9. H. W. Hoffman
10. T. R. LaPorte, Consultant
11. G. H. Llewellyn
12. J. W. Michel
13. L. I. Moss, Consultant
14-18. R. W. Murphy
19. R. C. Robertson
20. H. E. Trammell
21. ORNL Patent Office
22-31. Heat Exchange Technology, Building 9204-1, MS-3
32. Central Research Library
33. Document Reference Section
34-35. Laboratory Records Department
36. Laboratory Records, RC

External Distribution

37. Dr. Win Aung, Division of Engineering, National Science Foundation, Washington, DC 20550
38. Professor Kenneth J. Bell, School for Chemical Engineering, Oklahoma State University, Stillwater, OK 74074
39. Professor A. E. Bergles, Department of Mechanical Engineering, Iowa State University, Ames, IA 50010
40. B. Boswell, Westec Services, Inc., 3211 Fifth Ave., San Diego, CA 92103
41. Ted Carnavos, Noranda Metal Industries, Prospect Drive, Newton, CT 06470
42. Ronald L. Coit, Electric Power Research Institute, P.O. Box 10412, Palo Alto, CA 94303
43. J. B. Henderson, Wolverine Division, 2100 Market St. SE, P.O. Box 2202, Decatur, AL 35601
44. T. C. Hinrichs, Magma Power Company, 5143 Sunset Blvd., Los Angeles, CA 92112
45. Ivonne J. Ingvarsson, Aerojet Nuclear Company, 550 Second St., Idaho Falls, ID 83401
46. G. A. Kolstad, Office of Energy Research, Department of Energy, Washington, DC 20545
47. Raymond Kornbau, David Taylor Naval Ship Research and Development Center, Annapolis, MD 21402
48. J. T. Kuwada, Rogers Engineering Company, Inc., 111 Pine St., Sixth Floor, San Francisco, CA 94111
49. Alan D. K. Laird, Mechanical Engineering Department, University of California, Lawrence Berkeley Laboratory, Berkeley, CA 94720
50. Raymond J. LaSala, Hydrothermal Support Branch, Division of Geothermal Energy, Department of Energy, 12th and Pennsylvania Ave., NW, RA-342.3, Washington, DC 20461

51. G. W. Leonard, ATDD(P&E) HPDD, Department of the Navy, China Lake, CA 93555
52. A. Lundberg, L-505, University of California, Lawrence Livermore Laboratory, P.O. Box 808, Livemore, CA 94550
53. Dr. Paul Marto, Naval Postgraduate School, Monterey, CA 93940
54. C. B. McFarland, Hydrothermal Support Branch, Division of Geothermal Energy, Department of Energy, 12th and Pennsylvania Ave., N.W., MS 3344, Washington, DC 20461
55. G. L. Mines, Idaho National Engineering Laboratory, Idaho Falls, ID 83415
56. W. C. Moore, York Division, Borg Warner Corporation, York, PA 17403
57. F. Mueller, Patterson-Kelley Company, P.O. Box 458, East Stroudsburg, PA 18301
58. Kevin P. Murphy, Specialty Chemical Division, Allied Chemical Corporation, P.O. Box 1069, Buffalo, NY 14240
59. Kenneth E. Nichols, Barber-Nichols Engineering Company, Arvada, CO 80002
60. James Nugent, Geothermal Energy, San Diego Gas and Electric Company, P.O. Box 1831, San Diego, CA 92112
61. Dr. W. L. Owens, Lockheed Missiles and Space Company, Inc., P.O. Box 504, Sunnyvale, CA 95088
62. Robert W. Perkins, Spiral Tubing Corporation, 533 John Downey Drive, New Britain, CT 06051
63. J. J. Perona, Chemical and Metallurgical Engineering Department, University of Tennessee, Knoxville, TN 37916
64. Dr. Thomas Rabas, Steam-Turbine Generator Technical Operations Division, Westinghouse Electric Corporation, Lester Branch, P.O. Box 9175 N2, Philadelphia, PA 19113
65. Kenneth F. Read, 448 Ferry Point Road, Annapolis, MD 21403
66. Professor Warren Rohsenow, Mechanical Engineering Department, Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, MA 02139
67. Dr. R. R. Rothfus, Chemical Engineering Department, Carnegie-Mellon University, Schenley Park, Pittsburgh, PA 15213
68. John D. Ryan, Technology Consumer Products Branch, DOE, Forrestal Building, MS 6H-068, Washington, DC 20585
69. Dr. W. H. Thielbahr, DOE, Idaho Operations Office, 550 Second Street, Idaho Falls, ID 83401
70. M. W. Urbanek, DSS Engineers, Inc., 7483 Northwest 4th Street, Fort Lauderdale, FL 33317
71. Professor Ralph Webb, Department of Mechanical Engineering, The Pennsylvania State University, 208 Mechanical Engineering Building, University Park, PA 16802
72. J. F. Whitbeck, Idaho National Engineering Laboratory, Idaho Falls, ID 83415
73. G. Wildsmith, Research and Development, Yorkshire Imperial Metals, Ltd., P.O. Box 166, Leeds LS1 1RD England
74. Jack S. Yampolsky, General Atomic Company, P.O. Box 81608, San Diego, CA 92138
75. Ed Yost, Patterson-Kelly Company, P.O. Box 458, East Stroudsburg, PA 18301

76. Office of Assistant Manager for Energy Research and Development, Department of Energy, ORO, Oak Ridge, TN 37830

77-493. Given distribution as shown in DOE/TIC-4500 under category UC-66d (GE - Utilization Technology)