**DESIGN AND OPERATION OF A GEOPRESSURED-GEOTHERMAL
HYBRID CYCLE POWER PLANT**

FINAL REPORT

VOLUME II

February 1991

by

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and
Mai M. Hattar**

for

**EATON OPERATING COMPANY, INC.
AND
UNITED STATES DEPARTMENT OF ENERGY**

**The Ben Holt Co.
Pasadena, CA.**

**DOE Contract No. DE-AC07-85ID12578
Holt Project No. 30008**

MASTER

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VOLUME II

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APPENDIX A

PROCESS FLOW DIAGRAM

POWER PRODUCTION:

GAS ENGINES	650 KW
BINARY CYCLE	541 KW
TOTAL	1191 KW

PARASITIC LOADS:

CONDENSERS	75 KW
CIRCULATING PUMP	74 KW
MISCELLANEOUS	60 KW
TOTAL	209 KW
NET POWER	982 KW

NOTE:
-N AFTER EQUIPMENT NUMBER
IS FOR NEW, -E IS FOR
EXISTING.

STREAM NO.	1	2	3	4	5	6	7	8	9
FLUID	BRINE&GAS	BRINE	BRINE	BRINE	BRINE	GAS	GAS	EXHAUST	EXHAUST
FLOW, MLBS/HR	341	170	170	170	170	.47	.47	8.8	8.8
BPD OR (SCFH)	-	10000	10000	10000	10000	(153)	(153)	-	-
TEMP., °F	278	278	278	220	164	278	278	1130	300
PRESS., PSIA	595	595	595	570	520	595	595	16	15
DENSITY, #/CF	-	64.4	64.4	66.3	68.3	1.50	1.50	.024	.054

STREAM NO.	10	11	12	13	14	15	16	17	18
FLUID	ISOBUTANE	ISOBUTANE	ISOBUTANE	ISOBUTANE	ISOBUTANE	ISOBUTANE	ISOBUTANE	CW MAKEUP	BLOWDOWN
FLOW, MLBS/HR	107	107	92	15	107	107	107	22	5.4
BPD OR (SCFH)	-	-	-	-	-	-	-	-	-
TEMP., °F	98	210	210	210	210	128	94	64	80
PRESS., PSIA	330	300	280	280	280	70	68	30	15
DENSITY, #/CF	33.6	27.1	3.3	3.3	3.3	.7	33.6	62.4	62.2

No.	DATE	ISSUE	BY	CHK	APP.
0	9/18/80	ISSUED FOR CONSTRUCTION	MDG		

THE BEN HOLT CO.

**GEOPRESSURED PILOT PLANT
PROCESS FLOW DIAGRAM**

U.S. DOE/EATON PLEASANT BAYOU, TX.

DRN. MDG	CHK. MDG	SCALE NONE
DATE 8-18-80	APP. MDG	FILE NO.
JOB No. 30008	Dwg. No. 30008-B-3203	REV 0

APPENDIX B

PIPING AND INSTRUMENTATION DIAGRAM

APPENDIX C

SPECIFICATIONS OF NEW EQUIPMENT

INDEX

- C- 1 Geothermal Brine to Isobutane Preheat Heat Exchanger, E-1-N
- C- 2 Geothermal Brine to Boiling Isobutane Heat Exchanger, E-2-N
- C- 3 Exhaust Gas to Boiling Isobutane Heat Exchanger, E-3-N
- C- 4 Isobutane Separator, V-2-N
- C- 5 Utility Cooler
- C- 6 Gas-Freeing Compressor
- C- 7 Cooling Water Controller

EMCO

KRUEGER ENGINEERING & MFG. CO.

EXCHANGER SPECIFICATION SHEET

Revision	No.	Date

1	Customer THE BEN HOLT CO.				Job No.
2	Address EPRI				Reference No.
3	Plant Location				Proposal No.
4	Service of Unit Isobutane Preheater				Date Rev.
5	Size 19-480 Type NEN (Horizontal) Connected In Parallel Series				Item No. E-1-N
6	Surt./Unit (GPM) 2,774 Sq. Ft./Shell/Unit 1 Surt./Shell (GPM) 2,774 Sq Ft				
7	PERFORMANCE OF ONE UNIT				
8	Fluid Allocation		Shell Side		Tube Side
9	Fluid Name		Comm. Isobutane		Geothermal Brine
10	Fluid Quantity, Total Lb/Hr		107,000		170,000
11	Vapor (In/Out)				
12	Liquid		107,000 107,000		170,000 170,000
13	Steam				
14	Water				
15	Noncondensable				
16	Temperature (In/Out) °F		96 210		220 164
17	Specific Gravity				.99 avg.
18	Viscosity, Liquid Cp				.34 avg.
19	Molecular Weight, Vapor				
20	Molecular Weight, Noncondensable				
21	Specific Heat Btu/Lb °F				
22	Thermal Conductivity Btu Ft/Hr Sq Ft °F				.36 avg.
23	Latent Heat Btu/Lb °F				
24	Inlet Pressure Psig		315		555
25	Velocity Ft/S				
26	Pressure Drop, Allow./Calc. Psi		20/ 20		/
27	Fouling Resistance (Min.)		.0005		.003
28	Heat Exchanged 8,190,000 Btu/Hr; MTD (Corrected)		30.24 °F		
29	Transfer Rate, Service 97.7 Clean		Btu/Hr Sq Ft °F		
30	CONSTRUCTION OF ONE SHELL				Sketch (Bundle/Nozzle Orientation)
31			Shell Side Tube Side		
32	Design/Test Pressure Psig		350/525 600/900		
33	Design Temperature °F		350 350		
34	No. Passes per Shell		1 1		
35	Corrosion Allowance in.		1/16 1/16		
36	Connections In		6" - 300# RF 6" - 300# RF		
37	Size & Out		6" - 300# RF 6" - 300# RF		
38	Rating Intermediate				
39	Tube No. 424 OD 5/8 In.; Thk (Min./Assd) .065 In.; Length 40 Ft; Pitch 13/16 In. ☒ 30 ☒ 60 ☒ 90 ☒ 45				
40	Tube Type Welded Bare		Material SA214		
41	Shell CS ID OD IN.		Shell Cover (Integ.) (Remov.)		
42	Channel or Bonnet CS		Channel Cover CS		
43	Tubesheet-Stationary CS		Tubesheet-Floating		
44	Floating Head Cover		Impingement Protection		
45	Baffles-Cross CS Type		% Cut (Diam) (Area) Spacing: c/c Inlet In.		
46	Baffles-Long		Seal Type		
47	Supports-Tube		U-Bend Type		
48	Bypass Seal Arrangement		Tube-Tubesheet Joint Rolled		
49	Expansion Joint		Type		
50	PV ² - Inlet Nozzle		Bundle Entrance Bundle Exit		
51	Gaskets-Shell Side		Tube Side		
52	-Floating Head				
53	Code Requirements ASME Stamped		TEMA Class R		
54	Weights/Shell-Shipping		Filled with Water Bundle Lb		
55	Remarks				
56					
57					
58					

LENGO

KRUEGER ENGINEERING & MFG. CO.

EXCHANGER SPECIFICATION SHEET

Revision	No.	Date

1	Customer		THE BEN HOLT CO.		Job No.	
2	Address		EPRI		Reference No.	
3	Plant Location				Proposal No.	
4	Service of Unit		Isobutane Reboiler		Date	
5	Size		26-40-240 Type CKU		Item No. E-2-N	
6	Surf./Unit		1.813		Rev.	
7	Sg. Ft./Shell/Unit		1		Surf./Shell/Unit	
8	Sg. Ft.		1.813		Sg. Ft.	
9	PERFORMANCE OF ONE UNIT					
10	Fluid Allocation		Shell Side		Tube Side	
11	Fluid Name		Comm. Isobutane		Geothermal Brine	
12	Fluid Quantity, Total		Lb/Hr 92,000		170,000	
13	Vapor (In/Out)		92,000		170,000	
14	Liquid		92,000		170,000	
15	Steam				170,000	
16	Water					
17	Noncondensable					
18	Temperature (In/Out)		°F 210 210		278 220	
19	Specific Gravity		.43		.974 avg.	
20	Viscosity, Liquid		Cp		.23 avg.	
21	Molecular Weight, Vapor		58			
22	Molecular Weight, Noncondensable					
23	Specific Heat		Btu/Lb °F			
24	Thermal Conductivity		Btu Ft./Hr Sq Ft °F		.37 avg.	
25	Latent Heat		Btu/Lb °F			
26	Inlet Pressure		Psig 266		580	
27	Velocity		Ft/S		6.9	
28	Pressure Drop, Allow./Calc.		Psi 2 / NIL		25 / 25	
29	Fouling Resistance (Min.)		.0005		.0011	
30	Heat Exchanged		8,530,000 Btu/Hr; MTD (Corrected)		30.25 °F	
31	Transfer Rate, Service		156.0 Clean		Btu/Hr Sq Ft °F	
32	CONSTRUCTION OF ONE SHELL				Sketch (Bundle/Nozzle Orientation)	
33	Design/Test Pressure		Psig 350/525		600/900	
34	Design Temperature		°F 350		350	
35	No. Passes per Shell		Kettle		8	
36	Corrosion Allowance		In. 1/16		1/16	
37	Connections		In 6" - 300# RF		6" - 300# RF	
38	Size & Rating		Out (2) 8" - 300# RF		6" - 300# RF	
39	Intermediate					
40	Tube No. 220U OD 3/4 In.; Thk (Min/Max) .065 In.; Length 44Max Ft.; Pitch 15/16 in. 30 X 60 90 X 45					
41	Tube Type		Welded Bare		Material SA 214	
42	Shell		CS ID OD		IN. Shell Cover CS (Integ.)	
43	Channel or Bonnet		CS		Channel Cover CS	
44	Tubesheet-Stationary		CS		Tubesheet-Floating	
45	Floating Head Cover				Impingement Protection	
46	Baffles-Cross		Type % Cut (Diam/Ar) Spacing: c/c		Inlet In.	
47	Baffles-Long		Seal Type			
48	Supports-Tube		CS U-Bend		Type	
49	Bypass Seal Arrangement				Tube-Tubesheet Joint Rolled	
50	Expansion Joint				Type	
51	PV ² Inlet Nozzle		Bundle Entrance		Bundle Exit	
52	Gaskets-Shell Side				Tube Side	
53	-Floating Head					
54	Code Requirements		ASME Stamped		TEMA Class R	
55	Weights/Shell-Shipping		Filled with Water		Bundle Lb	
56	Remarks		Demister pads included.			
57						
58						

SIERRA INDUSTRIES

HEAT EXCHANGER SPECIFICATIONS

1	Job No.			
2	Customer BEN HOLT CO.	Reference No.		
3	Address	Inquiry No. 20065-1300-3		
4	Plant Location PRAZORIA, TX.	Date 8-18-91		
5	Service of Unit EXHAUST GAS - BOILING ISOBUTANE	Item No. E-3-A1		
6	Size and Type #34/21-96 CKU			
7	(Horiz) Vert. Stat. Hd.			
8	Surface per Unit 237 sq ft	Shells per Unit 1	Series	Parallel
9	PERFORMANCE OF ONE UNIT		Surface per Shell 237 sq ft	
10	Fluid Circulated	Shell Side		Tube Side
11	Total Fluid Entering	COMM. T-GAS		EXHAUST GAS
12	Vapor	15,000 lb per hr		6,600 lb per hr
13	Liquid	15,000 lb per hr		6,600 lb per hr
14	Steam			
15	Non-Condensables			
16	Fluid Vaporized or Condensed	15,000 lb per hr		
17	Steam Condensed			
18	Gravity - Liquid			
19	Density @ Ave. Cond. IN/OUT	25.839/25.839 lb per cu ft		.026/.051 lb per cu ft
20	Viscosity IN	.021 Centipoises at 210 °F		.039 Centipoises at 1130 °F
21	Viscosity OUT	.021 Centipoises at 210 °F		.023 Centipoises at 300 °F
22	Molecular Wt.	58.1		30.0
23	Conductivity			
24	Specific Heat	.756 Btu per lb		.260 Btu per lb
25	Latent Heat - Vapors			
26	Temperature In	210 °F		1130 °F
27	Temperature Out	210 °F		300 °F
28	Operating Pressure	26.6 psig		0 psig
29	Number of Passes	KETTLE		2
30	Velocity			175.98 fps
31	Pressure Drop ALLOW/CALL	2.00/.00 psi		1.00/.15 psi
32	Heat Exchanged - Btu per hr	1,430,000		MTD (Corrected) 357.06
33	Transfer Rate - Service 16.86	Clean 18.44	Fouling Resistance: Shell .0005	Tubes .0005
34	CONSTRUCTION			
35	Design Pressure	350 psig		5 psig
36	Test Pressure	525 psig		7.5 psig
37	Design Temp. (Max. Metal Temp.)	300 °F		1200 °F
38	Tubes 304 S.S.	No. 42-U's O.D. 1 1/4" BWG 18 Length 96" ST Fitch 19/16" TR 1		
39	Shell 34" I.D.; Mat'l	C.S. Tube Fins —		
40	Shell Cover	C.S. Floating Head Cover —		
41	Channel	304 S.S. Channel Cover 304 S.S.		
42	Tube Sheets—Stationary	304 S.S. Floating —		
43	Baffles—Cross	Type	Spacing	Thickness
44	Baffle—Long	Type		Impact Baffle
45	Tube Supports C.S. (FULL CUT)	No. 2	Thickness	
46	Gaskets	Gland Packing		
47	Connections—Shell - In 2"	Out 4"	Series 3004 RF Dome	
48	Channel - In 10"	Out 8"	Series 1504 RF	
49	Corrosion Allowance—Shell Side	.125	Tube Side .000	
50	Weight 3100# Code ACMF	Customer's Specifications		Temp Class R
51	Length	Width	Height	
52	Ref. Print	Inspection by whom		
53	Based upon operating conditions as given, maximum temperature of tubes will not exceed °F			
54	Note: Indicate after each part whether stress relieved (S.R.) and whether radiographed (X-R)			
55	Remarks: A. SPLIT CHANNEL DESIGN C - 3			
56	B. DEFLECTOR IN SERIES IN TUBES			

ISOBUTANE SEPARATOR, V-2-N

**Anderson LUS-8-300 Receiver Type Separator similar
to Form Sheet Type LRU. Built to ASME Code & Stamped.**

Design: 300 PSIG 300°F

Physical Size: 16" O.D. X 59" Overall Height

Nozzles: Two 8"-300# RF Side Inlet & Top Outlet

One 2"-3000# NPT Bottom Drain

One 1 1/2"-3000# NPT Side-Drain

**Material: Carbon Steel Throughout Except Type 304L
Stainless Steel Element Blades**

Eff. 99%, Pressure Drop 1.14 PSI

Manufacturer: Anderson Separator Company

UTILITY COOLER

**Baltimore Aircoil Closed Circuit Industrial Fluid Cooler Model
VX1 36-3. Capacity to cool 275 GPM.**

**Furnished with one 15 HP, 230/460 volt, 3 phase, 60 cycle fan
motor.**

**Also furnished with one 1 HP, 230/460 volt, 3 phase, 60 cycle
spray water pump.**

**Approximate shipping weight of the unit is 5140 lbs. The unit
ships in two pieces, with the heaviest section being 3720 lbs.**

GAS-FREEING COMPRESSOR

One Corken model D390-109A two stage, base mounted, non lubricated gas compressor. The compressor is mounted on a base with the following equipment:

- 7.5 HP, 460 VAC, TEFC electric motor.
- V-belt drive with enclosed belt guard.
- Air cooled interstage cooler.
- Liquid trap on suction with explosion-proof high liquid level switch.
- Pressure Gauges.

COOLING WATER CONTROLLER

APPLICATIONS

Custom prefabricated package including a centrifugal separator. The separator operates on a bypass to remove suspended particles from the sample flow and the cooling water - heat exchanger loop. A motorized ball valve blows down the separator with the normal cooling water blowdown. The effectiveness of the separator depends on the suspended particle size and other factors. One installation in a steel plant effectively removed heavy sludge from the cooling water.

Another custom system included two Model 6100 modular controllers on a single floor supported wall rack. This saved floor space and the requirement for two sets of chemical drums. Two separate recirculation water loops could not be combined and space was limited. The custom prefabricated system reduced installation and chemical handling costs.

GENERAL SPECIFICATIONS

MODEL 21-412

Dimensions
Material

30"H x 48"W x 12"D
Epoxy coated steel

Enclosure
Shipping weight
Plumbing
Acid fitting

Window door with key lock
 $\frac{3}{4}$ " Schedule 80 PVC
 $\frac{1}{2}$ " FNPT injector. CPVC

MODELS 9301 — 9305

Dimensions

9301 64"H x 84"W x 15"D
9302 and 9303 64"H x 112"W x 15"D
9304 64"H x 142"W x 15"D
9305 64"H x 170"W x 15"D

Material
Finish
Plumbing
Acid fitting

1 $\frac{1}{2}$ " square welded tube
Epoxy coated
 $\frac{3}{4}$ " Schedule 80 PVC
 $\frac{1}{2}$ " FNPT injector. CPVC

MODEL 25-412

31"H x 38"W x 12"D
UV stabilized polyethylene
316 SS hardware
Sliding plexiglass safety panels

$\frac{3}{4}$ " Schedule 80 PVC
 $\frac{1}{2}$ " FNPT injector. CPVC

MODELS 9310 — 9312

9310, 30"H x 68"W x 12"D
9311, 30"H x 68"W x 12"D
9312, 30"H x 68"W x 12"D

12 gauge steel
Epoxy coated
 $\frac{3}{4}$ " Schedule 80 PVC
 $\frac{1}{2}$ " FNPT injector. CPVC

**LAKEWOOD
INSTRUMENTS**

250 W. Walnut St., Compton, California 90220 (213) 638-8786

APPENDIX D

MAIN SINGLE LINE DIAGRAM

- NOTES**
- INSIDE THE POWER TRAILER SOLID LINE INDICATES NEW WIRING BY CONTRACTOR. DASHED LINES INDICATE EXISTING EQUIPMENT. OUTSIDE THE POWER TRAILER, DASHED LINES INDICATE ONLY EXISTING WIRING. ALL EQUIP. CONNECTIONS ARE NEW.
 - FOR ADDITIONAL DETAIL OF PARALLELING CONTROL PANEL SEE ELECTRICAL POWER EQUIPMENT CO. DWGS. #7B-661-1 & 7B-661-2
 - SEE BARBER-NICHOLS DRAWING #E-600-10-105 FOR CONTROL WIRING DIAGRAM.
 - REMOVE EXIST. WIRES FROM EXIST. C.B. & COIL UP & TAP ENDS. THIS WAS SERVICE TO EXIST. 250VA XFR.
 - ELECTRICAL CONTRACTOR TO REPLACE EXIST. 20A SHAPE C.B. WITH A NEW 40A, 3P C.B.
 - ELECTRICAL CONTRACTOR TO FURNISH & INSTALL H.O.A. SELECTOR SWITCH ON STARTER COVER.
 - CONTRACTOR SHALL FURNISH AND INSTALL NEW SHUNT TRIP DEVICE, GE CAT. NO. TRST105, RATED FOR 125V DC.
 - CONNECT GRD. WIRE TO SWBD. GRD. BUS.
 - PRIOR TO GEN. OPERATION IN PARALLEL WITH UTILITY, ALL GEN. NEUTRAL GROUNDING SHALL BE DISCONNECTED.

NO.	DATE	ISSUE	BY	CHK.	APP.
3	7/2/87	ADDED GRD WIRES TO SERVICE CABLES	RS	BT	RS
2	7/2/87	ADDED PREHEATER PUMP, AND NOTE, DELETED 400A FUSE, DELETED NOTES	RS	BT	RS
1	2/10/87	ADDED WATER WELL STARTER & FEEDER	RS	BT	TSE
0	7/12/86	ISSUED FOR CONSTRUCTION	RS	BT	RCC
C	7/14/86	ISSUED FOR BIDS/APPROVAL	RS	BT	RCC
B	7/14/86	ISSUED FOR DESIGN REVIEW	RS	BT	RCC
A	7/15/86	ISSUED FOR EQUIP. PURCHASE	RS	BT	RCC
NO. DATE ISSUE BY CHK. APP.					

THE BEN HOLT CO.

U.S. DEPARTMENT OF ENERGY
 IDAHO FALLS
 EATON OPERATING CO. IDAHO
 HOUSTON, TX.

TITLE: GEOPRESSURED PILOT PLANT
 MAIN SINGLE LINE DIAGRAM

DRN. F. DAVIS	CHK. R. STOKES	SCALE NONE
DATE 9-12-88	APP. R. STOKES	FILE NO.
JOB No. 30008	30008-D-3601	REV. 3

APPENDIX E

SHUTDOWN AND START-UP PROCEDURES

PLEASANT BAYOU HPS

SHUTDOWN AND STARTUP CHECKLIST PROCEDURES

TABLE OF CONTENTS

<u>Paragraph</u>	<u>Page</u>
1.0 SHUTDOWN AFTER TURBINE TRIP.....	2
2.0 STARTUP AFTER TURBINE TRIP.....	4
3.0 SHUTDOWN AFTER ELECTRICAL TRIP.....	6
4.0 STARTUP AFTER ELECTRICAL TRIP.....	8

1.0. SHUTDOWN AFTER TURBINE TRIP

- 1.1. Silence only, Annunciator No. 1, left side alarm panel.
Acknowledge only, Annunciator No. 2, right side alarm panel if it alarms.
- 1.2. Monitor vibration monitor as turbine rolls down.
Step 1.3. should be in progress while monitoring vibrations.
- 1.3. Reduce brine rate until P1-116 is between 270-280 psig. This should be 85-90 M lbs/hr if both Gas Engines are on line to E-3-N. Monitor E-3-N level while reducing brine rate.
- 1.4. Switch Level 1 Shutdown to OFF.
- 1.5. Switch Vanes PY-105 (PIC-109 Turbine Inlet Governor) to Manual and close to 0%.
- 1.6. Switch Bypass CV-100 (PIC-103 Turbine Inlet Bypass) to Manual and open to 100%.
- 1.7. Shut off Lube Oil cooling water outlet block valve HV-661 (Lower valve).
- 1.8. Switch Voltage Regulator to Manual.
- 1.9. Investigate cause of trip, log results, and report to supervisor the following items:
 - 1.9.1. Generator and Utility breaker positions.
 - 1.9.2. Lube Oil temperatures and pressures.
 - 1.9.3. Vane position at turbine.
 - 1.9.4. Trip valve position at turbine.
 - 1.9.5. Gas Engines conditions.
 - 1.9.6. Electrical Building breaker positions.
 - 1.9.7. Annunciator alarm conditions.
 - 1.9.8. Vibration monitor alert and danger conditions, and vibration during roll down if detected.

1.10. Lube Oil circulation can be maintained if start-up is anticipated within 2 hours. If Lube Oil circulation is to be shut down, ensure turbine has come to a complete stop.

1.11. Condenser fans and Utility Cooling system can remain running if start-up is anticipated within a few hours.

If turbine is to remain down, shut off condenser fans to maintain PI-104 (V-I-E contents) between 60-70 psig. Shutoff utility cooler fan, circulating pumps (P-106 and P-107) and water conditioner pH and conductivity controllers.

1.12. If the isobutane flow (FI-102) does not stabilize causing CV-117 (FIC-102 isobutane flow from P-1-E) to open, then put on Manual and open to 100%.

2.0. START-UP AFTER TURBINE TRIP

- 2.1. Prior to start-up the cause of turbine trip should have been determined and remedial action taken.
- 2.2. Turn on Utility Cooler pumps (P-106 and P-107), fan, and put water conditioner on control.
- 2.3. Turn on all condenser fans.
- 2.4. Turn on one Lube Oil pump and put the other one on standby.
- 2.5. Ensure that Voltage Regulator is on Manual.
- 2.6. Ensure that turbine vanes are closed at the turbine and turbine case is warm. Drain liquid from turbine to warm if required.
- 2.7. Ensure nitrogen pressure to Emergency Lube Oil Accumulator bladder is properly set and Air to Gearbox at 2 psig.
- 2.8. Ensure that cooling water is circulating properly to load banks.
- 2.9. Reset annunciator alarm panels, shutdown alarm (yellow button) and vibration monitor.
- 2.10. Adjust brine rate to maintain PI-116 at 275 psig.
- 2.11. Switch bypass CV-100 (PIC-103 Turbine Inlet Bypass) to Automatic. Set point should be at or near actual pressure (about 70%) so that bypass controller just begins to indicate closing. Immediately proceed to next step so that controller does not go to (or near) 0% causing overpressuring of system when Level 1 shutdown is enabled. Remember that bypass control valve only moves to controller position after enabling Level 1 Shutdown.

Note:

If next step is delayed or another start-up attempt is required, switch CV-100 to manual and open to 100%, then repeat step 2.11.

- 2.12. Switch Level 1 Shutdown to Enable.
- 2.13. Push Level 1 Shutdown "push button". This will enable Bypass Control Valve and open trip valve.

Note:

Turbine Speed (RPM) should bounce to a few hundred and return to zero. If not switch Level 1 Shutdown to OFF.

- 2.14. Begin opening vanes manually after Turbine Speed has returned to zero. Increase speed to about 22,000 PRM within 45 seconds.

- 2.15. Continue opening vanes at a slightly slower rate until governor controls speed at around 25,000 RPM.
- 2.16. Continue opening vanes increasing load on Generator until vibrations stabilize at a point below 3.0 mils (normally around 300 KW on J1-100).

NEVER RE-ROLL TURBINE UNTIL SPEED HAS RETURNED TO ZERO
- 2.17. Adjust vanes to maintain PI-116 around 275 psig, then switch vanes controller PY-105 to Automatic with a set point around 67%.

Ensure pressure and vibrations have stabilized.
- 2.18. Open manual block valve HV-661 for cooling water to Lube Oil Cooler.
- 2.19. Parallel Turbine-Generator to HL & P.
 - 2.19.1. Switch Synchronizing knob to pos. 1 (Gen. to Util.)
 - 2.19.2. Adjust voltage to match HL & P.
 - 2.19.3. Adjust frequency to slowly rotate sync scope.
 - 2.19.4. Close generator breaker when scope at 12:00.
 - 2.19.5. Record synchronizing time.
- 2.20. Switch Voltage Regulator to Automatic, and ensure controlling at around 1.0 power factor.
- 2.21. Monitor Lube Oil temperatures and adjust as required.
- 2.22. Check Gas Engines power factors and adjust as required.
- 2.23. Increase brine rate and load Generator per orders.
- 2.24. Monitor vane position while loading generator, keeping T-1-E inlet pressure (PI-107) between 260 and 275 psig.
- 2.25. When vanes are 100% open (or per orders) adjust brine rate to maintain PI-107 between 260 and 270 psig.
- 2.26. Monitor and record vibrations as you load generator.
- 2.27. Manually close CV-117 (FIC-102 Isobutane Flow from P-1-E) and switch to Automatic with a set point of 30%.
- 2.28. Check Turbine area for isobutane leaks.

3.0. SHUTDOWN AFTER ELECTRICAL TRIP

- 3.1. Silence Annunciator alarm panels.
- 3.2. Switch Level 1 Shutdown to OFF.
- 3.3. Manually close CV-632 (Exhaust Gas to E-3-N) to 0%.
- 3.4. Switch vanes PY-105 (PIC-109 Turbine Inlet Governor) to Manual and close to 0%.
- 3.5. Switch Bypass CV-100 (PIC-103 Turbine Inlet Bypass) to Manual and open to 100%.
- 3.6. Switch CV-104 (LIC-604 Isobutane Level E-3-N) to Manual and close to 0%.
- 3.7. Switch CV-116 (FIC-601 Brine Flow Out) to Manual and close to 0%. Needle Valve on half inch tubing bypass to be closed if extended shutdown anticipated.
- 3.8. Switch CV-117 (FIC-102 Isobutane Flow P-1-E) to Manual and open to 100%.
- 3.9. Shut off Lube Oil Cooling Water outlet block valve HV-661 (lower valve).
- 3.10. Switch Voltage Regulator to Manual.
- 3.11. Investigate cause of trip, log results and report to supervisor the following:
 - 3.11.1. Turbine Generator breaker position.
 - 3.11.2. Turbine Utility breaker position.
 - 3.11.3. Power Trailer outside breaker position.
 - 3.11.4. Gas Engine Generator breakers positions.
 - 3.11.5. Electrical Building breakers positions.
 - Main Breaker
 - Power Trailer Switchgear Breaker
 - MCC-A Breaker
 - Gas Engines Breaker
 - 3.11.6. Main Breaker Fault Trip Annunciator positions.
 - 3.11.7. 86 Lockout relay position.

3.11.8. Flags on any relays on Westinghouse Panel.

3.11.9. Line Voltage from HL & P.

3.12. If no line voltage from HL & P, call to have them reset their Reclosure Switch. Our Main Breaker must be open (the OFF position) prior to HL & P resetting their Reclosure Switch.

NEVER HAVE HL & P CLOSE THEIR RECLOSURE WHEN OUR MAIN BREAKER IS CLOSED (ON POSITION).

NEVER CLOSE OUR MAIN BREAKER WHEN ANY PART OF PLANT IS IN OPERATION.

4.0. START-UP AFTER ELECTRICAL TRIP

NEVER HAVE HL & P CLOSE THEIR RECLOSURE WHEN OUR MAIN BREAKER IS CLOSED (ON POSITION).

NEVER CLOSE OUR MAIN BREAKER WHEN ANY PART OF PLANT IS IN OPERATION.

- 4.1. Prior to start-up the cause of electrical trip should have been determined and remedial action taken.
- 4.2. Shut off all fans and pump motor switches in power trailer (including Lube Oil pumps) with the exception of Instrument Air. Switch Water Conditioners controllers to off and unplug chlorine pump.
- 4.3. HL & P should have reset their reclosure switch if necessary. Ensure our Main Breaker is open.
- 4.4. Ensure that Turbine Generator, Gas Engine No. 1 and No. 2 Generator breakers are open.
- 4.5. Reset relay flags.
- 4.6. Close any tripped breakers except Main Breaker, three Generator Breakers or Power Trailer Utility Breakers.
- 4.7. Reset Main Breaker fault buttons.
- 4.8. Close Main Breaker.
- 4.9. Close Power Trailer Utility Breaker,
- 4.10. Ensure Instrument Air Compressor operating properly.
- 4.11. When Instrument Air Pressure builds up enough pressure (about 40 psig) to open CV-612 (Gas Engine Gas Valve), start up and parallel Gas Engines.
- 4.12. When Instrument Air pressure builds up to normal (80-100 psig), check Isobutane Loop for normal line up.
- 4.13. Reset FV-636 and ensure CV-123 is open 100%.
- 4.14. Open CV-130 for isobutane heat up.
- 4.15. Start all condenser pumps and single fans, and put water conditioner on control. Plug in chlorine pump.

- 4.16. Start-up Isobutane pump until level re-established in E-2-N. E-3-N Level can also be re-established at this time.
- 4.17. Shut down Isobutane pump.
- 4.18. Re-open CV-116 (Brine Control Valve) bypass needle valve if closed. Continue this slow heat-up until E-2-N has warmed up. Re-establish E-2-N level with isobutane pump as required.
- 4.19. E-3-N can also be slowly heated up at this time. CV-104 (LIC-604 Isobutane Level E-3-N) should be on Automatic control.
- 4.20. When E-2-N heat-up is re-established, start up isobutane pump, slowly open CV-116 (Brine Control Valve) and slowly establish normal turbine bypass conditions. When brine flow rate is near normal rates, line up set point to process flow and switch to Automatic.
- 4.21. When isobutane is at normal temperatures, close CV-130.
- 4.22. Check isobutane system for isobutane leaks.
- 4.23. Check V-I-E, E-1-N and E-2-N for water. (Minimize Isobutane losses).

PROCEED TO 2.0 START-UP AFTER TURBINE TRIP.

APPENDIX F

DATA SHEETS FOR TESTS

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA
TEST #1

November

	UNITS	INST.#	12-Nov	12-Nov	12-Nov	12-Nov						
			7:30	7:45	8:00	8:15						
AMBIENT TEMP	°F		68	68	69	71						
WET BULB TEMP	°F		66	66	66	68						
POWER												
T-1-N GROSS	KW	J1-100	464	463	467	459						
GE-1-N GROSS	KW		310	310	310	310						
GE-2-N GROSS	KW		310	310	310	310						
PARASITIC	KW	J1-101	234	234	235	223						
NET SALE TO HL&P	KW		780	780	780	780						
NET SALE TO HL&P	FDG		259	259	0259	0259						
	KW-HR											
BRINE												
TO E-2-N	PSIG	PI-606	510	510	510	510						
TO E-1-N	PSIG	PI-611	510	510	510	510						
FROM E-1-N	PSIG	PI-106	510	510	510	510						
ISOBUTANE												
IN V-1-E	PSIG	PG-130	52	54	54	55						
OUT OF P-1-E	PSIG	PI-105	314	316	313	315						
OUT OF E-1-N	PSIG	PI-602	290	290	290	290						
OUT OF E-2-N	PSIG	PG-114	285	285	285	285						
OUT OF E-3-N	PSIG	PI-615	295	295	295	295						
INTO T-1-E	PSIG	PI-107	265	265	265	265						
OUT OF T-1-E	PSIG	PI-108	59	59	59	59						
TO OR 102	PSIG	PG-104	310	310	310	310						
FROM OR 102	PSIG	PG-105	150	150	150	150						
GAS												
TO E-3-N	PSIG	PI-614	0.4	0.4	0.4	0.4						
BRINE												
TO E-2-N	°F	TI-101	297	297	297	297						
TO E-1-N	°F	TR-113	207	207	207	206						
FROM E-1-N	°F	TR-102	148	148	148	148						

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA
TEST #1

November

	UNITS	INST.#	12-Nov	12-Nov	12-Nov	12-Nov						
			7:30	7:45	8:00	8:15						
ISOBUTANE												
IN V-1-E	°F	TI-104	94.6	94.6	94.6	95.0						
OUT OF P-1-E	°F	TI-105	96	96.1	95.8	96.5						
OUT OF E-1-N	°F	TR-112	208	208	208	208						
OUT OF E-2-N	°F	TI-111	214	214	214	214						
OUT OF E-3-N	°F	TI-603	210	210	210	210						
INTO T-1-E	°F	TI-107	215	215	215	216						
OUT OF T-1-E	°F	TI-108	130	130	130	131						
GAS												
TO E-3-N	°F	TI-601	977	977	977	977						
FROM E-3-N	°F	TI-602	302	302	303	302						
BRINE												
IC4 FROM P-1-E	M#/HR	FI-100	125.8	126.9	126.5	125.8						
IC4 FROM P-1-E	M#/HR	FI-102	131	130.3	130.5	129.3						
IC4 TO T-1-E	M#/HR	FI-101	106	105.0	105.6	104.9						
IC4 TO E-3-N	M#/HR	FR-627	8.5	8.3	8.4	008.6						
SEP FLOW	GALS	FQI-633	0	0								
GAS TO GE-1-N	#/HR	FR-607	475.9	468.7	468.7	465.6						
V-1-E												
	INCHES	LG-105										
REMARKS												

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA
TEST #3

December 29, 1989

	UNITS	INST.#	29-Dec 1900	29-Dec 1915	29-Dec 1930	29-Dec 2000	29-Dec 2015	29-Dec 2030	29-Dec 2045	29-Dec 2100	29-Dec 2115
AMBIENT TEMP	°F		63	62	61	60	61	61	61	61	
WET BULB TEMP	°F		62	61	61	60	60	60	61	61	
POWER											
T-1-N GROSS	KW	J1-100	502	501	504	501	499	496	494	494	
GE-1-N GROSS	KW		5	5	5	5	5	5	15	15	
GE-2-N GROSS	KW		260	260	260				15	15	
PARASITIC	KW	J1-101	242	242	252	243	242	242	252	242	
NET SALE TO HL&P	KW		200	500	500	300	300	300	240	240	
NET SALE TO HL&P	PDG		813	0813	0813	0813	0813	0813	0813	0813	
	KW-HR										
BRINE											
TO E-2-N	PSIG	PI-606	500	500	500	500	500	500	500	500	
TO E-1-N	PSIG	PI-611	490	490	490	490	490	490	490	490	
FROM E-1-N	PSIG	PI-106	491	490	490	490	489	489	490	488	
ISOBUTANE											
IN V-1-E	PSIG	PG-130	56	56	55	54	54	54	54	53	
OUT OF P-1-E	PSIG	PI-105	357	362	362	363	361	364	365	364	
OUT OF E-1-N	PSIG	PI-602	290	290	290	290	290	290	290	290	
OUT OF E-2-N	PSIG	PG-114	275	275	275	270	275	272	275	278	
OUT OF E-3-N	PSIG	PI-615	290	290	290	290	290	290	292	290	
INTO T-1-E	PSIG	PI-107	261	262	261	262	262	261	261	262	
OUT OF T-1-E	PSIG	PI-108	58	57	57	56	56	56	55	55	
TO OR 102	PSIG	PG-104	62	61	61	60	60	60	60	61	
FROM OR 102	PSIG	PG-105	48	45	45	45	45	45	45	45	
GAS											
TO E-3-N	PSIG	PI-614	0.6	0.1	0.1	0.1	0.1	0.1	0	0	
BRINE											
TO E-2-N	°F	TI-101	297	297	297	297	297	297	297	297	
TO E-1-N	°F	TR-113	214	214	214	214	214	214	214	214	
FROM E-1-N	°F	TR-102	150	150	150	150	151	151	152	151	

**GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA
TEST #3**

December 29, 1989

	UNITS	INST.#	29-Dec 1900	29-Dec 1915	29-Dec 1930	29-Dec 2000	29-Dec 2015	29-Dec 2030	29-Dec 2045	29-Dec 2100	29-Dec 2115
ISOBUTANE											
IN V-1-E	°F	TI-104	91.8	91.5	91.2	90.6	90.4	90.4	90.2	90.1	
OUT OF P-1-E	°F	TI-105	93.3	92.9	92.8	91.9	92.1	92.2	91.7	91.8	
OUT OF E-1-N	°F	TR-112	211	209	209	210	211	210	210	210	
OUT OF E-2-N	°F	TI-111	216	216	216	217	216	216	216	216	
OUT OF E-3-N	°F	TI-603	210	210	210	210	210	210	210	210	
INTO T-1-E	°F	TI-107	217	211	211	212	212	212	211	212	
OUT OF T-1-E	°F	TI-108	116	102	119	115	128	127	127	115	
GAS											
TO E-3-N	°F	TI-601	910	892	886	780	207	701	621	567	
FROM E-3-N	°F	TI-602	239	238	238	217	320	206	120	90	
BRINE											
IC4 FROM P-1-E	M#/HR	FI-100	144.1	144.7	144.8	144.1	144.3	144.6	144.5	145	
IC4 TO T-1-E	M#/HR	FI-102	109.7	109.3	109.9	107.2	107.4	106.6	105.7	106.5	
IC4 TO E-3-N	M#/HR	FI-101	114	114.2	113.7	112	110.8	110.2	108.8	109.1	
SEP FLOW	M#/HR	FR-627	0	0.1	0	0.1	0.1	0.1	0	0.1	
GAS TO GE-1-N	GALS	FQI-633	709	875	108.7	1414	1575.0	1714.0	1929	2050	
	#/HR	FR-607	234	235.9	240	156.6	154.5	161.7	127.7	0	
V-1-E											
	INCHES	LG-105	37	37	38.5	38	38.5	38.5	38	38	
REMARKS											

**GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA
TEST #3**

January 3, 1990

	UNITS	INST.#	3-Jan 10:30	3-Jan 11:00	3-Jan 11:30	3-Jan 12:00						
AMBIENT TEMP	°F		64	64	64	64						
WET BULB TEMP	°F		64	64	64	64						
POWER												
T-1-N GROSS	KW	J1-100	513	513	509	508						
GE-1-N GROSS	KW		340	340	340	340						
GE-2-N GROSS	KW		340	340	340	340						
PARASITIC	KW	J1-101	241	252	253	253						
NET SALE TO HL&P	KW		910	920	920	920						
NET SALE TO HL&P	PDG		0919	0920	0920	0921						
	KW-HR											
BRINE												
TO E-2-N	PSIG	PI-606	500	500	505	500						
TO E-1-N	PSIG	PI-611	490	495	495	495						
FROM E-1-N	PSIG	PI-106	490	495	489	495						
ISOBUTANE												
IN V-1-E	PSIG	PG-130	56	56	56	56						
OUT OF P-1-E	PSIG	PI-105	365	361	354	358						
OUT OF E-1-N	PSIG	PI-602	295	295	295	295						
OUT OF E-2-N	PSIG	PG-114	280	280	280	280						
OUT OF E-3-N	PSIG	PI-615	295	295	295	295						
INTO T-1-E	PSIG	PI-107	265	264	265	265						
OUT OF T-1-E	PSIG	PI-108	59	59	59	59						
TO OR 102	PSIG	PG-104	65	65	65	65						
FROM OR 102	PSIG	PG-105	45	45	45	45						
GAS												
TO E-3-N	PSIG	PI-614	0.7	0.7	0.7	0.7						
BRINE												
TO E-2-N	°F	TI-101	296	296	296	296						
TO E-1-N	°F	TR-113	216	217	215	215						
FROM E-1-N	°F	TR-102	151	151	151	152						

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA
TEST #3

January 3, 1990

	UNITS	INST.#	3-Jan	3-Jan	3-Jan	3-Jan						
			10:30	11:00	11:30	12:00						
ISOBUTANE												
IN V-1-E	°F	TI-104	93.2	93.9	93.8	93.9						
OUT OF P-1-E	°F	TI-105	95.1	95.6	95.4	95.7						
OUT OF E-1-N	°F	TR-112	210	211	210	210						
OUT OF E-2-N	°F	TI-111	221	221	222	222						
OUT OF E-3-N	°F	TI-603	211	212	211	211						
INTO T-1-E	°F	TI-107	215	215	214	215						
OUT OF T-1-E	°F	TI-108	122	117	119	118						
GAS												
TO E-3-N	°F	TI-601	977	997	992	992						
FROM E-3-N	°F	TI-602	322	322	320	321						
BRINE												
IC4 FROM P-1-E	M#/HR	FI-100	144.9	145	144.5	144						
IC4 FROM P-1-E	M#/HR	FI-102	110.3	110.8	110.9	110.4						
IC4 TO T-1-E	M#/HR	FI-101	116	116.0	116.0	115.9						
IC4 TO E-3-N	M#/HR	FR-627	9.7	9.5	10.1	009.6						
SEP FLOW	GALS	FQI-633	69826.0	70110	70433	70772						
GAS TO GE-1-N	#/HR	FR-607	488.2	488.3	488.3	448.3						
V-1-E												
	INCHES	LG-105	18.5	18.5	18.5	18.5						
REMARKS												

**LOW EXHAUST GAS TEST
GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA
TEST 4**

May 9, 1990

	UNITS	INST.#	05:00	07:00	08:00	09:00	09:30	10:00			
			100%	100%	100%	75%	75%	75%			
AMBIENT TEMP	°F		64	65	72	78	82	80			
WET BULB TEMP	°F		63	63	68	73	72	73			
POWER											
T-1-N GROSS	KW	JI-100	529	528	500	500	495	500			
GE-1-N GROSS	KW		310	310	300	100	100	100			
GE-2-N GROSS	KW		340	340	340	340	340	340			
PARASITIC	KW	JI-101	242	252	238	250	248	249			
NET SALE TO HL&P	KW		900	900	870	650	650	645			
NET SALE TO HL&P	FDG		3169	3171	3172	3172	3173	3163			
	KW-HR										
BRINE											
TO E-2-N	PSIG	PI-606	505	505	505	505	505	509			
TO E-1-N	PSIG	PI-611	495	495	500	495	495	492			
FROM E-1-N	PSIG	PI-106	482	479	480	490	490	475			
ISOBUTANE											
IN V-1-E	PSIG	PG-130	60	60	62	62	62	63			
OUT OF P-1-E	PSIG	PI-105	340	340	347	356	358	355			
OUT OF E-1-N	PSIG	PI-602	310	310	310	309	310	309			
OUT OF E-2-N	PSIG	PG-114	280	280	280	280	280	280			
OUT OF E-3-N	PSIG	PI-615	290	290	290	285	285	288			
INTO T-1-E	PSIG	PI-107	268	267	266	261	262	262			
OUT OF T-1-E	PSIG	PI-108	54	54	57	55	57	57			
TO OR 102	PSIG	PG-104	60	60	60	60	60	61			
FROM OR 102	PSIG	PG-105	60	60	60	60	60	61			
GAS											
TO E-3-N	PSIG	PI-614	.2	.2	.2	.2	.2	.2			
BRINE											
TO E-2-N	°F	TI-101	298	298	298	297	297	297			
TO E-1-N	°F	TR-113	218	218	218	216	216	217			
FROM E-1-N	°F	TR-102	150	149	151	151	152	152			

LOW EXHAUST GAS TEST
GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA
TEST 4

May 9, 1990

	UNITS	INST.#		05:00	07:00	08:00		09:00	09:30	10:00			
				100%	100%	100%		75%	75%	75%			
ISOBUTANE													
IN V-1-E	°F	TI-104		95.6	93.7	97.2		96.3	96.5	96.9			
OUT OF P-1-E	°F	TI-105		96.1	96.5	101.3		97.7	99.5	100.1			
OUT OF E-1-N	°F	TR-112		212	213	212		212	211	211			
OUT OF E-2-N	°F	TI-111		219	218	219		219	219	220			
OUT OF E-3-N	°F	TI-603		212	212	212		212	211	211			
INTO T-1-E	°F	TI-107		215	215	215		215	214	214			
OUT OF T-1-E	°F	TI-108		135	136	138		138	138	138			
GAS													
TO E-3-N	°F	TI-601		1007	1010	1007		968	962	955			
FROM E-3-N	°F	TI-602		363	363	361		325	325	324			
BRINE	M#/HR	FI-100		148.7	151.2	150.2		149.7	150.3	147.5			
IC4 FROM P-1-E	M#/HR	FI-102		119.5	120.1	117.9		118.2	114.4	120			
IC4 TO T-1-E	M#/HR	FI-101		122.7	122.9	122.5		122.0	121.8	122.2			
IC4 TO E-3-N	M#/HR	FR-627		11.0	11.1	9.5		6.6	6.9	6.6			
SEP FLOW	GALS	FQI-633		782309	788926	793675		7970923	7986162	8004590			
GAS TO GE-1-N	#/HR	FR-607		492.4	490.3	486.2		364.6	363.6	366.7			
V-1-E	INCHES	LG-105		29.5	32	29.5		22	22	22.5			

REMARKS

**LOW EXHAUST GAS TEST
GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA
TEST 4**

May 9, 1990

	INST.#	11:00	11:30	12:00	01:00	01:30	02:00	15:00	15:30	16:00
		50%	50%	50%	25%	25%	25%	0%	0%	0%
AMBIENT TEMP		82	82	85	86	85	86	86	88	89
WET BULB TEMP		73	74	76	76	76	76	76	78	77
POWER										
T-1-N GROSS	JI-100	490	489	482	472	465	471	462	462	462
GE-1-N GROSS		0	0	0	0	0	0	0	0	0
GE-2-N GROSS		340	340	340	95	90	90	0	0	0
PARASITIC	JI-101	248	238	247	246	246	247	245	236	247
NET SALE TO HL&P		560	560	570	320	310	320	220	220	220
NET SALE TO HL&P		3174	3174	3174	3175	3175	3175	3175	3176	3176
BRINE										
TO E-2-N	PI-606	505	505	505	505	502	505	510	510	510
TO E-1-N	PI-611	495	492	492	495	490	495	495	492	492
FROM E-1-N	PI-106	490	490	476	490	485	490	490	490	490
ISOBUTANE										
IN V-1-E	PG-130	62	63	63	64	64	64	64	64	65
OUT OF P-1-E	PI-105	366	361	361	370	362	372	367	373	375
OUT OF E-1-N	PI-602	310	309	310	305	310	310	310	310	310
OUT OF E-2-N	PG-114	282	280	280	280	280	280	280	280	280
OUT OF E-3-N	PI-615	290	285	285	283	285	265	260	240	225
INTO T-1-E	PI-107	265	266	264	264	264	265	266	267	267
OUT OF T-1-E	PI-108	58	59	59	60	62	62	62	59	59
TO OR 102	PG-104	61	61	61	61	61	65	65	65	65
FROM OR 102	PG-105	61	61	61	16	61	65	65	65	65
GAS										
TO E-3-N	PI-614	.0	.0	.0	.0	.0	.0	.0	.0	.0
BRINE										
TO E-2-N	TI-101	297	297	297	297	297	297	297	297	297
TO E-1-N	TR-113	217	216	217	216	216	216	216	216	216
FROM E-1-N	TR-102	153	154	153	154	154	156	156	156	155

LOW EXHAUST GAS TEST
GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA
TEST 4

May 9, 1990

	UNITS	11:00	11:30	12:00	01:00	01:30	02:00	15:00	15:30	16:00
		50%	50%	50%	25%	25%	25%	0%	0%	0%
ISOBUTANE										
IN V-1-E	°F	97.1	97.5	97.8	98.3	98.7	98.7	99.1	99.2	99.2
OUT OF P-1-E	°F	100.2	100.9	101	101.3	101.6	101.5	102.0	102.0	102.0
OUT OF E-1-N	°F	213	213	212	212	212	213	213	213	212
OUT OF E-2-N	°F	220	221	220	220	220	220	220	221	221
OUT OF E-3-N	°F	211	211	211	211	211	211	212	194	190
INTO T-1-E	°F	215	215	215	215	215	215	216	215	216
OUT OF T-1-E	°F	138	139	139	140	139	139	140	139	141
GAS					769					
TO E-3-N	°F	937	936	936	235	729	717	518	414	365
FROM E-3-N	°F	288	287	287	282	233	231	104	95	94
BRINE	M#/HR	149.9	148	148.2	149.4	148.3	150	149.8	149.1	150.2
IC4 FROM P-1-E	M#/HR	114.6	113	116.3	113.8	108.0	108.3	112	106.8	111
IC4 TO T-1-E	M#/HR	117.5	117.2	117.5	115.0	114.2	114.0	112	111.4	112
IC4 TO E-3-N	M#/HR	1.3	0.4	0.3	0.1	0.1	0.0	0.0	0.0	0.0
SEP FLOW	GALS	8031880	8046268	8064592	8091587	8107310	8121748	81473371	8165492	8175894
GAS TO GE-1-N	#/HR	270.9	268.8	270.9	134.9	134.9	133.9	5.2	2.1	77.3
V-1-E	INCHES	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
REMARKS										

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA TEST 5

DATE BEGINNING

NOVEMBER

5A

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TEST 5C

	UNITS	INST.#	4-Nov 14:00	4-Nov 14:30	4-Nov 15:00	4-Nov 15:30	4-Nov 16:00	4-Nov 18:30	4-Nov 19:00	4-Nov 19:30	4-Nov 20:00	4-Nov 20:30	6-Nov 13:30	6-Nov 14:00	6-Nov 14:30	6-Nov 15:00
AMBIENT TEMP	°F		77	78	77	76	75	70	72	70	69	69	85	86	85	85
WET BULB TEMP	°F		69	70	69	69	69	68	67	67	67	66	78	78	77	77
POWER																
T-1-N GROSS	KW	J1-100	430	423	411	418	418	239	239	239	239	239	118	118	118	78
GE-1-N GROSS	KW		200	200	200	200	205	140	140	150	150	150	O.S.	O.S.	O.S.	O.S.
GE-2-N GROSS	KW		200	205	205	200	205	140	140	150	140	140	220	220	220	150
PARASITIC	KW	J1-101	233	234	234	233	233	190	189	197	186	196	177	177	179	177
NET SALE TO HL&P	KW		525	530	540	525	525	300	300	300	300	300	100	100	100	40
NET SALE TO HL&P	FDG		0139	0139	0140	0141	0141	0142	0142	0142	0142	0143	0171	0171	0171	0171
	KW-HR															
PRESSURES																
BRINE																
TO E-2-N	PSIG	PI-606	478	478	475	478	480	475	475	0475	475	475	510	509	508	508
TO E-1-N	PSIG	PI-611	475	472	471	472	474	480	480	475	475	480	510	510	511	510
FROM E-1-N	PSIG	PI-106	465	470	470	470	470	470	470	472	472	470	500	501	499	500
ISOBUTANE																
IN V-1-E	PSIG	PG-130	52	51	52	52	53	50	52	50	50	50	51	51	52	52
OUT OF P-1-E	PSIG	PI-105	348	335	337	333	330	434	428	422	424	424	424	420	420	424
OUT OF E-1-N	PSIG	PI-602	282	282	281	281	281	270	275	275	275	275	280	275	280	276
OUT OF E-2-N	PSIG	PG-114	286	286	286	286	286	275	280	280	280	280	285	282	282	280
OUT OF E-3-N	PSIG	PI-615	291	292	291	291	292	290	290	290	290	290	298	297	297	295
INTO T-1-E	PSIG	PI-107	266	267	268	267	267	261	264	262	263	264	266	270	267	271
OUT OF T-1-E	PSIG	PI-108	57	57	57	57	57	57	57	56	54	54	54	54	55	55
TO OR 102	PSIG	PG-104	330	328	329	329	326	70	70	70	70	70	410	410	408	408
FROM OR 102	PSIG	PG-105	155	152	152	152	152	60	60	60	60	60	180	182	185	185
GAS																
TO E-3-N	PSIG	PI-614	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0	0	1002	1002
TEMPERATURES																
BRINE																
TO E-2-N	°F	TI-101	296	296	296	296	296	132	297	297	297	297	296	296	295	295
TO E-1-N	°F	TR-113	207	207	207	207	207	203	203	202	203	203	204	202	201	202
FROM E-1-N	°F	TR-102	150	149	151	150	149	149	150	149	149	149	155	155	151	151

DATE BEGINNING

NOVEMBER

REMARKS

**GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA
TEST 6**

January 4, 1990

	UNITS	INST.#	4-Jan 8:30	4-Jan 9:00	4-Jan 9:30	4-Jan 10:30	4-Jan 11:00	4-Jan 12:00	4-Jan 1:00	4-Jan 2:15
AMBIENT TEMP	°F		62	62	63	64	64	66	66	67
WET BULB TEMP	°F		56	56	55	54	53	54	54	55
POWER										
T-1-N GROSS	KW	JI-100	508	520	532	539	541	531	527	542
GE-1-N GROSS	KW		340	340	340	340	340	340	340	340
GE-2-N GROSS	KW		340	340	340	340	340	340	340	340
PARASITIC	KW	JI-101	244	242	243	242	242	253	241	253
NET SALE TO HL&P	KW		939	939	940	941	941	942	943	944
NET SALE TO HL&P	FDG		1150	1150	1200	1200	1175	1200	1200	1200
	KW-HR									
BRINE										
TO E-2-N	PSIG	PI-606	500	500	502	500	500	500	500	500
TO E-1-N	PSIG	PI-611	498	498	495	495	495	495	495	495
FROM E-1-N	PSIG	PI-106	492	493	495	492	491	495	493	492
ISOBUTANE										
IN V-1-E	PSIG	PG-130	51	51	51	52	52	52	52	52
OUT OF P-1-E	PSIG	PI-105	360	354	348	346	347	349	353	340
OUT OF E-1-N	PSIG	PI-602	293	295	298	298	300	295	295	300
OUT OF E-2-N	PSIG	PG-114	278	275	280	280	280	278	278	282
OUT OF E-3-N	PSIG	PI-615	292	292	292	296	296	300	2905	295
INTO T-1-E	PSIG	PI-107	265	263	265	266	265	263	264	267
OUT OF T-1-E	PSIG	PI-108	54	54	55	54	54	54	53	54
TO OR 102	PSIG	PG-104	58	58	58	58	58	58	550	58
FROM OR 102	PSIG	PG-105	40	45	45	43	42	42	40	42
GAS										
TO E-3-N	PSIG	PI-614	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
BRINE										
TO E-2-N	°F	TI-101	297	297	297	297	296	297	297	297
TO E-1-N	°F	TR-113	214	215	216	215	216	215	215	216
FROM E-1-N	°F	TR-102	147	148	148	148	148	147	147	148

**GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA
TEST 6**

January 4, 1990

	UNITS	INST.#	4-Jan 8:30	4-Jan 9:00	4-Jan 9:30	4-Jan 10:30	4-Jan 11:00	4-Jan 12:00	4-Jan 1:00	4-Jan 2:15	
ISOBUTANE											
IN V-1-E	°F	TI-104	89.9	88.7	89	88.7	88.5	88	88	88.4	
OUT OF P-1-E	°F	TI-105	91.0	90.5	90.8	90.3	90	89.7	89.6	90.1	
OUT OF E-1-N	°F	TR-112	209	209	210	210	211	209	209	211	
OUT OF E-2-N	°F	TI-111	218	220	220	220	221	219	220	221	
OUT OF E-3-N	°F	TI-603	210	210	211	212	212	211	211	212	
INTO T-1-E	°F	TI-107	214	215	214	214	215	213	214	215	
OUT OF T-1-E	°F	TI-108	122	123	123	125	129	126	126	128	
GAS											
TO E-3-N	°F	TI-601	1005	998	1001	1001	999	999	1000	999	
FROM E-3-N	°F	TI-602	330	326	328	327	326	326	326	328	
BRINE	M#/HR	FI-100	134.7	138.9	142.7	144.6	145.2	142.1	139.9	145.3	
IC4 FROM P-1-E	M#/HR	FI-102	104.7	108.2	110.9	111.4	111.1	110	108.2	112	
IC4 TO T-1-E	M#/HR	FI-101	109.6	113.0	115.7	116.2	116.2	115.6	113.5	116.2	
IC4 TO E-3-N	M#/HR	FR-627	9.4	9.3	9.6	009.7	9.7	9.3	009.7	009.4	
SEP FLOW	GALS	FQI-633	83854.0	84199	84523	85157	85525	86191	86827	87631	
GAS TO GE-1-N	#/HR	FR-607	501.6	514	509.9	514.0	513	505.8	507.8	504.7	
V-1-E	INCHES	LG-105	16.5	21	26	27.5	2750%	27.5	27	27	
REMARKS											

GAS ENGINE TEST DATA

TEST #8

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

DATE BEGINNING 0700 October 25, 1989

OPERATORS _____

	UNITS	INST.#	1000	1030	1100	1130	1200	1700	1900	2100	2300	0100	0300	0500
AMBIENT TEMP	°F		72	75	75	76	77							
WET BULB TEMP	°F		69	70	70	70	70							
POWER														
T-1-N GROSS	KW	J1-100	0	0	0	0	0							
GE-1-N GROSS	KW		320	325	325	325	325							
GE-2-N GROSS	KW		325	325	320	320	315							
PARASITIC	KW	J1-101	179	180	182	182	172							
NET SALE TO HL&P	KW		390	395	390	395	390							
NET SALE TO HL&P	KW-HR		8	9	9	9	9							
PRESSURES														
BRINE														
TO E-2-N	PSIG	PI-606	522	523	523	522	520							
TO E-1-N	PSIG	PI-611	524	525	525	523	523							
FROM E-1-N	PSIG	PI-106	519	520	519	519	518							
ISOBUTANE														
IN V-1-E	PSIG	PG-130	62	64	62	63	63							
OUT OF P-1-E	PSIG	PI-105	357	357	377	360	358							
OUT OF E-1-N	PSIG	PI-602	300	295	300	298	300							
OUT OF E-2-N	PSIG	PG-114	280	280	277	281	280							
OUT OF E-3-N	PSIG	PI-615	290	287	284	286	285							
INTO T-1-E	PSIG	PI-107	29	29	33	35	36							
OUT OF T-1-E	PSIG	PI-108	30	30	34	36	37							
TO OR 102	PSIG	PG-104	345	345	358	348	349							
FROM OR 102	PSIG	PG-105	160	160	165	163	162							
GAS														
TO E-3-N	PSIG	PI-614	0	0	0	0	0							
TEMPERATURES														
BRINE														
TO E-2-N	°F	TI-101	295	295	295	295	295							
TO E-1-N	°F	TR-113	206	206	205	204	204							
FROM E-1-N	°F	TR-102	145	147	149	148	149							

GAS ENGINE TEST DATA

TEST #8

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

DATE BEGINNING 0700 October 25, 1989

OPERATORS _____

	UNITS	INST.#	1000	1030	1100	1130	1200	1700	1900	2100	2300	0100	0300	0500
ISOBUTANE														
IN V-1-E	°F	TI-104	101.4	101.3	101.5	101.4	101.6							
OUT OF P-1-E	°F	TI-105	103.5	103.6	103.6	103.7	104.1							
OUT OF E-1-N	°F	TR-112	203	204	203	203	203							
OUT OF E-2-N	°F	TI-111	216	216	214	215	215							
OUT OF E-3-N	°F	TI-603	149	148	147	147	146							
INTO T-1-E	°F	TI-107	74	75	77	78	79							
OUT OF T-1-E	°F	TI-108	86	85	86	87	87							
GAS														
TO E-3-N	°F	TI-601	665	665	663	659	655							
FROM E-3-N	°F	TI-602	162	160	159	159	157							
FLOW RATES														
BRINE	M#/HR	FI-100	87.7	95.4	93.9	91.7	91.6							
IC4 FROM P-1-E	M#/HR	FI-102	117.2	117.1	113.1	115.2	113.6							
IC4 TO T-1-E	M#/HR	FI-101	0	0	0	0	0							
SEP FLOW	GALS	FQI-633	779.8	779.8	779.8	779.8	779.8							
GAS TO GE-1-N	#/HR	FR-607	496	520	513	501	511							
LEVEL														
V-1-E	INCHES	LG-105	32	31	32.5	31.5	31.5							

REMARKS

APPENDIX G

PLANT OUTAGES

PLANT OUTAGES

<u>Date</u>	<u>Turbine</u>		<u>Gas Engines</u>		<u>Problem</u>
	<u>Off</u>	<u>On</u>	<u>Off</u>	<u>On</u>	
10-19-89	Rolled turbine for 1st time		8:00	14:00	Not logged.
10-20					Grid power outage 11:25-13:00.
10-21			14:45	17:00	Not logged.
10-24					Grid power trip 09:30. Back on 13:00. Not logged.
			13:30	15:30	
10-25	17:37	13:00 18:30		15:30	Cold lube oil.
10-26	09:30	10:30			Removal of generator neutral ground
10-27	13:00		13:00		Turbine generator paralleled with grid. Turbine trip. Governor power supply burnt. DC power supply failure.
				13:10	
10-28			09:00	11:35	Power shut down to work on turbine. Turbine seal & assembly sent to B.N. for mod.
10-31			09:55	10:10	Work on reverse power relay.
			12:19	12:25	Power blip.
11-02		08:45	19:25		Gas engine down. reverse power.
11-03				17:15	
11-08	10:45	15:45	10:45	11:20	HL&P-Mustang switch station.
11-09			12:15	15:00	Turbine test.
			15:19	16:00	Turbine test.
			17:46		GE-1 Shut off, wouldn't stay running.

PLANT OUTAGES

<u>Date</u>	<u>Turbine</u>		<u>Gas Engines</u>		<u>Problem</u>
	<u>Off</u>	<u>On</u>	<u>Off</u>	<u>On</u>	
11-10	11:50 16:10	14:17 19:00	16:10	17:00	Work on vibration probes. Grid trip.
11-12-89			09:00		Shut both engines off for Test 4B.
				11:00	GE-1 started 50% gas flow. GE-2 still down.
				17:50	GE-2 started.
11-15	08:35 14:10 16:00	12:45 14:30	08:35	09:55	Grid trip. Operator closed wrong valve. Level 1 shutdown. Turbine apart.
11-16			14:00		Replace orifice plate. Plant down until 11-24-89. IGT-working on well.
11-24				11:53	GE-2 on. Paralled at 01:00.
11-25				08:52	Plant Mgr. decision.
11-28				09:10	Both gas engines started.
			10:10 11:30	10:25 16:00	Grid shut down. Mustang working on both engines.
11-29			14:00	16:30	Mustang working on both engines.
11-30			06:07	08:30	Grid trip. Shut off "toner" switch.
12-01			13:40	14:00	Mustang working on GE-1
12-03			19:30	21:00	Grid trip.
12-07			15:25	15:40	While starting turbine, tripped utility breaker.
		17:00			Turbine back together & running.

PLANT OUTAGES

<u>Date</u>	<u>Turbine</u>		<u>Gas Engines</u>		<u>Problem</u>
	<u>Off</u>	<u>On</u>	<u>Off</u>	<u>On</u>	
12-09	09:57	16:30	09:57 14:50	10:25 15:40	Grid Liverpool trip. Grid trip.
12-11-89	12:00	12:08			Low instrument air; running on load banks.
12-12	10:20	14:40	10:20	11:40	HL&P checking re- closure.
12-13	05:00		05:00		Scheduled shutdown repair 86 Lockout relay.
12-14		15:45		15:40	
12-15	08:12 09:45 12:00 18:48	08:45 10:00 12:25 19:05			Check vanes. Vibration check. Check vibration probes. Low instrument air; relight flare pilot (windy). Liquid entrainment separator. Liquid entrainment cold wind.
	20:36	20:50			
	22:04	23:20			
12-16	00:41 10:00 14:30	01:00 11:00 14:45			Liquid entrainment, cold wind. Lost level in E-2 & E-3-N. Level controller. Instrument air pressure low.
12-17	16:33 17:25 17:57	17:22 17:50 17:50	16:33 17:25 17:50	16:45 17:30 18:00	86 Lockout relay. 86 Lockout relay. 86 Lockout relay.
12-18		09:50 13:25			Low instrument air.
12-19	10:20	12:15	10:20	11:15	Grid shut down.
12-21	14:20 14:30 14:35	14:30 14:39			Freezing weather conditions causing some operational failures. Wind chill 9°F.

PLANT OUTAGES

<u>Date</u>	<u>Turbine</u>		<u>Gas Engines</u>		<u>Problem</u>
	<u>Off</u>	<u>On</u>	<u>Off</u>	<u>On</u>	
12-22		16:45			Not recorded. Gas engines OK. Lost cooling water. Low instrument air.
	17:30	18:30			
	22:10	22:30			
12-23	03:10	03:30			Low instrument air; freezing.
12-23	03:35				Instrument air closed down due to freezing conditions. Gas engines continued to run.
12-26			09:25	10:45	Grid.
			11:30	11:45	Mustang repair.
			17:45	22:10	Mustang repair.
12-29	09:45	07:40			Bentley Nevada probe test.
	X				Tripped turbine twice for Bentley Nevada test.
	X				Time not logged.
			18:00		GE-1 down from 19:00 until 12-30 @ 13:00. GE-2 down 21:00 Test.
1-03			13:08	16:10	GE-1E Re-running Test 4A.
			15:00	16:15	GE-2.
1-05			19:00		GE-1E not running right.
1-06			12:35	12:00	Replaced magneto.
			12:55	12:55	
				13:30	
1-08			11:45	15:40	GE-1 Mustang repair; oil change.
			15:40	17:10	GE-2.
1-09			10:35	13:50	GE-1 Mustang repair value adjustment.
			13:55	17:10	GE-2 " " "
1-10			13:40	23:07	Not running right.

PLANT OUTAGES

<u>Date</u>	<u>Turbine</u>		<u>Gas Engines</u>		<u>Problem</u>
	<u>Off</u>	<u>On</u>	<u>Off</u>	<u>On</u>	
1-11			04:20	14:40	GE-1 suspect magneto problem.
			16:05	16:10	GE-1 Mustang repair.
1-12			17:45	18:20	GE-1 Magneto problems.
			20:20	21:05	GE-1 Magneto problems.
			21:30	22:00	GE-1.
1-17	03:47	10:15	03:47	07:30	Turbine shaft speed high-high.
1-22	09:25				Seal repair.
1-28			23:00	23:15	Electrical storm.
2-03			12:30		Ground fault trip.
2-06				15:15	Both gas engines running again.
2-19	19:25				Turbine repaired & running.
2-21	05:30	02:20			Instrument air to trip valve.
2-22		05:35	05:35	07:15	GE-1 & GE-2 plant trip
				15:15	GE-1 won't run. Mustang called. Turbine seal sent to B.N.
2-28	07:55				Turbine up and running.
3-03		10:05			Lost water well pump.
3-04	10:08				Well pump repaired.
3-05			06:00	15:30	Both gas engines down for oil change. Hydro cleaning of E-3-N.
3-06	10:46	08:10	11:30	12:42	High vibration "A" only. Valve adjustment by Mustang.

PLANT OUTAGES

<u>Date</u>	<u>Turbine</u>		<u>Gas Engines</u>		<u>Problem</u>
	<u>Off</u>	<u>On</u>	<u>Off</u>	<u>On</u>	
3-07		10:25	17:19	17:39	GE-2 Mustang checking engine.
3-12	20:50	18:40	18:40		GE-2 engine voltage bouncing; also shut down turbine.
3-13	09:30	09:00 09:50			High vibrations again. Found front bearing bad.
3-14					Mustang repair power factor meter.
3-19			14:00	14:10	GE-2 throttle stuck- Restarted ok.
3-21	18:10		15:30		Electrical problem. Both gas engines turbine bearings were replaced.
3-22			13:45		Negative wire burned.
3-23		20:05			High vibrations.
		22:10			Shut down. High vibrations; sent seal assembly to B.N.
3-29	13:50 16:22	15:50			Turbine repaired.
3-30	10:24	23:30	10:24	11:35	Lightning strike; Grid shut down. Liquid entrainment separator shut down. Cleaned out sand.
4-02			17:30 20:30	21:40 21:40	GE-1 Test 4 repeated. GE-2 " " "
4-03	02:59	09:45	02:59 10:30	04:15 16:32	Power trailer circuit breaker tripped. GE-2 down for oil leak repair.

PLANT OUTAGES

<u>Date</u>	<u>Turbine</u>		<u>Gas Engines</u>		<u>Problem</u>
	<u>Off</u>	<u>On</u>	<u>Off</u>	<u>On</u>	
4-05			06:30		GE-1 electrical problem.
4-06	16:30	12:05 17:45	12:05 16:30	13:35 16:45	Grid outage. Electrical trip grid.
4-08	10:10	13:40	10:10	11:30	Grid Shutdown.
4-09	05:00 16:25	07:30 21:10			Water in oil. " " "
4-10	13:50	18:15	13:50	14:30	Lightning.
4-12	19:20	20:05			Suspect instrument air supply.
4-17	11:50				Leak in B condenser.
4-19		08:10			
4-22	11:30	13:30			Generator speed low.
4-24			09:30 13:00	12:00 15:15	Mustang oil change. " " "
4-27			11:30 16:00 23:15	13:45 19:05	GE-2 Mustang working. " " " GE-1 generator ground; Mustang working on it.
4-28			12:30	13:00	Under voltage trip; reset.
5-04				18:50	GE-1 generator repaired.
5-06	10:35 12:45	12:35 13:15			Generator speed low. " " "
5-09			10:15 14:00	16:20 16:20	Both gas engines shut down for low exhaust gas test.
5-22	13:01 13:24	15:29	13:01 13:24	13:50	Lightning strike. " "

PLANT OUTAGES

<u>Date</u>	<u>Turbine</u>		<u>Gas Engines</u>		<u>Problem</u>
	<u>Off</u>	<u>On</u>	<u>Off</u>	<u>On</u>	
5-23			05:30		GE-1 generator problem power factor.
5-24			12:15	13:00	Repair regulators by Mustang.
5-26	20:00				Suspect brine leak in E-2-N.
5-31	07:00		07:00		Plant shut down. No brine or natural gas.

END OF PROJECT

APPENDIX H

PRINCIPAL EQUATIONS FOR PROCESS CALCULATIONS

Appendix H

PRINCIPAL EQUATIONS FOR PROCESS CALCULATIONS

Heat Exchanger Duty:

$$Q = M \Delta h$$

(can be approximated as $Q = MC_p \Delta T$ for single-phase fluids)
Isobutane enthalpy is calculated from measured pressure and temperature using the Starling¹ equation of state. Brine enthalpy is calculated from the measured pressure and temperature for a 13% salinity solution using equations from Dittman, "Calculation of Brine Properties".²

Measured Overall Heat Transfer Coefficient:

$$U_{o,meas} = Q / A(\Delta T_{LM})$$

$$\Delta T_{LM} = \frac{(T_h - t_n) - (T_c - t_o)}{\ln \frac{(T_h - t_n)}{(T_c - t_o)}}$$

(Note that the LMTD correction factor is unity for all three heat exchangers in this plant: E-1-N is a counter-current exchanger, and E-2-N and E-3-N have an isothermal fluid on the shellside.)

Calculated Overall Heat Transfer Coefficient:

$$U_o = \left[\frac{1}{h_i} \times \frac{d_o}{d_i} + \frac{d_o}{2k} \ln \frac{d_o}{d_i} + \frac{1}{h_o} + ff_i \times \frac{d_o}{d_i} + ff_o \right]^{-1}$$

Film heat transfer coefficients are calculated for the tube and shell side of each exchanger as follows:

Tubeside:

$$Nu = h_i d_i / k_i = 0.023 Re^{0.8} Pr^{0.3}$$

This correlation for Nusselt number is recommended for fully developed turbulent flow in smooth tubes.³ Brine density was evaluated at the mean fluid temperature using Dittman's correlation. Brine transport properties were evaluated at bulk fluid temperatures using correlations found in Phillips, "A Technical Databook for Geothermal Energy Utilization."⁴

Shellside:

$$Nu = h_o d_o / k_o = C Re^n Pr^{1/3}$$

heater:

C and n are constants from a table in Holman⁵ for flow across tube banks based on tube spacing and pitch

boilers:

C and n are constants evaluated based on correlations in Holman.⁵

Since the heat transfer coefficient for a boiling fluid varies greatly depending on the boiling regime, these coefficients were adjusted so that they fit the overall heat transfer coefficients as supplied by the manufacturer.

Fouling Factor:

$$f_{fa} = 1/U_{o,meas} - 1/U_{o,calc}$$

Nomenclature:

A	Area (based on outside surface), sq. ft.
C_p	Heat capacity at constant pressure, Btu/lb - °F
d_i	Inside diameter, inches
d_o	Outside diameter, inches
$f f_i$	Inside fouling factor, hr - sq ft - °F/Btu
$f f_o$	Outside fouling factor, hr - sq ft - °F/Btu
$f f_{oA}$	Overall fouling factor, hr - sq ft - °F/Btu
h_i	Inside film heat transfer coefficient, Btu/hr - sq ft - °F
h_o	Outside film heat transfer coefficient, Btu/hr - sq ft - °F
Δh	Enthalpy change of fluid through a heat exchanger, Btu/lb
k	Thermal conductivity of tube metal, Btu/hr - ft - °F
k_i	Thermal conductivity of fluid inside tubes, Btu/hr - ft - °F
k_o	Thermal conductivity of fluid outside tubes, Btu/hr - ft - °F
M	Mass flow rate, lb/hr
Nu	Nusselt number, dimensionless
Pr	Prandtl number, dimensionless
Q	Duty, Btu/hr
Re	Reynolds number, dimensionless
T_c	Temperature of hot fluid leaving heat exchanger, °F
t_c	Temperature of cold fluid entering heat exchanger, °F
T_h	Temperature of hot fluid entering heat exchanger, °F
t_h	Temperature of cold fluid leaving heat exchanger, °F
ΔT	Temperature change of a fluid in a heat exchanger, °F
ΔT_{LM}	Logarithmic mean temperature difference (LMTD), °F
$U_{o,meas}$	Measured overall heat transfer coefficient (based on outside surface area), Btu/hr - sq ft - °F
$U_{o,calc}$	Calculated overall heat transfer coefficient (based on outside surface area), Btu/hr - sq ft - °F

References:

1. Starling, K., Fluid Thermodynamic Properties for Light Petroleum Systems, Gulf Publishing Co., Houston, 1973.
2. Dittman, G., "Calculation of Brine Properties", Lawrence Livermore Laboratory, UCID-17406, February 1977.
3. Holman, Heat Transfer, McGraw-Hill, New York, 1981, pp. 226-227.
4. Phillips, S., "A Technical Databook for Geothermal Energy Utilization", Lawrence-Berkeley Laboratory, LBL-12810, June 1981.

APPENDIX I

COMPUTER PROGRAM AND SAMPLE OUTPUT

**PROGRAM WRITTEN IN MICROSOFT QUICK BASIC VERSION 1.0
FOR MACINTOSH SE**


```

DIM k(20),G(20),H(20),c(6),V(6),R(6),P(6),U(6),W(6),M(20),a(6),B(6),E(21)
REM K-TEMP, G-PRESS, H-ENTHALPY, M-FLOW, C-TH CONDUCTIVITY
REM V-VISCOSITY, R-RE NUMBER, P-SKIN HEAT TRANS
REM U-OVERALL HEAT TRANSFER COEFF, W-FOULING FACTOR
REM SAMPLE TEMP, PRESS AND FLOW ENTERED
LPRINT "RUN DATE IS ",DATE$
OPEN "CLIP:" FOR INPUT AS #1
INPUT #1,DATE1$
INPUT #1,TIME1$
FOR KK=1 TO 12:INPUT#1,DUM:NEXT KK
INPUT #1, G(1)
INPUT #1, G(2)
INPUT #1, G(3)
INPUT #1, DUM
INPUT #1, G(14)
INPUT #1, G(15)
INPUT #1, G(16)
INPUT #1, G(19)
INPUT #1, G(20)
INPUT #1, G(11)
INPUT #1, G(12)
INPUT #1, GOR1
INPUT #1, GOR2
INPUT #1, DUM
INPUT #1, G(8)
INPUT #1, DUM
INPUT #1, DUM
INPUT #1, k(1)
PRINT k(1)
INPUT #1, k(2)
INPUT #1, k(3)
FOR KK=1 TO 9: INPUT #1, DUM:NEXT KK
INPUT #1, k(14)
PRINT k(14)
INPUT #1, k(15)
INPUT #1, k(16)
INPUT #1, k(19)
INPUT #1, k(20)
INPUT #1, k(11)
INPUT #1, k(12)
INPUT #1, DUM
INPUT #1, k(8)
PRINT k(8)
INPUT #1, k(9)
INPUT #1, DUM
INPUT #1, M(3)
PRINT M(3)
INPUT #1, M(15)
INPUT #1, M(11)
INPUT #1, M(17)
INPUT #1, DUM
INPUT #1, M(6)
PRINT M(6)
PRINT G(1)
PRINT G(12)
PRINT k(3)

```

```

PRINT "temp in and out pump",k(15),k(14)
PRINT M(3)
PRINT M(6)
PRINT M(15)
M(3)=M(3)*1000
M(15)=M(15)*1000
M(11)=M(11)*1000
M(17)=M(17)*1000
'M(17)=M(17)*1.2
'k(16)=k(16)-5
k(17)=k(16)
k(18)=k(16)
k(13)=k(14)
M(18)=M(11)-M(17)
M(8)=6600!*M(6)/470!
REM CALCULATE ENTHALPY
H(1)=.33*k(1)^1.1609
H(2)=.344*k(2)^1.1609
H(3)=.344*k(3)^1.1609
H(11)=-567.42-1.4328*k(11)+.0092117*k(11)^2-1.6663E-05*k(11)^3
H(12)=.469*k(12)-696.58+.09*(75-G(12))
H(13)=-847.07+.72259*k(13)-.001895*k(13)^2+8.3415E-06*k(13)^3
H(14)=-847.07+.72259*k(14)-.001895*k(14)^2+8.3415E-06*k(14)^3
H(15)=(-843.31+.0034*G(16))+(.57725-.00002*G(16))*k(15)
H(16)=.755*k(16)-869.53-.0077*(G(16)-300!)
'H(19)=.5175*K(17)-711.63-.099*(G(17)-150)
H(17)=H(16)
H(18)=H(16)
H(19)=-567.42-1.4328*k(19)+.0092117*k(19)^2-1.6663E-05*k(19)^3
'H(19)=-567!-1.43*K(19)+.009211*K(19)^2-1.6663E-05*K(19)^3
H(20)=-567.42-1.4328*k(20)+.0092117*k(20)^2-1.6663E-05*k(20)^3
H(10)=H(19)
LPRINT DATE1$,TIME1$
LPRINT
FOR X=1 TO 10
  LPRINT "H(";X;")",H(X),"H(";X+10;")",H(X+10)
NEXT X
REM MASS BALANCE
LPRINT
LPRINT "MASS BALANCE"
LPRINT "BRINE FLOWRATE ",M(3),"LB/HR"
LPRINT "GAS FLOWRATE",M(6),"LB/HR"
LPRINT "ISOBUTANE FLOWRATE"
LPRINT "AVERAGE=", (M(11)+M(15))/2!
LPRINT "DIFFERENCE=",100*(M(11)-M(15))*2/(M(11)+M(15)),"%"
REM
REM INDIVIDUAL ENERGY BALANCES
LPRINT
LPRINT "INDIVIDUAL ENERGY BALANCES"
  LPRINT "E-1-N"
  E(1)=-M(3)*(H(3)-H(2))
  E(2)=M(11)*(H(16)-H(15))
  PRINT M(15),H(16),H(15)
  E(3)=(E(2)+E(1))/2!
  E(4)=(E(1)-E(2))/E(3)*100
  LPRINT "BRINE",E(1),"BTU/HR"

```

```

LPRINT "ISOBUTANE", E(2), "BTU/HR"
LPRINT "AVERAGE=", E(3)
LPRINT "DIFFERENCE=", E(4), "%"
LPRINT "E-2-N"
E(5) = -M(3) * (H(2) - H(1))
E(6) = M(18) * (H(19) - H(18))
E(7) = (E(5) + E(6)) / 2!
E(8) = (E(5) - E(6)) / E(7) * 100
LPRINT "BRINE", E(5), "BTU/HR"
LPRINT "ISOBUTANE", E(6), "BTU/HR"
LPRINT "AVERAGE=", E(7)
LPRINT "DIFFERENCE=", E(8), "%"
LPRINT "E-3-N"
IF M(17) < 2000 THEN
E(9) = 0!
E(10) = 0!
E(11) = 0!
E(12) = 0!
ELSE
E(9) = -M(8) * .24 * (k(9) - k(8))
E(10) = M(17) * (H(20) - H(17))
E(11) = (E(9) + E(10)) / 2!
E(12) = (E(9) - E(10)) / E(11) * 100!
END IF
LPRINT "EXHAUST", E(9), "BTU/HR"
LPRINT "ISOBUTANE", E(10), "BTU/HR"
LPRINT "AVERAGE=", E(11)
LPRINT "DIFFERENCE=", E(12), "%"
REM OVERALL ENERGY BALANCE
LPRINT
LPRINT "OVERALL ENERGY BALANCE"
E(13) = -M(3) * (H(3) - H(1))
E(14) = E(9)
E(15) = M(15) * (H(15) - H(14))
E(16) = E(13) + E(14) + E(15)
E(17) = -M(11) * (H(13) - H(12))
E(18) = -M(11) * (H(12) - H(11))
E(19) = E(17) + E(18)
E(20) = (E(16) + E(19)) / 2!
E(21) = (E(16) - E(19)) / E(20) * 100!
LPRINT "ENERGY FROM BRINE", E(13), "BTU/HR"
LPRINT "ENERGY FROM EXHAUST", E(14), "BTU/HR"
LPRINT "ENERGY FROM PUMP", E(15), "BTU/HR"
LPRINT "TOTAL ENERGY INTO ISOBUTANE", E(16), "BTU/HR"
LPRINT "ENERGY TO COOLING WATER", E(17), "BTU/HR"
LPRINT "ENERGY TO TURBINE", E(18), "BTU/HR"
LPRINT "TOTAL ENERGY OUT OF ISOBUTANE", E(19), "BTU/HR"
LPRINT "AVERAGE", E(20), "BTU/HR"
LPRINT "DIFFERENCE", E(21), "%"
REM H CALCULATIONS FOR E-1-N
REM
REM TUBE SIDE BRINE
REM PROPERTY CALCULATION
a(1) = ((k(2) + k(3)) / 2! - 32) / 1.8
V(1) = 1.0613 + .0004309 * a(1)
D = (a(1) + 273.15) / 273.15

```

```

D=-.92247+2.8395*D-1.8007*D^2+.52557*D^3-.07344*D^4
c(1)=(.9713+9.963E-05*a(1)-5.1032E-07*a(1)^2)*D*.5778
R(1)=.0729*M(3)/V(1)
P(1)=.6887*c(1)*R(1)^.8
REM - SHELLSIDE ISOBUTANE FOR E-1-N
a(2)=(k(15)+k(16))/2!
V(2)=.5484-.0015073*a(2)
c(2)=.0737-1.7153E-04*a(2)
R(2)=M(15)/V(2)*.2
P(2)=10.11*c(2)*R(2)^.569
REM - E-2-N
REM - TUBESIDE BRINE
a(3)=(k(2)+k(1))/2!-32/1.8
V(3)=1.0613+.0004309*a(3)
D=(a(3)+273.15)/273.15
D=-.92247+2.8395*D-1.8007*D^2+.52557*D^3-.07344*D^4
c(3)=(.9713+9.963E-05*a(3)-5.1032E-07*a(3)^2)*D*.5778
R(3)=.1119*M(3)/V(3)
P(3)=.5014*c(3)*R(3)^.8
REM - SHELLSIDE ISOBUTANE
R(4)=M(18)*2.8606
P(4)=.4*R(4)^.556
REM - E-3-N
REM - TUBESIDE EXHAUST
R(5)=M(8)*3.3956
P(5)=.00732*R(5)^.8
REM - SHELLSIDE ISOBUTANE
R(6)=42.94*M(17)
P(6)=.146*R(6)^.54
LPRINT
LPRINT "                RE                h"
FOR X = 1 TO 6
    LPRINT X,R(X),P(X)
NEXT X
LPRINT
REM CALCULATE U
REM B-LOG MEAN TEMPERATURE DIFFERENCE
PRINT k(2),k(16),k(3),k(15)
B(1)=((k(2)-k(16))-(k(3)-k(15)))/LOG((k(2)-k(16))/(k(3)-k(15)))
PRINT k(1),k(19),k(2),k(18)
B(2)=((k(1)-k(19))-(k(2)-k(18)))/LOG((k(1)-k(19))/(k(2)-k(18)))
B(3)=((k(8)-k(20))-(k(9)-k(17)))/LOG((k(8)-k(20))/(k(9)-k(17)))
REM U CALCULATED
U(4)=1/(1.2615/P(1)+.0002413+1/P(2))
U(5)=1/(1.0832/P(3)+9.2488E-05+1/P(4))
U(6)=1/(1.0854/P(5)+1.5816E-04+1/P(6))
REM U MEASURED
'    U(1)=e(3)/2728/B(1)
    U(2)=E(7)/1738/B(2)
' base on brine
    U(1)=E(1)/2728/B(1)
'    U(2)=e(5)/1738/B(2)

    U(3)=E(9)/237/B(3)
REM FOULING FACTOR
W(1)=1/U(1)-1/U(4)

```

```

W(2)=1/U(2)-1/U(5)
W(3)=1/U(3)-1/U(6)
LPRINT "E-X-N", "UMEAS", "UCALC", "LMTD", "Fouling Factor"
FOR X= 1 TO 3
  LPRINT X, U(X), U(X+3), B(X), W(X)
NEXT X
PRINT "X", "UMEAS", "UCALC", "DTLM", "FF"
FOR X= 1 TO 3
  PRINT X, U(X), U(X+3), B(X), W(X)
NEXT X
STOP

```

PUN DATE IS 00-25-1000
5/4/1000 100

H(1)	245.9414	H(11)	-615.2643
H(2)	177.4004	H(12)	-631.844
H(3)	114.6596	H(13)	-790.7794
H(4)	0	H(14)	-790.7794
H(5)	0	H(15)	-789.3196
H(6)	0	H(16)	-709.5471
H(7)	0	H(17)	-709.5471
H(8)	0	H(18)	-709.5471
H(9)	0	H(19)	-614.4199
H(10)	-614.4199	H(20)	-615.9301

MASS BALANCE
BRINE FLOWRATE 149100 LB/HR
GAS FLOWRATE 493.4 LB/HR
ISOBUTANE FLOWRATE
AVERAGE= 120800
DIFFERENCE= 2.317881 %

INDIVIDUAL ENERGY BALANCES

E-1-N
BRINE 9354653 BTU/HR
ISOBUTANE 9748210 BTU/HR
AVERAGE= 9551432
DIFFERENCE= -4.120398 %
E-2-N
BRINE 1.021946E+07 BTU/HR
ISOBUTANE 1.059716E+07 BTU/HR
AVERAGE= 1.040831E+07
DIFFERENCE= -3.62883 %
E-3-N
EXHAUST 1107467 BTU/HR
ISOBUTANE 1011063 BTU/HR
AVERAGE= 1059265
DIFFERENCE= 9.101005 %

OVERALL ENERGY BALANCE

ENERGY FROM BRINE	1.957412E+07	BTU/HR
ENERGY FROM EXHAUST	1107467	BTU/HR
ENERGY FROM PUMP	174297.5	BTU/HR
TOTAL ENERGY INTO ISOBUTANE	2.085588E+07	BTU/HR
ENERGY TO COOLING WATER	1.942191E+07	BTU/HR
ENERGY TO TURBINE	2026041	BTU/HR
TOTAL ENERGY OUT OF ISOBUTANE	2.144795E+07	BTU/HR
AVERAGE	2.115191E+07	BTU/HR
DIFFERENCE	-2.799123	%

	RE	h
1	9904.243	410.4125
2	74914.63	285.5545
3	14959.7	424.6619
4	318670.8	459.1116
5	23526.74	23.00173
6	463752	167.5511

E-X-N	UMEAS	UCALC	LMTD	Fouling Factor
1	161.8478	146.6922	21.18735	-6.383494E-04
2	223.3621	207.4111	26.8115	-3.443076E-04
3	12.71399	18.75672	367.5365	2.533928E-02

APPENDIX J

**CHEMICAL ANALYSIS, SCANNING ELECTRON
MICROSCOPY AND LUBE OIL ANALYSIS RESULTS**

Report No.: 6971

Date: July 12, 1990

Prepared For: Ms. Mai Hattar
Ben Holt Company
201 S. Lake Ave. Suite 308
Pasadena, CA 91101

P.O. No.: 30008-258

PURPOSE OF ANALYSIS:

To elementally characterize the deposits on the inside and outside surfaces of six tubes. Also, to determine the minimum remaining wall thickness of each tube.

SAMPLES:

Six (6) tubes:
A:E-2-N, 4th pass tube.
B:E-2-N, tube #2, 1st pass.
C:E-3-N, tube #6.
D:E-2-N, ferrule on 1st pass inlet.
E:E-2-N, ferrule on 5th pass inlet.
F:Condenser tube.

METHODS OF ANALYSIS:

Scanning Electron Microscopy (SEM).
Energy Dispersive X-ray Spectroscopy (EDS).

RESULTS:

The material and operating environments for the tubes was reported as follows.

E-2-N	:geothermal brine inside tube. :isobutane outside tube. :carbon steel.
E-3-N	:engine exhaust gas inside tube (fuel:natural gas). :isobutane outside tube. :304 S.S..
Condenser	:isobutane inside tube. :water and air outside tube.

The inside (I.D.) and outside (O.D.) of each tube was analyzed with EDS to determine the elemental nature of the corrosion product/deposit (see spectra 1 through 12).

A sample of tube wall from each sample was encapsulated in clear epoxy and cross-sectioned using standard metallographic techniques. The samples were gold coated for SEM documentation of the minimum tube wall thickness. The dimensions can be seen in table 1.

The enclosed micrographs and spectra further present the results of this analysis.

Paul R. Reidel
Metallurgist

PRR:cp

Enclosures: Samples (6)
 Micrographs (6)
 Spectra (12)

Table 1

<u>Sample</u>	<u>Minimum Remaining Wall Thickness</u>
A	0.074 inches
B	0.074 inches
C	0.069 inches
D	0.013 inches
E	0.035 inches
F	0.054 inches

00.

ID

M-1

00

ID

M-2

J - 4

PHOTOMETRICS

OD

ID

M-3

OD

ID

M-4

J - 5

M-5

M-6

12-Jul-1990 08:33:46

SAMPLE A:I.D.

Vert= 6891 counts Disp= 1

Preset=

100 secs

Elapsed=

73 secs

12-Jul-1990 08:36:31

SAMPLE A:O.D.

Vert= 6454 counts Disp= 1

Preset=

100 secs

Elapsed=

74 secs

12-Jul-1990 08:41:14

SAMPLE B:I.D.

Vert= 5884 counts Disp= 1

Preset=

100 secs

Elapsed=

67 secs

12-Jul-1990 08:38:36

SAMPLE B:O.D.

Vert= 4277 counts Disp= 1

Preset=

100 secs

Elapsed=

53 secs

15 KV

12-Jul-1990 08:43:56

SAMPLE C:I.D.

Vert= 3276 counts Disp= 1

Preset= 100 secs

Elapsed= 100 secs

12-Jul-1990 08:46:30

SAMPLE C:O.D.

Vert= 6101 counts Disp= 1

Preset= 100 secs

Elapsed= 59 secs

15 KV

12-Jul-1990 09:59:57

SAMPLE D:I.D.

Vert= 1852 counts Disp= 1

Preset= 100 secs

Elapsed= 100 secs

12-Jul-1990 09:54:27

SAMPLE D:O.D.

Vert= 3957 counts Disp= 1

Preset= 100 secs

Elapsed= 100 secs

15 KV

12-Jul-1990 10:02:17

SAMPLE E:I.D.

Vert= 1739 counts Disp= 1

Preset= 100 secs

Elapsed= 82 secs

15 KV

4- 0.000 Range= 10.230 keV

Integral 0 = 10.110 →
166895

12-Jul-1990 10:10:47

SAMPLE F:I.D.

Vert= 4978 counts Disp= 1

Preset= 100 secs

Elapsed= 41 secs

15 KV

12-Jul-1990 10:08:53

SAMPLE F:O.D.

Vert= 6704 counts Disp= 1

Preset= 100 secs

Elapsed= 100 secs

CHEMICAL ANALYSIS

SAMPLES:

- A: E-1-N TUBESIDE INLET**
- B: E-1-N TUBESIDE OUTLET**
- C: E-2-N SHELLSIDE**
- D: E-3-N SHELLSIDE**
- E: E-3-N TUBESIDE OUTLET**
- F: E-3-N TUBESIDE INLET**

**AmeriChem
Testing
Laboratory**

1761 N. Batavia
Orange, CA 92665
(714) 921-1550
FAX: (714) 921-4770

REPORT NUMBER: AL-1879

CLIENT:

The Ben Holt Co.
201 S. Lake Ave.
Pasadena CA 91101-3094

REPORT ON:

Solid Sample A
E-I-N tube side inlet

DATE REPORTED: 7-10-90

DATE RECEIVED: 7-03-90

ANALYSIS

Moisture
Oil
Identification of oil by IR
Ash
Color of ash
Magnetics
Siliceous matter-soil, dirt
Chloride
Nitrate
Sulfate
Carbonate
Bicarbonate
Phosphate
Sodium
Calcium
Magnesium
Cadmium
Lead
Zinc
Cobalt
Nickel
Manganese
Copper
Chromium
Iron, as iron oxide

TEST RESULT

1.17%
51.37%
Petroleum oil
47.46%
Light brown
Yes
0.72%
0.20%
<0.01%
<0.01%
<0.1%
<0.005%
0.06%
0.281%
7.31%
0.237%
0.0169%
6.11%
4.18%
N.D.
N.D.
0.321%
0.205%
N.D.
4.63%

Peter T. Wu
Lab Director

AmeriChem Testing Laboratory

1761 N. Batavia
Orange, CA 92665
(714) 921-1550
FAX: (714) 921-4770

REPORT NUMBER: AL-1879

CLIENT:

The Ben Holt Co.

201 S. Lake Ave.

Pasadena CA 91101-3094

REPORT ON:

Solid Sample B

E-I-N residue marker

DATE REPORTED: 7-10-90

DATE RECEIVED: 7-03-90

ANALYSIS

Moisture
Oil
Identification of oil by IR
Ash
Color of ash
Magnetics
Siliceous matter-soil, dirt
Chloride
Nitrate
Sulfate
Carbonate
Bicarbonate
Phosphate
Sodium
Calcium
Magnesium
Cadmium
Lead
Zinc
Cobalt
Nickel
Manganese
Copper
Chromium
Iron, as iron oxide

TEST RESULT

2.51%
21.96%
Petroleum oil
75.52%
Light yellow
Slightly
2.63%
0.16%
0.01%
<0.01%
0.41%
<0.005%
0.10%
0.259%
3.52%
0.155%
0.0380%
10.35%
11.94%
N.D.
0.0040%
0.171%
0.076%
0.040%
10.35%

Peter T. Wu
Lab Director

AmeriChem Testing Laboratory

REPORT NUMBER: AL-1879

CLIENT:

The Ben Holt Co.
201 S. Lake Ave.
Pasadena CA 91101-3094

1781 N. Batavia
Orange, CA 92665
(714) 921-1550
FAX: (714) 921-4770

REPORT ON:

Solid Sample C
E-2-N Shell Side

DATE REPORTED: 7-10-90

DATE RECEIVED: 7-03-90

ANALYSIS

Moisture
Oil
Identification of oil by IR
Ash
Color of ash
Magnetics
Siliceous matter-soil, dirt
Chloride
Nitrate
Sulfate
Carbonate
Bicarbonate
Phosphate
Sodium
Calcium
Magnesium
Cadmium
Lead
Zinc
Cobalt
Nickel
Manganese
Copper
Chromium
Iron, as iron oxide

REST RESULT

3.40%
37.11%
Petroleum oil
59.48%
Rust brown
Strongly magnetic
3.72%
0.81%
0.01%
<0.01%
0.07%
<0.005%
<0.01%
0.183%
0.93%
0.105%
N.D.
0.0055%
0.278%
0.055%
0.0164%
0.149%
0.079%
N.D.
49.27%

N.D. = Not detected

The main ingredient is iron rust and oil.

Peter T. Wu
Lab Director

AmeriChem Testing Laboratory

1761 N. Batavia
Orange, CA 92665
(714) 921-1550
FAX: (714) 921-4770

REPORT NUMBER: AL-1879

CLIENT:

The Ben Holt Co.

201 S. Lake Ave.

Pasadena CA 91101-3094

REPORT ON:

Solid Sample D

DATE REPORTED: 7-10-90

DATE RECEIVED: 7-03-90

ANALYSIS

Moisture
Oil
Identification of oil by IR
Ash
Color of ash
Magnetics
Siliceous matter-soil, dirt
Chloride
Nitrate
Sulfate
Carbonate
Bicarbonate
Phosphate
Sodium
Calcium
Magnesium
Cadmium
Lead
Zinc
Cobalt
Nickel
Manganese
Copper
Chromium
Iron, as iron oxide

REST RESULT

1.11%
15.40%
Petroleum oil
83.49%
Rust brown
Strongly magnetic
6.63%
0.02%
0.04%
<0.01%
<0.1%
<0.005%
<0.01%
0.289%
1.37%
0.068%
N.D.
0.0105%
0.319%
0.088%
0.0248%
6.830%
0.093%
0.035%
75.06%

N.D. = Not detected

The main ingredient is iron rust and oil.

Peter T. Wu
Lab Director

AmeriChem Testing Laboratory

1761 N. Batavia
Orange, CA 92665
(714) 921-1550
FAX: (714) 921-4770

REPORT NUMBER: AL-1879

CLIENT:

The Ben Holt Co.
201 S. Lake Ave.
Pasadena CA 91101-3094

REPORT ON:

Solid Sample E

DATE REPORTED: 7-12-90

DATE RECEIVED: 7-03-90

ANALYSIS

Moisture
Charcoal particles
Oil
Identification of oil by IR
Ash
Color of ash
Magnetics
Siliceous matter-soil, dirt
Chloride
Nitrate
Sulfate
Carbonate
Bicarbonate
Phosphate
Sodium
Calcium
Magnesium
Cadmium
Lead
Zinc
Cobalt
Nickel
Manganese
Copper
Chromium
Iron, as iron oxide

TEST RESULT

17.31%
38.02%
N.D.
-
44.65%
Brown
Strongly magnetic
1.81%
<0.01%
0.02%
<0.01%
<0.1%
<0.005%
0.14%
0.076%
0.24%
0.159%
N.D.
0.181%
0.798%
0.072%
0.0361%
0.155%
1.084%
N.D.
65.06% of ash=29.05%

N.D. = Not detected

The main ingredient is iron rust, charcoal particles and moisture.

Peter T. Wu
Lab Director

AmeriChem Testing Laboratory

1761 N. Batavia
Orange, CA 92665
(714) 921-1550
FAX: (714) 921-4770

REPORT NUMBER: AL-1879

CLIENT:

The Ben Holt Co.
201 S. Lake Ave.
Pasadena CA 91101-3094

REPORT ON:

Solid Sample F

DATE REPORTED: 7-10-90

DATE RECEIVED: 7-03-90

ANALYSIS

Moisture
Oil
Identification of oil by IR
Ash
Color of ash
Magnetics
Siliceous matter-soil, dirt
Chloride
Fiber
Nitrate
Sulfate
Carbonate
Bicarbonate
Phosphate
Sodium
Calcium
Magnesium
Cadmium
Lead
Zinc
Cobalt
Nickel
Manganese
Copper
Chromium
Iron, as iron oxide

TEST RESULT

1.68%
N.D.
-
95.53%
Gray
Magnetic
66.75%
<0.01%
0.3%
0.012%
<0.01%
0.11%
<0.005%
0.13%
0.224%
0.20%
0.075%
N.D.
0.007%
1.291%
N.D.
0.0298%
0.067%
0.094%
N.D.
17.53%

N.D. = Not detected

The main ingredient is iron rust and siliceous dirt.

Peter T. Wu
Lab Director

AmeriChem Testing Laboratory

1761 N. Batavia
Orange, CA 92665
(714) 921-1550
FAX: (714) 921-4770

REPORT NUMBER: AL-1879
CLIENT:
The Ben Holt Co.
201 S. Lake Ave.
Pasadena CA 91101-3094

REPORT ON:
Solid Sample E-2-N, SHELL

DATE REPORTED: 7-10-90
DATE RECEIVED: 7-03-90

ANALYSIS

Moisture
Oil
Identification of oil by IR
Ash
Color of ash
Magnetics
Siliceous matter-soil, dirt
Chloride
Nitrate
Sulfate
Carbonate
Bicarbonate
Phosphate
Sodium
Calcium
Magnesium
Cadmium
Lead
Zinc
Cobalt
Nickel
Manganese
Copper
Chromium
Iron, as iron oxide

REST RESULT

41.54%
12.09%
Petroleum oil
46.37%
Rust beown
Strongly magnetic
9.92%
3.31%
<0.01%
<0.01%
1.60%
<0.005%
0.01%
0.697%
0.75%
0.045%
N.D.
0.006%
0.155%
0.047%
0.0134%
0.148%
0.049%
N.D.
33.48%

N.D. = Not detected

The main ingredient is iron rust , oil and water.

Peter T. Wu
Lab Director

AmeriChem Testing Laboratory

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FAX: (714) 921-4770

REPORT NUMBER: AL-1879

CLIENT:

The Ben Holt Co.
201 S. Lake Ave.
Pasadena CA 91101-3094

REPORT ON:

Oil in E-3-N Shell

DATE REPORTED: 7-10-90

DATE RECEIVED: 7-03-90

ANALYSIS

Moisture
Ash
Magnetic particles
Dirt particles
Sodium
Calcium
Magnesium
Cadmium
Lead
Zinc
Cobalt
Nickel
Manganese
Copper
Chromium
Iron

REST RESULT

<0.1%
0.017%
82.2 ppm
2.6 ppm
0.0014%
0.0010%
0.00034%
N.D.
0.00033%
0.00233%
N.D.
0.0055%
N.D.
N.D.
N.D.
0.0086%

Viscosity, 100 F

232 Seconds

N.D. = Not detected

The contamination came from rust and dirt particles.

Peter T. Wu
Lab Director

AmeriChem Testing Laboratory

1761 N. Batavia
Orange, CA 92665
(714) 921-1550
FAX: (714) 921-4770

REPORT NUMBER: AL-1879
CLIENT:
The Ben Holt Co.
201 S. Lake Ave.
Pasadena CA 91101-3094

REPORT ON:
Solid Sample CT-113-E
From Tube Cut Out
DATE REPORTED: 7-10-90
DATE RECEIVED: 7-03-90

ANALYSIS

Moisture
Oil
Identification of oil by IR
Ash
Color of ash
Magnetics
Siliceous matter-soil, dirt
Chloride
Nitrate
Sulfate
Carbonate
Bicarbonate
Phosphate
Sodium
Calcium
Magnesium
Cadmium
Lead
Zinc
Cobalt
Nickel
Manganese
Copper
Chromium
Iron, as iron oxide

TEST RESULT

26.19%
<0.1%
-
73.52%
Rust beown
Strongly magnetic
<0.1%
<0.1%
0.02%
<0.01%
1.60%
<0.1%
<0.01%
0.033%
0.04%
0.032%
N.D.
0.004%
0.072%
0.099%
0.0066%
0.144%
0.015%
0.027%
68.21%

N.D. = Not detected

The main ingredient is iron rust and water.

Peter T. Wu
Lab Director

**AmeriChem
Testing
Laboratory**

1701 N. Batavia
Orange, CA 92665
(714) 921-1550
FAX: (714) 921-4770

REPORT NUMBER: AL-1879
CLIENT:
The Ben Holt Co.
201 S. Lake Ave.
Pasadena CA 91101-3094

REPORT ON:
Solid Sample

DATE REPORTED: 7-12-90
DATE RECEIVED: 7-03-90

SAMPLE ID.

CHARCOAL PARTICLES

A	<0.5%
B	<0.5%
C	1.6%
D	2.3%
F	<0.5%
E-2-N, SHELL	1.2%
CT-113-E	<0.5%

For adjustment of calculation, please include the above % in the oil content reported on July 10, 1990.

Peter T. Wu
Lab Director

Mustang

7777 WASHINGTON AVE.
P.O. BOX 1373
HOUSTON, TEXAS 77251-1373
(713) 861-4832

RECEIVED

JUN 14 1990

PROCUREMENT DIV.

MUSTANG TRACTOR & EQUIPMENT
POWER SYSTEMS DIVISION
CONSTRUCTION MACHINERY DIV.
INDUSTRIAL EQUIPMENT DIV.

SCHEDULED OIL SAMPLING

SHOP JOB NUMBER	
JOB SEGMENT NUMBER	
UNIT NUMBER	7380766
JOB SITE	NEW ENG.RENT.#2
UNIT MANUFACTURER	CAT
UNIT MODEL	6398
UNIT SERIAL NUMBER	73808766
COMPARTMENT	NATURAL GAS
OIL BRAND/WEIGHT	/
WAS OIL CHANGED AT THIS SAMPLE TIME?	
CUSTOMER PURCHASE ORDER NO.	ELLISOR
SAMPLE LABEL NUMBER	MJ 8937
LAB CONTROL NUMBER	8F06058
OVERALL SAMPLE EVALUATION CODE	Q

TAKEN	Am'l of Add Oil	SMU/ Odom. on Unit	SMU/ Odom. on Oil	
253898				WEAR METAL RESULTS APPEAR NORMAL. NO EVIDENCE OF CONTAMINATION.
REC'D				
268198		35211		Feedback:
TAKEN				IRON IS SLIGHTLY HIGH. RECOMMEND OIL CHANGE RESAMPLE AFTER 500 HOURS
242498				
REC'D				
242598		34365	1115	Feedback:
TAKEN				UNKNOWN HOURS ON OIL SAMPLE. ELEMENTS APPEAR AVERAGE
230598				
REC'D				
231298		33253		Feedback:
TAKEN				UNKNOWN HOURS ON OIL SAMPLE. ELEMENTS APPEAR AVERAGE
228698				
REC'D				
228798		32613		Feedback:

Lab Report Date	Elements Concentrations in PPM:								Oil condition/Contaminants:								
	CU	FE	CR	PB	AL	SI	MO	NA	W	F	A	ST	OXI	NIT	SUL	APP	VIS
262198	2	18	0	1	0	1		18	NEG			8%					
242598	2	28	1	3	1	3		19	NEG								
231298	2	16	1	3	1	1		25	NEG								
228798	2	14	1	4	2	1		22	NEG								

ABBREVIATIONS

Al - ALUMINUM
Cr - CHROMIUM
Fe - IRON

Cu - COPPER
Pb - LEAD
Mo - MOLYBDENUM

Si - SILICON
Na - SODIUM
TR - TRACE

W - WATER
F - FUEL
A - ANTIFREEZE

ST - SOOT
SUL - SULFUR
VIS - VISCOSITY

OXI - OXIDATION
NIT - NITRATION
APP - APPEARANCE

Mustang

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(713) 861-4832

MUSTANG TRACTOR & EQUIPMENT
POWER SYSTEMS DIVISION
CONSTRUCTION MACHINERY DIV.
INDUSTRIAL EQUIPMENT DIV.

SHOP JOB NUMBER	
JOB SEGMENT NUMBER	
UNIT NUMBER	7380766
JOB SITE	NEW ENG.RENT.#2
UNIT MANUFACTURER	CAT
UNIT MODEL	6398
UNIT SERIAL NUMBER	73800766
COMPARTMENT	NATURAL GAS
OIL BRAND/WEIGHT	/
WAS OIL CHANGED AT THIS SAMPLE TIME?	Y
CUSTOMER PURCHASE ORDER NO.	
SAMPLE LABEL NUMBER	ELLISOR
LAB CONTROL NUMBER	8A00227
OVERALL SAMPLE EVALUATION CODE	A

TAKEN	Am't. of Add Oil	SMU/ Odom. on Unit	SMU/ Odom. on Oil
-------	---------------------------	-----------------------------	----------------------------

ALL ELEMENTS APPEAR ACCEPTABLE.

REC'D

111190 32012 1645

Feedback:

TAKEN

REC'D

Feedback:

TAKEN

REC'D

Feedback:

TAKEN

REC'D

Feedback:

Lab
Report
Date

Elements
Concentrations in PPM:

Oil condition/Contaminants:

	CU	FE	CR	PB	AL	SI	MO	NA		W	F	A	ST	OXI	NIT	SUL	APP	VIS
111190	4	13	0	5	5	1		24		NEG				10%	27%	50%	40%	

ABBREVIATIONS

Al - ALUMINUM
Cr - CHROMIUM
Fe - IRON

Cu - COPPER
Pb - LEAD
Mo - MOLYBDENUM

Si - SILICON
Na - SODIUM
TR - TRACE

W - WATER
F - FUEL
A - ANTIFREEZE

ST - SOOT
SUL - SULFUR
VIS - VISCOSITY

OXI - OXIDATION
NIT - NITRATION
APP - APPEARANCE

Mustang

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RECEIVED
JUN 14 1990
PROCUREMENT DIV.

MUSTANG TRACTOR & EQUIPMENT
POWER SYSTEMS DIVISION
CONSTRUCTION MACHINERY DIV.
INDUSTRIAL EQUIPMENT DIV.

SHOP JOB NUMBER	
JOB SEGMENT NUMBER	
UNIT NUMBER	7388535
JOB SITE	NEW ENG.RENT.#1
UNIT MANUFACTURER	CAT
UNIT MODEL	6398
UNIT SERIAL NUMBER	7388535
COMPARTMENT	NATURAL GAS
OIL BRAND/WEIGHT	/
WAS OIL CHANGED AT THIS SAMPLE TIME?	
CUSTOMER PURCHASE ORDER NO.	ELLISOR
SAMPLE LABEL NUMBER	MJ 0936
LAB CONTROL NUMBER	0F06057
OVERALL SAMPLE EVALUATION CODE	

TAKEN 253898	Am't of Add Oil	SMU/ Odom. on Unit	SMU/ Odom. on Oil	UNKNOWN HOURS ON OIL SAMPLE. IRON IS SLIGHTLY HIGH. IT IS DIFFICULT TO INTERPRET RESULTS WITHOUT INFO.
REC'D 260198		475		Feedback:
TAKEN 242498				COPPER IS SLIGHTLY HIGH. IRON IS HIGH. THIS MAY BE DUE TO AN EXTENDED OIL CHANGE PERIOD. RECOMMEND OIL CHANGE RESAMPLE AFTER 500 HOURS
REC'D 242598		3918	1138	Feedback:
TAKEN 238598				UNKNOWN HOURS ON OIL SAMPLE. SILICON IS SLIGHTLY HIGH. MODERATE DIRT ENTRY EVIDENT THIS SAMPLE CONTAINS A SLIGHT WATER CONTAMINATION. RECOMMEND OIL CHANGE
REC'D 231298		2779		Feedback:
TAKEN 228698				UNKNOWN HOURS ON OIL SAMPLE. ELEMENTS APPEAR AVERAGE
REC'D 228798		2149		Feedback:

Lab Report Date	Elements Concentrations in PPM:								Oil condition/Contaminants:								VIS
	CU	FE	CR	PB	AL	SI	MO	NA	W	F	A	ST	OXI	NIT	SUL	APP	
252192	18	24	1	1	1	1		11	NEG		NEG	10%					
242598	23	31	2	3	1	2		17	NEG								
231298	13	18	2	3	1	18		23	TR								
228798	18	18	2	5	2	2		24	NEG								

ABBREVIATIONS

Al - ALUMINUM	Cu - COPPER	Si - SILICON	W - WATER	ST - SOOT	OXI - OXIDATION
Cr - CHROMIUM	Pb - LEAD	Na - SODIUM	F - FUEL	SUL - SULFUR	NIT - NITRATION
Fe - IRON	Mo - MOLYBDENUM	TR - TRACE	A - ANTIFREEZE	VIS - VISCOSITY	APP - APPEARANCE

Mustang

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MUSTANG TRACTOR & EQUIPMENT
POWER SYSTEMS DIVISION
CONSTRUCTION MACHINERY DIV.
INDUSTRIAL EQUIPMENT DIV.

SCHEDULED OIL SAMPLING

SHOP JOB NUMBER	
JOB SEGMENT NUMBER	
UNIT NUMBER	7388535
JOB SITE	NEW ENG.RENT.#1
UNIT MANUFACTURER	CAT
UNIT MODEL	6398
UNIT SERIAL NUMBER	7388535
COMPARTMENT	NATURAL GAS
OIL BRAND/WEIGHT	/
WAS OIL CHANGED AT THIS SAMPLE TIME?	Y
CUSTOMER PURCHASE ORDER NO.	
SAMPLE LABEL NUMBER	ELLISOR
LAB CONTROL NUMBER	8A88226
OVERALL SAMPLE EVALUATION CODE	X

TAKEN	Am't of Add Oil	SMU/ Odom. on Unit	SMU/ Odom. on Oil
018898			

COPPER IS HIGH. IRON IS HIGH. ALUMINUM IS EXTREMELY HIGH.

POSSIBLE ROD/MAIN BEARING WEAR. RESAMPLE IMMEDIATELY TO CHECK.

REC'D

011198

1553

1553

Feedback:

TAKEN

REC'D

Feedback:

TAKEN

REC'D

Feedback:

TAKEN

REC'D

Feedback:

Lab
Report
Date

Elements
Concentrations in PPM:

Oil condition/Contaminants:

CU FE CR PB AL SI MO NA

W F A ST OXI NIT SUL APP

VIS

011198 38 38 1 12 13 2 23

NEG 22% 48% 75% 57%

ABBREVIATIONS

Al - ALUMINUM
Cr - CHROMIUM
Fe - IRON

Cu - COPPER
Pb - LEAD
Mo - MOLYBDENUM

Si - SILICON
Na - SODIUM
TR - TRACE

W - WATER
F - FUEL
A - ANTIFREEZE

ST - SOOT
SUL - SULFUR
VIS - VISCOSITY

OXI - OXIDATION
NIT - NITRATION
APP - APPEARANCE

APPENDIX K

MANAGEMENT REPORT DATA SHEETS

JANUARY 5, 1990 - MAY 29, 1990

January 5-8, 1990

1.

January 5-8, 1990

[illegible]

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

January 9-10, 1990

	UNITS	INST.#	9-Jan	9-Jan	9-Jan	10-Jan	10-Jan	10-Jan			
			900	1700	100	900	1700	100			
AMBIENT TEMP	°F		59	70	50	58	58	58			
WET BULB TEMP	°F		56	63	50	57	56	57			
POWER											
T-1-N GROSS	KW	J1-100	554	504	555	549	504	508			
GE-1-N GROSS	KW		340	330	340	340	15	340			
GE-2-N GROSS	KW		340	0.5	340	340	15	340			
PARASITIC	KW	J1-101	257	242	257	253	252	253			
NET SALE TO HL&P	KW		940	560	920	940	260	900			
NET SALE TO HL&P	FDG		1051	1057	1065	1073	1079	1082			
	KW-HR										
BRINE											
TO E-2-N	PSIG	PI-606	500	505	500	500	500	500			
TO E-1-N	PSIG	PI-611	495	495	495	495	490	495			
FROM E-1-N	PSIG	PI-106	489	489	490	490	487	500			
ISOBUTANE											
IN V-1-E	PSIG	PG-130	51	56	52	50	52	52			
OUT OF P-1-E	PSIG	PI-105	352	371	361	362	368	376			
OUT OF E-1-N	PSIG	PI-602	300	295	300	300	295	290			
OUT OF E-2-N	PSIG	PG-114	280	275	280	280	270	270			
OUT OF E-3-N	PSIG	PI-615	300	295	300	300	300	300			
INTO T-1-E	PSIG	PI-107	270	263	269	270	260	258			
OUT OF T-1-E	PSIG	PI-108	54	58	53	53	55	53			
TO OR 102	PSIG	PG-104	55	60	60	40	60	60			
FROM OR 102	PSIG	PG-105	40	50	40	55	45	40			
GAS											
TO E-3-N	PSIG	PI-614	0.7	0.5	0.7	0.8	0.4	0			
BRINE											
TO E-2-N	°F	TI-101	297	297	297	297	297	297			
TO E-1-N	°F	TR-113	217	212	216	216	213	211			
FROM E-1-N	°F	TR-102	148	175	147	148	151	151			

January 9-10, 1990

[illegible]

REMARKS

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

January 11-14, 1990

	UNITS	INST.#	11-Jan	11-Jan	11-Jan	12-Jan	12-Jan	12-Jan	13-Jan	13-Jan	13-Jan	14-Jan	14-Jan	14-Jan
			900	1700	100	900	60	100	900	1700	100	900	1700	100
AMBIENT TEMP	°F		64	66	60	55	0.5	42	48	51	52	63	65	62
WET BULB TEMP	°F		63	62	59	53	50	36	43	46	50	60	62	60
POWER												537		
T-1-N GROSS	KW	JI-100	528	526	532	562	566	583	574	558	555	340	521	528
GE-1-N GROSS	KW		240	330	340	340	320	340	340	340	340	340	340	340
GE-2-N GROSS	KW		340	330	340	340	340	340	340	340	340	243	340	340
PARASITIC	KW	JI-101	253	251	254	254	244	256	246	254	243	900	252	253
NET SALE TO HL&P	KW		820	880	920	940	900-940	940	940	906	930	1160	910	920
NET SALE TO HL&P	PDG		1089	1095	1103	1111	1119	1126	1135	1143	1151	1029	1168	1175
	KW-HR													
BRINE														
TO E-2-N	PSIG	PI-606	500	510	500	501	500	500	500	500	500	500	500	500
TO E-1-N	PSIG	PI-611	498	495	495	495	495	490	495	490	490	490	490	490
FROM E-1-N	PSIG	PI-106	494	491	490	491	487	490	490	490	490	487	485	490
ISOBUTANE														
IN V-1-E	PSIG	PG-130	54	57	56	46	49	44	44	49	50	54	56	56
OUT OF P-1-E	PSIG	PI-105	369	347	358	359	348	346	352	361	358	363	367	360
OUT OF E-1-N	PSIG	PI-602	300	300	295	295	300	300	300	300	295	300	300	300
OUT OF E-2-N	PSIG	PG-114	280	280	275	280	280	280	280	280	280	280	280	280
OUT OF E-3-N	PSIG	PI-615	295	300	300	300	300	300	300	300	300	300	300	300
INTO T-1-E	PSIG	PI-107	267	270	268	262	268	266	266	266	269	269	268	269
OUT OF T-1-E	PSIG	PI-108	58	59	56	49	51	46	50	50	52	56	58	58
TO OR 102	PSIG	PG-104	60	62	60	50	50	50	50	50	30	60	60	60
FROM OR 102	PSIG	PG-105	50	50	45	35	40	35	35	40	55	45	50	45
GAS														
TO E-3-N	PSIG	PI-614	0.7	0.7	0.8	0.5	0.7	.5-1.0	0.1	0.8	.5-1.0	0.8	0.8	0.8
BRINE														
TO E-2-N	°F	TI-101	297	297	297	296	297	297	296	296	296	297	297	297
TO E-1-N	°F	TR-113	0.5	217	0.5	216	0.3	0.5	216	216	216	15	216	215
FROM E-1-N	°F	TR-102	0.5	147	0.5	147	0.5	0.5	146	148	148	15	151	150

January 11-14, 1990

	UNITS	INST.#	11-Jan	11-Jan	11-Jan	12-Jan	12-Jan	12-Jan	13-Jan	13-Jan	13-Jan	14-Jan	14-Jan	14-Jan
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
ISOBUTANE														
IN V-1-E	°F	TI-104	91.7	93.4	90.6	82.8	84.4	79.1	82	85.2	86.7	90.4	95.2	92.6
OUT OF P-1-E	°F	TI-105	94.0	95	92.2	84.3	86.4	81.8	83.7	86.3	88	92.1	93.8	94.2
OUT OF E-1-N	°F	TR-112	0.5	201	0.5	210	211	210	210		211	0.15	211	210
OUT OF E-2-N	°F	TI-111	222	221	222	223	221	221	223	222	221	223	224	221
OUT OF E-3-N	°F	TI-603	212	214	212	212	214	214	212	212	214	212	213	214
INTO T-1-E	°F	TI-107	215	214	216	216	215	215	216	216	215	217	217	215
OUT OF T-1-E	°F	TI-108	122	5	0.5	123	5	0.5	125		125	127?	126	127
GAS														
TO E-3-N	°F	TI-601	987	100	1015	972	988	1011	1008	1008	1012	1012	1004	1007
FROM E-3-N	°F	TI-602	281	292	303	298	306	296	310	315	323	328	329	333
BRINE	M#/HR	FI-100	145.4	146.4	144.6	146.3	145.8	146.9	146.4	146.4	146.6	146.1	146	146.4
IC4 FROM P-1-E	M#/HR	FI-102	109.4	111.7	109.6	107.5	109.5	109.1	108.2	108.2	109.3	109.3	109	110
IC4 TO T-1-E	M#/HR	FI-101	116.5	116.6	116.3	115.7	116.6	1166	116.4	116.2	116.6	116.5	116.5	116.6
IC4 TO E-3-N	M#/HR	FR-627	0.5	.0	0.5	9.8	8.8	9.8	010.3		10.1	015.0	009.0	9.4
SEP FLOW	GALS	FQI-633	194119.3	199627	204765	210073	216384	220278	225690	231034	236220	241548	246915	252033
GAS TO GE-1-N	#/HR	FR-607	0.5	0	0.5	499.6	0	491.3	493.4	493.2	496.5	0.15	503.7	504.7
V-1-E	INCHES	LG-105	31.5	30	29	28.5	27.5	26	25	24.0	23	22	21	18

REMARKS

January 15-17, 1990

	INST.#	15-Jan	15-Jan	15-Jan	16-Jan	16-Jan	16-Jan	17-Jan	17-Jan	17-Jan
		900	1700	100	900	1700	100	900	1700	100
AMBIENT TEMP		65	67	60	67	68	64	69	70	67
WET BULB TEMP		62	63	60	65	66	64	67	68	67
POWER										
T-1-N GROSS	JI-100	517	519	525	515	505	514	0	500	514
GE-1-N GROSS		340	340	340	340	340	340	340	340	340
GE-2-N GROSS		340	340	340	340	340	340	340	340	340
PARASITIC	JI-101	252	240	251	241	251	241	224	248	249
NET SALE TO HL&P		920	910	910	900	900	900	460	900	900
NET SALE TO HL&P		1184	1192	1200	1207	1215	1223	1227	1234	1242
BRINE										
TO E-2-N	PI-606	500	500	500	500	500	500	500	500	500
TO E-1-N	PI-611	490	490	490	490	490	490	510	490	490
FROM E-1-N	PI-106	475	485	490	487	488	490	507	489	490
ISOBUTANE										
IN V-1-E	PG-130	56	57	56	58	59	58	46	60	60
OUT OF P-1-E	PI-105	364	357	363	368	351	355	404	364	260
OUT OF E-1-N	PI-602	300	300	300	300	300	300	185	295	300
OUT OF E-2-N	PG-114	280	285	280	280	285	280	185	280	280
OUT OF E-3-N	PI-615	300	300	300	300	300	300	190	300	300
INTO T-1-E	PI-107	267	264	270	269	268	269	43	265	267
OUT OF T-1-E	PI-108	58	59	58	60	62	60	44	64	61
TO OR 102	PG-104	60	60	60	65	70	65	380	70	65
FROM OR 102	PG-105	45	50	50	50	50	50	140	50	50
GAS										
TO E-3-N	PI-614	0.8	0.8	0.8	0.8	0.8	0.8	0	0.8	5-1.0
BRINE										
TO E-2-N	TI-101	297	297	297	297	296	297	297	297	298
TO E-1-N	TR-113	15		216	15	0.5	0.5	216	215	215
FROM E-1-N	TR-102	15	1	151	15	0.5	0.5	152	152	157

January 15-17, 1990

	UNITS	15-Jan	15-Jan	15-Jan	16-Jan	16-Jan	16-Jan	17-Jan	17-Jan	17-Jan
		900	1700	100	900	1700	100	900	1700	100
ISOBUTANE										
IN V-1-E	°F	93.2	94.4	92.7	94.5	96.1	95.2	82.3	97.8	96.0
OUT OF P-1-E	°F	94.4	95.7	94.3	96.1	97.7	96.8	82.9	99.2	97.4
OUT OF E-1-N	°F	15		210	15	0.5	0.5	140	201	210
OUT OF E-2-N	°F	221	223	220	221	221	221	175	221	220
OUT OF E-3-N	°F	213	213	214	213	213	214	173	212	212
INTO T-1-E	°F	215	219	217	217	217	217	86	216	217
OUT OF T-1-E	°F	124		0.5	15	0.5	0.5			
GAS										
TO E-3-N	°F	1006	1005	1007	1006	999	1004	903	1009	1005
FROM E-3-N	°F	334	338	340	348	339	345	169	301	305
BRINE										
IC4 FROM P-1-E	M#/HR	144.9	147	146.3	146.3	146.5	147.1	050.0	144.6	144.6
IC4 TO T-1-E	M#/HR	108.9	109.8	110.6	110.5	110.2	110.6	84.3	110.1	111.6
IC4 TO T-1-E	M#/HR	116.3	116.5	116.6	116.5	116.3	116.5	0	119	118.9
IC4 TO E-3-N	M#/HR	15	262604	8.30	15	0.5	0.5	517.9	10.2	10.5
SEP FLOW	GALS	257382		267795	273123	278400	283546	285685	285832	286020
GAS TO GE-1-N	#/HR	015		507.8	326	526	526.1	507.8	516.1	504.7
V-1-E										
	INCHES	18	31	29	28	27	26	25.5	24	22.5
REMARKS										

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

January 18-21, 1990

	UNITS	INST.#	18-Jan	18-Jan	18-Jan	19-Jan	19-Jan	19-Jan	20-Jan	20-Jan	20-Jan	21-Jan	21-Jan	21-Jan
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
AMBIENT TEMP	°F		70	70	66	70	70	57	50	59	52	55	61	48
WET BULB TEMP	°F		69	68	66	68	69	57	49	52	48	47	50	45
POWER														
T-1-N GROSS	KW	J1-100	502	508	516	510	512	534	574	563	573	582	568	579
GE-1-N GROSS	KW		340	340	340	340	345	340	345	345	345	345	350	345
GE-2-N GROSS	KW		340	340	340	340	340	345	345	345	345	345	345	345
PARASITIC	KW	J1-101	248	257	258	257	247	260	252	260	252	262	261	264
NET SALE TO HL&P	KW		900	900	900	900	900	920	940	970	960	970	960	980
NET SALE TO HL&P	FDG		1250	1258	1266	1274	1282	1290	1298	1307	1315	1323	1332	1341
	KW-HR													
BRINE														
TO E-2-N	PSIG	PI-606	500	496	500	500	501	500	501	501	500	500	501	500
TO E-1-N	PSIG	PI-611	495	495	490	490	495	495	492	491	490	490	492	490
FROM E-1-N	PSIG	PI-106	488	487	490	485	488	486	486	488	487	487	487	485
ISOBUTANE														
IN V-1-E	PSIG	PG-130	61	60	60	60	60	54	49	52	49	49	50	48
OUT OF P-1-E	PSIG	PI-105	361	359	350	350	357	349	352	348	352	345	356	338
OUT OF E-1-N	PSIG	PI-602	295	300	300	300	300	300	299	300	300	302	305	300
OUT OF E-2-N	PSIG	PG-114	280	280	280	280	280	280	283	285	280	283	285	285
OUT OF E-3-N	PSIG	PI-615	300	300	300	300	295	300	300	301	300	300	300	300
INTO T-1-E	PSIG	PI-107	265	267	216	268	268	267	269	270	270	269	271	270
OUT OF T-1-E	PSIG	PI-108	63	63	61	62	63	55	52	54	51	51	53	50
TO OR 102	PSIG	PG-104	65	65	65	65	69	60	56	52	55	54	55	55
FROM OR 102	PSIG	PG-105	50	50	50	50	51	45	41	42	40	40	45	40
GAS														
TO E-3-N	PSIG	PI-614	0.8	0.8	.5-1.0	0.8	0.8	0.8	0.7	0.9	0.9	0.9	0.9	0.9
BRINE														
TO E-2-N	°F	TI-101	298	297	297	297	297	297	297	298	298	297	298	298
TO E-1-N	°F	TR-113	214.3	215	215	201	212	216	216	217	216	216	217	216
FROM E-1-N	°F	TR-102	152	148	152	152	150	147	147	149	147	147	151	146

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

January 18-21, 1990

	UNITS	INST.#	18-Jan	18-Jan	18-Jan	19-Jan	19-Jan	19-Jan	20-Jan	20-Jan	20-Jan	21-Jan	21-Jan	21-Jan
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
ISOBUTANE														
IN V-1-E	°F	TI-104	96.9	97.0	95.8	96.6	97.5	88.7	85.4	88.2	85.0	86.3	87.9	84.1
OUT OF P-1-E	°F	TI-105	98.6	98.8	97.7	98.6	99.4	90.8	87.6	89.7	86.9	86.3	89.3	85.9
OUT OF E-1-N	°F	TR-112	209	209	210	210	210	206		214	210	210	211	211
OUT OF E-2-N	°F	TI-111	220	219	219	220	221	219	221	222	220	222	222	219
OUT OF E-3-N	°F	TI-603	211	212	212	212	212	214	213	214	215	214	214	215
INTO T-1-E	°F	TI-107	215	216	216	217	217	216	217	217	216	217	217	215
OUT OF T-1-E	°F	TI-108	15	125	0.5	0.5	0.5	0.5	125	0.5	0.5	0.5	0.5	0.5
GAS														
TO E-3-N	°F	TI-601	1010	999	1001	1003	1010	1014	1008	1013	1017	1015	1015	1015
FROM E-3-N	°F	TI-602	308	308	312	314	321	324	326	331	336	334	340	340
BRINE	M#/HR	FI-100	143.9	147.9	147.6	147.5	148	148.2	151.7	150.4	148.3	151.8	148.7	148.8
IC4 FROM P-1-E	M#/HR	FI-102	109.9	111.6	112.2	112.2	111.9	112.4	112.1	112.5	113	111.5	112.1	113.5
IC4 TO T-1-E	M#/HR	FI-101	118.8	119.3	119.4	119.4	119.4	119.5	119.6	119.5	119.3	119.4	119.7	119.4
IC4 TO E-3-N	M#/HR	FR-627	15	10.4	10.4	10.3	10.3	10.16	010.3	10.2	10.2	010.2	010.5	10.4
SEP FLOW	GALS	FQI-633	286230.0	286399	286502	286686	286874	297080	287253	287392	287581	287956	287956	288123
GAS TO GE-1-N	#/HR	FR-607	518	526.08	505.7	511.9	521.6	505.7	502.6	506.8	503.7	503.4	498.6	502.7
V-1-E	INCHES	LG-105	21.5	20.5	18	18	25 1/4	24.5	23 1/4	21.0	19	23	22	20

REMARKS

January 22-24, 1990

[illegible]

January 22-24, 1990

	UNITS	22-Jan	22-Jan	22-Jan	23-Jan	23-Jan	23-Jan	24-Jan	24-Jan	24-Jan
		900	1700	100	900	1700	100	900	1700	100
ISOBUTANE										
IN V-1-E	°F	84.9	64.5	59.7	59.6	63.5	64.4	66.6	68.8	65.3
OUT OF P-1-E	°F	87.2	75.8	55	58.2	64.6	63.7	68.2	69.6	59.4
OUT OF E-1-N	°F		0.5	0.5	15	0.5	0.5	15	15	0.5
OUT OF E-2-N	°F	221	116	91	84	80	78	77	78	70
OUT OF E-3-N	°F	214	102	100	104	110	110	110	110	88
INTO T-1-E	°F	216	70	65	68	71	70	73	73	60
OUT OF T-1-E	°F				15	0.5	0.5	15	15	0.5
GAS										
TO E-3-N	°F	1014	745	795	795	795	800	795	791	698
FROM E-3-N	°F	343	212	285	288	286	285	281	269	202
BRINE	M#/HR	148	0.3	0.4	0.4	0.3	0.3	000.3	0.3	0.3
IC4 FROM P-1-E	M#/HR	112.4	-0.1	0.1	0	0	0	0	26.9	0.1
IC4 TO T-1-E	M#/HR	119.2	2.5	2.4	2.4	2.5	2.4	2.4	2.4	2.4
IC4 TO E-3-N	M#/HR		0.5	0.00	15	15	0.5	15	15	0.5
SEP FLOW	GALS	288333	288430	288405	288405	288406	288406	288406	288406	288406
GAS TO GE-1-N	#/HR	507	509.6	509.6	517.8	509.6	509.6	517.8	509.6	493.2
V-1-E	INCHES	18	32 3/4	33	36	38	36.5	39.5	39.5	33

REMARKS

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

January 25-28, 1990

	UNITS	INST.#	25-Jan	25-Jan	25-Jan	26-Jan	26-Jan	26-Jan	27-Jan	27-Jan	27-Jan	28-Jan	28-Jan	28-Jan
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
AMBIENT TEMP	°F		48	59	41	56	61	58	64	67	64	64	65	47
WET BULB TEMP	°F		42	45	37	50	52	55	60	62	62	63	66	49
POWER														
T-1-N GROSS	KW	JI-100	2	1	1	1	1	1	1	0	0	0	1	1
GE-1-N GROSS	KW		340	345	350	350	345	350	350	350	350	350	345	350
GE-2-N GROSS	KW		350	345	350	350	345	350	350	350	350	350	345	350
PARASITIC	KW	JI-101	7	11	17	6	6	17	6	23	16	16	16	6
NET SALE TO HL&P	KW		620	635	620	640	640	640	640	640	640	640	615	20
NET SALE TO HL&P	FDG		1397	1403	1408	1414	1419	1425	1430	1436	1441	1447	1452	1458
	KW-HR													
BRINE														
TO E-2-N	PSIG	PI-606	505	510	510	510	511	510	510	515	510	510	511	510
TO E-1-N	PSIG	PI-611	515	322	520	520	521	520	520	520	520	520	521	520
FROM E-1-N	PSIG	PI-106	517	512	515	517	514	516	520	520	520	520	516	516
ISOBUTANE														
IN V-1-E	PSIG	PG-130	24	26	21	20	29	25	26	36	32	30	30	22
OUT OF P-1-E	PSIG	PI-105	25	24	16	16	26	4	25	32	27	27	30	14
OUT OF E-1-N	PSIG	PI-602	20	28	20	20	31	28	30	30	30	30	30	20
OUT OF E-2-N	PSIG	PG-114	20	28	20	20	30	28	30	0	28	30	28	20
OUT OF E-3-N	PSIG	PI-615	35	38	40	35	32	35	35	35	35	35	35	35
INTO T-1-E	PSIG	PI-107	-25	5	-95	-95	-95	-95	-95	-95	-95	-95	-95	-95
OUT OF T-1-E	PSIG	PI-108	-12	5	-49	-49	-49	-49	-49	-49	-49	-49	-49	-49
TO OR 102	PSIG	PG-104	25	29	28	25	30	30	30	40	35	35	34	25
FROM OR 102	PSIG	PG-105	15	18	12	0	11	20	20	30	25	25	22	15
GAS														
TO E-3-N	PSIG	PI-614	0.5	0.55	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.4	0.5
BRINE														
TO E-2-N	°F	TI-101	128	129	130	129	128	126	125	125	119	116	113	101
TO E-1-N	°F	TR-113	015		0.5	015		015	0.5	0.5	015	0.5		015
FROM E-1-N	°F	TR-102	015		0.5	015		015	0.5	0.5	015	0.5		015

January 25-28, 1990

	UNITS	INST.#	25-Jan	25-Jan	25-Jan	26-Jan	26-Jan	26-Jan	27-Jan	27-Jan	27-Jan	28-Jan	28-Jan	28-Jan
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
ISOBUTANE														
IN V-1-E	°F	TI-104	54.9	58.4	51.7	48.2	55.2	56.2	58.1	63.0	64.5	65.0	65.9	54.2
OUT OF P-1-E	°F	TI-105	48.7	55.4	44.7	46.7	72.9	55	60.9	69.5	62.9	62.9	62.5	48.3
OUT OF E-1-N	°F	TR-112	015		5	015		015	0.5	0.5	015	0.5		015
OUT OF E-2-N	°F	TI-111	60	66	58	55	76	67	69	76	71	69	71	59
OUT OF E-3-N	°F	TI-603	67	75	85	91	101	94	100	102	86	86	87	64
INTO T-1-E	°F	TI-107	51	66	44	60	70	69	68	74	71	71	63	-30
OUT OF T-1-E	°F	TI-108	015		5	015		-53	-53	-52	-54	-54	-54	-54
GAS														
TO E-3-N	°F	TI-601	732	742	800	804	753	792	794	748	727	736	780	716
FROM E-3-N	°F	TI-602	171	172	263	284	235	260	269	209	185	185	190	155
BRINE	M#/HR	FI-100	0.4		5	15	0	0	0	0	0	0	0	-11
IC4 FROM P-1-E	M#/HR	FI-102	0.1	.0	000.2	.1	0	0	49.1	0	0	0	.1	.2
IC4 TO T-1-E	M#/HR	FI-101	2.2		-.1	-.2	0.1	2	0.1	.2	.2	0.2	.3	.2
IC4 TO E-3-N	M#/HR	FR-627	015		5	15.0			0.5	0.5	015	015	010.5	015
SEP FLOW	GALS	FQI-633	288406	288406	288406	288406	288406	288406	288406	288406	288406	288409	287956	290296
GAS TO GE-1-N	#/HR	FR-607	501.4	501.4	509.6	509.6	501.4	509.6	509.6	509.6	509.6	509.6	498.6	509.6
V-1-E	INCHES	LG-105	32	37	32 1/4	35	37	36.5	37	39.0	34	35	22	35.5

REMARKS

January 29-31, 1990

	INST.#	29-Jan	29-Jan	29-Jan	30-Jan	30-Jan	30-Jan	31-Jan	31-Jan	31-Jan
		900	1700	100	900	1700	100	900	1700	100
AMBIENT TEMP		47	59	49	63	67	54	65	68	66
WET BULB TEMP		43	51	47	59	59	53	62	66	65
POWER										
T-1-N GROSS	JI-100	1	1	1	1	1	1	1	1	1
GE-1-N GROSS		350	345	345	340	348	345	340	345	345
GE-2-N GROSS		350	35	345	340	345	345	340	340	340
PARASITIC	JI-101	6	169	159	169	182	182	181	188	187
NET SALE TO HL&P		620	520	500	50	500	500	500	490	480
NET SALE TO HL&P		1463	1468	1472	1476	1481	1485	1490	1494	1499
BRINE										
TO E-2-N	PI-606	510	501	500	500	502	500	500	500	500
TO E-1-N	PI-611	520	502	510	505	501	505	505	500	510
FROM E-1-N	PI-106	520	493	497	494	491	494	495	495	495
ISOBUTANE										
IN V-1-E	PG-130	20	59	58	62	61	58	62	61	60
OUT OF P-1-E	PI-105	15	372	352	364	379	375	379	370	372
OUT OF E-1-N	PI-602	25	279	280	285	274	278	275	270	270
OUT OF E-2-N	PG-114	25	269	270	275	266	265	260	260	260
OUT OF E-3-N	PI-615	35	299	295	295	292	285	290	285	285
INTO T-1-E	PI-107	-30	-95	-95	015	-95	-95	015	15	-95
OUT OF T-1-E	PI-108	-53	-49	-49	015	-49	-49	015	15	-49
TO OR 102	PG-104	15	342	340	340	351	350	350	350	350
FROM OR 102	PG-105	0	140	140	140	139	140	140	140	140
GAS										
TO E-3-N	PI-614	0.4	0.8	1	0.8	0.8	0.7	0.8	0.9	1
BRINE										
TO E-2-N	TI-101	269	297	297	297	297	297	297	297	297
TO E-1-N	TR-113	0.5		0.15	015		0.15	015	0.5	015
FROM E-1-N	TR-102	0.5		0.15	015		0.15	015	0.5	015

January 29-31, 1990

	UNITS	29-Jan	29-Jan	29-Jan	30-Jan	30-Jan	30-Jan	31-Jan	31-Jan	31-Jan
		900	1700	100	900	1700	100	900	1700	100
ISOBUTANE										
IN V-1-E	°F	46.2	94.5	92.8	94.5	95.3	94.8	96.4	95.8	95.6
OUT OF P-1-E	°F	44.8	96.8	96	96.9	97.8	96.7	98.7	97.1	97.4
OUT OF E-1-N	°F	0.5		015	015		0.15	015	0.5	015
OUT OF E-2-N	°F	56	217	216	218	216	213	215	213	215
OUT OF E-3-N	°F	68	207	208	208	207	206	206	205	205
INTO T-1-E	°F	-30		-29	531	531	533	015	0.5	-29
OUT OF T-1-E	°F	-53		-54	015	-52	-53	015	0.5	-54
GAS										
TO E-3-N	°F	776	1010	1019	1021	1013	1015	1013	1003	1004
FROM E-3-N	°F	200	300	310	313	309	314	312	311	312
BRINE										
IC4 FROM P-1-E	M#/HR	0	85.2	85.3	85.3	85.4	85.5	085.1	85.3	85.3
IC4 TO T-1-E	M#/HR	0.1	107.7	109.5	109.3	116.1	111.0	109.9	109.4	109.2
IC4 TO E-3-N	M#/HR	0.2	0.1	0.1	0	0.2	0.2	0.3	0.3	0.2
SEP FLOW	M#/HR	015		015	015		015	015	0.5	015
	GALS	290296	290296	0	0	0	0	0	0	0
GAS TO GE-1-N	#/HR	510	501.4	509.6	509.6	534.3	534.3	517.8	534.3	534.3
V-1-E	INCHES	42	50 3/4	4.5	45	41 1/2	42.5	41	42 1/4	41
REMARKS										

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

February 1-7, 1990

	UNITS	INST.#	1-Feb	1-Feb	1-Feb	2-Feb	2-Feb	2-Feb	3-Feb	6-Feb	6-Feb	7-Feb	7-Feb	7-Feb
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
AMBIENT TEMP	°F		68	70	60	68	70	68	70	64	57	61	64	62
WET BULB TEMP	°F		67	63	59	68	69	68	70	63	57	97	61	62
POWER														
T-1-N GROSS	KW	JI-100	1	1	1	1	1	1	1	1	1	1	1	1
GE-1-N GROSS	KW		340	340	340	340	340	340	335	340	340	340	345	340
GE-2-N GROSS	KW		345	340	340	340	340	340	335	340	340	340	345	340
PARASITIC	KW	JI-101	188	177	178	177	180	176	187	171	173	171	17	180
NET SALE TO HL&P	KW		520	500	480	500	490	490	495	510	500	500	510	500
NET SALE TO HL&P	PDG		1503	1507	1511	1516	1520	1526	1528	1532	1535	1540	1544	1548
	KW-HR													
BRINE														
TO E-2-N	PSIG	PI-606	500	500	500	500	505	500	504	500	500	500	505	500
TO E-1-N	PSIG	PI-611	505	500	510	505	505	510	518	500	500	505	505	500
FROM E-1-N	PSIG	PI-106	495	495	495	494	496	500	497	494	510	495	496	500
ISOBUTANE														
IN V-1-E	PSIG	PG-130	61	59	58	62	64	58	61	60	58	60	61	60
OUT OF P-1-E	PSIG	PI-105	371	366	361	362	430	437	439	429	414	360	358	365
OUT OF E-1-N	PSIG	PI-602	275	275	275	275	270	270	277	270	280	305	305	305
OUT OF E-2-N	PSIG	PG-114	265	260	260	262	260	260	266	270	265	270	267	265
OUT OF E-3-N	PSIG	PI-615	285	285	285	275	265	265	270	270	275	275	271	270
INTO T-1-E	PSIG	PI-107	---	---	---	---	---	---	---	---	---	---	---	---
OUT OF T-1-E	PSIG	PI-108	---	---	---	---	---	---	---	---	---	---	---	---
TO OR 102	PSIG	PG-104	350	340	340	350	60	60	60	60	60	330	332	330
FROM OR 102	PSIG	PG-105	140	150	150	150	60	60	60	60	55	140	145	145
GAS														
TO E-3-N	PSIG	PI-614	0.9	0.9	0.9	0.6	0.9	1.0	0.9	0.9	1.0	1.0	1.0	1.0
BRINE														
TO E-2-N	°F	TI-101	297	297	298	129	297	297	298	298	298	297	297	297
TO E-1-N	°F	TR-113	---	---	---	---	---	---	---	---	---	---	---	---
FROM E-1-N	°F	TR-102	---	---	---	---	---	---	---	---	---	---	---	---

February 1-7, 1990

REMARKS

February 1-7 1990

	INST.#	29-Jan	29-Jan	29-Jan	30-Jan	30-Jan	30-Jan	31-Jan	31-Jan	31-Jan
		900	1700	100	900	1700	100	900	1700	100
AMBIENT TEMP		47	59	49	63	67	54	65	68	66
WET BULB TEMP		43	51	47	59	59	53	62	66	65
POWER										
T-1-N GROSS	J1-100	1	1	1	1	1	1	1	1	1
GE-1-N GROSS		350	345	345	340	348	345	340	345	345
GE-2-N GROSS		350	35	345	340	345	345	340	340	340
PARASITIC	J1-101	6	169	159	169	182	182	181	188	187
NET SALE TO HL&P		620	520	500	50	500	500	500	490	480
NET SALE TO HL&P		1463	1468	1472	1476	1481	1485	1490	1494	1499
BRINE										
TO E-2-N	PI-606	510	501	500	500	502	500	500	500	500
TO E-1-N	PI-611	520	502	510	505	501	505	505	500	510
FROM E-1-N	PI-106	520	493	497	494	491	494	495	495	495
ISOBUTANE										
IN V-1-E	PG-130	20	59	58	62	61	58	62	61	60
OUT OF P-1-E	PI-105	15	372	352	364	379	375	379	370	372
OUT OF E-1-N	PI-602	25	279	280	285	274	278	275	270	270
OUT OF E-2-N	PG-114	25	269	270	275	266	265	260	260	260
OUT OF E-3-N	PI-615	35	299	295	295	292	285	290	285	285
INTO T-1-E	PI-107	-30	-95	-95	015	-95	-95	015	15	-95
OUT OF T-1-E	PI-108	-53	-49	-49	015	-49	-49	015	15	-49
TO OR 102	PG-104	15	342	340	340	351	350	350	350	350
FROM OR 102	PG-105	0	140	140	140	139	140	140	140	140
GAS										
TO E-3-N	PI-614	0.4	0.8	1	0.8	0.8	0.7	0.8	0.9	1
BRINE										
TO E-2-N	TI-101	269	297	297	297	297	297	297	297	297
TO E-1-N	TR-113	0.5		0.15	015		0.15	015	0.5	015
FROM E-1-N	TR-102	0.5		0.15	015		0.15	015	0.5	015

February 1-,7 1990

	UNITS	29-Jan	29-Jan	29-Jan	30-Jan	30-Jan	30-Jan	31-Jan	31-Jan	31-Jan
		900	1700	100	900	1700	100	900	1700	100
ISOBUTANE										
IN V-1-E	°F	46.2	94.5	92.8	94.5	95.3	94.8	96.4	95.8	95.6
OUT OF P-1-E	°F	44.8	96.8	96	96.9	97.8	96.7	98.7	97.1	97.4
OUT OF E-1-N	°F	0.5		015	015		0.15	015	0.5	015
OUT OF E-2-N	°F	56	217	216	218	216	213	215	213	215
OUT OF E-3-N	°F	68	207	208	208	207	206	206	205	205
INTO T-1-E	°F	-30		-29	531	531	533	015	0.5	-29
OUT OF T-1-E	°F	-53		-54	015	-52	-53	015	0.5	-54
GAS										
TO E-3-N	°F	776	1010	1019	1021	1013	1015	1013	1003	1004
FROM E-3-N	°F	200	300	310	313	309	314	312	311	312
BRINE	M#/HR	0	85.2	85.3	85.3	85.4	85.5	085.1	85.3	85.3
IC4 FROM P-1-E	M#/HR	0.1	107.7	109.5	109.3	116.1	111.0	109.9	109.4	109.2
IC4 TO T-1-E	M#/HR	0.2	0.1	0.1	0	0.2	0.2	0.3	0.3	0.2
IC4 TO E-3-N	M#/HR	015		015	015		015	015	0.5	015
SEP FLOW	GALS	290296	290296	0	0	0	0	0	0	0
GAS TO GE-1-N	#/HR	510	501.4	509.6	509.6	534.3	534.3	517.8	534.3	534.3
V-1-E	INCHES	42	50 3/4	4.5	45	41 1/2	42.5	41	42 1/4	41

REMARKS

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

February 8-11, 1990

	UNITS	INST.#	8-Feb	8-Feb	8-Feb	9-Feb	9-Feb	9-Feb	10-Feb	10-Feb	10-Feb	11-Feb	11-Feb	11-Feb
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
AMBIENT TEMP	°F		67	68	67	72	70	58	58	62	49	58	73	52
WET BULB TEMP	°F		67	68	67	70	69	54	54	55	49	55	59	52
POWER														
T-1-N GROSS	KW	J1-100	1	2	0	0	1	1	1	1	1	1	1	1
GE-1-N GROSS	KW		340	340	340	340	340	340	350	340	340	350	340	350
GE-2-N GROSS	KW		340	340	340	340	340	340	350	350	340	350	340	350
PARASITIC	KW	J1-101	180	193	193	187	187	189	183	181	173	182	181	182
NET SALE TO HL&P	KW		500	485	480	480	485	500	520	510	480	520	510	500
NET SALE TO HL&P	PDG		1553	1556	1561	1566	1570	1574	1579	1583	1587	1592	1596	1601
	KW-HR													
BRINE														
TO E-2-N	PSIG	PI-606	500	500	510	505	500	500	510	500	500	500	500	505
TO E-1-N	PSIG	PI-611	505	500	510	510	500	500	520	500	510	510	500	510
FROM E-1-N	PSIG	PI-106	495	497	500	490	492	500	495	495	500	491	490	500
ISOBUTANE														
IN V-1-E	PSIG	PG-130	62	59	60	60	62	56	54	58	56	56	59	58
OUT OF P-1-E	PSIG	PI-105	368	365	364	370	365	349	350	336	349	357	366	365
OUT OF E-1-N	PSIG	PI-602	305	305	305	305	305	300	305	305	300	310	310	300
OUT OF E-2-N	PSIG	PG-114	265	270	265	265	265	260	265	270	265	270	270	260
OUT OF E-3-N	PSIG	PI-615	275	275	275	275	270	270	275	275	270	270	275	270
INTO T-1-E	PSIG	PI-107	---	---	---	-095	---	---	---	---	---	---	---	---
OUT OF T-1-E	PSIG	PI-108	---	---	---	-048	---	---	---	---	---	---	---	---
TO OR 102	PSIG	PG-104	330	330	330	340	335	330	330	330	330	330	340	330
FROM OR 102	PSIG	PG-105	145	150	140	140	145	140	140	140	145	140	150	140
GAS														
TO E-3-N	PSIG	PI-614	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
BRINE			297											
TO E-2-N	°F	TI-101	297	297	297	297	297	297	297	298	298	298	297	298
TO E-1-N	°F	TR-113	---	---	---	---	---	---	---	---	---	---	---	---
FROM E-1-N	°F	TR-102	---	---	---	---	---	---	---	---	---	---	---	---

February 8-11, 1990

[illegible]

REMARKS

February 12-14 1990

	INST.#	12-Feb	12-Feb	12-Feb	13-Feb	13-Feb	13-Feb	14-Feb	14-Feb	14-Feb
		900	1700	100	900	1700	100	900	1700	100
AMBIENT TEMP		64	66	58	71	68	64	70	71	68
WET BULB TEMP		61	60	56	66	65	64	68	69	67
POWER										
T-1-N GROSS	JI-100	1	1	1	0	1	1	1	1	1
GE-1-N GROSS		340	340	340	340	340	340	340	335	340
GE-2-N GROSS		340	340	340	340	340	340	340	335	340
PARASITIC	JI-101	172	202	202	200	206	187	186	205	205
NET SALE TO HL&P		500	480	480	480	470	480	500	480	460
NET SALE TO HL&P		1605	1609	1613	1618	1622	1626	1630	1635	1639
BRINE										
TO E-2-N	PI-606	505	500	500	505	500	500	505	501	500
TO E-1-N	PI-611	510	505	510	505	500	505	505	502	510
FROM E-1-N	PI-106	497	493	500	494	491	500	496	493	500
ISOBUTANE										
IN V-1-E	PG-130	59	64	62	65	58	60	59	59	58
OUT OF P-1-E	PI-105	348	364	361	372	363	360	357	369	365
OUT OF E-1-N	PI-602	310	305	300	300	305	305	305	280	280
OUT OF E-2-N	PG-114	270	265	260	265	265	265	265	265	270
OUT OF E-3-N	PI-615	275	275	275	270	275	275	270	272	275
INTO T-1-E	PI-107	---	---	---	---	---	---	---	---	---
OUT OF T-1-E	PI-108	---	---	---	---	---	---	---	---	---
TO OR 102	PG-104	330	330	340	335	330	330	340	332	330
FROM OR 102	PG-105	140	150	150	145	145	140	145	142	140
GAS										
TO E-3-N	PI-614	1.0	1.0	1.0	1.2	1.2	1.2	1.2	1.4	1.2
BRINE										
TO E-2-N	TI-101	298	297	297	297	297	297	297	298	298
TO E-1-N	TR-113	---	---	---	---	207	207	207	210	207
FROM E-1-N	TR-102	---	---	---	---	145	144	144	144	144

February 12-14, 1990

	UNITS	12-Feb	12-Feb	12-Feb	13-Feb	13-Feb	13-Feb	14-Feb	14-Feb	14-Feb
		900	1700	100	900	1700	100	900	1700	100
ISOBUTANE										
IN V-1-E	°F	94.0	99.2	97.0	100.0	91.3	95.0	95.3	94.2	93.6
OUT OF P-1-E	°F	96.5	101.5	99.1	102.5	91.0	96.8	97.1	96.1	95.4
OUT OF E-1-N	°F	- - -	- - -	- - -	- - -	199	199	199	199	199
OUT OF E-2-N	°F	214	215	216	219	214	213	213	215	214
OUT OF E-3-N	°F	207	206	206	205	206	206	206	207	206
INTO T-1-E	°F	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
OUT OF T-1-E	°F	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
GAS										
TO E-3-N	°F	1018	1005	1013	1012	1009	1013	1012	1008	1012
FROM E-3-N	°F	328	322	328	330	327	332	329	329	335
BRINE										
IC4 FROM P-1-E	M#/HR	86.6	86.8	86.9	86.7	86.9	87.1	86.9	87	87.1
IC4 TO T-1-E	M#/HR	113.6	111.9	111.9	109.3	110.4	113.6	110.3	110	113.2
IC4 TO E-3-N	M#/HR	.3	.9	.4	.4	.4	.4	.3	.4	.3
SEP FLOW	M#/HR	- - -	- - -	- - -	- - -	6.9	7.6	5.3	9.3	10.2
SEP FLOW	GALS	0	0	0	0	0	0	0	- - -	0
GAS TO GE-1-N	#/HR	550.7	542.5	542.5	534.3	545.4	539.8	544.9	539.8	545.9
V-1-E										
	INCHES	37	35	35	35	39	38	38.5	37	37

REMARKS

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

February 15-18, 1990

	UNITS	INST.#	15-Feb	15-Feb	15-Feb	16-Feb	16-Feb	16-Feb	17-Feb	17-Feb	17-Feb	18-Feb	18-Feb	18-Feb
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
AMBIENT TEMP	°F		69	76	70	57	63	54	51	54	52	51	53	54
WET BULB TEMP	°F		68	72	69	47	51	47	45	46	46	49	53	53
POWER														
T-1-N GROSS	KW	JI-100	1	1	1	0	1	1	1	1	1	1	1	1
GE-1-N GROSS	KW		340	330	335	350	350	350	350	350	350	350	350	350
GE-2-N GROSS	KW		340	330	330	350	350	350	350	350	350	350	350	350
PARASITIC	KW	JI-101	194	194	204	168	168	158	168	171	181	181	158	168
NET SALE TO HL&P	KW		470	470	460	510	530	500	515	510	470	490	520	500
NET SALE TO HL&P	FDG		1643	1647	1651	1656	1660	1664	1669	1673	1678	1682	1687	1691
	KW-HR													
BRINE														
TO E-2-N	PSIG	PI-606	505	505	505	502	520	510	504	505	500	502	500	500
TO E-1-N	PSIG	PI-611	505	510	505	508	520	510	508	510	500	503	505	510
FROM E-1-N	PSIG	PI-106	496	493	494	496	493	494	496	493	492	496	498	495
ISOBUTANE														
IN V-1-E	PSIG	PG-130	58	60	59	58	60	59	57	56	56	55	62	62
OUT OF P-1-E	PSIG	PI-105	362	358	354	342	342	354	349	346	352	354	357	358
OUT OF E-1-N	PSIG	PI-602	280	285	285	278	280	230	274	285	280	280	280	285
OUT OF E-2-N	PSIG	PG-114	260	270	265	265	270	365	261	270	265	266	268	270
OUT OF E-3-N	PSIG	PI-615	270	275	270	271	280	280	269	285	275	273	275	280
INTO T-1-E	PSIG	PI-107	- - -	-95	- - -	- - -	-95	- - -	- - -	-95	- - -	-95	-95	- - -
OUT OF T-1-E	PSIG	PI-108	- - -	-49	- - -	- - -	-49	- - -	- - -	49	- - -	-49	-49	- - -
TO OR 102	PSIG	PG-104	335	335	330	332	330	330	334	325	330	328	330	330
FROM OR 102	PSIG	PG-105	145	145	145	148	150	150	148	140	140	141	140	140
GAS														
TO E-3-N	PSIG	PI-614	1.2	1.2	1.2	1.5	1.5	1.5	1.5	1.6	1.3	1.6	1.6	1.6
BRINE														
TO E-2-N	°F	TI-101	297	297	297	297	298	298	297	297	298	297	297	298
TO E-1-N	°F	TR-113	207	208	206	207	208	206	206	206	206	206	206	211
FROM E-1-N	°F	TR-102	144	145	140	144	147	- - -	143	143	- - -	113	143	147

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

February 15-18, 1990

	UNITS	INST.#	15-Feb	15-Feb	15-Feb	16-Feb	16-Feb	16-Feb	17-Feb	17-Feb	17-Feb	18-Feb	18-Feb	18-Feb
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
ISOBUTANE														
IN V-1-E	°F	TI-104	93.9	95.5	94.4	92.4	96.2	94.2	93.4	89.9	90.0	90.6	96.8	97.1
OUT OF P-1-E	°F	TI-105	95.7	97.5	96.2	95.2	98.8	6.9	95.4	91.9	91.7	92.4	99.2	99.7
OUT OF E-1-N	°F	TR-112	199	200	197	199	198	- - -	196	201	- - -	186	201	201
OUT OF E-2-N	°F	TI-111	215	215	214	212	214	212	212	215	216	216	215	216
OUT OF E-3-N	°F	TI-603	206	206	206	206	206	206	207	208	206	207	208	208
INTO T-1-E	°F	TI-107	- - -	531	- - -	- - -	529	- - -	- - -	526	- - -	-30	-30	- - -
OUT OF T-1-E	°F	TI-108	- - -	-52	- - -	- - -	-53	- - -	- - -	-056	- - -	-54	-54	- - -
GAS														
TO E-3-N	°F	TI-601	1009	1010	1007	1012	1019	1021	1013	1017	1016	1015	1013	1023
FROM E-3-N	°F	TI-602	332	336	337	338	344	344	339	343	344	343	345	350
BRINE														
IC4 FROM P-1-E	M#/HR	FI-100	86.8	87.4	87.2	86.8	86.7	87.0	86.8	90.5	90.3	90.9	90.6	90.5
IC4 FROM P-1-E	M#/HR	FI-102	110.3	112.6	112.8	110.2	112.1	113	110.9	112.4	11.3	111.6	11.2	114.1
IC4 TO T-1-E	M#/HR	FI-101	.7	.4	.4	.5	.3	.4	0.4	.3	.4	.3	.3	.4
IC4 TO E-3-N	M#/HR	FR-627	9.9	10.3	8.7	9.6	10.6	9.8	9.6	10.4	10.2	10.4	10.4	9.6
SEP FLOW	GALS	FQI-633	0	0	0	- - -	- - -	- - -	0	0	- - -	- - -	- - -	- - -
GAS TO GE-1-N	#/HR	FR-607	531.5	495.5	496.5	508.9	529.5	329.6	494.4	494.4	494.4	484.1	494.4	494.4
V-1-E	INCHES	LG-105	37	37	37	37	37	37	36	36	36	36	36	36

REMARKS

February 19-21, 1990

	INST.#	19-Feb	19-Feb	19-Feb	20-Feb	20-Feb	20-Feb	21-Feb	21-Feb	21-Feb
		900	1700	100	900	1700	100	900	1700	100
AMBIENT TEMP		56	62	53	54	59	60	64	54	50
WET BULB TEMP		54	57	50	54	55	50	64	53	49
POWER										
T-1-N GROSS	JI-100	1	1	430	431	539	523	514	547	564
GE-1-N GROSS		350	350	350	350	350	350	350	350	30
GE-2-N GROSS		350	350	350	350	350	350	340	350	350
PARASITIC	JI-101	168	180	237	238	242	253	251	263	245
NET SALE TO HL&P		500	520	840	820	950	930	920	950	980
NET SALE TO HL&P		1696	1700	1707	1714	1722	1730	1739	1747	1755
BRINE										
TO E-2-N	PI-606	500	500	500	505	490	490	500	500	505
TO E-1-N	PI-611	505	505	500	505	490	490	490	495	495
FROM E-1-N	PI-106	496	494	485	496	484	482	480	485	484
ISOBUTANE										
IN V-1-E	PG-130	61	59	45	44	51	55	58	51	50
OUT OF P-1-E	PI-105	361	358	410	413	356	361	361	355	347
OUT OF E-1-N	PI-602	285	290	285	285	310	310	310	315	315
OUT OF E-2-N	PG-114	270	275	265	270	280	280	280	280	280
OUT OF E-3-N	PI-615	275	285	275	275	305	290	285	285	290
INTO T-1-E	PI-107	---	---	---	262	267	265	265	266	268
OUT OF T-1-E	PI-108	---	---	---	---	56	58	60	55	52
TO OR 102	PG-104	330	330	40	40	50	50	55	50	50
FROM OR 102	PG-105	145	145	40	40	50	50	55	50	50
GAS										
TO E-3-N	PI-614	1.6	1.4	1.4	1.4	1.5	1.4	1.4	1.4	1.4
BRINE										
TO E-2-N	TI-101	298	298	297	297	297	297	297	297	298
TO E-1-N	TR-113	211	211	211	211	216	216	216	215	215
FROM E-1-N	TR-102	147	147	---	142	147	147	147	145	143

February 19-21, 1990

[illegible]

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

February 22-25, 1990

	UNITS	INST.#	22-Feb	22-Feb	22-Feb	23-Feb	23-Feb	23-Feb	24-Feb	24-Feb	24-Feb	25-Feb	25-Feb	25-Feb
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
AMBIENT TEMP	°F		59	67	48	51	67	49	60	75	53	58	69	61
WET BULB TEMP	°F		56	54	45	44	66	44	54	58	49	54	56	59
POWER														
T-1-N GROSS	KW	JI-100	542	537	579	0	0	1	1	0	1	0	0	0
GE-1-N GROSS	KW		350	350	350	0	345	350	350	345	350	350	340	350
GE-2-N GROSS	KW		340	345	350	335	345	350	350	345	350	350	340	350
PARASITIC	KW	JI-101	254	253	257	178	157	157	156	183	171	170	170	170
NET SALE TO HL&P	KW		950	945	950	200	525	520	540	505	520	520	515	520
NET SALE TO HL&P	FDG		1762	1769	1778	1784	1786	1790	1795	1799	1803	1808	1812	1818
	KW-HR													
BRINE														
TO E-2-N	PSIG	PI-606	500	507	500	505	508	505	510	506	500	500	505	500
TO E-1-N	PSIG	PI-611	490	497	500	515	511	515	510	509	510	510	505	505
FROM E-1-N	PSIG	PI-106	486	485	486	506	494	497	505	496	494	500	494	497
ISOBUTANE														
IN V-1-E	PSIG	PG-130	52	52	46	54	61	58	62	57	54	56	57	59
OUT OF P-1-E	PSIG	PI-105	351	354	340	399	352	355	354	355	356	356	368	366
OUT OF E-1-N	PSIG	PI-602	310	308	310	155	270	285	280	283	282	280	279	280
OUT OF E-2-N	PSIG	PG-114	280	276	280	150	259	270	270	272	270	270	267	270
OUT OF E-3-N	PSIG	PI-615	285	283	285	155	266	280	275	277	282	280	272	275
INTO T-1-E	PSIG	PI-107	267	265	265	45	2	0	3	4	0	2	2	1
OUT OF T-1-E	PSIG	PI-108	55	55	47	47	11	11	14	12	11	14	11	11
TO OR 102	PSIG	PG-104	50	50	50	380	338	330	335	330	330	330	332	330
FROM OR 102	PSIG	PG-105	50	50	50	160	148	150	150	141	145	140	142	145
GAS														
TO E-3-N	PSIG	PI-614	1.4	1.4	1.4	1.1	1.4	1.5	1.4	.5	.4	.6	.4	.4
BRINE														
TO E-2-N	°F	TI-101	298	297	298	297	297	296	297	298	298	298	297	297
TO E-1-N	°F	TR-113	215	214	214	154	013	211	209	210	209	209	208	209
FROM E-1-N	°F	TR-102	142	145	140	116	193	146	148	143	142	142	145	146

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

February 22-25, 1990

	UNITS	INST.#	22-Feb	22-Feb	22-Feb	23-Feb	23-Feb	23-Feb	24-Feb	24-Feb	24-Feb	25-Feb	25-Feb	25-Feb
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
ISOBUTANE														
IN V-1-E	°F	TI-104	88.0	88.3	80.5	88.1	94.7	94.5	99.5	92.1	91.9	92.6	93.4	95.6
OUT OF P-1-E	°F	TI-105	89.8	90.3	81.8	89.2	97.2	96.5	97.5	93.5	93.4	94.4	94.8	97.1
OUT OF E-1-N	°F	TR-112	210	209	209	149	194	202	201	201	199	198	200	199
OUT OF E-2-N	°F	TI-111	220	220	216	171	216	216	219	219	216	218	219	216
OUT OF E-3-N	°F	TI-603	210	211	211	104	204	208	206	207	208	206	207	208
INTO T-1-E	°F	TI-107	220	219	218	095	70	053	65	80	62	68	074	67
OUT OF T-1-E	°F	TI-108	132	131	124	132	70	053	65	81	62	67	076	68
GAS														
TO E-3-N	°F	TI-601	1017	992	1017	732	1011	1023	1020	1009	1019	1016	1007	1013
FROM E-3-N	°F	TI-602	360	352	368	127	285	298	300	304	313	316	310	316
BRINE	M#/HR	FI-100	140.5	140.7	140.6	41.5	82.7	88.1	84.9	85	83.8	83.9	84	84.2
IC4 FROM P-1-E	M#/HR	FI-102	113.5	111.4	113.4	86.7	88.2	110.8	99.3	98.4	100.9	98.2	108.1	98.5
IC4 TO T-1-E	M#/HR	FI-101	117.6	116.7	117.2	1.9	.2	.2	.3	.1	.2	.3	.1	.2
IC4 TO E-3-N	M#/HR	FR-627	9.5	9.7	10.6	0.0	9.3	11.1	10.9	10.8	10.3	10.5	10	10.3
SEP FLOW	GALS	FQI-633	0	- - -	0	0	- - -	- - -	0	- - -	- - -	0	- - -	- - -
GAS TO GE-1-N	#/HR	FR-607	536.7	540.8	495.5	247.2	495.5	506.8	505.8	516.1	522.2	522.2	495.5	507.8
V-1-E	INCHES	LG-105	35.75	35.25	35	25	33.75	33.5	33.5	32.5	32	32.5	33.75	32

REMARKS

February 26-28, 1990

	INST.#	26-Feb	26-Feb	26-Feb	27-Feb	27-Feb	27-Feb	28-Feb	28-Feb	28-Feb
		900	1700	100	900	1700	100	900	1700	100
AMBIENT TEMP		66	67	60	68	67	64	70	68	53
WET BULB TEMP		60	62	58	64	63	63	67	66	51
POWER										
T-1-N GROSS	JI-100	0	0	0	0	0	0	483	516	551
GE-1-N GROSS		350	350	350	350	350	350	350	340	350
GE-2-N GROSS		350	350	350	350	350	350	350	345	350
PARASITIC	JI-101	169	180	181	169	180	190	240	252	256
NET SALE TO HL&P		520	535	510	510	520	152	900	900	960
NET SALE TO HL&P		1821	1826	1831	1835	1840	1844	1849	1857	1865
BRINE										
TO E-2-N	PI-606	505	502	502	505	505	505	500	505	500
TO E-1-N	PI-611	505	503	505	505	505	505	500	490	490
FROM E-1-N	PI-106	500	497	495	496	495	497	487	481	485
ISOBUTANE										
IN V-1-E	PG-130	60	60	59	62	62	60	56	59	48
OUT OF P-1-E	PI-105	368	367	359	367	364	354	378	353	341
OUT OF E-1-N	PI-602	280	279	278	275	280	260	285	315	310
OUT OF E-2-N	PG-114	265	266	265	265	265	270	265	280	280
OUT OF E-3-N	PI-615	275	274	278	270	275	270	270	290	290
INTO T-1-E	PI-107	2	2	1	3	2	44	276	269	264
OUT OF T-1-E	PI-108	12	11	11	13	12	46	58	61	52
TO OR 102	PG-104	330	335	335	335	335	330	55	60	50
FROM OR 102	PG-105	145	142	150	145	145	150	55	60	50
GAS										
TO E-3-N	PI-614	.4	.4	.4	.4	.4	.4	.4	.4	.4
BRINE										
TO E-2-N	TI-101	297	297	297	297	297	297	297	297	297
TO E-1-N	TR-113	208	208	208	209	209	206	216	215	214
FROM E-1-N	TR-102	145	146	146	148	148	145	148	149	145

February 26-28, 1990

[illegible]

REMARKS

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

March 1-4, 1990

[illegible]

March 1-4, 1990

[illegible]

REMARKS

March 5-6, 1990

	INST.#	5-Mar	5-Mar	5-Mar	5-Mar	5-Mar	6-Mar	6-Mar	6-Mar	6-Mar	6-Mar	6-Mar
		900	1700	2100	100	500	900	1300	1700	2100	100	500
AMBIENT TEMP		66	67	62	63	63	69	73	69	68	68	67
WET BULB TEMP		60	62	60	60	61	66	69	66	66	66	66
POWER												
T-1-N GROSS	JI-100	527	515	520	510	519	0	491	0	499	0	0
GE-1-N GROSS		0	340	340	345	340	340	345	345	340	340	340
GE-2-N GROSS		0	340	340	340	340	345	0	340	345	340	320
PARASITIC	JI-101	252	249	252	242	251	233	249	230	241	223	231
NET SALE TO HL&P		305	910	920	900	900	640	595	460	890	460	430
NET SALE TO HL&P		1958	1962	1965	1970	1973	1977	1980	1981	1985	1987	1989
BRINE												
TO E-2-N	PI-606	505	500	500	500	500	502	502	500	505	505	505
TO E-1-N	PI-611	490	490	490	490	490	502	489	500	490	505	505
FROM E-1-N	PI-106	481	483	481	480	480	493	481	492	481	494	494
ISOBUTANE												
IN V-1-E	PG-130	55	56	56	56	56	53	58	54	60	59	54
OUT OF P-1-E	PI-105	353	353	344	342	334	287	376	435	358	430	430
OUT OF E-1-N	PI-602	290	285	285	290	290	276	295	285	295	275	275
OUT OF E-2-N	PG-114	280	275	275	280	280	270	277	215	275	265	265
OUT OF E-3-N	PI-615	0	280	280	290	290	276	282	285	285	275	270
INTO T-1-E	PI-107	267	263	266	263	268	53	268	54	264	58	53
OUT OF T-1-E	PI-108	57	58	59	59	60	53	61	54	63	59	54
TO OR 102	PG-104	52	55	55	55	55	49	57	50	60	55	500
FROM OR 102	PG-105	52	55	50	55	55	0	57	50	60	55	500
GAS												
TO E-3-N	PI-614	.0	.3	.3	.3	.3	.2	.1	.1	.1	.2	0.2
BRINE												
TO E-2-N	TI-101	298	297	297	297	297	297	297	297	297	297	297
TO E-1-N	TR-113	215	213	213	214	214	210	213	210	213	209	200
FROM E-1-N	TR-102	152	146	145	146	146	143	150	148	148	145	144

March 5-6, 1990

	UNITS	5-Mar	5-Mar	5-Mar	5-Mar	5-Mar	6-Mar	6-Mar	6-Mar	6-Mar	6-Mar	6-Mar
		900	1700	2100	100	500	900	1300	1700	2100	100	500
ISOBUTANE												
IN V-1-E	°F	90.6	92.1	92.1	92.3	93.4	88.9	96.1	89.7	95.8	94.4	89.4
OUT OF P-1-E	°F	92.3	93.3	93.5	93.8	94.8	90.7	94.4	91.3	97.4	97.0	91.6
OUT OF E-1-N	°F	217	213	208	210	209	213	210	205	209	200	200
OUT OF E-2-N	°F	221	219	218	217	219	218	221	215	219	216	216
OUT OF E-3-N	°F	- - -	210	210	210	210	228	210	210	210	206	206
INTO T-1-E	°F	214	212	212	211	213	96	213	103	212	100	96
OUT OF T-1-E	°F	133	133	131	132	133	171	135	168	135	164	163
GAS												
TO E-3-N	°F	154	993	1014	1018	1017	1016	949	938	1009	1007	991
FROM E-3-N	°F	64	266	279	283	288	316	257	236	295	294	294
BRINE	M#/HR	153.4	139.1	139	136.6	140.8	91.3	141.2	97.2	141.8	88.5	88.7
IC4 FROM P-1-E	M#/HR	111.7	113.3	114.9	113.8	114.7	66.2	109.5	87.8	115.4	82.1	74.4
IC4 TO T-1-E	M#/HR	116.2	118.4	118.8	118.2	119.1	1.0	113.0	1.3	120.6	.9	1.2
IC4 TO E-3-N	M#/HR	0.0	0.0	11.4	11.0	11.1	8.7	0.5	.1	10.9	9.8	10.4
SEP FLOW	GALS	0	0	0	0	0	0	0	0	0	0	0
GAS TO GE-1-N	#/HR	126.7	414.4	485.2	490.3	485.2	486.2	249.3	502.7	498.6	490	499
V-1-E	INCHES	33.5	31.5	31	31	31	32	30.25	31.5	30.5	28	32
FLOW												

REMARKS

March 7, 1990

	INST.#	7-Mar	7-Mar	7-Mar	7-Mar	7-Mar	7-Mar					
		900	1300	1700	2100	100	500					
AMBIENT TEMP		70	75	71	69	69	69					
WET BULB TEMP		68	71	68	67	67	68					
POWER												
T-1-N GROSS	JI-100	0	482	494	497	502	507					
GE-1-N GROSS		340	340	345	345	345	340					
GE-2-N GROSS		340	340	345	350	350	340					
PARASITIC	JI-101	213	239	250	251	240	240					
NET SALE TO HL&P		470	850	900	900	900	900					
NET SALE TO HL&P		1991	1994	1998	2002	2006	2010					
BRINE												
TO E-2-N	PI-606	505	500	502	502	500	500					
TO E-1-N	PI-611	502	495	491	492	485	490					
FROM E-1-N	PI-106	493	482	481	482	480	482					
ISOBUTANE												
IN V-1-E	PG-130	56	58	60	60	60	60					
OUT OF P-1-E	PI-105	442	359	354	355	356	352					
OUT OF E-1-N	PI-602	275	297	298	295	300	300					
OUT OF E-2-N	PG-114	265	280	280	277	280	280					
OUT OF E-3-N	PI-615	270	294	286	282	285	285					
INTO T-1-E	PI-107	57	270	267	264	265	266					
OUT OF T-1-E	PI-108	60	63	63	63	63	64					
TO OR 102	PG-104	50	55	60	60	60	60					
FROM OR 102	PG-105	50	55	60	60	60	60					
GAS												
TO E-3-N	PI-614	.1	.4	.2	.3	.2	.2					
BRINE												
TO E-2-N	TI-101	297	297	297	297	298	298					
TO E-1-N	TR-113	208	214	216	213	214	214					
FROM E-1-N	TR-102	143	147	154	147	148	147					

March 7, 1990

	UNITS	7-Mar	7-Mar	7-Mar	7-Mar	7-Mar	7-Mar					
		900	1300	1700	2100	100	500					
ISOBUTANE												
IN V-1-E	°F	82.0	93.1	96.6	96.5	96.8	96.5					
OUT OF P-1-E	°F	94.9	96.7	98.1	98.1	98.3	98.2					
OUT OF E-1-N	°F	200	210	210	209	209	210					
OUT OF E-2-N	°F	217	221	220	219	219	219					
OUT OF E-3-N	°F	206	211	211	211	211	211					
INTO T-1-E	°F	101	214	213	212	213	212					
OUT OF T-1-E	°F	165	136	135	135	135	135					
GAS												
TO E-3-N	°F	1013	1016	1007	1010	1021	1019					
FROM E-3-N	°F	302	307	305	307	315	318					
BRINE	M#/HR	88.4	132.4	140.4	142.3	142.1	141.8					
IC4 FROM P-1-E	M#/HR	71.5	109.7	112.8	115.2	115.0	116.8					
IC4 TO T-1-E	M#/HR	1.4	110.6	116.3	120.2	120.3	120.4					
IC4 TO E-3-N	M#/HR	10.5	11.3	11.0	11.0	11.2	11.1					
SEP FLOW	GALS	0	0	0	0	0	0					
GAS TO GE-1-N	#/HR	494.4	493.4	30.25	500.6	499.6	500.6					
V-1-E	INCHES	32	33.5	30.25	29.75	29.5	29.5					

REMARKS

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

March 8-11, 1990

	UNITS	INST.#	8-Mar	8-Mar	8-Mar	9-Mar	9-Mar	9-Mar	10-Mar	10-Mar	10-Mar	11-Mar	11-Mar	11-Mar
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
AMBIENT TEMP	°F		75	72	67	71	73	69	74	74	69	74	73	70
WET BULB TEMP	°F		71	70	67	70	70	69	71	70	67	71	70	69
POWER														
T-1-N GROSS	KW	J1-100	500	491	501	499	498	501	501	493	500	501	491	499
GE-1-N GROSS	KW		340	340	340	340	340	340	340	340	340	340	340	340
GE-2-N GROSS	KW		340	330	340	340	340	335	340	340	340	340	340	340
PARASITIC	KW	J1-101	240	240	252	248	239	252	250	239	250	240	241	240
NET SALE TO HL&P	KW		890	880	900	890	880	890	900	880	895	900	900	890
NET SALE TO HL&P	FDG		2014	2022	2029	2037	2045	2053	2061	2069	2076	2084	2092	2100
	KW-HR													
BRINE														
TO E-2-N	PSIG	PI-606	500	500	500	500	500	500	505	505	500	505	510	500
TO E-1-N	PSIG	PI-611	495	490	490	492	490	490	495	490	490	495	490	490
FROM E-1-N	PSIG	PI-106	482	480	480	479	476	480	480	479	481	479	478	478
ISOBUTANE														
IN V-1-E	PSIG	PG-130	60	60	60	58	63	61	60	62	60	61	62	61
OUT OF P-1-E	PSIG	PI-105	355	356	343	348	356	346	345	363	345	334	358	355
OUT OF E-1-N	PSIG	PI-602	300	295	300	298	300	300	298	295	300	298	300	300
OUT OF E-2-N	PSIG	PG-114	280	280	275	280	280	280	280	280	280	280	280	280
OUT OF E-3-N	PSIG	PI-615	290	275	290	290	285	290	292	285	290	295	285	290
INTO T-1-E	PSIG	PI-107	266	265	264	263	266	266	266	266	264	265	264	267
OUT OF T-1-E	PSIG	PI-108	65	64	63	64	65	64	65	65	64	65	66	65
TO OR 102	PSIG	PG-104	60	60	60	60	60	60	60	60	60	60	60	60
FROM OR 102	PSIG	PG-105	60	60	60	60	60	60	60	60	60	60	60	60
GAS														
TO E-3-N	PSIG	PI-614	.4	.4	.1	.4	.3	.2	.4			.4	.1	.1
BRINE														
TO E-2-N	°F	TI-101	298	297	298	297	297	297	297	297	297	297	297	298
TO E-1-N	°F	TR-113	214	214	214	214	214	214	214	214	213	213	214	215
FROM E-1-N	°F	TR-102	197	152	148	153	150	149	151	150	150	149	150	149

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

March 8-11, 1990

	UNITS	INST.#	8-Mar	8-Mar	8-Mar	9-Mar	9-Mar	9-Mar	10-Mar	10-Mar	10-Mar	11-Mar	11-Mar	11-Mar
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
ISOBUTANE														
IN V-1-E	°F	TI-104	97.5	98.0	96.5	97.5	98.7	97.5	98.3	98.3	97.2	97.5	98.1	98.0
OUT OF P-1-E	°F	TI-105	99.4	99.3	98	98.9	99.9	99.0	100.0	99.8	98.7	99.2	99.5	99.5
OUT OF E-1-N	°F	TR-112	212	209	209	209	210	210	210	210	210	210	209	210
OUT OF E-2-N	°F	TI-111	220	219	219	221	219	219	223	221	220	222	220	221
OUT OF E-3-N	°F	TI-603	212	210	210	210	211	211	212	211	210	211	211	211
INTO T-1-E	°F	TI-107	213	212	212	214	214	212	215	214	213	214	213	214
OUT OF T-1-E	°F	TI-108	137	136	135	137	136	135	140	138	136	138	137	138
GAS														
TO E-3-N	°F	TI-601	1020	1008	1014	1016	1014	1010	1010	1006	1007	1013	1005	1017
FROM E-3-N	°F	TI-602	321	315	322	325	328	329	333	331	334	340	339	346
BRINE	M#/HR	FI-100	142.2	142.2	142.4	142.5	144	144.0	143.5	143.7	144.4	144.1	144.6	144.0
IC4 FROM P-1-E	M#/HR	FI-102	116.1	116.0	115.3	113.2	116.3	116.0	14.4	114.5	114.3	115.2	114.7	115.0
IC4 TO T-1-E	M#/HR	FI-101	120.6	120.1	120.3	120.0	120.5	120.6	120.2	119.6	119.7	120.0	119.6	120.1
IC4 TO E-3-N	M#/HR	FR-627	11.5	10.3	10.5	11.0	10.2	10.3	11.0	10.0	10.1	10.7	10.1	10.3
SEP FLOW	GALS	FQI-633	0	0	0	0	0	0	---	---	---	---	---	---
GAS TO GE-1-N	#/HR	FR-607	501.6	494.4	494.4	497.5	496.5	496.5	496.5	496.5	499.6	501.6	504.7	507.8
V-1-E	INCHES	LG-105	30	30	29	29.5	29	28.75	29	29	10.1	28.5	28	28

REMARKS

March 12-14, 1990

	INST.#	12-Mar	12-Mar	12-Mar	13-Mar	13-Mar	13-Mar	14-Mar	14-Mar	14-Mar		
		900	1700	100	900	1700	100	900	1700	100		
AMBIENT TEMP		75	67	68	74	71	70	70	73	59		
WET BULB TEMP		71	67	67	71	69	69	68	71	56		
POWER												
T-1-N GROSS	JI-100	488	501	482	1	0	0	0	0	0		
GE-1-N GROSS		340	340	340	340	340	340	345	345	340		
GE-2-N GROSS		340	340	0	- - -	- - -	- - -	0	140	330		
PARASITIC	JI-101	239	241	251	236	181	191	191	193	192		
NET SALE TO HL&P		890	160	570	150	160	170	180	280	470		
NET SALE TO HL&P		2108	2115	2120	2125	2126	2128	2129	2131	2135		
BRINE												
TO E-2-N	PI-606	500	500	500	509	505	500	502	510	500		
TO E-1-N	PI-611	490	490	490	505	500	500	502	510	505		
FROM E-1-N	PI-106	477	478	480	479	492	494	493	495	493		
ISOBUTANE												
IN V-1-E	PG-130	60	60	59	58	60	61	60	61	56		
OUT OF P-1-E	PI-105	349	349	361	421	359	370	362	360	350		
OUT OF E-1-N	PI-602	298	295	300	280	275	275	275	280	290		
OUT OF E-2-N	PG-114	280	280	280	270	265	265	266	265	275		
OUT OF E-3-N	PI-615	290	290	285	275	270	270	269	272	285		
INTO T-1-E	PI-107	265	266	264	55	1	1	1	1	0		
OUT OF T-1-E	PI-108	65	63	61	56	8	9	9	9	8		
TO OR 102	PG-104	60	60	60	55	140	145	339	330	320		
FROM OR 102	PG-105	60	60	60	55	330	330	148	140	140		
GAS												
TO E-3-N	PI-614	.4	.1	.1	.4	.1	.1	.1	.1	.2		
BRINE												
TO E-2-N	TI-101	297	296	297	297	297	297	297	297	298		
TO E-1-N	TR-113	214	215	213	223	207	208	208	209	212		
FROM E-1-N	TR-102	151	140	146	156	148	149	148	164	145		

March 12-14, 1990

[illegible]

REMARKS

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

March 15-18, 1990

	UNITS	INST.#	15-Mar	15-Mar	15-Mar	16-Mar	16-Mar	16-Mar	17-Mar	17-Mar	17-Mar	18-Mar	18-Mar	18-Mar
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
AMBIENT TEMP	°F		52	62	53	57	64	54	60	72	55	69	71	58
WET BULB TEMP	°F		51	57	71	55	58	52	54	57	53	65	61	55
POWER														
T-1-N GROSS	KW	JI-100	0	0	0	0	0	0	0	0	0	0	0	0
GE-1-N GROSS	KW		340	345	345	350	350	350	350	340	340	345	345	345
GE-2-N GROSS	KW		330	345	345	350	350	350	350	340	340	345	345	345
PARASITIC	KW	JI-101	170	179	180	169	180	1770	169	178	179	168	169	170
NET SALE TO HL&P	KW		480	515	520	505	520	500	520	500	500	515	520	510
NET SALE TO HL&P	PDG		2138	2143	2146	2152	2157	2161	2166	2170	2174	2179	2183	2188
	KW-HR													
BRINE														
TO E-2-N	PSIG	PI-606	500	501	500	501	502	500	508	505	500	503	505	500
TO E-1-N	PSIG	PI-611	505	501	505	502	502	510	511	505	500	509	505	500
FROM E-1-N	PSIG	PI-106	494	491	492	493	490	496	496	492	494	493	493	494
ISOBUTANE														
IN V-1-E	PSIG	PG-130	57	60	58	58	58	58	58	58	58	61	58	58
OUT OF P-1-E	PSIG	PI-105	348	341	345	344	346	341	351	356	360	358	365	354
OUT OF E-1-N	PSIG	PI-602	285	286	285	286	285	290	286	290	285	287	286	285
OUT OF E-2-N	PSIG	PG-114	275	275	275	276	275	280	277	280	280	279	280	275
OUT OF E-3-N	PSIG	PI-615	285	283	285	283	285	290	283	290	285	284	290	285
INTO T-1-E	PSIG	PI-107	0	1	0	0	1	0	2	1	0	1	1	0
OUT OF T-1-E	PSIG	PI-108	8	8	8	8	7	8	11	7	8	10	7	8
TO OR 102	PSIG	PG-104	330	330	330	328	330	320	330	330	330	330	325	325
FROM OR 102	PSIG	PG-105	145	144	145	148	140	145	148	150	150	147	145	145
GAS														
TO E-3-N	PSIG	PI-614	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
BRINE														
TO E-2-N	°F	TI-101	298	297	298	298	297	298	298	298	298	298	297	298
TO E-1-N	°F	TR-113	212	212	211	212	211	211	212	212	212	212	212	212
FROM E-1-N	°F	TR-102	145	145	144	145	148	146	179	147	178	212	148	147

March 15-18, 1990

[illegible]

March 19-21, 1990

	INST.#	19-Mar	19-Mar	19-Mar	20-Mar	20-Mar	20-Mar	21-Mar	21-Mar	21-Mar		
		900	1700	100	900	1700	100	900	1700	100		
AMBIENT TEMP		67	67	50	55	62	48	65	66	59		
WET BULB TEMP		60	58	45	50	53	47	56	59	57		
POWER												
T-1-N GROSS	J1-100	1	0	0	0	0	0	0	1	491		
GE-1-N GROSS		350	350	355	350	340	345	345	- - -	- - -		
GE-2-N GROSS		350	350	345	350	340	345	345	- - -	- - -		
PARASITIC	J1-101	168	176	167	155	165	167	169	210	241		
NET SALE TO HL&P		520	510	530	540	520	500	510	0	250		
NET SALE TO HL&P		2192	2197	2201	2206	2210	2215	2219	2223	2225		
BRINE												
TO E-2-N	PI-606	502	505	500	500	502	510	500	502	505		
TO E-1-N	PI-611	509	505	500	502	502	510	505	498	490		
FROM E-1-N	PI-106	492	490	494	493	492	498	493	490	484		
ISOBUTANE												
IN V-1-E	PG-130	61	58	59	61	60	60	58	59	50		
OUT OF P-1-E	PI-105	353	362	349	357	358	336	354	335	377		
OUT OF E-1-N	PI-602	288	285	285	284	285	285	280	290	290		
OUT OF E-2-N	PG-114	279	276	275	277	275	275	270	278	275		
OUT OF E-3-N	PI-615	286	290	280	281	290	285	280	270	130		
INTO T-1-E	PI-107	1	1	0	1	0	0	1	59	265		
OUT OF T-1-E	PI-108	11	5	6	10	7	8	11	59	50		
TO OR 102	PG-104	322	330	330	322	325	325	330	320	50		
FROM OR 102	PG-105	142	145	150	147	145	140	140	140	50		
GAS												
TO E-3-N	PI-614	.2	.2	.2	.2	.2	.2	.2	.0	.0		
BRINE												
TO E-2-N	TI-101	298	298	298	298	298	298	298	297	298		
TO E-1-N	TR-113	212	211	212	211	212	212	211	211	214		
FROM E-1-N	TR-102	213	147	146	227	143	146	145	150	148		

March 19-21, 1990

	UNITS	19-Mar	19-Mar	19-Mar	20-Mar	20-Mar	20-Mar	21-Mar	21-Mar	21-Mar		
		900	1700	100	900	1700	100	900	1700	100		
ISOBUTANE												
IN V-1-E	°F	97.0	94.8	95.4	96.7	97.4	97.3	94.7	96.3	87.0		
OUT OF P-1-E	°F	99.2	96.5	97.4	98.5	99.0	98.8	96.3	98.9	88.8		
OUT OF E-1-N	°F	208	205	204	212	205	204	205	204	209		
OUT OF E-2-N	°F	221	220	216	222	219	216	221	219	219		
OUT OF E-3-N	°F	211	210	210	209	210	210	208	210	116		
INTO T-1-E	°F	69	71	57	59	64	52	69	85	209		
OUT OF T-1-E	°F	69	71	59	61	66	53	69	167	129		
GAS												
TO E-3-N	°F	1024	1015	1027	1023	1016	1026	1017	434	63		
FROM E-3-N	°F	377	377	390	392	386	395	388	75	76		
BRINE	M#/HR	90	90.2	89.7	90.3	90.1	90.2	090.0	104.1	132.8		
IC4 FROM P-1-E	M#/HR	116.0	111.2	116.2	115.3	111.1	114.4	115.2	118.3	100.4		
IC4 TO T-1-E	M#/HR	.3	.1	.2	.3	.1	.2	.3	1.2	100.4		
IC4 TO E-3-N	M#/HR	9.2	09.4	9	9.6	9	9	9.3	0.0	0		
SEP FLOW	GALS	---	---	---	---	---	---	---	---	---		
GAS TO GE-1-N	#/HR	498.6	498.6	509.9	517.1	500.6	509.9	502.7	128.8	75.2		
V-1-E	INCHES	24	23.5	24	24.25	24.5	24	23.75	23	23.5		
REMARKS												

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

March 22-25, 1990

	UNITS	INST.#	22-Mar	22-Mar	22-Mar	23-Mar	23-Mar	23-Mar	24-Mar	24-Mar	24-Mar	25-Mar	25-Mar	25-Mar
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
AMBIENT TEMP	°F		70	74	63	75	73	65	77	73	62	65	69	62
WET BULB TEMP	°F		63	67	61	69	67	64	72	68	57	59	63	58
POWER														
T-1-N GROSS	KW	JI-100	484	522	530	515	512	0	0	0	0	0	0	0
GE-1-N GROSS	KW		0	345	345	345	345	345	345	340	340	340	335	340
GE-2-N GROSS	KW		0	345	345	345	345	345	345	345	340	345	345	340
PARASITIC	KW	JI-101	250	250	251	249	252	182	191	192	192	179	177	180
NET SALE TO HL&P	KW		260	910	930	910	920	500	500	500	500	500	500	500
NET SALE TO HL&P	PDG		2227	2230	2240	2248	2256	2262	2267	2271	2275	2280	2284	2288
	KW-HR													
BRINE														
TO E-2-N	PSIG	PI-606	500	500	502	500	502	504	500	502	505	505	505	500
TO E-1-N	PSIG	PI-611	495	486	490	490	489	508	505	502	510	505	505	505
FROM E-1-N	PSIG	PI-106	487	474	478	477	478	491	492	493	495	494	495	494
ISOBUTANE														
IN V-1-E	PSIG	PG-130	50	58	57	59	59	60	60	60	55	58	63	58
OUT OF P-1-E	PSIG	PI-105	375	363	337	349	356	343	337	358	340	348	359	358
OUT OF E-1-N	PSIG	PI-602	295	300	300	300	297	269	280	278	280	275	278	275
OUT OF E-2-N	PSIG	PG-114	275	280	280	280	298	260	270	269	270	268	270	270
OUT OF E-3-N	PSIG	PI-615	260	289	300	285	285	268	275	274	280	275	275	280
INTO T-1-E	PSIG	PI-107	264	265	267	266	265	37	---	---	---	---	---	---
OUT OF T-1-E	PSIG	PI-108	51	60	59	62	60	52	---	---	---	---	---	---
TO OR 102	PSIG	PG-104	50	58	55	55	58	147	330	330	325	140	145	195
FROM OR 102	PSIG	PG-105	50	58	55	55	58	340	145	142	140	330	340	330
GAS														
TO E-3-N	PSIG	PI-614	.0	.1	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
BRINE														
TO E-2-N	°F	TI-101	298	298	298	298	298	298	298	298	298	298	298	298
TO E-1-N	°F	TR-113	213	215	214	215	214	209	210	209	209	209	210	210
FROM E-1-N	°F	TR-102	152	148	148	174	148	147	148	153	146	145	149	146

March 22-25, 1990

[illegible]

March 26-28, 1990

	INST.#	26-Mar	26-Mar	26-Mar	27-Mar	27-Mar	27-Mar	28-Mar	28-Mar	28-Mar		
		900	1700	100	900	1700	100	900	1700	100		
AMBIENT TEMP		58	67	55	59	64	65	70	71	68		
WET BULB TEMP		54	59	51	54	60	63	67	68	67		
POWER												
T-1-N GROSS	JI-100	0	0	0	0	0	0	0	0	0		
GE-1-N GROSS		340	340	345	345	345	340	335	335	330		
GE-2-N GROSS		340	340	345	345	345	345	345	340	345		
PARASITIC	JI-101	187	184	174	187	181	192	186	191	196		
NET SALE TO HL&P		500	510	510	500	495	500	495	480	480		
NET SALE TO HL&P		2293	2297	2301	2306	2310	2314	2319	2323	2328		
BRINE												
TO E-2-N	PI-606	505	502	505	505	501	500	502	505	505		
TO E-1-N	PI-611	510	502	505	505	501	505	502	500	505		
FROM E-1-N	PI-106	500	493	493	492	494	496	495	493	494		
ISOBUTANE												
IN V-1-E	PG-130	56	58	56	61	57	58	61	62	60		
OUT OF P-1-E	PI-105	340	350	350	361	360	360	363	361	355		
OUT OF E-1-N	PI-602	275	275	275	270	274	275	275	275	275		
OUT OF E-2-N	PG-114	265	267	268	265	265	265	266	265	265		
OUT OF E-3-N	PI-615	280	275	280	275	271	275	271	275	280		
INTO T-1-E	PI-107	---	---	---	---	---	---	---	---	---		
OUT OF T-1-E	PI-108	---	---	---	---	---	---	---	---	---		
TO OR 102	PG-104	325	330	330	330	334	330	330	330	330		
FROM OR 102	PG-105	145	142	140	145	140	145	142	145	145		
GAS												
TO E-3-N	PI-614	.2	.2	.2	.2	.2	.2	.2	.2	.2		
BRINE												
TO E-2-N	TI-101	298	298	298	298	297	298	297	297	297		
TO E-1-N	TR-113	210	209	208	209	209	208	209	210	209		
FROM E-1-N	TR-102	145	145	146	147	144	145	146	146	146		

March 26-28, 1990

	UNITS	26-Mar	26-Mar	26-Mar	27-Mar	27-Mar	27-Mar	28-Mar	28-Mar	28-Mar		
		900	1700	100	900	1700	100	900	1700	100		
ISOBUTANE												
IN V-1-E	°F	92.3	95.2	94.1	97.9	92.7	95.2	96.4	96.2	97.1		
OUT OF P-1-E	°F	94.6	96.2	96.3	99.6	94.0	96.9	98.2	98.1	99.0		
OUT OF E-1-N	°F	199	201	199	199	199	199	200	201	200		
OUT OF E-2-N	°F	217	216	214	217	216	216	217	216	215		
OUT OF E-3-N	°F	206	207	206	206	206	206	206	206	206		
INTO T-1-E	°F	61	72	59	61	67	69	70	73	72		
OUT OF T-1-E	°F	62	73	60	63	67	67	70	72	71		
GAS												
TO E-3-N	°F	1009	1008	1022	1012	1012	1010	1008	1009	1007		
FROM E-3-N	°F	325	336	341	342	343	342	340	345	347		
BRINE	M#/HR	83.9	85.1	85.5	82.4	85.7	84.2	85.6	85.5	85.6		
IC4 FROM P-1-E	M#/HR	109.5	108.9	114.7	113.1	109.0	113.2	111.7	113	113.2		
IC4 TO T-1-E	M#/HR	.3	.3	.3	.2	.3	.2	.3	.2	.2		
IC4 TO E-3-N	M#/HR	9.1	9.9	9.4	9.9	9.4	10.1	9.4	9.3	9		
SEP FLOW	GALS	---	---	---	---	---	---	---	---	---		
GAS TO GE-1-N	#/HR	494.4	493.4	493.4	497.5	494.4	491.3	495.5	494.4	492.4		
V-1-E	INCHES	22	22	21.5	23.5	32	32	32.5	32.5	32		

REMARKS

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

March 29-April 1, 1990

	UNITS	INST.#	29-Mar	29-Mar	29-Mar	30-Mar	30-Mar	30-Mar	31-Mar	31-Mar	31-Mar	1-Apr	1-Apr	1-Apr
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
AMBIENT TEMP	°F		70	60	63	65	73	64	65	74	67	69	68	67
WET BULB TEMP	°F		69	60	63	65	68	62	61	69	66	67	68	66
POWER														
T-1-N GROSS	KW	JI-100	1	449	515	508	0	518	514	504	516	508	495	512
GE-1-N GROSS	KW		335	325	325	335	320	340	335	335	335	325	320	320
GE-2-N GROSS	KW		345	335	340	345	340	340	345	345	340	345	340	340
PARASITIC	KW	JI-101	203	239	240	249	130	252	251	249	251	240	239	252
NET SALE TO HL&P	KW		490	830	880	895	500	900	900	885	902	885	880	875
NET SALE TO HL&P	FDG		2332	2337	2344	2352	2356	2362	2370	2378	2386	2392	2400	2408
	KW-HR													
BRINE														
TO E-2-N	PSIG	PI-606	503	505	490	501	530	500	500	500	500	501	500	500
TO E-1-N	PSIG	PI-611	505	500	490	491	530	490	489	484	485	490	490	490
FROM E-1-N	PSIG	PI-106	494	500	475	477	529	480	479	475	478	477	475	475
ISOBUTANE														
IN V-1-E	PSIG	PG-130	60	52	57	59	36	60	59	63	60	62	62	61
OUT OF P-1-E	PSIG	PI-105	363	308	352	352	39	345	341	358	353	352	360	359
OUT OF E-1-N	PSIG	PI-602	275	285	297	297	110	300	296	300	300	299	300	300
OUT OF E-2-N	PSIG	PG-114	264	270	276	277	35	280	278	281	280	280	280	280
OUT OF E-3-N	PSIG	PI-615	270	280	300	282	160	290	285	287	290	286	282	290
INTO T-1-E	PSIG	PI-107	- - -	268	264	264	33	265	263	267	268	267	265	267
OUT OF T-1-E	PSIG	PI-108	- - -	54	60	62	36	62	61	65	64	65	66	64
TO OR 102	PSIG	PG-104	328	290	55	59	35	60	59	62	60	61	60	60
FROM OR 102	PSIG	PG-105	142	130	55	59	35	60	59	61	60	61	60	60
GAS														
TO E-3-N	PSIG	PI-614	.2	.2	.2	.2	.0	.2	.2	.2	.2	.2	.2	.2
BRINE														
TO E-2-N	°F	TI-101	297	297	297	298	291	298	298	297	298	298	298	298
TO E-1-N	°F	TR-113	209	212	215	214	074	215	214	215	215	214	214	215
FROM E-1-N	°F	TR-102	154	143	147	148	103	143	143	143	145	146	145	145

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

March 29-April 1, 1990

	UNITS	INST.#	29-Mar	29-Mar	29-Mar	30-Mar	30-Mar	30-Mar	31-Mar	31-Mar	31-Mar	1-Apr	1-Apr	1-Apr
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
ISOBUTANE														
IN V-1-E	°F	TI-104	95.0	87.0	93.7	94.4	74.0	87.4	87.8	92.5	91.1	92.0	92.7	91.9
OUT OF P-1-E	°F	TI-105	96.5	88.4	95.2	96.0	78.0	89.2	89.6	93.6	92.6	93.4	94.3	92.9
OUT OF E-1-N	°F	TR-112	199	205	209	210	135	209	209	209	209	209	209	209
OUT OF E-2-N	°F	TI-111	215	217	220	221	194	220	222	219	219	221	219	218
OUT OF E-3-N	°F	TI-603	207	208	210	210	162	210	210	211	210	211	211	211
INTO T-1-E	°F	TI-107	72	215	217	217	91	216	217	215	216	217	215	214
OUT OF T-1-E	°F	TI-108	71	128	137	138	90	136	137	136	135	138	136	134
GAS														
TO E-3-N	°F	TI-601	1009	986	994	1010	802	1015	1004	1002	1014	1003	997	1001
FROM E-3-N	°F	TI-602	346	344	345	357	159	292	293	298	309	311	317	325
BRINE	M#/HR	FI-100	84.4	113.9	142.2	143.7	0	141.8	142.4	140.7	142.9	143	141.8	143.4
IC4 FROM P-1-E	M#/HR	FI-102	110.1	127.8	113.5	112.1	0	115.4	113.7	112.4	115.3	108.1	114.1	114.6
IC4 TO T-1-E	M#/HR	FI-101	.3	93.6	117.4	117.4	.8	121.1	120.6	119.8	118.6	117.6	117.7	117.9
IC4 TO E-3-N	M#/HR	FR-627	10.0	8.9	9.6	9.7	.1	11.3	11.0	10.9	11.2	10.8	10.4	10.0
SEP FLOW	GALS	FQI-633	---	---	---	---	---	---	---	---	---	---	---	---
GAS TO GE-1-N	#/HR	FR-607	497.5	486.2	483.1	494.4	476.9	488.3	482.1	485.2	488.3	483.1	479.0	476.9
V-1-E	INCHES	LG-105	32	33.5	33.5	33.5	33	31.5	31.5	31.25	31.5	30.75	30	30
REMARKS														

April 2-4, 1990

	INST.#	2-Apr	2-Apr	2-Apr	3-Apr	3-Apr	3-Apr	4-Apr	4-Apr	4-Apr		
		900	1700	100	900	1700	100	900	1700	100		
AMBIENT TEMP		70	76	64	60	73	57	64	76	60		
WET BULB TEMP		69	69	60	53	62	55	60	66	59		
POWER												
T-1-N GROSS	J1-100	511	498	524	544	535	544	0	509	525		
GE-1-N GROSS		325	120	330	330	335	330	335	330	330		
GE-2-N GROSS		345	333	340	345	340	340	340	345	340		
PARASITIC	J1-101	250	250	242	253	240	254	238	239	243		
NET SALE TO HL&P		895	650	900	922	920	900	450	900	900		
NET SALE TO HL&P		2415	2423	2428	2436	2444	2452	2456	2462	2470		
BRINE												
TO E-2-N	PI-606	500	504	500	501	500	500	505	510	500		
TO E-1-N	PI-611	490	492	490	491	490	490	509	495	490		
FROM E-1-N	PI-106	475	478	477	479	405	483	493	478	483		
ISOBUTANE												
IN V-1-E	PG-130	63	64	59	55	57	58	48	58	56		
OUT OF P-1-E	PI-105	351	372	349	365	363	343	348	375	334		
OUT OF E-1-N	PI-602	304	300	300	299	300	300	278	295	300		
OUT OF E-2-N	PG-114	284	280	280	281	280	280	270	275	280		
OUT OF E-3-N	PI-615	289	290	290	284	290	290	278	285	290		
INTO T-1-E	PI-107	268	269	268	263	266	267	49	260	264		
OUT OF T-1-E	PI-108	65	65	60	55	58	56	51	60	59		
TO OR 102	PG-104	61	61	60	61	55	55	325	60	55		
FROM OR 102	PG-105	61	60	60	61	55	55	135	60	55		
GAS												
TO E-3-N	PI-614	.2	.2	.2	.2	.2	.2	.2	.1	.2		
BRINE												
TO E-2-N	T1-101	298	298	298	298	298	298	298	298	298		
TO E-1-N	TR-113	215	215	215	214	215	215	210	214	214		
FROM E-1-N	TR-102	145	146	145	144	144	144	138	143	159		

April 2-4, 1990

	UNITS	2-Apr	2-Apr	2-Apr	3-Apr	3-Apr	3-Apr	4-Apr	4-Apr	4-Apr		
		900	1700	100	900	1700	100	900	1700	100		
ISOBUTANE												
IN V-1-E	°F	92.1	92.6	88.6	83.5	86.3	85.5	81.7	89.7	88.1		
OUT OF P-1-E	°F	93.5	93.7	90.2	85.2	87.7	86.4	82.7	90.8	89.4		
OUT OF E-1-N	°F	209	210	209	208	209	209	201	209	207		
OUT OF E-2-N	°F	220	221	218	220	222	217	217	222	218		
OUT OF E-3-N	°F	212	213	212	211	212	211	207	210	210		
INTO T-1-E	°F	216	217	215	216	216	214	102	215	214		
OUT OF T-1-E	°F	136	138	133	133	134	130	167	135	132		
GAS												
TO E-3-N	°F	1014	954	1011	1010	1013	1012	1017	1007	1013		
FROM E-3-N	°F	334	301	335	337	340	346	318	320	325		
BRINE	M#/HR	140.7	142.2	142.8	141.3	143.4	142.6	88.2	140.3	140.9		
IC4 FROM P-1-E	M#/HR	117.1	111.8	115.9	113.7	112.1	113.7	112.1	114	115.5		
IC4 TO T-1-E	M#/HR	118.0	113.4	117.5	117.0	117.3	117.8	1.2	119.6	118.3		
IC4 TO E-3-N	M#/HR	10.6	7.4	10.0	10.2	10.9	10.6	10.8	11.2	11		
SEP FLOW	GALS	---	---	---	---	---	---	---	---	---		
GAS TO GE-1-N	#/HR	487.2	358.5	480.0	480.0	484.1	490.3	493.4	495.5	499.6		
V-1-E	INCHES	29.75	30.25	29	29.5	30	38.75	28	29.5	29		
REMARKS												

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

April 5-8, 1990

	UNITS	INST.#	5-Apr 900	5-Apr 1700	5-Apr 100	6-Apr 900	6-Apr 1700	6-Apr 100	7-Apr 900	7-Apr 1700	7-Apr 100	8-Apr 900	8-Apr 1700	8-Apr 100
AMBIENT TEMP	°F		72	77	68	65	61	50	53	62	54	60	67	65
WET BULB TEMP	°F		68	71	67	64	56	49	53	51	41	56	62	62
POWER														
T-1-N GROSS	KW	J1-100	482	507	513	517	0	550	555	540	553	536	523	521
GE-1-N GROSS	KW		---	---	---	0	340	340	340	340	340	340	340	340
GE-2-N GROSS	KW		340	340	340	340	340	340	340	340	340	340	340	340
PARASITIC	KW	J1-101	244	250	250	252	248	255	243	252	261	252	251	251
NET SALE TO HL&P	KW		570	580	580	590	450	920	950	940	940	930	915	920
NET SALE TO HL&P	FDG		2477	2482	2486	2492	2495	2503	2512	2520	2528	2537	2542	2550
	KW-HR													
BRINE														
TO E-2-N	PSIG	PI-606	505	505	505	500	505	500	500	505	500	500	505	500
TO E-1-N	PSIG	PI-611	495	490	490	490	512	490	495	490	490	490	490	490
FROM E-1-N	PSIG	PI-106	476	475	479	475	503	484	482	481	479	480	480	480
ISOBUTANE														
IN V-1-E	PSIG	PG-130	61	63	60	60	52	52	48	53	52	55	58	60
OUT OF P-1-E	PSIG	PI-105	366	363	350	349	385	344	360	368	331	325	357	355
OUT OF E-1-N	PSIG	PI-602	295	300	300	305	185	300	295	295	295	298	295	300
OUT OF E-2-N	PSIG	PG-114	275	280	280	285	180	275	280	280	280	280	280	280
OUT OF E-3-N	PSIG	PI-615	285	290	290	290	170	290	285	285	290	295	290	290
INTO T-1-E	PSIG	PI-107	260	266	267	268	48	265	263	266	264	265	264	265
OUT OF T-1-E	PSIG	PI-108	64	64	64	61	57	53	51	54	55	58	62	63
TO OR 102	PSIG	PG-104	60	61	60	60	150	55	45	50	50	50	55	55
FROM OR 102	PSIG	PG-105	60	60	60	60	360	55	45	50	50	50	55	55
GAS														
TO E-3-N	PSIG	PI-614	.2	.2	.2	.2	.1	.2	.2	.2	.2	.2	.2	.2
BRINE														
TO E-2-N	°F	TI-101	298	297	298	298	297	298	297	298	298	298	297	298
TO E-1-N	°F	TR-113	213	215	216	217	177	215	215	214	215	216	216	216
FROM E-1-N	°F	TR-102	149	148	190	149	114	142	142	143	143	147	---	147

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

April 5-8, 1990

	UNITS	INST.#	5-Apr 900	5-Apr 1700	5-Apr 100	6-Apr 900	6-Apr 1700	6-Apr 100	7-Apr 900	7-Apr 1700	7-Apr 100	8-Apr 900	8-Apr 1700	8-Apr 100
ISOBUTANE														
IN V-1-E	°F	TI-104	93.4	93.5	93.4	91.5	76.9	81.3	80.6	84.1	84.7	93.2	90.9	95.5
OUT OF P-1-E	°F	TI-105	95.2	94.7	94.9	93.7	79.3	82.8	81.5	84.8	86.0	94.6	91.8	97.0
OUT OF E-1-N	°F	TR-112	209	211	211	211	161	209	209	209	209	116	176	210
OUT OF E-2-N	°F	TI-111	219	222	220	218	187	218	220	221	218	222	221	222
OUT OF E-3-N	°F	TI-603	209	212	212	212	196	211	210	211	212	211	210	211
INTO T-1-E	°F	TI-107	214	217	215	214	161	215	217	217	215	217	125	217
OUT OF T-1-E	°F	TI-108	138	138	136	133	130	128	130	132	130	138	171	139
GAS														
TO E-3-N	°F	TI-601	941	935	941	944	844	1010	991	1007	1018	1002	992	1000
FROM E-3-N	°F	TI-602	270	270	274	276	147	294	293	302	313	299	298	305
BRINE														
IC4 FROM P-1-E	M#/HR	FI-100	143.4	151.0	150.4	149.3	70.1	140.7	139.3	140.6	143.2	144.1	93.0	146.1
IC4 FROM P-1-E	M#/HR	FI-102	112.4	112.2	115.0	114.4	103.5	109.6	105.3	110.4	113.7	114.5	117.5	116.3
IC4 TO T-1-E	M#/HR	FI-101	117.6	118.5	118.6	118.7	2.4	116.9	116.3	116.4	123.0	119.6	1.5	123.1
IC4 TO E-3-N	M#/HR	FR-627	2.4	1.4	2.1	7.9	6.5	11.2	10.2	10.6	11.3	11.1	08.5	10.4
SEP FLOW	GALS	FQI-633	---	---	---	---	---	---	---	---	---	---	---	---
GAS TO GE-1-N	#/HR	FR-607	299.8	297.7	298.7	348.2	493.4	493.4	488.3	490.3	484.1	339.9	442.9	493.4
V-1-E	INCHES	LG-105	28	29	28	28	27	27.5	27	27.5	26.75	26	30	30

REMARKS

April 9-11, 1990

	INST.#	9-Apr	9-Apr	9-Apr	10-Apr	10-Apr	10-Apr	11-Apr	11-Apr	11-Apr		
		900	1700	100	900	1700	100	900	1700	100		
AMBIENT TEMP		71	78	71	73	71	65	59	72	60		
WET BULB TEMP		68	74	69	71	71	61	55	61	58		
POWER												
T-1-N GROSS	JI-100	503	0	499	507	0	535	543	527	551		
GE-1-N GROSS		340	340	340	330	335	340	345	345	340		
GE-2-N GROSS		340	335	340	340	335	340	340	340	340		
PARASITIC	JI-101	251	234	251	250	192	252	244	239	254		
NET SALE TO HL&P		920	420	890	880	460	900	940	920	940		
NET SALE TO HL&P		2557	2564	2570	2577	2583	2590	2596	2606	2615		
BRINE												
TO E-2-N	PI-606	505	505	505	502	505	500	501	505	500		
TO E-1-N	PI-611	495	505	490	495	515	490	491	490	490		
FROM E-1-N	PI-106	482	494	480	481	503	480	482	474	478		
ISOBUTANE												
IN V-1-E	PG-130	58	58	62	62	61	58	55	58	56		
OUT OF P-1-E	PI-105	360	362	351	351	422	347	345	265	340		
OUT OF E-1-N	PI-602	295	285	295	295	150	300	295	295	300		
OUT OF E-2-N	PG-114	280	275	280	284	145	280	280	280	280		
OUT OF E-3-N	PI-615	297	285	285	297	150	290	284	290	290		
INTO T-1-E	PI-107	266	58	265	268	56	268	264	265	268		
OUT OF T-1-E	PI-108	65	59	66	67	60	62	59	61	59		
TO OR 102	PG-104	60	320	60	60	375	58	52	55	57		
FROM OR 102	PG-105	60	135	60	60	155	58	52	55	57		
GAS												
TO E-3-N	PI-614	.2	.2	.2	.2	.0	.2	.2	.2	.2		
BRINE												
TO E-2-N	TI-101	298	297	298	298	297	298	298	298	298		
TO E-1-N	TR-113	216	211	215	215	154	215	216	215	216		
FROM E-1-N	TR-102	72	125	149	150	118	146	145	158	147		

April 9-11, 1990

[illegible]

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

April 12-15, 1990

	UNITS	INST.#	12-Apr 900	12-Apr 1700	12-Apr 100	13-Apr 900	13-Apr 1700	13-Apr 100	14-Apr 900	14-Apr 1700	14-Apr 100	15-Apr 900	15-Apr 1700	15-Apr 100
AMBIENT TEMP	°F		62	70	62	72	70	66	74	74	61	77	79	64
WET BULB TEMP	°F		58	60	57	65	60	64	70	66	60	68	71	62
POWER														
T-1-N GROSS	KW	JI-100	535	528	529	516	519	516	523	518	535	526	516	526
GE-1-N GROSS	KW		340	345	335	345	340	340	340	340	340	335	335	335
GE-2-N GROSS	KW		340	345	340	345	340	340	340	340	340	335	340	340
PARASITIC	KW	JI-101	253	252	252	240	251	251	241	249	242	251	250	253
NET SALE TO HL&P	KW		940	920	920	910	910	900	905	900	920	900	900	900
NET SALE TO HL&P	PDG		2623	2631	2639	2647	2655	2663	2671	2679	2687	2695	2703	2711
	KW-HR													
BRINE														
TO E-2-N	PSIG	PI-606	500	505	500	505	505	505	503	509	510	503	510	505
TO E-1-N	PSIG	PI-611	490	490	490	491	490	490	492	490	500	494	495	495
FROM E-1-N	PSIG	PI-106	490	481	479	482	479	481	477	478	483	480	477	480
ISOBUTANE														
IN V-1-E	PSIG	PG-130	56	55	57	59	60	60	61	59	58	59	60	60
OUT OF P-1-E	PSIG	PI-105	313	350	353	354	350	358	357	330	340	353	360	331
OUT OF E-1-N	PSIG	PI-602	295	295	295	294	298	300	299	301	300	289	300	300
OUT OF E-2-N	PSIG	PG-114	280	278	275	277	280	280	282	285	280	283	280	280
OUT OF E-3-N	PSIG	PI-615	290	285	285	280	290	290	289	290	290	289	290	290
INTO T-1-E	PSIG	PI-107	264	263	263	262	265	266	267	266	269	265	265	266
OUT OF T-1-E	PSIG	PI-108	60	60	60	62	64	64	65	63	62	62	64	62
TO OR 102	PSIG	PG-104	50	55	55	58	60	60	60	60	60	58	60	60
FROM OR 102	PSIG	PG-105	50	55	55	57	60	60	60	60	60	58	60	60
GAS														
TO E-3-N	PSIG	PI-614	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
BRINE														
TO E-2-N	°F	TI-101	298	297	298	298	298	298	298	298	298	298	298	298
TO E-1-N	°F	TR-113	215	215	215	215	216	216	216	216	216	216	216	---
FROM E-1-N	°F	TR-102	148	146	147	147	173	151	151	201	150	201	220	---

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

April 12-15, 1990

	UNITS	INST.#	12-Apr	12-Apr	12-Apr	13-Apr	13-Apr	13-Apr	14-Apr	14-Apr	14-Apr	15-Apr	15-Apr	15-Apr
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
ISOBUTANE														
IN V-1-E	°F	TI-104	90.4	90.8	91.1	92.8	94.9	95.3	95.7	94.4	92.1	93.2	95.5	93.7
OUT OF P-1-E	°F	TI-105	91.7	91.9	92.2	94.2	96.3	96.7	97.6	96.5	93.9	95.2	97.2	95.3
OUT OF E-1-N	°F	TR-112	210	209	210	210	211	211	211	214	211	222	220	- - -
OUT OF E-2-N	°F	TI-111	221	221	219	220	219	220	221	222	219	222	222	219
OUT OF E-3-N	°F	TI-603	212	211	211	210	211	212	211	211	214	212	212	212
INTO T-1-E	°F	TI-107	216	216	214	215	216	216	217	217	215	217	217	214
OUT OF T-1-E	°F	TI-108	136	136	134	136	136	136	137	138	133	137	139	134
GAS														
TO E-3-N	°F	TI-601	1005	998	998	995	995	1003	1007	1005	1005	1007	1000	1007
FROM E-3-N	°F	TI-602	314	309	309	309	310	316	320	321	326	324	321	326
BRINE														
IC4 FROM P-1-E	M#/HR	FI-100	145.0	146.0	145.6	144.3	147.8	150.5	150.2	149.1	146.1	148.0	146.4	145.2
IC4 FROM P-1-E	M#/HR	FI-102	117.0	117.0	118.7	114.4	116.9	116.9	119.1	117.6	120	118.4	116.0	120.3
IC4 TO T-1-E	M#/HR	FI-101	122.7	121.0	121.4	120.9	121.8	121.6	121.7	121.8	121.7	121.5	121.5	121.7
IC4 TO E-3-N	M#/HR	FR-627	10.8	10.5	10.4	10.7	10.8	10.2	10.5	11.0	10.2	10.9	10.6	10.6
SEP FLOW	GALS	FQI-633	- - -	- - -	- - -	7830	12741	- - -	22566	27589	32285	37016	41233	
GAS TO GE-1-N	#/HR	FR-607	491.3	492.4	486.2	495.5	492.4	492.4	494.4	500.6	493.4	526.4	523.3	538.7
V-1-E	INCHES	LG-105	30	24	23.5	25	23	24.5	24.5	26.5	27	26.75	22.5	21.25

REMARKS

April 16-18, 1990

	INST.#	16-Apr	16-Apr	16-Apr	17-Apr	17-Apr	17-Apr	18-Apr	18-Apr	18-Apr		
		900	1700	100	900	1700	100	900	1700	100		
AMBIENT TEMP		77	80	68	81	82	69	65	67	68		
WET BULB TEMP		69	70	67	74	72	68	63	64	66		
POWER												
T-1-N GROSS	JI-100	517	515	512	513	0	0	0	0	0		
GE-1-N GROSS		335	330	335	330	330	330	330	330	335		
GE-2-N GROSS		335	335	335	335	330	330	340	340	335		
PARASITIC	JI-101	250	248	250	238	25	26	6	6	115		
NET SALE TO HL&P		895	880	890	885	60	600	620	620	600		
NET SALE TO HL&P		2719	2727	2735	2743	2749	2753	2759	2764	2769		
BRINE												
TO E-2-N	PI-606	504	509	505	504	515	510	510	510	510		
TO E-1-N	PI-611	490	492	495	492	520	520	520	520	520		
FROM E-1-N	PI-106	479	476	482	481	520	514	512	511			
ISOBUTANE												
IN V-1-E	PG-130	60	61	61	62	52	46	48	45	46		
OUT OF P-1-E	PI-105	350	362	355	355	52	32	41	42	439		
OUT OF E-1-N	PI-602	297	298	300	300	35	0	0	0	50		
OUT OF E-2-N	PG-114	281	280	280	282	30	0	0	0	50		
OUT OF E-3-N	PI-615	286	290	290	289	35	10	0	0	50		
INTO T-1-E	PI-107	265	266	266	268	32	2	0	0	45		
OUT OF T-1-E	PI-108	64	65	66	68	38	14	6	9	48		
TO OR 102	PG-104	58	60	60	60	50	45	46	45	165		
FROM OR 102	PG-105	58	60	60	60	50	45	46	45	400		
GAS												
TO E-3-N	PI-614	.2	.2	.2	.2	.0	.0	.0	.0	.0		
BRINE												
TO E-2-N	TI-101	298	297	298	298	272	269	262	261	284		
TO E-1-N	TR-113	216	217	216	217	123	98	83	74	83		
FROM E-1-N	TR-102	151	181	150	155	121	103	90	82	87		

April 16-18, 1990

	UNITS	16-Apr	16-Apr	16-Apr	17-Apr	17-Apr	17-Apr	18-Apr	18-Apr	18-Apr		
		900	1700	100	900	1700	100	900	1700	100		
ISOBUTANE												
IN V-1-E	°F	95.4	96.7	96.2	97.2	81.2	76.6	72.5	71.3	86.5		
OUT OF P-1-E	°F	97.2	98.3	98.1	98.2	90.0	67.4	65.2	68.4	89.7		
OUT OF E-1-N	°F	211	211	211	212	110	75	68	70	88		
OUT OF E-2-N	°F	221	223	219	221	166	119	90	88	92		
OUT OF E-3-N	°F	211	211	213	211	140	118	91	94	90		
INTO T-1-E	°F	216	217	215	216	85	70	68	70	80		
OUT OF T-1-E	°F	137	139	135	137	81	70	69	70	92		
GAS												
TO E-3-N	°F	1001	998	1002	1006	771	812	765	768	170		
FROM E-3-N	°F	322	324	327	329	265	341	292	279	89		
BRINE	M#/HR	145.8	147	146.6	146.6	.0	.0	.0	0	0.2		
IC4 FROM P-1-E	M#/HR	115.3	116.5	117.3	116.7	.0	.0	.0	0	6.5		
IC4 TO T-1-E	M#/HR	121.5	121.5	121.5	121.3	1.7	2.8	3.4	3.3	.0		
IC4 TO E-3-N	M#/HR	10.2	10.9	10.7	10.4	0.0	0.0	0.1	0.0	0.0		
SEP FLOW	GALS	50581	54919	59154	64056	65732	65747	65750	65750	66047		
GAS TO GE-1-N	#/HR	495.5	492.4	494.4	496.5	493.4	495.5	497.5	499.6	492.4		
V-1-E	INCHES	21	21.5	20.75	20.5	34	37	42.5	42.5	34		
REMARKS												

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

April 19-22, 1990

	UNITS	INST.#	19-Apr 900	19-Apr 1700	19-Apr 100	20-Apr 900	20-Apr 1700	20-Apr 100	21-Apr 900	21-Apr 1700	21-Apr 100	22-Apr 900	22-Apr 1700	22-Apr 100
AMBIENT TEMP	°F		76	79	71	75	83	72	76	87	72	77	82	70
WET BULB TEMP	°F		72	73	70	72	76	70	73	77	70	73	75	69
POWER														
T-1-N GROSS	KW	JI-100	490	492	494	492	490	495	499	494	499	493	492	501
GE-1-N GROSS	KW		330	335	340	540	340	340	335	330	335	335	335	335
GE-2-N GROSS	KW		340	340	340	340	340	340	340	340	340	340	335	335
PARASITIC	KW	JI-101	239	251	250	250	249	240	250	249	250	239	248	250
NET SALE TO HL&P	KW		890	875	890	880	875	890	880	860	880	870	880	870
NET SALE TO HL&P	FDG		2774	2782	2790	2798	2805	2813	2821	2828	2836	2844	2852	2860
	KW-HR													
BRINE														
TO E-2-N	PSIG	PI-606	500	504	505	505	506	509	505	503	505	505	506	505
TO E-1-N	PSIG	PI-611	490	490	490	490	491	493	490	489	495	490	490	495
FROM E-1-N	PSIG	PI-106	480	479	482	482	477	481	481	476	481	481	479	481
ISOBUTANE														
IN V-1-E	PSIG	PG-130	63	65	64	64	66	63	64	64	63	64	67	62
OUT OF P-1-E	PSIG	PI-105	360	358	362	366	351	358	359	365	376	365	363	345
OUT OF E-1-N	PSIG	PI-602	305	305	305	305	305	305	310	308	310	310	309	310
OUT OF E-2-N	PSIG	PG-114	275	278	280	280	278	280	280	280	280	280	280	280
OUT OF E-3-N	PSIG	PI-615	285	282	288	285	284	285	290	287	290	290	287	290
INTO T-1-E	PSIG	PI-107	263	263	263	263	264	264	265	264	265	265	265	265
OUT OF T-1-E	PSIG	PI-108	67	68	68	69	69	69	68	69	65	363	63	63
TO OR 102	PSIG	PG-104	65	63	60	65	66	65	65	64	65	65	65	65
FROM OR 102	PSIG	PG-105	65	63	60	65	65	65	65	64	65	65	65	65
GAS														
TO E-3-N	PSIG	PI-614	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
BRINE														
TO E-2-N	°F	TI-101	297	297	297	297	292	298	298	297	298	298	297	298
TO E-1-N	°F	TR-113	215	215	215	215	215	215	216	216	216	216	216	216
FROM E-1-N	°F	TR-102	149	149	149	158	149	207	192	149	224	149	149	149

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

April 19-22, 1990

	UNITS	INST.#	19-Apr	19-Apr	19-Apr	20-Apr	20-Apr	20-Apr	21-Apr	21-Apr	21-Apr	22-Apr	22-Apr	22-Apr
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
ISOBUTANE														
IN V-1-E	°F	TI-104	93.8	95.4	95.1	96.6	97.0	96.2	96.2	96.9	96.3	96.5	97.5	96.1
OUT OF P-1-E	°F	TI-105	95.8	96.9	96.0	98.0	98.4	97.6	97.7	98.2	97.7	97.8	99	97.3
OUT OF E-1-N	°F	TR-112	210	211	210	210	210	211	211	211	212	211	211	211
OUT OF E-2-N	°F	TI-111	220	220	219	220	221	220	221	223	219	220	221	218
OUT OF E-3-N	°F	TI-603	210	211	211	211	211	211	211	211	212	211	211	212
INTO T-1-E	°F	TI-107	215	215	215	216	216	215	215	217	215	215	215	214
OUT OF T-1-E	°F	TI-108	138	139	138	140	141	138	139	141	137	138	140	136
GAS														
TO E-3-N	°F	TI-601	1006	993	999	999	998	1004	1007	1000	1005	1007	998	1002
FROM E-3-N	°F	TI-602	288	288	292	294	296	301	304	303	308	310	309	312
BRINE	M#/HR	FI-100	144.2	146.6	146.7	144.8	145.4	146.1	145.8	146.7	145.3	149.9	146.6	146.3
IC4 FROM P-1-E	M#/HR	FI-102	115.0	115.4	116.4	117.1	116.1	118.1	117	116.4	116.7	117.8	114.8	119.8
IC4 TO T-1-E	M#/HR	FI-101	123.2	123.6	123.4	123.3	123.1	123.7	124.0	123.0	123.3	121.5	121.4	121.7
IC4 TO E-3-N	M#/HR	FR-627	10.4	10.5	10.7	11.0	10.6	10.7	11.1	10.2	11.2	11.3	11.2	10.4
SEP FLOW	GALS	FQI-633	66805	71714	77229	81115	85161	90173	94515	98526	103299	107683	112084	116784
GAS TO GE-1-N	#/HR	FR-607	492.4	496.5	504.7	504.7	203.7	505.8	502.7	498.6	499.6	497.5	498.6	493.4
V-1-E	INCHES	LG-105	37	37	37	37	37	35	35	37.25	34.5	35	30	34.25

REMARKS

April 23-25, 1990

	INST.#	23-Apr	23-Apr	23-Apr	24-Apr	24-Apr	24-Apr	25-Apr	25-Apr	25-Apr		
		900	1700	100	900	1700	100	900	1700	100		
AMBIENT TEMP		79	81	70	76	80	74	76	79	73		
WET BULB TEMP		73	73	69	62	74	71	72	74	70		
POWER												
T-1-N GROSS	JI-100	500	498	497	492	494	495	488	483	488		
GE-1-N GROSS		335	335	335	335	340	340	335	330	335		
GE-2-N GROSS		335	335	340	340	340	340	305	305	295		
PARASITIC	JI-101	239	238	250	248	249	249	250	249	249		
NET SALE TO HL&P		870	870	880	870	880	880	845	840	840		
NET SALE TO HL&P		2867	2874	2882	2890	2895	2903	2910	2918	2925		
BRINE												
TO E-2-N	PI-606	505	508	505	505	503	505	508	505	505		
TO E-1-N	PI-611	490	492	490	490	489	490	492	490	490		
FROM E-1-N	PI-106	481	478	479	474	478	479	481	477	281		
ISOBUTANE												
IN V-1-E	PG-130	64	65	62	64	65	64	65	66	64		
OUT OF P-1-E	PI-105	345	355	348	354	341	356	353	361	350		
OUT OF E-1-N	PI-602	310	305	310	310	309	310	307	310	305		
OUT OF E-2-N	PG-114	280	279	280	280	280	280	279	280	280		
OUT OF E-3-N	PI-615	290	282	290	290	282	290	285	285	280		
INTO T-1-E	PI-107	265	263	265	263	263	264	264	264	265		
OUT OF T-1-E	PI-108	61	63	- - -	- - -	63	64	64	65	64		
TO OR 102	PG-104	65	63	60	65	65	65	64	65	65		
FROM OR 102	PG-105	65	63	60	65	65	65	64	65	65		
GAS												
TO E-3-N	PI-614	.2	.2	.2	.2	.2	.2	.2	.2	.2		
BRINE												
TO E-2-N	TI-101	298	297	298	297	297	297	297	297	297		
TO E-1-N	TR-113	216	216	217	216	216	216	216	215	215		
FROM E-1-N	TR-102	149	149	205	150	151	151	151	150	174		

April 23-25, 1990

	UNITS	23-Apr	23-Apr	23-Apr	24-Apr	24-Apr	24-Apr	25-Apr	25-Apr	25-Apr		
		900	1700	100	900	1700	100	900	1700	100		
ISOBUTANE												
IN V-1-E	°F	96.0	96.4	96.2	96.5	97.2	97.3	97.4	98.2	97.5		
OUT OF P-1-E	°F	97.5	97.6	97.6	98.1	98.6	98.8	98.9	99.7	99.1		
OUT OF E-1-N	°F	211	211	211	211	211	211	211	211	211		
OUT OF E-2-N	°F	219	220	219	218	218	220	220	219	218		
OUT OF E-3-N	°F	211	211	212	211	211	212	211	210	211		
INTO T-1-E	°F	215	215	214	214	213	215	215	214	214		
OUT OF T-1-E	°F	137	138	137	137	137	139	139	139	138		
GAS												
TO E-3-N	°F	1003	991	1006	995	962	1001	986	974	976		
FROM E-3-N	°F	314	311	319	314	281	318	317	313	314		
BRINE	M#/HR	146.2	146.8	145.5	146.7	147.2	146.7	146.5	147.2	148.4		
IC4 FROM P-1-E	M#/HR	117.5	116.4	117.4	116.0	112.1	116.6	117.7	116.3	118.4		
IC4 TO T-1-E	M#/HR	121.9	121.1	121.8	121.3	120.6	121.7	121.7	121.3	121.7		
IC4 TO E-3-N	M#/HR	10.9	10.6	10.4	10.4	8.4	10.6	10.1	10.1	10.1		
SEP FLOW	GALS	121378	125288	129950	13451	138902	143504	147870	152368	156602		
GAS TO GE-1-N	#/HR	494.4	500.6	504.7	496.5	501.6	501.6	489.3	479	473.8		
V-1-E	INCHES	34.5	34	34	34	34	33.5	33.25	33.25	34		

REMARKS

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

April 26-29, 1990

	UNITS	INST.#	26-Apr	26-Apr	26-Apr	27-Apr	27-Apr	27-Apr	28-Apr	28-Apr	28-Apr	29-Apr	29-Apr	29-Apr
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
AMBIENT TEMP	°F		76	62	68	73	82	64	67	82	74	79	80	76
WET BULB TEMP	°F		72	62	65	69	76	63	60	76	71	77	76	62
POWER														
T-1-N GROSS	KW	J1-100	494	525	515	504	476	533	533	493	493	497	479	491
GE-1-N GROSS	KW		335	335	340	340	335	0	0	0	0	0	0	0
GE-2-N GROSS	KW		315	305	320	280	0	340	345	340	330	340	330	335
PARASITIC	KW	J1-101	248	251	238	237	248	252	249	248	248	239	247	247
NET SALE TO HL&P	KW		855	870	880	835	560	600	615	580	580	585	570	560
NET SALE TO HL&P	PDG		2932	2940	2947	2957	2962	2968	2972	2978	2982	298	2992	2997
	KW-HR													
BRINE														
TO E-2-N	PSIG	PI-606	508	505	505	505	505	505	500	505	505	503	508	505
TO E-1-N	PSIG	PI-611	492	490	492	492	490	490	488	470	490	490	490	490
FROM E-1-N	PSIG	PI-106	481	478	479	480	478	477	480	475	477	476	477	477
ISOBUTANE														
IN V-1-E	PSIG	PG-130	65	62	62	63	65	58	57	64	64	66	67	66
OUT OF P-1-E	PSIG	PI-105	359	347	343	358	350	333	344	364	351	354	357	357
OUT OF E-1-N	PSIG	PI-602	307	310	310	307	305	310	309	310	310	312	310	310
OUT OF E-2-N	PSIG	PG-114	279	280	280	281	275	280	282	280	280	283	280	280
OUT OF E-3-N	PSIG	PI-615	285	285	290	287	282	290	289	285	290	289	290	290
INTO T-1-E	PSIG	PI-107	264	266	267	264	259	270	264	265	265	265	265	265
OUT OF T-1-E	PSIG	PI-108	64	61	62	62	64	62	68	64	65	65	66	66
TO OR 102	PSIG	PG-104	63	65	60	61	65	60	52	65	65	62	65	65
FROM OR 102	PSIG	PG-105	62	65	60	61	65	60	52	65	65	62	65	65
GAS														
TO E-3-N	PSIG	PI-614	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
BRINE														
TO E-2-N	°F	TI-101	297	297	297	297	297	297	298	297	297	297	297	297
TO E-1-N	°F	TR-113	216	217	218	216	214	216	218	217	217	217	216	216
FROM E-1-N	°F	TR-102	151	149	150	151	151	151	149	152	154	153	153	153

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

April 26-29, 1990

	UNITS	INST.#	26-Apr	26-Apr	26-Apr	27-Apr	27-Apr	27-Apr	28-Apr	28-Apr	28-Apr	29-Apr	29-Apr	29-Apr
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
ISOBUTANE														
IN V-1-E	°F	TI-104	97.2	92.0	94.8	95.3	96.3	92.1	89.3	97.2	97.7	97.6	99.1	98.1
OUT OF P-1-E	°F	TI-105	98.8	93.4	96.2	96.7	97.9	94.2	91.5	99	99.4	99.4	100.9	99.8
OUT OF E-1-N	°F	TR-112	211	211	212	211	209	211	211	212	212	213	212	212
OUT OF E-2-N	°F	TI-111	219	218	220	220	217	219	219	222	220	221	220	219
OUT OF E-3-N	°F	TI-603	211	211	212	211	210	211	211	211	213	213	212	214
INTO T-1-E	°F	TI-107	214	214	215	215	211	215	215	216	214	215	215	214
OUT OF T-1-E	°F	TI-108	138	134	137	137	136	134	134	140	138	138	139	137
GAS														
TO E-3-N	°F	TI-601	983	978	983	440	943	907	939	928	935	942	931	929
FROM E-3-N	°F	TI-602	318	323	324	328	204	268	292	272	276	280	279	279
BRINE	M#/HR	FI-100	147.1	181.9	149.7	148.2	147.2	160.7	151.7	159.8	154.5	153.7	154.9	154.4
IC4 FROM P-1-E	M#/HR	FI-102	117.0	119.6	119.3	117.0	117.2	120.2	118.9	111.5	118.4	117.9	116.9	117.4
IC4 TO T-1-E	M#/HR	FI-101	121.2	112.4	122.1	121.6	120.6	123.0	1220.0	122.0	121.9	122.1	121.7	121.6
IC4 TO E-3-N	M#/HR	FR-627	9.7	10.6	10.5	10.6	.6	0.7	4.5	0.7	0.7	1.4	1.2	.5
SEP FLOW	GALS	FQI-633	161320	165734	170441	174841	180110	183926	188098	192733	196480	40361		90953
GAS TO GE-1-N	#/HR	FR-607	487.2	486.2	490.3	486.2	253.4	278.1	345.1	275	303.9	302.8	301.8	304.9
V-1-E	INCHES	LG-105	27.25	32.25	32	32.25	32.25	32	31.5	32	31.5	26.5	31	31

REMARKS

April 30-May 2, 1990

	INST.#	30-Apr	30-Apr	30-Apr	1-May	1-May	1-May	2-May	2-May	2-May		
		900	1700	100	900	1700	100	900	1700	100		
AMBIENT TEMP		85	82	77	80	80	75	77	81	74		
WET BULB TEMP		77	77	72	75	75	72	73	76	71		
POWER												
T-1-N GROSS	JI-100	481	473	482	483	479	484	488	483	490		
GE-1-N GROSS		0	0	0	0	0	0	0	0	0		
GE-2-N GROSS		335	335	335	345	340	340	340	340	340		
PARASITIC	JI-101	237	248	246	238	246	238	248	237	248		
NET SALE TO HL&P		555	580	570	560	560	560	560	565	560		
NET SALE TO HL&P		3002	3006	3011	3016	3021	3025	3031	3035	3041		
BRINE												
TO E-2-N	PI-606	504	505	500	503	510	505	510	506	505		
TO E-1-N	PI-611	490	490	485	491	490	490	490	491	490		
FROM E-1-N	PI-106	473	476	476	476	476	477	477	476	478		
ISOBUTANE												
IN V-1-E	PG-130	66	70	67	66	68	66	64	66	65		
OUT OF P-1-E	PI-105	358	359	352	354	363	357	356	355	355		
OUT OF E-1-N	PI-602	311	310	310	309	310	310	310	310	310		
OUT OF E-2-N	PG-114	281	280	280	280	280	280	280	279	280		
OUT OF E-3-N	PI-615	287	285	290	285	285	290	290	288	290		
INTO T-1-E	PI-107	264	265	265	264	264	264	263	263	264		
OUT OF T-1-E	PI-108	67	67	65	666	65	64	65	65	63		
TO OR 102	PG-104	63	69	65	64	68	65	65	67	65		
FROM OR 102	PG-105	63	69	65	64	69	65	65	66	65		
GAS												
TO E-3-N	PI-614	.2	.2	.2	.2	.1	.1	.1	.1	.1		
BRINE												
TO E-2-N	TI-101	298	297	297	297	297	297	297	297	297		
TO E-1-N	TR-113	216	217	217	217	217	216	217	216	216		
FROM E-1-N	TR-102	154	155	155	154	154	154	154	154	214		

April 30-May 2, 1990

[illegible]

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

May 3-6, 1990

	UNITS	INST.#	3-May 900	3-May 1700	3-May 100	4-May 900	4-May 1700	4-May 100	5-May 900	5-May 1700	5-May 100	6-May 900	6-May 1700	6-May 100
AMBIENT TEMP	°F		77	75	68	71	73	68	61	67	64	70	76	64
WET BULB TEMP	°F		74	75	68	67	65	61	53	62	61	60	61	59
POWER														
T-1-N GROSS	KW	JI-100	485	484	499	501	503	535	545	533	535	538	523	531
GE-1-N GROSS	KW		0	0	0	0	0	320	320	320	320	310	300	310
GE-2-N GROSS	KW		340	340	340	340	345	340	340	340	340	340	340	340
PARASITIC	KW	JI-101	238	238	249	246	250	253	252	250	253	253	251	252
NET SALE TO HL&P	KW		560	570	580	580	600	905	900	905	905	890	880	900
NET SALE TO HL&P	FDG		3045	3050	3055	3060	3065	3073	3081	3089	3097	3105	3111	3119
	KW-HR													
BRINE														
TO E-2-N	PSIG	PI-606	505	505	505	505	510	505	505	510	505	505	510	505
TO E-1-N	PSIG	PI-611	490	490	490	495	495	490	490	495	495	490	495	495
FROM E-1-N	PSIG	PI-106	477	478	479	475	478	478	481	475	481	480	476	480
ISOBUTANE														
IN V-1-E	PSIG	PG-130	65	65	64	62	62	58	55	58	58	55	58	57
OUT OF P-1-E	PSIG	PI-105	360	363	341	339	352	339	348	349	340	342	354	340
OUT OF E-1-N	PSIG	PI-602	310	310	310	310	310	310	305	310	310	310	307	310
OUT OF E-2-N	PSIG	PG-114	280	278	280	280	280	280	280	280	280	280	280	280
OUT OF E-3-N	PSIG	PI-615	290	285	290	290	285	290	290	290	290	290	285	290
INTO T-1-E	PSIG	PI-107	264	263	265	265	265	267	263	266	268	267	264	263
OUT OF T-1-E	PSIG	PI-108	64	62	59	58	56	54	51	56	54	53	51	50
TO OR 102	PSIG	PG-104	65	65	65	65	60	60	55	55	55	55	55	60
FROM OR 102	PSIG	PG-105	56	65	65	65	60	60	55	55	55	55	55	60
GAS														
TO E-3-N	PSIG	PI-614	.2	.2	.1	.1	.1	.2	.2	.2	.2	.2	.2	.2
BRINE														
TO E-2-N	°F	TI-101	297	297	298	298	298	298	297	298	298	298	298	298
TO E-1-N	°F	TR-113	217	217	218	216	214	217	217	217	217	219	217	217
FROM E-1-N	°F	TR-102	155	158	153	153	152	149	148	149	149	149	148	148

May 3-6, 1990

	UNITS	INST.#	3-May	3-May	3-May	4-May	4-May	4-May	5-May	5-May	5-May	6-May	6-May	6-May
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
ISOBUTANE														
IN V-1-E	°F	TI-104	99.4	98.7	96.7	95.6	94.2	90.9	87.3	91.5	91.7	91.3	92.3	90.9
OUT OF P-1-E	°F	TI-105	100.9	100.2	98.6	97.8	96.1	92.7	89.4	93.2	93.3	93.0	93.6	92.1
OUT OF E-1-N	°F	TR-112	212	212	213	212	212	212	211	212	212	212	212	211
OUT OF E-2-N	°F	TI-111	220	219	218	218	218	219	218	221	219	219	220	219
OUT OF E-3-N	°F	TI-603	212	211	211	212	212	212	212	214	212	212	210	212
INTO T-1-E	°F	TI-107	215	214	214	213	213	215	214	216	215	215	215	214
OUT OF T-1-E	°F	TI-108	140	139	136	136	135	134	132	135	134	134	137	134
GAS														
TO E-3-N	°F	TI-601	941	928	938	938	942	1008	1001	1017	1014	1011	996	1003
FROM E-3-N	°F	TI-602	291	288	296	294	296	342	342	354	353	352	345	352
BRINE	M#/HR	FI-100	155.0	154.9	154.6	153.4	153.6	149.1	150	148.4	147.4	147.5	149.3	148.8
IC4 FROM P-1-E	M#/HR	FI-102	117.3	117.8	116.6	119.4	118.2	119.4	117.7	116.3	118.6	118.3	116.8	117.5
IC4 TO T-1-E	M#/HR	FI-101	121.4	121.4	121.7	121.7	121.6	122.2	121.7	122.0	122.0	122	122.3	122.5
IC4 TO E-3-N	M#/HR	FR-627	1.4	0.4	1.1	0.3	.9	10.8	9.3	10.4	10.8	11.2	9.4	9.6
SEP FLOW	GALS	FQI-633	3459881	267781	298730	422875	448559	473928	5043271	527681	545837	5821591	601865	618412
GAS TO GE-1-N	#/HR	FR-607	260.6	263.7	263.7	258.5	261.6	493.4	491.3	496.5	492.4	489.3	478.0	479
V-1-E	INCHES	LG-105	29.5	29.5	29.5	28.75	27.5	28	16	30	30.5	30	32	30.5

REMARKS

May 7-9, 1990

	INST.#	7-May 900	7-May 1700	7-May 100	8-May 900	8-May 1700	8-May 100	9-May 900	9-May 1700	9-May 100		
AMBIENT TEMP		73	76	70	69	71	67	77	91	74		
WET BULB TEMP		66	66	70	68	69	66	72	80	72		
POWER												
T-1-N GROSS	JI-100	509	511	510	515	503	516	502	461	497		
GE-1-N GROSS		310	315	310	310	305	310	100	200	305		
GE-2-N GROSS		340	340	340	340	340	340	335	220	340		
PARASITIC	JI-101	249	250	249	250	250	251	251	237	239		
NET SALE TO HL&P		880	878	880	870	875	880	655	590	860		
NET SALE TO HL&P		3127	3134	3142	3150	3157	3165	3172	3176	3183		
BRINE												
TO E-2-N	PI-606	505	508	505	505	505	505	502	508	505		
TO E-1-N	PI-611	495	490	490	495	490	495	492	490	495		
FROM E-1-N	PI-106	479	478	479	480	480	479	479	475	478		
ISOBUTANE												
IN V-1-E	PG-130	60	62	62	62	64	61	63	67	66		
OUT OF P-1-E	PI-105	350	349	355	341	349	354	351	373	356		
OUT OF E-1-N	PI-602	305	305	305	310	208	310	305	305	310		
OUT OF E-2-N	PG-114	280	276	280	280	280	280	277	278	280		
OUT OF E-3-N	PI-615	295	285	290	290	290	290	283	285	290		
INTO T-1-E	PI-107	264	265	265	267	266	267	263	268	268		
OUT OF T-1-E	PI-108	62	55	55	56	59	52	56	63	51		
TO OR 102	PG-104	60	60	60	60	61	60	61	65	65		
FROM OR 102	PG-105	60	60	60	60	60	60	61	65	65		
GAS												
TO E-3-N	PI-614	.2	.2	.2	.2	.2	.2	.2	.0	.2		
BRINE												
TO E-2-N	TI-101	298	297	297	298	297	298	297	297	298		
TO E-1-N	TR-113	217	217	217	218	218	218	216	216	218		
FROM E-1-N	TR-102	150	151	151	151	153	150	151	155	152		

May 7-9, 1990

	UNITS	7-May 900	7-May 1700	7-May 100	8-May 900	8-May 1700	8-May 100	9-May 900	9-May 1700	9-May 100		
ISOBUTANE												
IN V-1-E	°F	94.2	94.7	95.8	96.6	97.3	95.1	96.1	99.9	98.8		
OUT OF P-1-E	°F	96.2	96.9	98.3	99.4	100.1	97.9	099.1	102.7	101.9		
OUT OF E-1-N	°F	212	211	212	212	212	212	211	213	212		
OUT OF E-2-N	°F	221	220	220	220	220	217	219	221	219		
OUT OF E-3-N	°F	212	210	211	212	211	212	211	192	212		
INTO T-1-E	°F	216	215	215	215	215	215	214	216	215		
OUT OF T-1-E	°F	139	137	137	137	139	136	137	141	138		
GAS												
TO E-3-N	°F	1004	995	997	1008	1084	1005	990	472	1009		
FROM E-3-N	°F	353	346	350	360	358	360	328	155	358		
BRINE												
IC4 FROM P-1-E	M#/HR	149	150.2	148.4	148.1	148.5	150.5	150.9	149.9	149.6		
IC4 TO T-1-E	M#/HR	117.1	117.5	117.6	120.4	117.8	119.9	114.8	111.1	117.0		
IC4 TO T-1-E	M#/HR	122.1	122.1	122.5	122.7	122.7	122.6	122.2	122.2	121.7		
IC4 TO E-3-N	M#/HR	9.8	9.2	9.8	11	9.6	10.6	6.4	0.0	9.3		
SEP FLOW	GALS	6475920	672206	694498	7223514	747182	770285	7967680	821750	844349		
GAS TO GE-1-N	#/HR	486.2	482.1	488.3	491.3	492.4	495.4	363.6	292.5	476.9		
V-1-E	INCHES	23.75	31	30.75	22.5	23	29.5	22.5	21	22.5		
REMARKS												

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

May 10-13, 1990

	UNITS	INST.#	10-May	10-May	10-May	11-May	11-May	11-May	12-May	12-May	12-May	13-May	13-May	13-May
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
AMBIENT TEMP	°F		69	80	70	79	80	76	77	82	77	77	88	77
WET BULB TEMP	°F		59	66	68	76	75	74	74	76	75	76	79	75
POWER														
T-1-N GROSS	KW	JI-100	527	526	517	491	491	486	490	484	486	495	482	486
GE-1-N GROSS	KW		325	325	325	320	320	320	320	310	300	316	315	300
GE-2-N GROSS	KW		345	345	340	345	335	340	335	320	320	325	320	330
PARASITIC	KW	JI-101	251	249	250	250	249	238	249	239	248	238	250	250
NET SALE TO HL&P	KW		905	900	900	860	850	860	845	820	810	840	840	830
NET SALE TO HL&P	FDG		3191	3198	3207	3214	3222	3230	3237	3244	3251	3259	3266	3272
	KW-HR													
BRINE														
TO E-2-N	PSIG	PI-606	503	510	505	502	505	505	505	505	510	507	510	510
TO E-1-N	PSIG	PI-611	492	490	490	489	490	490	492	490	495	494	490	490
FROM E-1-N	PSIG	PI-106	480	475	480	479	477	477	476	478	480	479	480	479
ISOBUTANE														
IN V-1-E	PSIG	PG-130	57	58	60	65	65	66	66	68	68	67	69	68
OUT OF P-1-E	PSIG	PI-105	346	348	348	347	355	359	358	358	356	347	361	359
OUT OF E-1-N	PSIG	PI-602	306	307	310	309	310	308	309	310	312	311	310	310
OUT OF E-2-N	PSIG	PG-114	279	280	280	281	280	280	280	280	283	284	284	280
OUT OF E-3-N	PSIG	PI-615	284	289	290	287	290	285	285	290	290	291	290	290
INTO T-1-E	PSIG	PI-107	263	266	265	265	266	265	265	261	268	270	268	267
OUT OF T-1-E	PSIG	PI-108	52	55	53	59	59	58	68	60	61	63	62	59
TO OR 102	PSIG	PG-104	52	60	60	64	65	65	65	68	68	68	69	69
FROM OR 102	PSIG	PG-105	53	60	60	347	65	65	65	68	68	68	69	69
GAS														
TO E-3-N	PSIG	PI-614	.2	.2	.2	.3	.2	.2	.3	.3	.2	.3	.2	.3
BRINE														
TO E-2-N	°F	TI-101	297	297	297	297	297	297	297	297	297	298	297	297
TO E-1-N	°F	TR-113	217	219	218	219	219	219	219	219	219	220	219	218
FROM E-1-N	°F	TR-102	149	151	152	155	155	155	155	157	155	155	181	156

May 10-13, 1990

	UNITS	INST.#	10-May	10-May	10-May	11-May	11-May	11-May	12-May	12-May	12-May	13-May	13-May	13-May
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
ISOBUTANE														
IN V-1-E	°F	TI-104	91.1	93.5	94.8	99.4	100.3	100.4	87.3	101.6	101.6	101.2	103.3	101.5
OUT OF P-1-E	°F	TI-105	93.9	95.4	97.3	102.3	103.1	103.4	89.4	104.7	104.5	104.1	104.9	104.6
OUT OF E-1-N	°F	TR-112	212	213	213	213	213	210	211	214	214	214	214	214
OUT OF E-2-N	°F	TI-111	220	221	220	222	221	221	218	222	222	223	223	222
OUT OF E-3-N	°F	TI-603	211	211	212	212	211	211	212	213	214	213	212	212
INTO T-1-E	°F	TI-107	215	218	216	217	216	216	214	216	216	217	217	216
OUT OF T-1-E	°F	TI-108	136	139	138	142	142	141	132	0	142	143	144	142
GAS														
TO E-3-N	°F	TI-601	1004	998	1003	998	994	990	1001	1001	993	999	996	1000
FROM E-3-N	°F	TI-602	356	355	356	355	355	356	342	367	367	368	364	366
BRINE	M#/HR	FI-100	148.1	150.4	152.2	151.3	151.7	1530.0	150	152.4	150.3	152.9	151.1	153
IC4 FROM P-1-E	M#/HR	FI-102	116.2	115.4	116.1	118.1	117.3	117.4	117.7	118.3	18.4	118.9	115.6	116.7
IC4 TO T-1-E	M#/HR	FI-101	121.3	121.8	121.7	121.7	121.8	121.5	121.7	121.4	121.8	122.6	121.8	122.0
IC4 TO E-3-N	M#/HR	FR-627	10.4	10.5	10.4	9.5	9.3	9.9	9.3	10.4	10	10.2	10.7	94.0
SEP FLOW	GALS	FQI-633	8699760	8944536	918579	9433790	9674541	991334	5043271	406140	655255	8960337		
GAS TO GE-1-N	#/HR	FR-607	496.2	542.8	547	569.6	570.7	576.8	491.3	530.5	525.3	543.9	508.9	557.3
V-1-E	INCHES	LG-105	21.75	22.5	27	21.5	21.5	21.25	21	20.5	20.25	20	21	19.5

REMARKS

May 14-16, 1990

	INST.#	14-May	14-May	14-May	15-May	15-May	15-May	16-May	16-May	16-May		
		900	1700	100	900	1700	100	900	1700	100		
AMBIENT TEMP		82	88	78	86	85	77	88	89	79		
WET BULB TEMP		77	82	75	78	77	74	78	80	74		
POWER												
T-1-N GROSS	J1-100	481	478	469	473	470	458	469	472	471		
GE-1-N GROSS		316	10	310	312	310	310	315	310	310		
GE-2-N GROSS		325	320	325	325	320	320	330	320	320		
PARASITIC	J1-101	239	248	244	242	232	238	226	242	243		
NET SALE TO HL&P		830	820	830	840	830	820	840	320	820		
NET SALE TO HL&P		3280	3288	3295	3302	3309	3317	3324	3331	3338		
BRINE												
TO E-2-N	PI-606	508	500	505	502	505	505	505	505	505		
TO E-1-N	PI-611	495	490	495	493	490	490	495	490	490		
FROM E-1-N	PI-106	480	480	480	479	476	480	478	415	480		
ISOBUTANE												
IN V-1-E	PG-130	68	68	70	67	68	70	68	69	69		
OUT OF P-1-E	PI-105	366	369	357	364	376	367	364	363	361		
OUT OF E-1-N	PI-602	309	305	308	309	305	305	310	36	310		
OUT OF E-2-N	PG-114	283	280	280	280	280	280	280	280	280		
OUT OF E-3-N	PI-615	290	285	285	287	285	285	290	290	290		
INTO T-1-E	PI-107	268	265	266	264	263	264	263	266	266		
OUT OF T-1-E	PI-108	61	61	60	60	62	62	61	62	62		
TO OR 102	PG-104	68	68	70	68	68	20	65	70	70		
FROM OR 102	PG-105	67	69	70	67	68	20	55	70	70		
GAS												
TO E-3-N	PI-614	.3	.3	.5	.3	.3	.4	.2	.2	.2		
BRINE												
TO E-2-N	TI-101	297	297	297	297	297	297	297	297	198		
TO E-1-N	TR-113	219	218	218	218	218	218	218	218	2200		
FROM E-1-N	TR-102	157	155	156	155	154	155	154	154	155		

May 14-16, 1990

	UNITS	14-May 900	14-May 1700	14-May 100	15-May 900	15-May 1700	15-May 100	16-May 900	16-May 1700	16-May 100		
ISOBUTANE												
IN V-1-E	°F	102.9	102.0	102.7	101.9	101.9	103.4	101.2	103.1	103.0		
OUT OF P-1-E	°F	105.3	104.8	105.7	104.8	104.5	106.6	104.1	105.7	105.7		
OUT OF E-1-N	°F	214	212	213	23	212	212	213	213	213		
OUT OF E-2-N	°F	222	222	221	223	222	221	222	223	222		
OUT OF E-3-N	°F	213	212	212	211	211	210	210	211	212		
INTO T-1-E	°F	216	215	215	215	215	215	215	216	215		
OUT OF T-1-E	°F	143	142	142	142	142	142	141	143	142		
GAS												
TO E-3-N	°F	963	997	997	997	787	992	993	996	1001		
FROM E-3-N	°F	367	367	367	370	366	368	373	574	376		
BRINE	M#/HR	152.4	148.2	148.2	148	149.5	148.0	147.1	148.8	147.1		
IC4 FROM P-1-E	M#/HR	116.4	112.4	112.4	115.0	109.3	110.7	110.4	112.7	114.7		
IC4 TO T-1-E	M#/HR	121.4	121.5	121.5	121.0	120.9	121.0	120.9	121.5	121.5		
IC4 TO E-3-N	M#/HR	9.6	9.4	9.4	9.4	10.2	9.8	9.2	9.0	9.9		
SEP FLOW	GALS	163624	212944	212944	2370971	2623050	2869002	312669	3377700	3610036		
GAS TO GE-1-N	#/HR	557.3	548.0	552.1	542.8	551.1	551.1	552.1	508.9	517.1		
V-1-E	INCHES	19.5	19.25	19.25	18.5	30.75	30.25	30	30.25	29.5		

REMARKS

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

May 17-23, 1990

	UNITS	INST.#	17-May	17-May	17-May	18-May	18-May	18-May	19-May	19-May	19-May	20-May	20-May	20-May
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
AMBIENT TEMP	°F		81	83	77	80	87	77	82	90	78	86	87	79
WET BULB TEMP	°F		76	77	74	75	79	74	76	81	75	78	80	75
POWER														
T-1-N GROSS	KW	JI-100	473	462	465	468	463	473	470	475	470	472	464	471
GE-1-N GROSS	KW		310	315	315	320	315	320	310	310	310	315	315	320
GE-2-N GROSS	KW		320	325	325	320	325	335	330	320	320	325	325	330
PARASITIC	KW	JI-101	243	242	241	233	244	244	242	232	244	244	242	233
NET SALE TO HL&P	KW		820	830	830	840	815	840	840	820	830	830	820	825
NET SALE TO HL&P	FDG		3346	3353	3361	3368	3374	3382	3390	3397	3404	3411	3419	3427
	KW-HR													
BRINE														
TO E-2-N	PSIG	PI-606	510	502	505	505	502	504	510	505	505	505	502	505
TO E-1-N	PSIG	PI-611	500		490	485	480	482	485	480	485	480	478	485
FROM E-1-N	PSIG	PI-106	485	477	480	485	477	480	476	475	478	477	473	476
ISOBUTANE														
IN V-1-E	PSIG	PG-130	70	69	68	68	69	68	68	69	68	68	69	69
OUT OF P-1-E	PSIG	PI-105	360	355	365	358	357	359	363	356	361	356	351	358
OUT OF E-1-N	PSIG	PI-602	310	305	310	305	306	306	305	305	305	310	306	310
OUT OF E-2-N	PSIG	PG-114	275	278	280	275	276	278	279	280	280	280	279	280
OUT OF E-3-N	PSIG	PI-615	285	278	290	280	277	278	279	280	285	282	280	285
INTO T-1-E	PSIG	PI-107	269	263	264	263	264	264	264	266	266	265	265	266
OUT OF T-1-E	PSIG	PI-108	67	62	64	61	62	60	77	78	79	79	80	80
TO OR 102	PSIG	PG-104	70	69	70	70	69	69	68	69	70	68	70	70
FROM OR 102	PSIG	PG-105	70	69	70	69	69	69	68	69	70	68	70	70
GAS														
TO E-3-N	PSIG	PI-614	.2	.2	.2	.3	.2	.2	.2	.2	.2	.2	.2	.2
BRINE														
TO E-2-N	°F	TI-101	298	298	298	297	297	297	297	297	297	297	297	297
TO E-1-N	°F	TR-113	217	217	219	217	218	218	218	218	218	219	218	219
FROM E-1-N	°F	TR-102	154	155	155	155	156	155	155	155	156	155	156	156

GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

May 17-23, 1990

	UNITS	INST.#	17-May	17-May	17-May	18-May	18-May	18-May	19-May	19-May	19-May	20-May	20-May	20-May
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
ISOBUTANE														
IN V-1-E	°F	TI-104	103.2	102.5	102.1	102.0	102.7	101.8	102.3	102.4	102.7	102.4	103.5	103.2
OUT OF P-1-E	°F	TI-105	105.9	105.2	104.6	104.6	105.4	104.5	104.8	105.1	105.5	105.4	106.1	106.0
OUT OF E-1-N	°F	TR-112	212	212	212	212	212	212	212	213	213	213	213	212
OUT OF E-2-N	°F	TI-111	223	221	221	222	222	221	222	223	221	222	223	221
OUT OF E-3-N	°F	TI-603	212	211	211	211	213	213	213	212	212	213	213	212
INTO T-1-E	°F	TI-107	216	214	214	215	215	214	215	216	215	215	216	215
OUT OF T-1-E	°F	TI-108	142	142	141	142	143	583	143	143	141	142	144	142
GAS														
TO E-3-N	°F	TI-601	1008	998	1001	996	990	998	1001	1000	995	1004	988	1003
FROM E-3-N	°F	TI-602	383	374	374	372	371	376	374	378	376	383	373	383
BRINE	M#/HR	FI-100	149.3	146.8	146.7	148.3	148.5	147.9	149	150	150.2	150.5	149.0	149.1
IC4 FROM P-1-E	M#/HR	FI-102	114.9	114.2	112.5	114.5	112.3	146.3	117.3	117.6	117.3	116	117.3	116.8
IC4 TO T-1-E	M#/HR	FI-101	121.5	120.6	121.0	121.0	120.8	121.0	120.8	121.4	121.2	121.4	121.2	121.4
IC4 TO E-3-N	M#/HR	FR-627	9.9	9.4	9.6	8.8	9.3	9.1	10.2	9	9.5	10.6	10.0	10.3
SEP FLOW	GALS	FQI-633	3809555	4110779	440972	4666666	4853826	5097412	5355400	5602750	585389	6099600	6343670	657349
GAS TO GE-1-N	#/HR	FR-607	586.7	544.9	542.8	535.6	534.6	552.1	520.2	497.5	518.1	508.9	513.0	539.8
V-1-E	INCHES	LG-105	29	29.25	30	29	29	28.5	28.5	28.5	28	27.5	28	27.5

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May 21-23, 1990

	INST.#	21-May	21-May	21-May	22-May	22-May	22-May	23-May	23-May	23-May		
		900	1700	100	900	1700	100	900	1700	100		
AMBIENT TEMP		86	93	78	92	70	72	73	85	74		
WET BULB TEMP		79	82	75	80	69	68	67	75	70		
POWER												
T-1-N GROSS	JI-100	470	455	467	457	485	482	497	488	483		
GE-1-N GROSS		310	312	315	300	325	300	0	0	0		
GE-2-N GROSS		320	315	325	330	340	300	345	340	340		
PARASITIC	JI-101	242	242	244	241	245	243	243	242	243		
NET SALE TO HL&P		820	790	810	800	860	800	595	575	570		
NET SALE TO HL&P		3433	3940	3448	3454	3460	3468	3474	3479	3484		
BRINE												
TO E-2-N	PI-606	505	502	510	503	509	505	504	505	505		
TO E-1-N	PI-611	485	478	485	482	488	485	479	478	480		
FROM E-1-N	PI-106	480	475	477	478	480	480	476	473	480		
ISOBUTANE												
IN V-1-E	PG-130	70	71	69	69	64	66	64	67	68		
OUT OF P-1-E	PI-105	356	355	363	371	361	364	359	351	356		
OUT OF E-1-N	PI-602	305	305	310	310	277	305	310	317	310		
OUT OF E-2-N	PG-114	280	269	280	280	305	275	278	280	280		
OUT OF E-3-N	PI-615	280	278	285	285	278	280	278	283	280		
INTO T-1-E	PI-107	266	266	265	264	265	263	264	267	266		
OUT OF T-1-E	PI-108	81	78	77	82	72	75	75	77	77		
TO OR 102	PG-104	69	70	70	69	62	65	61	65	65		
FROM OR 102	PG-105	65	70	70	69	61	60	60	65	62		
GAS												
TO E-3-N	PI-614	.2	.2	.2	.2	.2	.2	.2	.2	.2		
BRINE												
TO E-2-N	TI-101	297	298	298	298	297	298	297	298	298		
TO E-1-N	TR-113	219	217	218	218	218	218	220	219	218		
FROM E-1-N	TR-102	155	156	154	155	154	154	155	157	157		

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May 24-27, 1990

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GEOPRESSURED HYBRID POWER SYSTEM - MANAGEMENT REPORT DATA

May 24-27, 1990

	UNITS	INST.#	24-May	24-May	24-May	25-May	25-May	25-May	26-May	26-May	26-May	27-May	27-May	27-May
			900	1700	100	900	1700	100	900	1700	100	900	1700	100
ISOBUTANE														
IN V-1-E	°F	TI-104	102.4	102.7	100.9	101.4	101.2	100.2	101	103.0	84.2	82.9	85.9	84.6
OUT OF P-1-E	°F	TI-105	105.0	105.2	103.7	104.3	103.5	102.5	104.0	105.5	81.9	88.5	94.7	80.4
OUT OF E-1-N	°F	TR-112	214	213	213	212	213	212	212	213	223	143	118	086
OUT OF E-2-N	°F	TI-111	222	224	224	225	224	221	223	223	217	208	206	115
OUT OF E-3-N	°F	TI-603	214	214	214	214	214	213	214	214	240	165	144	148
INTO T-1-E	°F	TI-107	216	217	217	218	216	214	215	214	89	80	86	79
OUT OF T-1-E	°F	TI-108	144	146	0	0	143	139	142	141	127	81	86	78
GAS														
TO E-3-N	°F	TI-601	925	994	997	997	993	994	997	994	787	807	813	812
FROM E-3-N	°F	TI-602	284	315	320	321	324	326	331	332	188	314	342	334
BRINE														
IC4 FROM P-1-E	M#/HR	FI-102	117.8	112.5	115.6	114.6	114.8	114.7	112.2	116.3	0	.0	.1	.0
IC4 TO T-1-E	M#/HR	FI-101	122.4	121.9	122.5	122.0	121.6	121.9	112.6	122.0	3.7	4.4	.9	4.2
IC4 TO E-3-N	M#/HR	FR-627	5.0	11.0	11.6	10.3	11.3	11.2	10.0	11.1	3.6	0.1	0.0	0.0
SEP FLOW	GALS	FQI-633	8986530	9249004	9502455	9745880	2301	229393	503448	769490	845507	0	0	845507
GAS TO GE-1-N	#/HR	FR-607	366.7	517.1	521.2	523.3	523.3	519.2	518.1	522.2	517.1	525.3	523.3	517.1
V-1-E	INCHES	LG-105	23.5	34	31	26.25	25.75	28	26.5	24.75	37	39.5	42	41.5
REMARKS														

May 28-30, 1990

	INST.#	28-May	28-May	28-May	29-May	29-May	29-May	30-May	30-May	30-May		
		900	1700	100	900	1700	100	900	1700	100		
AMBIENT TEMP		86	95	75	80	85	78					
WET BULB TEMP		78	86	72	75	78	74					
POWER												
T-1-N GROSS	JI-100	0	0	0	0	0	0					
GE-1-N GROSS		335	320	320	335	335	330					
GE-2-N GROSS		335	330	320	335	335	330					
PARASITIC	JI-101	34	19	19	6	29	29					
NET SALE TO HL&P		565	550	575	610	580	590					
NET SALE TO HL&P		3565	3570	3574	3580	3585	3589					
BRINE												
TO E-2-N	PI-606	0	0	525	530	0	0					
TO E-1-N	PI-611	0	0	525	530	0	0					
FROM E-1-N	PI-106	0	0	529	529	17	535					
ISOBUTANE												
IN V-1-E	PG-130	57	63	54	47	60	60					
OUT OF P-1-E	PI-105	56	61	53	47	62	60					
OUT OF E-1-N	PI-602	0	0	40	40	60	0					
OUT OF E-2-N	PG-114	0	0	40	40	45	0					
OUT OF E-3-N	PI-615	59	60	60	50	0	50					
INTO T-1-E	PI-107	36	44	21	45	45	25					
OUT OF T-1-E	PI-108	37	38	21	44	41	23					
TO OR 102	PG-104	54	60	60	50	60	55					
FROM OR 102	PG-105	57	55	55	50	60	55					
GAS												
TO E-3-N	PI-614	0	0	0	0	0	0					
BRINE												
TO E-2-N	TI-101	208	118	222	206	274	270					
TO E-1-N	TR-113	124	97	86	85	97	103					
FROM E-1-N	TR-102	96	113	102	92	94	92					

May 28-30, 1990

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