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ERDA 10MW$_e$ SOLAR PILOT PLANT SUBSYSTEM RESEARCH EXPERIMENTS, STEAM GENERATOR TESTS AT NORTHERN STATES POWER RIVERSIDE STATION

Volume 8: Test Number 23

April 28, 1977

Work Performed Under Contract No. EY-76-C-03-1109

Honeywell, Inc.
Energy Resources Center
Minneapolis, Minnesota

U.S. Department of Energy

Solar Energy

NOTICE

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ERDA 10 MWe SOLAR PILOT PLANT
SUBSYSTEM RESEARCH EXPERIMENTS

VOLUME VIII
STEAM GENERATOR TEST NO. 23
NORTHERN STATES POWER RIVERSIDE STATION

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ERDA CONTRACT E(04-3)-1109

Honeywell
Energy Resources Center
2600 RIDGWAY PARKWAY
MINNEAPOLIS, MINNESOTA 55413

TABLE OF CONTENTS

TABLE OF CONTENTS (CONCLUDED)

SECTION 1
EXPLANATORY SHEETS

Summary of SRE Steam Generator Testing

TEST NUMBER	DATE 1977	DURATION (HOURS)	OBJECTIVE	PEAK POWER (Mw) IN/OUT*	MANUFACTURER'S OPERATING MANUAL REFERENCE	DIFFICULTIES**
1	3/11	7.25	INITIAL STEAMING		3.0	RECIRCULATION PUMP INSTABILITY
2	3/14	4.95	RELIEF VALVE SETTING		3.0	DAC P-T OUTPUT
3	3/16	9.87	RELIEF VALVE SETTING SATURATION CHECK OF T/C		3.0	480-V CIRCUIT BREAKER TRIPS
4	3/17	4.55	RECIRCULATION VERSUS DRUM LEVEL COOLING WATER INSTRUMENTATION		3.0	- DAC INTERMITTENT - COOLING WATER PLUGGING
5	3/18	12.93	STEADY STATE AT HIGHER POWER TUNE AUTOMATIC CONTROLS		3.0	- ZONE 3 CIRCUIT BREAKER TRIP - ATTEMPERATOR AUTO CONTROL
6	3/19	9.93	TUNE AUTOMATIC CONTROLS		3.0	ZONE 3 CIRCUIT BREAKER TRIP
7	3/21	13.83	TUNE AUTOMATIC CONTROLS		3.0	ZONE 3 CIRCUIT BREAKER TRIP
8	3/22	10.00	CALIBRATE SIMULATOR AND CHECK FULL RANGE OPERATION		3.0	FAILED MANY LAMPS IN ARRAY
9	3/28	7.93	CHECK R/A AFTER RE-LAMPING STEADY STATE CHECKS; AUTO CONTROL TUNING	2.07/1.4	4.0	ZONE 3 TRIP PROBLEM
10	3/29	3.83	DETERMINE CAUSE OF ZONE 3 TRIP; STEADY STATE DATA		4.0	ZONE 3 TRIP; NO STEADY STATE DATA
11	3/30	6.25	CONFIRM CORRECTION OF ZONE 3 TRIP REPAIR; TAKE STEADY STATE DATA	2.07/1.4	4.0	ZONE 3 TRIP PROBLEM
12	3/31	3.04	ZONE 3 TRIP INVESTIGATION; STEADY STATE DATA	3.84/2.76	4.0	ZONE 3 TRIP 18 LAMPS FAILED
13	4/2	2.5	TAKE HEAT BALANCE DATA		4.0	NSP FEEDWATER FAILURE
14	4/4	5.5	CALIBRATE R/A POWER DELIVERY			ZONE 1 CIRCUIT BREAKER FAILED
15	4/7	5.0	R/A POWER DELIVERY CALIBRATION AND INSTALL 420V LIMITING			ZONE 3 POWER CONTROL CIRCUITRY
16	4/11	6.5	REPEAT TESTS 11 AND 12 TO NOTE EFFECT OF BOILER PAINTING	2.07/1.4	4.0	35 LAMPS FAILED

Summary of SRE Steam Generator Testing -- Concluded

TEST NUMBER	DATE 1977	DURATION (HOURS)	OBJECTIVE	PEAK POWER (Mw) IN/OUT*	MANUFACTURER'S OPERATING MANUAL REFERENCE	DIFFICULTIES**
17	4/13	10.7	TRANSIENT: MAIN STEAM	4.1/3.0	5.1.1	- 100 LAMPS FAILED
			TRANSIENT: RADIANT ARRAY		5.1.3	- DAC RECORDING STOPPED
			TRANSIENT: DRUM SHRINK-SWELL		5.1.4	DURING "SHRINK SWELL"
18	4/15	10.5	TRANSIENT: POWER RAMP		5.1.5	- 154 LAMPS FAILED
			CLOUD OBSTRUCTION		5.1.6	- DAC REMOTE CABINET OUTAGES
			ATTEMPERATOR		5.1.2	
			POWER		5.1.7	
19	4/18	6.7	TRIP: RECIRCULATION PUMP		6.1.2	NONE
			FEEDWATER PUMP		6.1.4	NONE
			RECIRCULATION PUMP STABILITY		---	
			STEADY STATE		---	
			TRANSIENT: POWER STEP INCREASE		---	
20	4/19	10.5	TRIP: HELIOSTAT - 800°F		6.1.1	LOW NSP WATER RESERVES
			TRIP: HELIOSTAT - 700°F		6.1.1	
			TRIP: HELIOSTAT - 595°F		6.1.1	
			TRANSIENT: SHRINK-SWELL			
			(REPEAT)		5.1.4	
			TUNE ATTEMPERATOR CONTROL		---	
21	4/21	29.5	ASYMMETRIC HEAT INPUT	3.8/2.7	7.1.1	20 LAMPS FAILED
	4/22				7.1.2	DAC INTERMITTENT
						LOW NSP WATER SUPPLY
						SCR COOLING WATER PLUGGED
						SIMULATOR ZONE 1
22	4/26	11.75	STEADY STATE AND TRANSIENT		4.0	FAILED 31 LAMPS
			TESTS - WITH AUTOMATIC		5.0	LEAKAGE AT ATTEMPERATOR
			ATTEMPERATION			WATER SUPPLY FLANGE
23	4/28	4.5	MAXIMUM POWER STEADY	5.0/3.85	4.0	FAILED 350 LAMPS
			STATE HEAT BALANCE			

*PEAK POWER ENTRIES ARE FROM THE TEST LOG FOR PERIODS WHEN HEAT BALANCE DATA WERE BEING TAKEN.

**DIFFICULTIES SHOWN DID NOT NECESSARILY PREVENT THE TAKING OF DATA.

TEST NO. 23

DATE: April 28, 1977

Test Objectives

1. To take steady state heat balances at several points including maximum possible power.
2. To bring boiler to rated pressure at maximum rate.
3. To monitor parameters while bottled up with array down.

Description

The startup was at near maximum rate for the unit. Average rate of temperature change was 490^{o}F/hr to operating pressure.

A maximum power heat balance was performed with the power controller voltage limiters at 420v which resulted in about 3.5 Mw output.

Later, the voltage limiters were defeated and a heat balance of 3.85 Mw output was achieved, but at the expense of 350 lamps.

Problems Encountered

None.

Code Sheet for Recorder Charts

Recorder Number	Pen or Point Number	Process Variable	Data Source	Scale Range
RCD-1	1, Red	Main Steam Flow	FT-3	0-18,000 lb/hr*
	2, Blue	Drum Inlet Feedwater Flow	FT-1	0-18,000 lb/hr**
	3, Green	Attemperator Spraywater Flow	FT-480	0-2,000 lb/hr**
RCD-4	1, Red	Drum Water Level	LT-211	0-55 Inches†
	2, Blue	Main Steam Pressure	PT-590	0-2,100 psig
	3, Green	Trend Panel PV-1: Water Conductivity	Beckman solu-meter®	0-100 micromhos/cm††
RCD-3	1	Feedwater Temperature (F)	TE-1	0-1,000°F (K)
	2	Attemperator Inlet Temperature (F)	TE-475	0-1,000°F (K)
	3	Attemperator Outlet Temperature (F)	TE-500	0-1,000°F (K)
	4	Main Steam Temperature (F)	TE-591	
	5	Lower 1st Stage Superheater (M)	TE-405	0-1,000°F (K)
	6	Upper 1st Stage Superheater (M)	TE-452	0-1,000°F (K)
	7-10	Recirculation Pump Inlet Water Temperature (F)	TE-301	0-1,000°F (K)
	11	Lower 2nd Stage Superheater (M)	TE-507	0-1,000°F (K)
	12	Upper 2nd Stage Superheater (M)	TE-550	0-1,000°F (K)

*lb/hr. at 955°F, $\rho = 2.06\ lb_m/ft^3$

**lb/hr. at 440°F, $\rho = 52.52\ lb_m/ft^3$

(F): Fluid Temperature

(M): Metal Temperature

†Datum is centerline of lower pipe; transmitter output is for 80°F water; alarm and trips set for 620°F water.

††Specific conductance at 25°C.

Parameter Identification Legend: Operator and Performance Summaries

LABEL	PARAMETER	UNITS	SOURCE (5)
OPERATOR SUMMARY BOILER DRUM			
P-D	Pressure, drum	psig	PT-230
T-D	Temperature, drum	°F	CALC.
L-D	Level, drum	Inches above-55" reference	LT-210
W-FW	Flow, feedwater	Lbs_m/Hour	FT-1
W-BD	Flow, blowdown	Lbs_m/Hour	FT-260
PUMP			
W-B	Flow, boiler recirculation	Lbs_m/Hour	FT-310
T-DC	Temperature, downcomer	°F	TE-300
T-SUB	Temperature, pump suction subcooling	°F	CALC.
T-PC	Temperature, pump coolant	°F	TE-306
SUPERHEATER 1			
TE-	Temperature, thermocouples	°F	TE-420-440; 406-409; 450-454; 455-466
T-S1I	Temperature, steam, superheater inlet	°F	TE-400-402
W-ATT	Flow, attemperator water	Lbs_m/Hour	FT-480
SUPERHEATER 2			
TE-	Temperature, thermocouples	°F	TE-520-540; 506-509; 550-554; 555-566
T-S2O	Temperature, steam, superheater outlet	°F	TT-590
P-S2O	Pressure, steam, superheater outlet	psig	PT-590
W-S2	Flow, superheater	Lbs_m/Hour	FT-3
POWER			
BOILER ABS	Absorbed power, boiler	Kilowatts	CALC.
S.H. #1 ABS	Absorbed power, superheater	Kilowatts	CALC.
S.H. #2 ABS	Absorbed power, superheater	Kilowatts	CALC.
TOTAL INPUT	Net power input (1)	Kilowatts	CALC.
TOTAL ABSORBED	Absorbed power, steam generator	Kilowatts	CALC.
POWER RATIO	$\frac{\text{Total Absorbed}}{\text{Total Input}}$	Dimensionless	

(1) Electrical power to Radiant Array minus cooling water heat absorbed.

(2) Recirculation flow divided by Superheater #1 flow.

(3) Reciprocal of recirculation ratio (N-CR).

(4) Electrical power to Radiant Array minus cooling water heat absorbed.

(5) Sources are cited by transmitter or thermocouple designations as indicated in the P & ID Diagrams, or as calculated (Calc.) by the Data Acquisition System (DAC) (i.e., enthalpies, power). Transmitter and thermocouple raw outputs are modified by the DAC to provide readouts in engineering units.

Parameter Identification Legend: Operator and Performance Summaries--Continued

LABEL	PARAMETER	UNITS	SOURCE (5)
PERFORMANCE SUMMARY BOILER DRUM			
P-D	Pressure, drum	psig	PT-230
T-D	Temperature, drum	°F	CALC.
H-GD	Enthalpy, drum steam	BTU/Lb_m	CALC.
H-FD	Enthalpy, drum water	BTU/Lb_m	CALC.
N-CR	Recirculation ratio (2)	Dimensionless	CALC.
FEEDWATER			
P-FW	Pressure, feedwater	psig	PT-1
T-FW	Temperature, feedwater	°F	TE-19
W-FW	Flow, feedwater	Lb_m/Hour	FT-1
H-FW	Enthalpy, feedwater	BTU/Lb_m	CALC.
FLOW CIRCUITS			
T-DC	Temperature, downcomer	°F	TE-300
T-SUB	Temperature, pump suction subcooling	°F	CALC.
W-B	Flow, boiler recirculation	Lbs_m/Hour	FT-310
W-BC1	Flow, boiler circuit (Transmitter #1)	Lb_m/Hour	FT-350
W-BC2	Flow, boiler circuit (Transmitter #2)	Lb_m/Hour	FT-351
W-BC3	Flow, boiler circuit (Transmitter #3)	Lb_m/Hour	FT-352
X-B	Quality, boiler steam (3)	Dimensionless	CALC.
SUPERHEATERS S.H. Stage 1			
W-SI	Flow, superheater #1	Lb_m/Hour	WS2-WATT
T-SII	Temperature, steam, superheater inlet	°F	TE-400-402
T=S10	Temperature, steam, superheater outlet	°F	TE-476
P-S10	Pressure, steam, superheater outlet	psig	PT-475
H-S10	Enthalpy, steam, superheater outlet	BTU/Lb_m	CALC.

(1) Electrical power to Radiant Array minus cooling water heat absorbed.

(2) Recirculation flow divided by Superheater #1 flow.

(3) Reciprocal of recirculation ratio (N-CR).

(4) Electrical power to Radiant Array minus cooling water heat absorbed.

(5) Sources are cited by transmitter or thermocouple designations as indicated in the P & ID Diagrams, or as calculated (Calc.) by the Data Acquisition System (DAC) (i.e., enthalpies, power). Transmitter and thermocouple raw outputs are modified by the DAC to provide readouts in engineering units.

Parameter Identification Legend: Operator and Performance Summaries--Concluded

LABEL	PARAMETER	UNITS	SOURCE (5)
ATTEMPERATOR			
P-ATT	Pressure, attemperator water inlet	psig	PT-1
T-ATT	Temperature, attemperator water inlet	°F	TE-480
W-ATT	Flow, attemperator water	Lb_m/Hour	FT-480
H-ATT	Enthalpy, attemperator water	BTU/Lb_m	CALC.
S.H. Stage 2			
W-S2	Flow, superheater #2	Lb_m/Hour	FT-3
T-S2I	Temperature, superheater #2 inlet	°F	TE-500,501
T-S20	Temperature, steam, superheater outlet	°F	TT 590
P-S20	Pressure, steam, superheater outlet	°F	PT 590
H-S20	Enthalpy, steam, superheater outlet	BTU/Lb_m	CALC.
BOILER			
L-D	Level, drum	Inches above-55" reference	LT 210
T-BI	Temperature, boiler inlet	°F	TE-310, 311
H-BI	Enthalpy, boiler inlet	BTU/Lb	CALC.
R-BI	Density, boiler inlet	Lb_m/Ft^m	CALC.
R-GD	Density, drum steam	Lb_m/Ft	CALC.
R-FD	Density, drum water	Lb_m/Ft	CALC.
POWER			
Boiler ABS	Absorbed power, boiler	Kilowatts	CALC.
S.H. #1 ABS	Absorbed power, superheater	Kilowatts	CALC.
S.H. #2, ABS	Absorbed power, superheater	Kilowatts	CALC.
Total Input	Net power input (4)		CALC.
Total Absorbed	Absorbed power, steam generator	Kilowatts	CALC.
Power Ratio	Total Absorbed / Total Input	Dimensionless	CALC.

(1) Electrical power to Radiant Array minus cooling water heat absorbed.

(2) Recirculation flow divided by Superheater #1 flow.

(3) Reciprocal of recirculation ratio (N-CR).

(4) Electrical power to Radiant Array minus cooling water heat absorbed.

(5) Sources are cited by transmitter or thermocouple designations as indicated in the P & ID Diagrams, or as calculated (Calc.) by the Data Acquisition System (DAC) (i.e., enthalpies, power). Transmitter and thermocouple raw outputs are modified by the DAC to provide readouts in engineering units.

SRE Steam Generator Thermocouple Identifications/Locations

	AZIMUTH	#1 SUPERHEATER				#2 SUPERHEATER			
SUPERHEATER OUTSIDE* OF TUBES									
ROW 6	345	420	426	432	438	520	526	532	538
ROW 5	30	425	431	437		525	531	537	
ROW 4	120	424	430	436		524	530	536	
ROW 3	210	423	429	435		523	529	535	
ROW 2	240	422	428	434	440	522	528	534	540
ROW 1 (HOT SPOT)	300	421	427	433	439	521	527	533	539
SUPERHEATER INSIDE* OF TUBES AT BEGINNING OF THE HEATED LENGTH									
NEAR ROW 1		406				506			
NEAR ROW 3		407				507			
NEAR ROW 4		408				508			
NEAR ROW 5		409				509			
SUPERHEATER INSIDE* OF TUBES AT BEGINNING OF THE HEATED LENGTH									
NEAR ROW 1		450				550			
NEAR ROW 2		451				551			
NEAR ROW 3		452				552			
NEAR ROW 4		453				553			
NEAR ROW 5		454				554			
SUPERHEATER OUTSIDE* OF TUBES NEAR FLOW EXIT									
	330	455				555			
	300	456				556			
	270	457				557			
	240	458				558			
	210	459				559			
	180	460				560			
	150	461				561			
	120	462				562			
	90	463				563			
	60	464				564			
	30	465				565			
	0	466				566			

SRE Steam Generator Thermocouple Identifications/Locations--Concluded

BOILER	AZIMUTH	LOWER TANGENT** ←							NEAR UPPER TANGENT** →
ROW 1	~ 10		333		332		331		330
ROW 2	~ 45		337		336		335		334
ROW 3	90		341		340		339		338
ROW 4	~140	349	348	347	346	345	344	343	342
ROW 5	~187½		353		352		351		350
ROW 6	~235	361	360	359	358	357	356	355	354
ROW 7	270	369	368	367	366	365	364	363	362
ROW 8 HOT SPOT (300°)	~295	377	376	375	374	373	372	371	370
ROW 9	~305	385	384	383	382	381	380	379	378
ROW 10	330		389		388		387		386

DRUM

T/C#

210 DRUM SURFACE: ADJACENT TO FEEDWATER (FW) INLET

211 DRUM SURFACE: FW INLET PLANE AT 270° AZIMUTH

212 DRUM SURFACE: 11" BELOW UPPER TANGENT AT 270° AZIMUTH

213 DRUM SUPPORT: ~240° AZIMUTH

214 DRUM GUSSET 1" FROM DRUM SURFACE: ~240° AZIMUTH

215 DRUM SURFACE 1" FROM T/C #214

216 FW INLET PIPE ~1/2" FROM WELD

217 DRUM SURFACE ~1/2" FROM DOWNCOMER PIPE AT 0° AZIMUTH

* WITH RESPECT TO STEAM GENERATOR CAVITY.

** WITH RESPECT TO VERTICAL SECTION OF BOILER TUBE.

Explanation of Array Flux Map

INCIDENT FLUX SENSOR	LOCATION
IF 1	4 INCHES ABOVE TOP OF BOTTOM REFLECTOR } THERE IS 15.5 IN. OF VERTICAL SEPARATION
IF 10	6 INCHES FROM CEILING } BETWEEN ADJACENT SENSORS IF 1 THROUGH IF 10.
IF 11	40 INCHES FROM CENTER OF CEILING AT CEILING
IF 12	20 INCHES FROM CENTER OF CEILING AT CEILING

IF 1 THROUGH IF 4 ARE IN THE BOILER REGION
IF 5 IS ON THE LINE BETWEEN THE BOILER AND S.H. NO. 1
IF 6 THROUGH IF 7 ARE IN THE S.H. NO. 1 REGION
IF 8 THROUGH IF 10 ARE IN THE S.H. NO. 2 REGION
IF 11 THROUGH IF 12 ARE IN THE CEILING REGION

BOOM POSITION	AZIMUTH	COMMENTS
1	20°	
2	30°	
.	.	
.	.	
.	.	
8	90°	East
.	.	
.	.	
17	180°	South
.	.	
.	.	
26	270°	West
.	.	
.	.	
.	.	
34	350°	
35	360° (0°)	North - not read.
36	10°	Not read.

Each incident flux sensor measures the incident flux over azimuthal positions 1 through 34. Positions 35 and 36 cannot be read due to the design of the flux boom which switches its direction of angular motion before revolving a full 360°.

The boom positions correspond to the center positions of each of the 18 boiler panels and to their intersections.

The unit of flux for each sensor is [hundreds of watts per square meter]

Data Acquisition System Real Time Plot Format

1. PLOT HEADERS
   - NUMBER OF RECORDS - TOTAL VARIABLES PLOTTED (ARGUMENT PLUS FUNCTIONS)
   - ARGUMENT SELECTED - INDEPENDENT VARIABLE - (1 THROUGH 4 IS TIME)
   - FUNCTION NUMBERS - DEPENDENT VARIABLES PLOTTED, NUMBERS SHOWN ON GROUP LIST BELOW
   - SEARCH MODE - SOFTWARE FUNCTION
   - PLOT START TIME - TIME OF DAY IN SECONDS (I.E., 8 AM = 28,800 SEC.)
   - (NO.) POINTS SKIPPED - RECORD SKIP FACTOR (PLOT ONLY Nth POINTS OF ALL DATA TAKEN)
   - POINTS PLOTTED

2. PLOT GROUPING AND IDENTIFIERS

2.1 FLOWS - LBM/HR.	
• 8 - WFW	
• 10 - WS2	
• 17 - WS1	SECTION 4.14 (PAGE 14)
• 9 - WATT (*)	
• 11 - WBD (*)	
2.2 PRESSURES - PSIG	
• 18 - PD	
• 19 - PFW	SECTION 4.15 (PAGE 15)
• 20 - PS10	
• 21 - PS20	
2.3 FLUID TEMPS. DEG. F.	
• 22 - TBI	
• 24 - TFW	
• 26 - TS10	SECTION 4.16 (PAGE 16)
• 27 - TS1I	
• 28 - TS20	
• 29 - TS21	
2.4 METAL TEMPS. DEG. F.	
• 12 - TE4ØØ	
• 13 - TE4Ø1	
• 14 - TE4Ø2	SECTION 4.17 (PAGE 17)
• 23 - TDC	
• 32 - TAS1	
• 33 - TAS2	
2.5 DRUM LEVEL - INCHES (*)	
• 30 - LD	SECTION 4.18 (PAGE 18)
2.6 RECIRC. FLOW (*)	
• 31 - WB	SECTION 4.19 (PAGE 19)
2.7 POWER LEVELS -	
• 6 - QABS	
• 7 - QIN	SECTION 4.20 (PAGE 20)
• 15 - QB	
• 16 - QS2	

(*) OPTIONAL VARIABLES/PLOTS

Ø = ZERO

Plot Labels and Descriptors

NUMBER	LABEL	DESCRIPTOR	WHERE USED
1-4	time		
5	year		
6	QABS	Total Absorbed Power	A-series, B-series, F-F-series, G1-1
7	QIN	Total Input Power	E1-1, G16-1, G16-2
8	WFW	Feedwater Flow	A1-4, G2-3, E2-1
9	WATT	Attemperator Flow	A1-2, E2-1, G3-1
10	WS2	Steam Flow	A1-1, E2-1, G2-1, B1b-2
11	WBD	Blowdown Flow	A1-3, E2-1
12	TE4ØØ		
13	TE4Ø1	Superheater #1 Inlet Temperature	
14	TE4Ø2		
15	QB	Boiler Absorbed Power	A6-1, F5-1, F6-1, G1-1
16	QS2	Second Stage Superheater Absorbed Power	A6-3, F5-3, F6-3, G1-4
17	WS-1	First Stage Superheater Flow	G2-1
18	PD	Drum Pressure	G4-1
19	PFW	Feedwater Pressure	G4-2
20	PS10	First Stage Superheater Outlet Pressure	A3-2, G5-1
21	PS20	Second Stage Superheater Outlet Pressure	A3-3, G5-2
22	TBI	Boiler Inlet Temperature	A5-2, G6-2
23	TDC	Downcomer Temperature	A5-1, G6-3
24	TFW	Feedwater Temperature	A2-1, G6-4

Plot Labels and Descriptors--Concluded

NUMBER	LABEL	DESCRIPTOR	WHERE USED
25	TATT	Attemperator Supply Temperature	A2-2, G6-5
26	TS1)	First Stage Superheater Outlet Temperature	A2-4, G7-1
27	TS1I	First Stage Superheater Inlet Temperature	
28	TS20	Second Stage Superheater Outlet Temperature	A2-6, G7-3
29	TS2I	Second Stage Superheater Inlet Temperature	A2-5, G7-2
30	LD	Drum Level	G-12
31	WB	Boiler Flow	A4-1, G13-1
32	TAS1	First Stage Superheater Average Metal Temp.	G15-1
33	TAS2	2nd Stage Superheater Average Metal Temp.	G15-2
51	QABS/QIN	Power Ratio	E-1
52	$\frac{(WFW + WATT)}{(WS2 + WBD)}$	Flow Ratio - Mass Balance	E-2
53	(WS2 + WBD)	Outlet Flows	E-2
54	(TD-TE400)	Drum-to-Superheater Temp. Loss	E-3.3
55	(TD-TE401)	Drum-to-Superheater Temp. Loss	E-3.3
56	(TD-TE402)	Drum-to-Superheater Temp. Loss	E-3.3
57	HS10	Steam Enthalpy, S.H. 1 Outlet	G-8.1
58	HS2I	Steam Enthalpy, S.H. 2 Inlet	G-8.2
59	HS20	Steam Enthalpy, S.H. 2 Outlet	G-8.3
60	H-GD	Drum - Steam Enthalpy	G-9.2
61	H-FD	Drum - Water Enthalpy	G-9.1
62	H-BI	Boiler Inlet Water Enthalpy	G-9.3
63	X-B	Boiler Outlet (Drum) Steam Quality	G-14

Radiant Array Calibration

POWER SETTING%	ZONE 1			ZONE 2			ZONE 3			ZONE 4		
	KW	LAMP VOLTS	CONTROL VOLTS	KW	LAMP VOLTS	CONTROL VOLTS	KW	LAMP VOLTS	CONTROL VOLTS	KW	LAMP VOLTS	CONTROL VOLTS
0												
10	210.5	134.5	0.44	224.4	138.7	0.47	229.5		0.45	230.4		0.45
20	420	209.3	0.89	445.5	217.3	0.97	460.8		0.90	459		0.90
30	633	270	1.34	682.5	284.3	1.47	679.5		1.35	670.5		1.35
40	849	322.7	1.79	922.5	340.3	1.97	909		1.80	900		1.79
50	1065	367.3	2.25	1155	396	2.48	1120.5		2.25	1120.5		2.24
60	1278	420	2.70	1287(2)	420.7	2.76	1350		2.71	1341		2.70
70							1575		3.16	1566		3.15
80							1809		3.60	1800		3.60
90												
100												
KW/Volt (1)	473			464.8			500.9			499		

(1) Based on averages in which 10% values were omitted for Zones 1 and 2; 10% to 20% values were omitted for Zones 3 and 4.

(2) Apparently erroneous

Data Acquisition System Printout Listing

PAGE NUMBER	TITLE
1	Operator Summary
2	Performance Summary
3	Base Data Report -- Metal Temperatures
4	Base Data Report -- Fluid
5	Cooling Water Temperature
6	First Stage Superheater Metal Temperatures
7	Second Stage Superheater Metal Temperatures
8	Boiler Temperature Profile
9	First Stage Superheater Temperature Profile
10	Second Stage Superheater Temperature Profile
11	Warnings and Alarms Report
12	Alarm Conditions
13	Array Flux Map
14	Flows, Plots
15	Pressures, Plots
16	Fluids Temperatures, Plots
17	Metal Temperatures, Plots
18	Drum Level, Plots
19	Recirculation Flow, Plots
20	Power Levels, Plots
21	Enthalpy
22	Ratios

SECTION 2

DATA SHEETS: TEST RUN LOG BOOK PAGES

TEST NO. 23 105
DEV. NO.
PAGE 1 OF 5

DATE 28 Apr 77

Time	OPERATOR ACTION	COMMENTS
0817	Started Recirc Pump	
0820	Open VALVE 22	
0826	30% Power To Zones 3 & 4	
0839	Open CV-1 To 95%	To Preheat Steam Piping
0845	6% Pwer To Zones 1 & 2	
0852	Increase Power To Zones 1 & 2 To 10%	
0901	Open CV-10 Add 200# PPH Feedwater Close Superheater Drains	
0903	Open CV-1 To 90% Increase Power To Zones 3 & 4 To 35%	
0905	Open CV-1 To 80%	
0907	Open CV-1 To 70%	
0908	Cut Power To Zones 1 & 2	996°F 1st Stage Metal Temperature.
0911	Add Feedwater Flow Close CV-1 To 78%	Had To ease off because the 2nd Stage Superheater Can't Keep up with
0917	10% Power To Zones 1 & 2	
0919	Close CV-1 To 80%	

106

TEST NO. 23
DEV. NO.
PAGE 2 OF 5

DATE 28 APR 77

Time	Operator Action	Comments
0930	Steam Valve All & Discharge Header on Auto	1575 PSIG
0932	Increase Power To Zones 1 & 2 To 20%	
0933	Drum Level on Automatic	
0935	Attemperator in Auto	To Control at 900°F
0937	Increase Zone 1 & 2 Power Zone 1 45% Zone 2 42% Zone 3 35% Zone 4 35%	
0950	Changed Attemp Temp To 955°	
1013	Attemperator in Manual	To Settle out oscillations in Flow & Temp.
1015	Water Sample Taken	Phosphate 3.6 ppm.
1028	Attemp on Auto	
1044	Take DAC Summary	
1044	Take Analog Data	TT-22 61°F FT-13 265 GPM TT-16 99°F TT-25 81°F TT-23 65°F TT-306 64°F PT-16 88 PSIG Drum Press 1625 PSIG Steam Press 1573 PSIG FW Press 1900 PSIG FT-1 8000 PPH TT-590 955°F

TEST NO. 23
DEV. NO.
PAGE 3 OF 5

107

DATE 28 APR 77

Time	OPERATOR ACTION	COMMENTS
		Recirc Flow - 80,000 PPH Blowdown - Zero Zone 1 2.04 V Zone 2 2.08 V Zone 3 1.56 V Zone 4 1.51 V
1050	Increase Power Zone 1 56.5% Zone 2 53% Zone 3 53.5% Zone 4 52%	Limits Reads 1.31 2.59 V 1.35 1.36 2.63 1.41 1.20 2.38 V 1.25 1.16 2.30 V 1.20
1058	Put Attemperator in Manual	To Minimize Time To Stable Conditions
1119	Take DAC Summary	Close To Stable Conditions
		TT-22 61 FT-13 271 TT-16 90 106 TT-25 90 TT-23 65 TT-306 65 PT-16 84 Drum Press 1650 Steam Press. 1575 TT-530 950°F Recirc 80,000 PPH Blowdown Zero FT-1 11,600 PPH
1127	Take DAC Summary	
1128	Drive all Rods To Voltage Limiting	No Help.

108

TEST NO. 23
DEV. NO. 4
PAGE 4 OF 5

DATE 28 APR 77

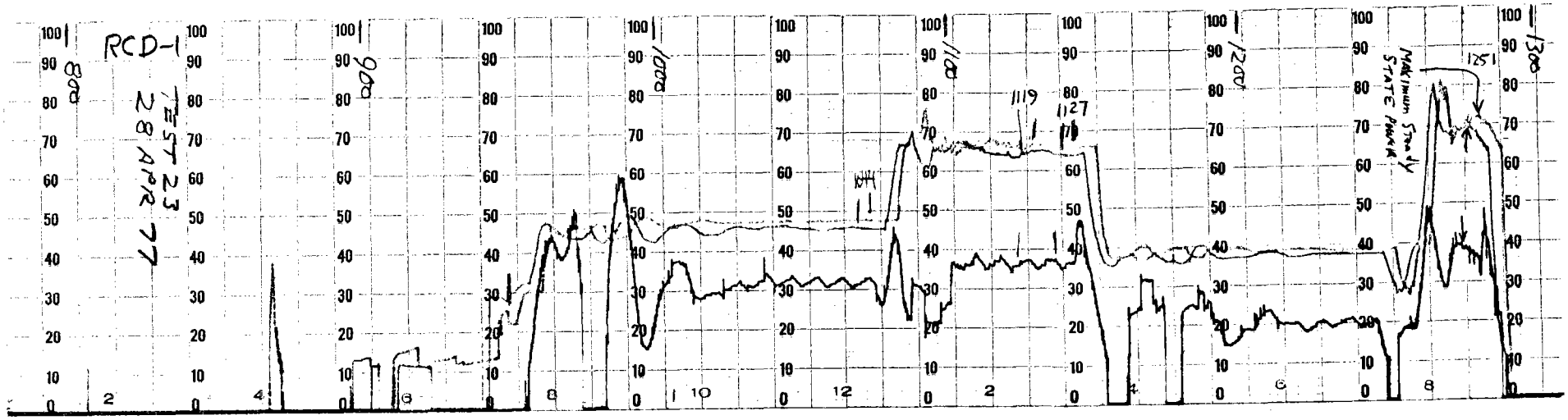
TIME	OPERATOR ACTION	COMMENTS
1132	Reduce Power Zone 1 35% Zone 2 35% Zone 3 30% Zone 4 30%	
	Attemperater Back in Auto.	
1220	Added 3 Minutes of Precipitate	
1225	Take DAC Summary Take Analog Data.	TT-22 61 FT-1's 271 TT-16 95 TT-25 79 TT-23 65 TT-30 66 PT-16 90 PSIG Drum Press 1608 PSIG Steam Press 1573 PSIG FW Press 1900 PSIG FT-1 6300 PPH TT-550 955 °F Recirc Flow - 00 000 PPH Blowdown - Zero Power Zone 1 1.59 V 2 1.74 V 3 1.37 V 4 1.32 V
R35	Defeated Voltage Limiters on Power Controllers	
	Escalate Power To Limits	Reading at Limit Zone 1 1.45 2 1.62 3 1.15 4 1.40

DATE 28 Apr 77 TEST NO. 23 DEV. NO. PAGE 5 OF 5 109

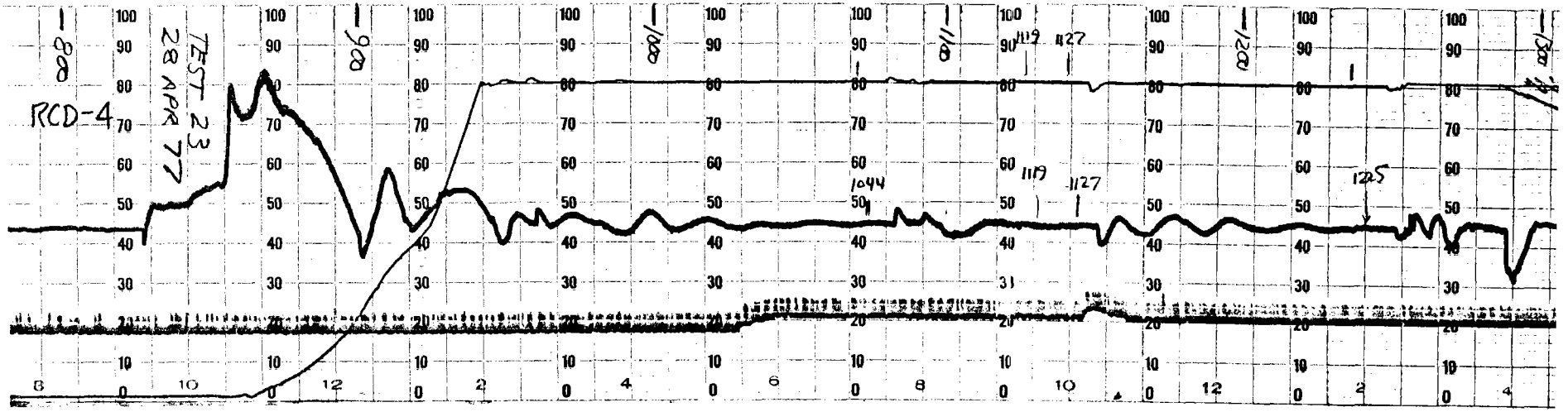
Time	OPERATOR ACTION	COMMENTS
1254	TAKE DAC SUMMARY	TT-22 61
1253	TAKE ANALOG DATA	FT-13 271
		TT-16 110
		TT-25 90
		TT-23 65
	Unit Losing →	TT-306 66
	Power During	PT-16 90
	This	Drum Press 1685
		Steam Pres 1575
		Fw Press 1900
		FT-1 12,000 PPH
1255	Unpower ARRAY	END OF TESTING
	BOTTLE up Unit	
1300	Low Power on ARRAY To Lower it.	Best Time For A valid HEAT Balance would be ABOUT 3 Minutes Prior To Unpowering The Unit
1638	BRING UNIT DOWN LIS open 13.8 OFF	350 Bulbs Burned out.
1720	Unpower Recirc Pump.	
1815	Restored Voltage Limiter Pots To original Setting.	Not Verified by Testing That actual Limits are at 420 V.

SECTION 3

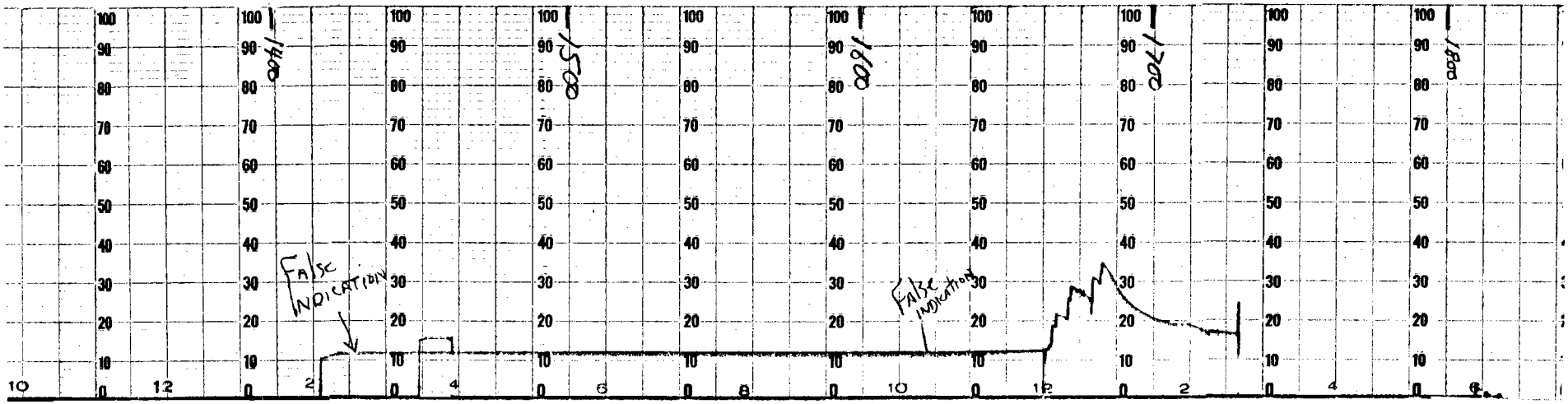
DATA SHEETS: RECORDER CHARTS


RCD-1
TEST 23
28 APR 77
800
900
1000
1100
1200
1300
1119
1127
1125
MAXIMUM STEADY STATE POWER

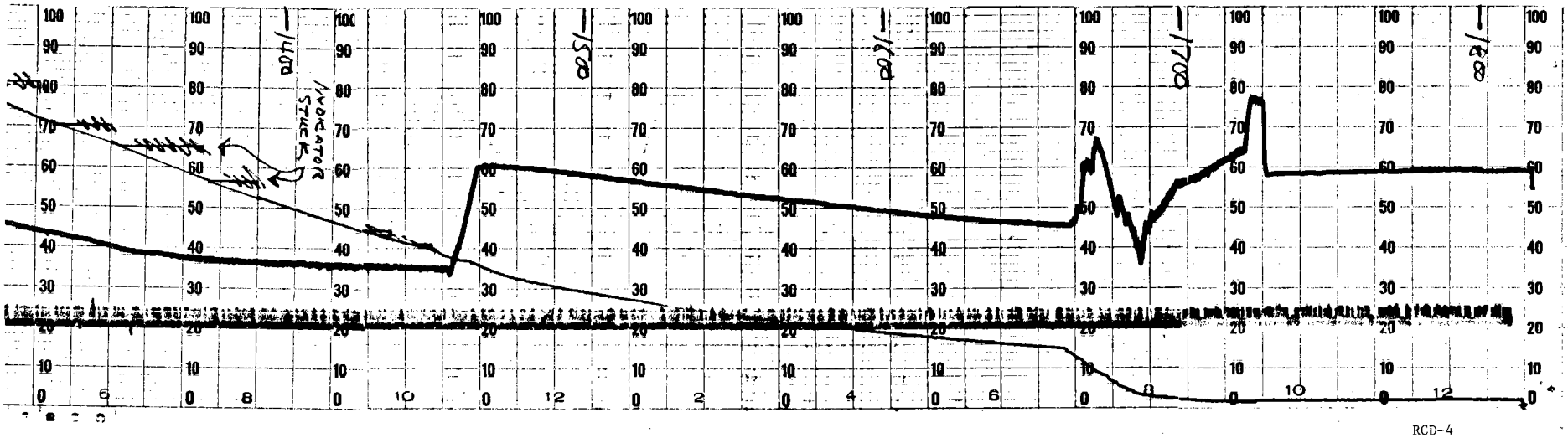
RCD-1


RCD-4
TEST 23
28 APR 77
800
900
1000
1100
1200
1300
1044
1119
1127
1125

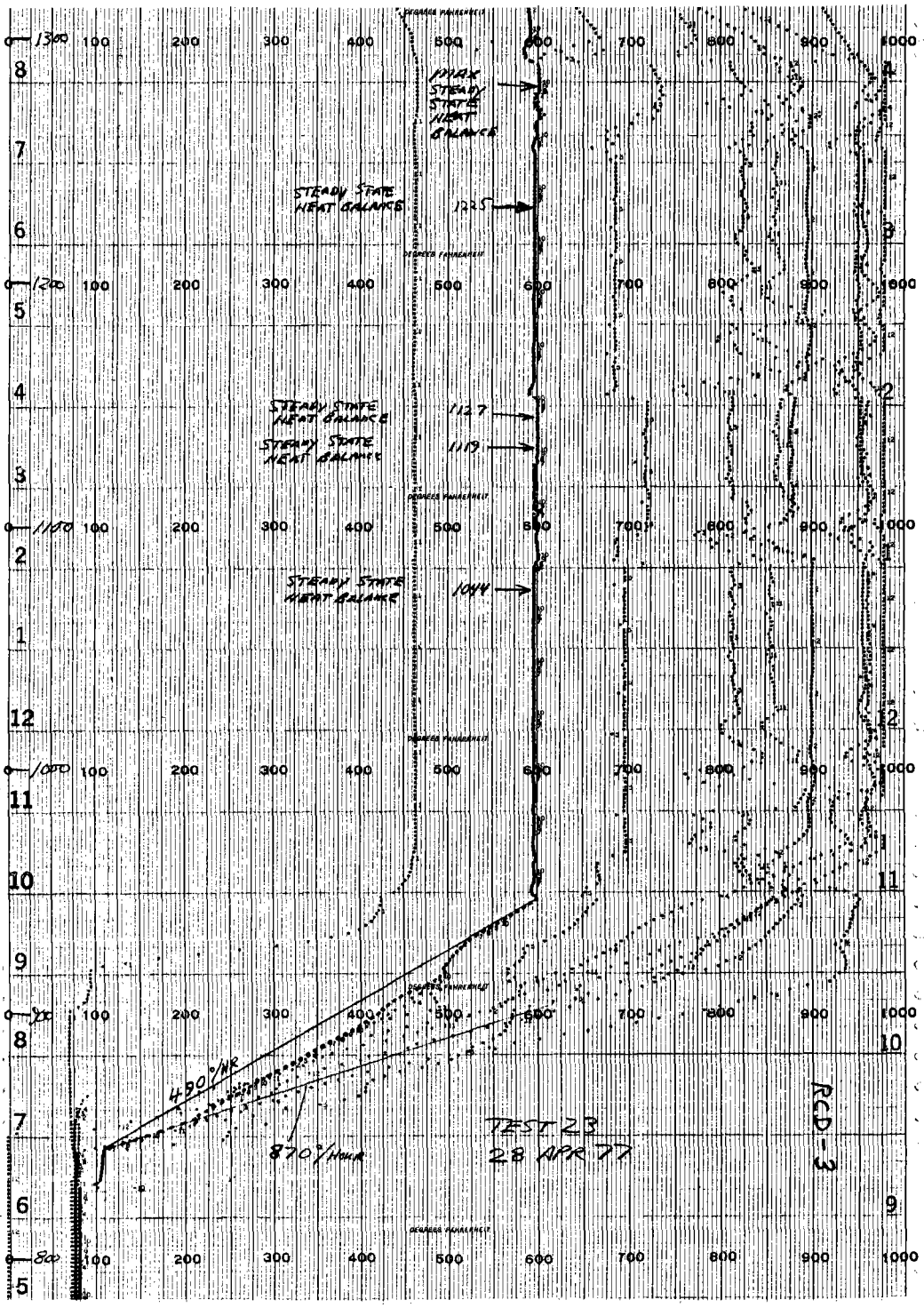
RCD-4

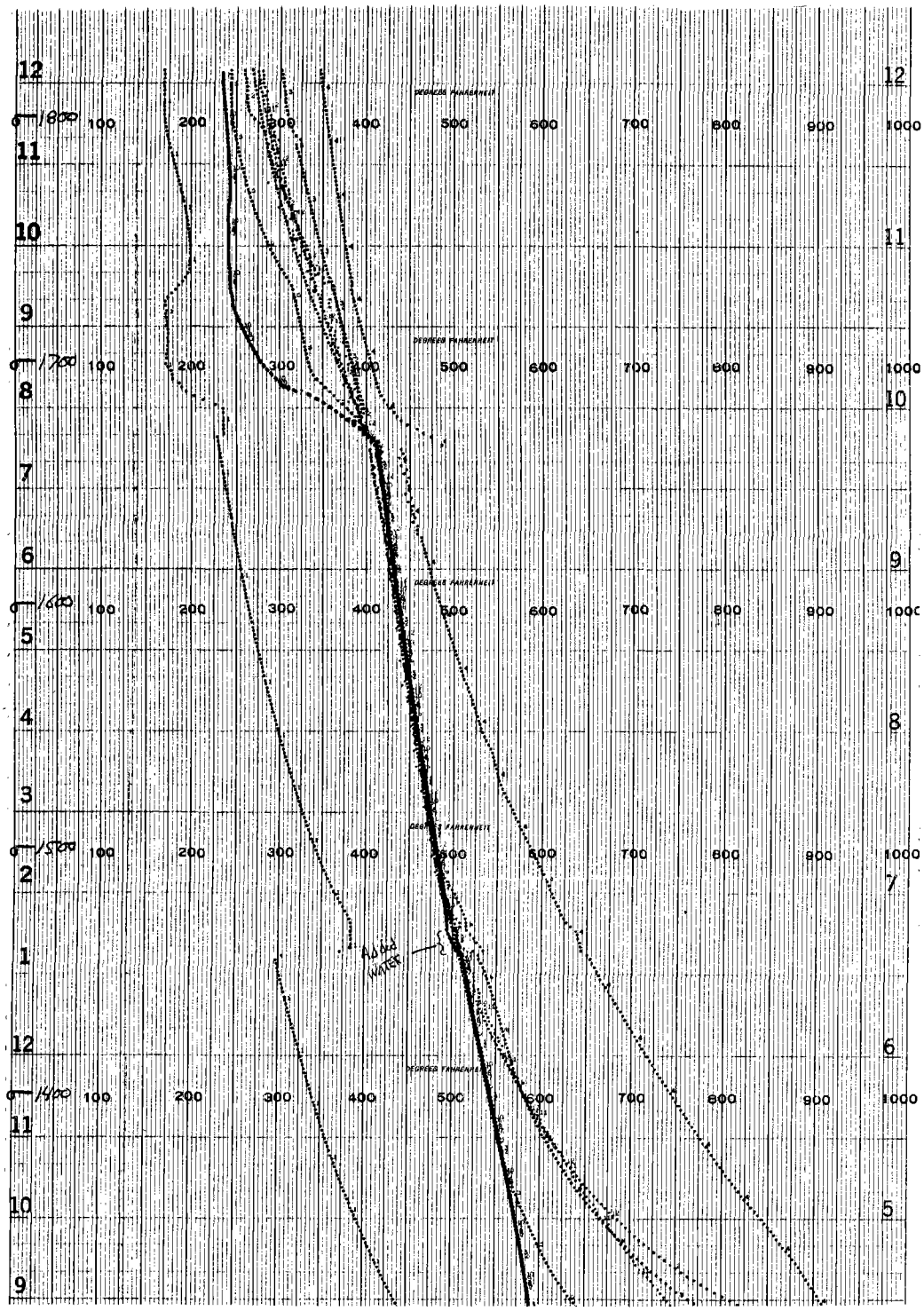


RCD-1



RCD-4


DEGREES FAHRENHEIT
PEAK STEADY STATE HEAT BALANCE
STEADY STATE HEAT BALANCE
1225
STEADY STATE HEAT BALANCE
1127
STEADY STATE HEAT BALANCE
1119
STEADY STATE HEAT BALANCE
1044
480°/HR
870°/HOUR
TEST 23
28 APR 77
RCD-3


DEGREES FAHRENHEIT
100
200
300
400
500
600
700
800
900
1000
ADD WATER

RCD-3

SECTION 4

DATA SHEETS: DATA ACQUISITION SYSTEM TABULATION AND PLOT PRINTOUTS

PAGE 1

OPERATOR SUMMARY

```
**********************************************************************************************
OPERATOR SUMMARY                                          1977  118  10  44    23
----------------                                         ------------------------

BOILER
------

DRUM                                    PUMP
P-D     1633                            W-B    88010
T-D      608                            T-DC     602
L-D       32                            T-SUB     -6
W-FW    7934                            T-PC      65
W-BD       0

SUPERHEATER 1                           SUPERHEATER 2
-------------                           -------------
INLET METAL      OUTLET METAL           INLET METAL      OUTLET METAL
TE405   702      TE450   149            TE505   150      TE550   985
TE406   676      TE451   149            TE506   150      TE551   149
TE407   708      TE452   963            TE507   857      TE552   965
TE408   681      TE453   150            TE508   150      TE553   589
TE409   681      TE454   568            TE509   870      TE554   149

T-S1I   609                             T-S2O   953
                                        P-S2O  1588
W-ATT   406                             W-S2   8527

POWER
-----
BOILER ABS. KW     1714     NET INPUT KW          2749
S.H. *1 ABS. KW     628     TOTAL ABSORBED KW     2544
S.H. *2 ABS. KW     202     POWER RATIO          .9255
**********************************************************************************************
```

```
**********************************************************************************
OPERATOR SUMMARY                                        1977  118  11  19    23
----------------                                       ----------------------

BOILER
------

DRUM                                    PUMP
P-D     1680                            W-B    88510
T-D      612                            T-DC     605
L-D       32                            T-SUB     -7
W-FW   11233                            T-PC      65
W-BD       0

SUPERHEATER 1                           SUPERHEATER 2
-------------                           -------------
INLET METAL      OUTLET METAL           INLET METAL      OUTLET METAL
TE405   723      TE450   149            TE505   150      TE550   988
TE406   685      TE451   149            TE506   150      TE551   149
TE407   734      TE452   958            TE507   869      TE552   973
TE408   700      TE453   150            TE508   150      TE553   479
TE409   744      TE454   573            TE509   890      TE554   149

T-S1I   612                             T-S2O   951
                                        P-S2O  1584
W-ATT   466                             W-S2  12001

POWER
-----
BOILER ABS. KW     2411     NET INPUT KW          3705
S.H. *1 ABS. KW     872     TOTAL ABSORBED KW     3578
S.H. *2 ABS. KW     294     POWER RATIO          .9657
**********************************************************************************
```

```
**********************************************************************************
OPERATOR SUMMARY                                        1977  118  11  28     23
----------------                                        ------------------------

BOILER
------

DRUM                                    PUMP
P-D     1677                            W-B    88220
T-D      612                            T-DC     604
L-D       32                            T-SUB     -8
W-FW   11198                            T-PC      65
W-BD       0

SUPERHEATER 1                           SUPERHEATER 2
-------------                           -------------
INLET METAL      OUTLET METAL           INLET METAL      OUTLET METAL
TE405   723      TE450   149            TE505   150      TE550   990
TE406   695      TE451   149            TE506   150      TE551   149
TE407   735      TE452   959            TE507   866      TE552   974
TE408   703      TE453   150            TE508   150      TE553   492
TE409   730      TE454   573            TE509   879      TE554   149

T-S11   612                             T-S20   951
                                        P-S20  1584
W-ATT   481                             W-S2  11865

POWER
-----
BOILER ABS. KW     2376     NET INPUT KW          3647
S.H. *1 ABS. KW     857     TOTAL ABSORBED KW     3527
S.H. *2 ABS. KW     293     POWER RATIO          .9671
**********************************************************************************
```

```
**********************************************************************
OPERATOR SUMMARY                                  1977  118  12  24   23
----------------                                  ----------------------

BOILER
------

DRUM                                PUMP
P-D     1611                        W-B    88470
T-D      607                        T-DC     601
L-D       31                        T-SUB     -6
W-FW    6493                        T-PC      66
W-BD       0

SUPERHEATER 1                       SUPERHEATER 2
--------------                      --------------

INLET METAL      OUTLET METAL       INLET METAL      OUTLET METAL
TE405   687      TE450   149        TE505   150      TE550   980
TE406   666      TE451   149        TE506   150      TE551   149
TE407   695      TE452   951        TE507   863      TE552   963
TE408   673      TE453   150        TE508   150      TE553   388
TE409   668      TE454   582        TE509   878      TE554   149

T-S11   607                         T-S20   954
                                    P-S20  1578
W-ATT   157                         W-S2   6866

POWER
-----

BOILER ABS. KW     1428     NET INPUT KW          2226
S.H. *1 ABS. KW     515     TOTAL ABSORBED KW     2063
S.H. *2 ABS. KW     119     POWER RATIO          .9270
**********************************************************************
```

```
**********************************************************************************
OPERATOR SUMMARY                                    1977  118  12  50    23
----------------                                    ------------------------

BOILER
------

DRUM                                    PUMP
P-D     1699                            W-B    87140
T-D      614                            T-DC     606
L-D       33                            T-SUB     -8
W-FW   12181                            T-PC      66
W-BD       0

SUPERHEATER 1                           SUPERHEATER 2
-------------                           -------------
INLET METAL      OUTLET METAL           INLET METAL      OUTLET METAL
TE405   737      TE450   149            TE505   150      TE550  1003
TE406   708      TE451   149            TE506   150      TE551   149
TE407   746      TE452   974            TE507   878      TE552   986
TE408   684      TE453   150            TE508   150      TE553   373
TE409   757      TE454   585            TE509   897      TE554   149

T-S1I   614                             T-S2O   961
                                        P-S2O  1584
W-ATT   522                             W-S2  12867

POWER
-----
BOILER ABS. KW     2557     NET INPUT KW          3883
S.H. *1 ABS. KW     940     TOTAL ABSORBED KW     3827
S.H. *2 ABS. KW     329     POWER RATIO          .9855
**********************************************************************************
```

```
**********************************************************************************
OPERATOR SUMMARY                                        1977  118  12  51    23
----------------                                       ------------------------
BOILER
------
DRUM                                    PUMP
P-D     1696                            W-B    87600
T-D      613                            T-DC     605
L-D       32                            T-SUB     -8
W-FW   12219                            T-PC      66
W-BD       0

SUPERHEATER 1                           SUPERHEATER 2
-------------                           -------------
INLET METAL      OUTLET METAL           INLET METAL      OUTLET METAL
TE405   737      TE450   149            TE505   150      TE550  1003
TE406   708      TE451   149            TE506   150      TE551   149
TE407   744      TE452   971            TE507   876      TE552   985
TE408   696      TE453   150            TE508   150      TE553   367
TE409   758      TE454   585            TE509   898      TE554   149

T-S1I   614                             T-S2O   961
                                        P-S2O  1584
W-ATT   517                             W-S2  12821

POWER
-----
BOILER ABS. KW     2546     NET INPUT KW          3871
S.H. *1 ABS. KW     937     TOTAL ABSORBED KW     3811
S.H. *2 ABS. KW     327     POWER RATIO          .9847
**********************************************************************************
```

OPERATOR SUMMARY 1977 118 12 54 23

BOILER

DRUM

P-D	1677
T-D	612
L-D	32
W-FW	11580
W-BD	0

PUMP

W-B	87760
T-DC	604
T-SUB	-8
T-PC	66

SUPERHEATER 1

INLET	METAL	OUTLET	METAL
TE405	727	TE450	149
TE406	705	TE451	149
TE407	737	TE452	958
TE408	681	TE453	150
TE409	747	TE454	584

T-S11	612
W-ATT	473

SUPERHEATER 2

INLET	METAL	OUTLET	METAL
TE505	150	TE550	989
TE506	150	TE551	149
TE507	866	TE552	973
TE508	150	TE553	384
TE509	883	TE554	149

T-S20	954
P-S20	1578
W-S2	11896

POWER

BOILER ABS. KW	2343	NET INPUT KW	3483
S.H. *1 ABS. KW	850	TOTAL ABSORBED KW	3502
S.H. *2 ABS. KW	308	POWER RATIO	1.0055

PAGE 2

PERFORMANCE SUMMARY

```
**********************************************************************************************
PERFORMANCE SUMMARY                                          1977  118  11  19    23
-------------------                                          ----------------------

BOILER                  SUPERHEATERS              BOILER
------                  ------------              ------
DRUM                    S.H. STAGE 1              L-D       32
P-D      1683           W-S1    11535             T-BI     605
T-D       612           T-S1I     612             H-BI     643
H-GD     1153           T-S1O     882             R-BI  38.446
H-FD      634           P-S1O    1642             R-GD  4.2680
N-CR  7.5137           H-S1O    1411             R-FD  41.314
FEEDWATER              ATTEMPERATOR
P-FW     1892          P-ATT    1892
T-FW      468          T-ATT     459
W-FW    11269          W-ATT     466
H-FW      450          H-ATT     440

FLOW CIRCUITS          S.H. STAGE 2              ARRAY - KW
T-DC      605          W-S2    12001             ZONE 1  1208
T-SUB      -7          T-S2I     816             ZONE 2  1227
W-B     86670                                    ZONE 3  1207
W-BC1    9742          T S2O     951             ZONE 4  1145
W-BC2    9657          P-S2O    1584
W-BC3    9340          H-S2O    1457             TOTAL   4787
X-B    25.633

POWER
-----
BOILER ABS. KW     2411     NET INPUT KW          3705
S.H. *1 ABS. KW     872     TOTAL ABSORBED KW     3578
S.H. *2 ABS. KW     294     POWER RATIO          .9657
**********************************************************************************************
```

PERFORMANCE SUMMARY 1977 118 10 44 23

BOILER		SUPERHEATERS		BOILER	
DRUM		S.H. STAGE 1		L-D	32
P-D	1630	W-S1	8121	T-BI	600
T-D	608	T-S1I	609	H-BI	634
H-GD	1158	T-S1O	901	R-BI	39.258
H-FD	628	P-S1O	1610	R-GD	4.0847
N-CR	10.837	H-S1O	1424	R-FD	41.659
FEEDWATER		ATTEMPERATOR			
P-FW	1892	P-ATT	1892		
T-FW	468	T-ATT	459		
W-FW	7935	W-ATT	406		
H-FW	450	H-ATT	440		
FLOW CIRCUITS		S.H. STAGE 2		ARRAY - KW	
T-DC	601	W-S2	8527	ZONE 1	964
T-SUB	-7	T-S2I	815	ZONE 2	969
W-B	88010			ZONE 3	789
W-BC1	9903	T S2O	953	ZONE 4	763
W-BC2	9819	P-S2O	1588		
W-BC3	9534	H-S2O	1458	TOTAL	3485
X-B	18.047				

POWER

BOILER ABS. KW	1714	NET INPUT KW	2749
S.H. *1 ABS. KW	628	TOTAL ABSORBED KW	2544
S.H. *2 ABS. KW	202	POWER RATIO	.9255

```
**********************************************************************************************
PERFORMANCE SUMMARY                                          1977  118  11  28    23
-------------------                                          ----------------------
BOILER                    SUPERHEATERS                       BOILER
------                    ------------                       ------
DRUM                      S.H. STAGE 1                       L-D       32
P-D      1677             W-S1    11384                      T-BI     603
T-D       612             T-S1I     612                      H-BI     641
H-GD     1155             T-S10     883                      R-BI  38.664
H-FD      634             P-S10    1641                      R-GD  4.2356
N-CR   7.7495             H-S10    1412                      R-FD  41.305
FEEDWATER                 ATTEMPERATOR
P-FW     1889             P-ATT    1889
T-FW      468             T-ATT     461
W-FW    11198             W-ATT     481
H-FW      450             H-ATT     443

FLOW CIRCUITS             S.H. STAGE 2                       ARRAY - KW
T-DC      604             W-S2    11865                      ZONE 1  1203
T-SUB      -8             T-S2I     813                      ZONE 2  1225
W-B     88220                                                ZONE 3  1144
W-BC1    9874             T S20     951                      ZONE 4  1145
W-BC2    9818             P-S20    1584
W-BC3    9563             H-S20    1457                      TOTAL   4717
X-B    25.298

POWER
-----
BOILER ABS. KW      2376     NET INPUT KW          3647
S.H. *1 ABS. KW      857     TOTAL ABSORBED KW     3527
S.H. *2 ABS. KW      293     POWER RATIO          .9671
**********************************************************************************************
```

PERFORMANCE SUMMARY 1977 118 12 24 23

BOILER		SUPERHEATERS		BOILER	
DRUM		S.H. STAGE 1		L-D	32
P-D	1611	W-S1	6709	T-BI	600
T-D	607	T-S1I	607	H-BI	634
H-GD	1160	T-S1O	896	R-BI	39.258
H-FD	627	P-S1O	1601	R-GD	4.0102
N-CR	13.118	H-S1O	1422	R-FD	41.735
FEEDWATER		ATTEMPERATOR			
P-FW	1892	P-ATT	1892		
T-FW	468	T-ATT	456		
W-FW	6463	W-ATT	157		
H-FW	450	H-ATT	437		
FLOW CIRCUITS		S.H. STAGE 2		ARRAY - KW	
T-DC	601	W-S2	6866	ZONE 1	752
T-SUB	-6	T-S2I	829	ZONE 2	806
W-B	88010			ZONE 3	678
W-BC1	9847	T S2O	954	ZONE 4	656
W-BC2	9791	P-S2O	1578		
W-BC3	9563	H-S2O	1459	TOTAL	2892
X-B	14.909				

POWER

BOILER ABS. KW	1428	NET INPUT KW	2226
S.H. *1 ABS. KW	515	TOTAL ABSORBED KW	2063
S.H. *2 ABS. KW	119	POWER RATIO	.9270

PERFORMANCE SUMMARY 1977 118 12 42 23

BOILER		SUPERHEATERS		BOILER	
DRUM		S.H. STAGE 1		L-D	34
P-D	1727	W-S1	12737	T-BI	610
T-D	616	T-S1I	616	H-BI	661
H-GD	1152	T-S1O	898	R-BI	36.710
H-FD	640	P-S1O	1681	R-GD	4.4039
N-CR	6.8800	H-S1O	1420	R-FD	40.944
FEEDWATER		ATTEMPERATOR			
P-FW	1790	P-ATT	1790		
T-FW	468	T-ATT	455		
W-FW	10145	W-ATT	242		
H-FW	450	H-ATT	436		
FLOW CIRCUITS		S.H. STAGE 2		ARRAY - KW	
T-DC	611	W-S2	12979	ZONE 1	1345
T-SUB	-5	T-S2I	855	ZONE 2	1462
W-B	87630			ZONE 3	1189
W-BC1	9774	T S2O	963	ZONE 4	1374
W-BC2	9746	P-S2O	1608		
W-BC3	9493	H-S2O	1463	TOTAL	5370
X-B	28.304				

Full Array Power Volt Limit at ≈ 466 Volts.

POWER

BOILER ABS. KW	2962	NET INPUT KW	4246
S.H. *1 ABS. KW	1000	TOTAL ABSORBED KW	4196
S.H. *2 ABS. KW	233	POWER RATIO	.9883

PERFORMANCE SUMMARY 1977 118 12 50 23

BOILER		SUPERHEATERS		BOILER	
DRUM		S.H. STAGE 1		L-D	32
P-D	1696	W-S1	12345	T-BI	605
T-D	613	T-S1I	614	H-BI	646
H-GD	1152	T-S1O	889	R-BI	38.215
H-FD	636	P-S1O	1653	R-GD	4.3130
N-CR	7.0960	H-S1O	1415	R-FD	41.226
FEEDWATER		ATTEMPERATOR			
P-FW	1889	P-ATT	1889		
T-FW	470	T-ATT	462		
W-FW	12214	W-ATT	522		
H-FW	453	H-ATT	444		
FLOW CIRCUITS		S.H. STAGE 2		ARRAY - KW	
T-DC	606	W-S2	12867	ZONE 1	1251
T-SUB	-7	T-S2I	822	ZONE 2	1429
W-B	87600			ZONE 3	1059
W-BC1	9770	T S2O	961	ZONE 4	1245
W-BC2	9685	P-S2O	1584		
W-BC3	9428	H-S2O	1463	TOTAL	4984
X-B	27.252				

POWER

BOILER ABS. KW	2557	NET INPUT KW	3883
S.H. *1 ABS. KW	940	TOTAL ABSORBED KW	3827
S.H. *2 ABS. KW	329	POWER RATIO	.9855

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**********************************************************************************************
PERFORMANCE SUMMARY                                          1977  118  12  51     23
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BOILER                    SUPERHEATERS                BOILER
------                    ------------                ------
DRUM                      S.H. STAGE 1                L-D        32
P-D       1696            W-S1     12304              T-BI      605
T-D        613            T-S1I      614              H-BI      643
H-GD      1152            T-S1O      889              R-BI   38.446
H-FD       636            P-S1O     1653              R-GD   4.3130
N-CR   7.1196             H-S1O     1415              R-FD   41.226
FEEDWATER                 ATTEMPERATOR
P-FW      1889            P-ATT     1889
T-FW       469            T-ATT      462
W-FW     12219            W-ATT      517
H-FW       452            H-ATT      444

FLOW CIRCUITS             S.H. STAGE 2                ARRAY - KW
T-DC       605            W-S2     12821              ZONE 1   1241
T-SUB       -8            T-S2I      822              ZONE 2   1434
W-B      87600                                        ZONE 3   1059
W-BC1     9881            T S2O      961              ZONE 4   1240
W-BC2     9854            P-S2O     1584
W-BC3     9543            H-S2O     1463              TOTAL    4974
X-B    27.221

POWER
-----
BOILER ABS. KW      2546     NET INPUT KW          3871
S.H. *1 ABS. KW      937     TOTAL ABSORBED KW     3811
S.H. *2 ABS. KW      327     POWER RATIO          .9847
**********************************************************************************************
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PERFORMANCE SUMMARY 1977 118 12 54 23

BOILER		SUPERHEATERS		BOILER	
DRUM		S.H. STAGE 1		L-D	31
P-D	1677	W-S1	11423	T-BI	603
T-D	612	T-S1I	612	H-BI	643
H-GD	1155	T-S1O	879	R-BI	38.446
H-FD	634	P-S1O	1637	R-GD	4.2356
N-CR	7.7230	H-S1O	1409	R-FD	41.305
FEEDWATER		ATTEMPERATOR			
P-FW	1897	P-ATT	1897		
T-FW	470	T-ATT	462		
W-FW	11471	W-ATT	473		
H-FW	453	H-ATT	444		
FLOW CIRCUITS		S.H. STAGE 2		ARRAY - KW	
T-DC	605	W-S2	11896	ZONE 1	1118
T-SUB	-7	T-S2I	812	ZONE 2	1327
W-B	88220			ZONE 3	996
W-BC1	9902	T S2O	954	ZONE 4	1112
W-BC2	9734	P-S2O	1578		
W-BC3	9620	H-S2O	1459	TOTAL	4553
X-B	25.216				

POWER

BOILER ABS. KW	2343	NET INPUT KW	3483
S.H. *1 ABS. KW	850	TOTAL ABSORBED KW	3502
S.H. *2 ABS. KW	308	POWER RATIO	1.0055

PAGE 3

BASE DATA REPORT -- METAL TEMPERATURES

BASE DATA REPORT - METAL TEMPERATURES 1977 118 10 44 23

TE 210-217	592	601	610	235	541	596	463	599		
TE 330-339	638	616	638	634	642	652	640	640	638	639
TE 340-349	640	636	643	642	642	641	640	638	636	608
TE 350-359	642	643	642	635	638	640	641	639	638	637
TE 360-369	635	611	642	643	639	641	641	638	636	621
TE 370-379	150	643	643	643	641	638	630	624	641	641
TE 380-389	641	641	637	637	636	624	643	643	641	636
TE 405-409	702	676	708	681	681					
TE 450-459	149	149	963	150	568	913	888	269	897	906
TE 460-466	150	915	82	910	905	900	903			
TE 420-429	631	589	636	643	1345	686	696	708	721	734
TE 430-439	760	785	798	809	822	836	856	873	829	149
TE 440	149									
TE 505-509	150	150	857	150	870					
TE 550-554	985	149	965	589	149					
TE 555-560	951	956	149	960	957	953				
TE 561-566	959	957	961	959	858	954				
TE 520-529	150	829	835	840	856	150	874	882	882	890
TE 530-539	902	909	916	786	926	932	939	946	951	557
TE 540	149									
TE 470-471	881	883		TE 570-571		1299	956			
TE 601-606	785	635	508	867	842	820				
TE 607-612	592	582	573	941	935	932				

BASE DATA REPORT - METAL TEMPERATURES 1977 118 11 19 23

TE 210-217	594	603	613	243	546	598	464	604		
TE 330-339	655	625	657	651	660	664	655	655	650	654
TE 340-349	657	652	658	658	659	657	657	655	652	616
TE 350-359	655	660	659	650	651	654	657	655	653	653
TE 360-369	649	620	653	655	652	655	654	652	649	634
TE 370-379	150	655	656	656	654	652	643	636	655	655
TE 380-389	655	655	653	651	651	636	656	659	658	650
TE 405-409	723	685	734	700	744					
TE 450-459	149	149	958	150	573	894	863	407	878	881
TE 460-466	150	895	78	890	884	876	880			
TE 420-429	635	590	635	640	1368	678	686	696	708	720
TE 430-439	742	764	777	787	800	811	831	849	785	149
TE 440	149									
TE 505-509	150	150	869	150	890					
TE 550-554	988	149	973	479	149					
TE 555-560	946	951	149	957	953	949				
TE 561-566	956	954	961	954	858	949				
TE 520-529	150	830	835	840	854	150	871	878	878	885
TE 530-539	896	903	909	764	919	924	932	941	946	554
TE 540	149									
TE 470-471	859	866		TE 570-571		1671	959			
TE 601-606	797	651	526	854	834	818				
TE 607-612	598	590	582	947	944	941				

BASE DATA REPORT - METAL TEMPERATURES 1977 118 12 24 23

TE 210-217	592	600	609	248	543	596	463	599		
TE 330-339	633	553	633	629	633	643	630	630	630	631
TE 340-349	633	629	636	635	635	634	633	632	629	605
TE 350-359	634	636	635	628	631	633	633	632	630	629
TE 360-369	628	608	634	635	632	632	632	631	629	617
TE 370-379	150	635	636	636	634	632	625	619	634	635
TE 380-389	635	634	632	631	630	620	634	634	633	629
TE 405-409	687	666	695	673	668					
TE 450-459	149	149	951	150	582	909	883	516	890	902
TE 460-466	150	910	70	905	901	898	903			
TE 420-429	628	589	635	643	1415	687	696	709	722	736
TE 430-439	761	785	798	809	822	835	856	872	883	149
TE 440	149									
TE 505-509	150	150	863	150	878					
TE 550-554	980	149	963	388	149					
TE 555-560	953	957	149	961	959	954				
TE 561-566	961	959	964	961	850	956				
TE 520-529	150	845	847	853	867	150	884	890	890	899
TE 530-539	910	916	922	1008	931	937	944	951	954	559
TE 540	149									
TE 470-471	875	877		TE 570-571		1101	955			
TE 601-606	795	655	535	869	850	832				
TE 607-612	595	588	579	945	942	940				

BASE DATA REPORT - METAL TEMPERATURES 1977 118 12 50 23

TE 210-217	596	604	615	248	547	599	466	606		
TE 330-339	660	563	660	654	659	666	657	657	649	652
TE 340-349	655	652	659	659	659	659	657	655	652	616
TE 350-359	660	664	660	650	658	660	664	662	660	658
TE 360-369	653	622	662	664	661	663	663	661	656	637
TE 370-379	150	664	667	667	663	661	650	640	662	662
TE 380-389	663	663	659	658	656	639	663	665	664	655
TE 405-409	737	708	746	684	757					
TE 450-459	149	149	974	150	585	902	871	544	888	890
TE 460-466	150	906	67	898	890	883	888			
TE 420-429	638	591	637	643	1433	679	689	700	713	725
TE 430-439	748	769	781	791	807	819	839	855	867	149
TE 440	149									
TE 505-509	150	150	878	150	897					
TE 550-554	1003	149	986	373	149					
TE 555-560	958	963	149	970	966	964				
TE 561-566	969	966	973	967	868	961				
TE 520-529	150	840	843	850	863	150	881	889	889	899
TE 530-539	910	917	924	1005	936	941	949	954	959	562
TE 540	149									
TE 470-471	864	873		TE 570-571		1134	965			
TE 601-606	805	661	538	862	843	829				
TE 607-612	600	592	584	950	945	944				

BASE DATA REPORT - METAL TEMPERATURES 1977 118 11 28 23

TE 210-217	594	603	613	244	545	599	464	604		
TE 330-339	654	626	655	650	654	661	652	652	648	652
TE 340-349	655	651	659	657	657	657	655	654	650	616
TE 350-359	655	660	658	650	651	654	655	655	652	653
TE 360-369	649	620	655	655	653	655	655	653	649	632
TE 370-379	150	655	658	659	655	654	644	635	655	655
TE 380-389	655	655	653	652	650	636	656	659	658	651
TE 405-409	723	695	735	703	730					
TE 450-459	149	149	959	150	573	895	864	438	878	881
TE 460-466	150	896	76	891	884	877	881			
TE 420-429	636	590	635	642	1375	679	688	698	710	722
TE 430-439	746	766	780	788	802	814	834	850	839	149
TE 440	149									
TE 505-509	150	150	866	150	879					
TE 550-554	990	149	974	492	149					
TE 555-560	946	951	149	958	953	950				
TE 561-566	956	954	961	956	848	949				
TE 520-529	150	827	832	837	851	150	867	875	875	883
TE 530-539	895	902	908	785	919	926	933	941	946	555
TE 540	149									
TE 470-471	858	866		TE 570-571		1702	957			
TE 601-606	796	652	528	854	834	818				
TE 607-612	599	591	583	945	942	941				

BASE DATA REPORT - METAL TEMPERATURES 1977 118 12 51 23

TE 210-217	596	603	615	248	547	600	466	606		
TE 330-339	660	562	660	654	659	666	657	657	651	654
TE 340-349	657	654	654	654	655	654	654	654	650	616
TE 350-359	659	664	660	650	658	660	664	661	659	658
TE 360-369	653	622	661	663	661	663	663	661	656	637
TE 370-379	150	664	667	667	663	661	649	639	661	662
TE 380-389	663	662	659	658	655	639	664	665	663	655
TE 405-409	737	708	744	696	758					
TE 450-459	149	149	971	150	585	900	870	545	886	890
TE 460-466	150	906	67	898	889	880	887			
TE 420-429	637	593	637	644	1433	679	689	700	712	725
TE 430-439	746	767	781	791	807	817	838	855	867	149
TE 440	149									
TE 505-509	150	150	876	150	898					
TE 550-554	1003	149	985	367	149					
TE 555-560	958	963	149	971	966	964				
TE 561-566	970	966	973	968	868	960				
TE 520-529	150	840	842	849	862	150	879	888	888	897
TE 530-539	910	916	922	1005	935	941	948	955	959	562
TE 540	149									
TE 470-471	864	873		TE 570-571		1134	965			
TE 601-606	805	661	538	862	844	829				
TE 607-612	600	592	584	950	946	944				

BASE DATA REPORT - FLUID 1977 118 10 44 23

TEMPERATURES - FLUID

TE 19	468
TE 260	470
TE 300	601
TE 301	600
TE 306	65
TE 310	600
TE 311	600
TE 400	610
TE 401	609
TE 402	609
TE 476	901
TE 480	459
TE 501	815
TT 590	953

LEVELS

LT 210	32
LT 211	33

PRESSURES

PT 1	1892
PT 2	1586
PT 3	98
PT 230	1630
PT 475	1610
PT 590	1588

FLOWS

FT 1	7935
FT 3	8527
FT 260	0
FT 310	88010
FT 350	9903
FT 351	9819
FT 352	9534
FT 480	406
FT 13	133930
PUMP JACKET	65

BASE DATA REPORT - METAL TEMPERATURES 1977 118 12 54 23

TE 210-217	596	604	615	248	547	599	466	605		
TE 330-339	654	554	657	651	655	666	654	654	644	648
TE 340-349	651	648	650	650	651	652	652	651	648	614
TE 350-359	654	657	654	646	654	655	657	656	653	653
TE 360-369	649	619	656	659	656	660	659	656	652	634
TE 370-379	150	661	662	663	660	656	647	637	658	659
TE 380-389	660	659	655	654	652	637	659	660	659	652
TE 405-409	727	705	737	681	747					
TE 450-459	149	149	958	150	584	888	859	556	876	879
TE 460-466	150	894	65	884	876	867	874			
TE 420-429	637	592	638	644	1434	679	689	700	713	725
TE 430-439	746	766	780	788	802	814	832	846	858	149
TE 440	149									
TE 505-509	150	150	866	150	883					
TE 550-554	989	149	973	384	149					
TE 555-560	949	951	149	959	956	953				
TE 561-566	959	956	963	956	837	949				
TE 520-529	150	830	833	839	852	150	868	876	876	885
TE 530-539	895	903	909	1013	921	927	934	943	946	555
TE 540	149									
TE 470-471	861	871		TE 570-571		1139	964			
TE 601-606	805	661	538	860	844	829				
TE 607-612	600	592	584	950	947	944				

PAGE 4

BASE DATA REPORT -- FLUID

BASE DATA REPORT - FLUID 1977 118 11 19 23

TEMPERATURES - FLUID

TE 19	468
TE 260	343
TE 300	605
TE 301	605
TE 306	65
TE 310	605
TE 311	605
TE 400	612
TE 401	612
TE 402	612
TE 476	882
TE 480	459
TE 501	816
TT 590	951

LEVELS

LT 210	32
LT 211	34

PRESSURES

PT 1	1892
PT 2	1586
PT 3	98
PT 230	1683
PT 475	1642
PT 590	1584

FLOWS

FT 1	11269
FT 3	12001
FT 260	0
FT 310	86670
FT 350	9742
FT 351	9657
FT 352	9340
FT 480	466
FT 13	133740
PUMP JACKET	66

BASE DATA REPORT - FLUID 1977 118 11 28 23

TEMPERATURES - FLUID

TE 19	468
TE 260	321
TE 300	605
TE 301	603
TE 306	65
TE 310	604
TE 311	603
TE 400	612
TE 401	612
TE 402	612
TE 476	882
TE 480	461
TE 501	812
TT 590	951

LEVELS

LT 210	32
LT 211	34

PRESSURES

PT 1	1900
PT 2	1586
PT 3	96
PT 230	1677
PT 475	1638
PT 590	1578

FLOWS

FT 1	11125
FT 3	11813
FT 260	0
FT 310	87680
FT 350	9864
FT 351	9808
FT 352	9495
FT 480	487
FT 13	132640
PUMP JACKET	65

BASE DATA REPORT - FLUID 1977 118 12 24 23

TEMPERATURES - FLUID

TE 19	468
TE 260	383
TE 300	601
TE 301	600
TE 306	66
TE 310	600
TE 311	600
TE 400	607
TE 401	607
TE 402	607
TE 476	896
TE 480	456
TE 501	829
TT 590	954

LEVELS

LT 210	32
LT 211	33

PRESSURES

PT 1	1892
PT 2	1586
PT 3	98
PT 230	1611
PT 475	1601
PT 590	1578

FLOWS

FT 1	6463
FT 3	6866
FT 260	0
FT 310	88010
FT 350	9847
FT 351	9791
FT 352	9563
FT 480	157
FT 13	134110
PUMP JACKET	67

BASE DATA REPORT - FLUID 1977 M18 12 51 23

TEMPERATURES - FLUID

TE 19	469
TE 260	305
TE 300	605
TE 301	605
TE 306	66
TE 310	605
TE 311	605
TE 400	614
TE 401	614
TE 402	614
TE 476	889
TE 480	462
TE 501	822
TT 590	961

LEVELS

LT 210	32
LT 211	34

PRESSURES

PT 1	1889
PT 2	1586
PT 3	106
PT 230	1696
PT 475	1653
PT 590	1584

FLOWS

FT 1	12219
FT 3	12821
FT 260	0
FT 310	87600
FT 350	9881
FT 351	9854
FT 352	9543
FT 480	517
FT 13	136470
PUMP JACKET	67

BASE DATA REPORT - FLUID 1977 118 12 51 23

TEMPERATURES - FLUID

TE 19	469
TE 260	305
TE 300	605
TE 301	605
TE 306	66
TE 310	605
TE 311	605
TE 400	614
TE 401	614
TE 402	614
TE 476	889
TE 480	462
TE 501	822
TT 590	961

LEVELS

LT 210	32
LT 211	34

PRESSURES

PT 1	1889
PT 2	1586
PT 3	106
PT 230	1696
PT 475	1653
PT 590	1584

FLOWS

FT 1	12219
FT 3	12821
FT 260	0
FT 310	87600
FT 350	9881
FT 351	9854
FT 352	9543
FT 480	517
FT 13	136470
PUMP JACKET	67

BASE DATA REPORT - FLUID 1977 118 12 54 23

TEMPERATURES - FLUID

TE 19	469
TE 260	298
TE 300	605
TE 301	604
TE 306	66
TE 310	603
TE 311	603
TE 400	612
TE 401	612
TE 402	612
TE 476	878
TE 480	462
TE 501	812
TT 590	953

LEVELS

LT 210	32
LT 211	34

PRESSURES

PT 1	1900
PT 2	1581
PT 3	96
PT 230	1672
PT 475	1636
PT 590	1576

FLOWS

FT 1	11336
FT 3	11799
FT 260	0
FT 310	88220
FT 350	9957
FT 351	9874
FT 352	9592
FT 480	475
FT 13	136920
PUMP JACKET	67

PAGE 5

COOLING WATER TEMPERATURE

COOLING WATER TEMPERATURES 1977 118 10 44 23

INLET TEMPERATURE	TE 26	62
OUTLET TEMPERATURES		
RECIRCULATION PUMP	TT 306	65
PUMP JACKET	TE 613	65
FLUX BOOM	TT 16	100
POWER CONTROLLERS	TT 23	65

ARRAY POINTS

FACET 12		FACET 3		FACET 6		FACET 9	
BUSBAR COOLERS							
TE 700	97	TE 701	100	TE 702	98	TE 703	100
REFLECTOR COOLERS							
TE 704	79	TE 705	86	TE 706	85	TE 707	94

UPPER SKIRT		LOWER SKIRT		AMBIENT AIR	
TE 708	69	TE 709	69	TE 710	118

ARRAY & FLUX BOOM OUTLET	TE 24	81

COOLING WATER TEMPERATURES 1977 118 11 19 23

INLET TEMPERATURE	TE 26	62	
OUTLET TEMPERATURES			
RECIRCULATION PUMP	TT 306	65	
PUMP JACKET	TE 613	66	
FLUX BOOM	TT 16	109	
POWER CONTROLLERS	TT 23	66	

ARRAY POINTS

FACET 12		FACET 3		FACET 6		FACET 9	
BUSBAR COOLERS							
TE 700	108	TE 701	106	TE 702	109	TE 703	110
REFLECTOR COOLERS							
TE 704	86	TE 705	95	TE 706	104	TE 707	103

UPPER SKIRT		LOWER SKIRT		AMBIENT AIR	
TE 708	74	TE 709	86	TE 710	130

ARRAY & FLUX BOOM OUTLET TE 24 90

COOLING WATER TEMPERATURES 1977 118 11 28 23

INLET TEMPERATURE	TE 26	62
OUTLET TEMPERATURES		
RECIRCULATION PUMP	TT 306	65
PUMP JACKET	TE 613	65
FLUX BOOM	TT 16	109
POWER CONTROLLERS	TT 23	66

ARRAY POINTS

FACET 12		FACET 3		FACET 6		FACET 9	
BUSBAR COOLERS							
TE 700	109	TE 701	104	TE 702	109	TE 703	110
REFLECTOR COOLERS							
TE 704	86	TE 705	92	TE 706	104	TE 707	103

UPPER SKIRT		LOWER SKIRT		AMBIENT AIR	
TE 708	73	TE 709	86	TE 710	130

ARRAY & FLUX BOOM OUTLET TE 24 90

COOLING WATER TEMPERATURES 1977 118 12 24 23

INLET TEMPERATURE	TE 26	63					
OUTLET TEMPERATURES							
RECIRCULATION PUMP	TT 306	66					
PUMP JACKET	TE 613	67					
FLUX BOOM	TT 16	97					
POWER CONTROLLERS	TT 23	65					
ARRAY POINTS							
FACET 12		FACET 3		FACET 6		FACET 9	
BUSBAR COOLERS							
TE 700	95	TE 701	93	TE 702	94	TE 703	86
REFLECTOR COOLERS							
TE 704	76	TE 705	82	TE 706	95	TE 707	92
UPPER SKIRT		LOWER SKIRT		AMBIENT AIR			
TE 708	72	TE 709	83	TE 710	121		
ARRAY & FLUX BOOM OUTLET	TE 24	79					

COOLING WATER TEMPERATURES 1977 118 12 51 23

INLET TEMPERATURE	TE 26	63
OUTLET TEMPERATURES		
RECIRCULATION PUMP	TT 306	66
PUMP JACKET	TE 613	65
FLUX BOOM	TT 16	111
POWER CONTROLLERS	TT 23	67

ARRAY POINTS

FACET 12		FACET 3		FACET 6		FACET 9	
BUSBAR COOLERS							
TE 700	113	TE 701	103	TE 702	101	TE 703	109
REFLECTOR COOLERS							
TE 704	92	TE 705	88	TE 706	85	TE 707	101

UPPER SKIRT		LOWER SKIRT		AMBIENT AIR	
TE 708	71	TE 709	94	TE 710	132

ARRAY & FLUX BOOM OUTLET TE 24 91

COOLING WATER TEMPERATURES 1977 118 12 51 23

INLET TEMPERATURE	TE 26	63
OUTLET TEMPERATURES		
RECIRCULATION PUMP	TT 306	66
PUMP JACKET	TE 613	67
FLUX BOOM	TT 16	111
POWER CONTROLLERS	TT 23	67

ARRAY POINTS

FACET 12		FACET 3		FACET 6		FACET 9	
BUSBAR COOLERS							
TE 700	113	TE 701	103	TE 702	101	TE 703	109
REFLECTOR COOLERS							
TE 704	92	TE 705	88	TE 706	85	TE 707	101

UPPER SKIRT		LOWER SKIRT		AMBIENT AIR	
TE 708	71	TE 709	94	TE 710	132

ARRAY & FLUX BOOM OUTLET TE 24 91

COOLING WATER TEMPERATURES 1977 118 12 54 23

INLET TEMPERATURE	TE 26	63					
OUTLET TEMPERATURES							
RECIRCULATION PUMP	TT 306	66					
PUMP JACKET	TE 613	65					
FLUX BOOM	TT 16	109					
POWER CONTROLLERS	TT 23	66					
ARRAY POINTS							
	FACET 12		FACET 3		FACET 6		FACET 9
BUSBAR COOLERS							
TE 700	109	TE 701	108	TE 702	104	TE 703	119
REFLECTOR COOLERS							
TE 704	88	TE 705	85	TE 706	93	TE 707	108
UPPER SKIRT		LOWER SKIRT		AMBIENT AIR			
TE 708	74	TE 709	79	TE 710	128		
ARRAY & FLUX BOOM OUTLET	TE 24	88					

PAGE 6

FIRST STAGE SUPERHEATER METAL TEMPERATURES

FIRST STAGE SUPERHEATER METAL TEMPERATURES 1977 118 10 45 23

TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	149	963	149	571	150

TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	676	707	701	679	681

TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	887	271	897	906	150	914
TUBE NUMBER	7	8	9	10	11	12
	82	910	905	900	903	913

HEADER TEMPERATURES

METAL	913	883	FLUID	901

DRUM TEMPERATURES

GUSSET PLATE	DRUM	596	STEAM LEVEL	610
	BRACKET	541	WATER LEVEL	592
	BASE	235	DRUM AT FEED	601
			FEED LINE	463
			DOWNCOMER	599

FIRST STAGE SUPERHEATER METAL TEMPERATURES 1977 118 11 19 23

TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	149	958	149	572	150

TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	695	734	717	742	700

TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	862	409	877	879	150	895
TUBE NUMBER	7	8	9	10	11	12
	78	889	883	876	879	893

HEADER TEMPERATURES

METAL	893	865	FLUID	881

DRUM TEMPERATURES

GUSSET PLATE	DRUM	599	STEAM LEVEL	614
	BRACKET	545	WATER LEVEL	594
	BASE	243	DRUM AT FEED	603
			FEED LINE	464
			DOWNCOMER	604

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FIRST STAGE SUPERHEATER METAL TEMPERATURES          1977  118  11  28     23
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TUBE OUTLET METAL TEMPERATURES
TUBE NUMBER     2      5      4      11      8
ANGLE REF-N   300    210    240      30    120
              149    959    149     571    150

TUBE INLET METAL TEMPERATURES
TUBE NUMBER     6      9      4       3     12
ANGLE REF-N   300    210      0      30    120
              695    734    724     741    702

TUBE-TO-TUBE OUTLET TEMPERATURES
TUBE NUMBER     1      2      3       4      5      6
              864    438    878     882    150    896
TUBE NUMBER     7      8      9      10     11     12
               76    891    884     877    881    894

HEADER TEMPERATURES
METAL    894     866      FLUID     882

DRUM TEMPERATURES
GUSSET PLATE   DRUM        598    STEAM LEVEL      614
               BRACKET     545    WATER LEVEL      594
               BASE        244    DRUM AT FEED     603
                                  FEED LINE        464
                                  DOWNCOMER        604

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FIRST STAGE SUPERHEATER METAL TEMPERATURES 1977 118 12 25 23

TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	149	950	149	580	150

TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	666	695	690	666	673

TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	883	516	890	902	150	910
TUBE NUMBER	7	8	9	10	11	12
	70	906	901	898	902	910

HEADER TEMPERATURES

METAL	910	877	FLUID	898

DRUM TEMPERATURES

GUSSET PLATE	DRUM	596	STEAM LEVEL	608
	BRACKET	543	WATER LEVEL	592
	BASE	248	DRUM AT FEED	600
			FEED LINE	463
			DOWNCOMER	599

FIRST STAGE SUPERHEATER METAL TEMPERATURES 1977 118 12 51 23

TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	149	971	149	586	150

TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	708	743	736	759	699

TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	869	546	886	889	150	905
TUBE NUMBER	7	8	9	10	11	12
	67	896	888	879	886	900

HEADER TEMPERATURES

METAL	900	873	FLUID	888

DRUM TEMPERATURES

GUSSET PLATE	DRUM	600	STEAM LEVEL	615
	BRACKET	547	WATER LEVEL	596
	BASE	248	DRUM AT FEED	604
			FEED LINE	466
			DOWNCOMER	606

FIRST STAGE SUPERHEATER METAL TEMPERATURES 1977 118 12 51 23

TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	149	971	149	585	150

TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	708	744	737	758	696

TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	870	545	886	890	150	906
TUBE NUMBER	7	8	9	10	11	12
	67	898	889	880	887	900

HEADER TEMPERATURES

METAL	900	873	FLUID	889

DRUM TEMPERATURES

GUSSET PLATE	DRUM	600	STEAM LEVEL	615
	BRACKET	547	WATER LEVEL	596
	BASE	248	DRUM AT FEED	603
			FEED LINE	466
			DOWNCOMER	606

FIRST STAGE SUPERHEATER METAL TEMPERATURES 1977 118 12 54 23

TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	149	958	149	582	150

TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	705	724	725	746	683

TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	859	556	876	879	150	893
TUBE NUMBER	7	8	9	10	11	12
	65	884	876	867	873	888

HEADER TEMPERATURES

METAL	888	871	FLUID	878

DRUM TEMPERATURES

GUSSET PLATE	DRUM	599	STEAM LEVEL	615
	BRACKET	547	WATER LEVEL	594
	BASE	248	DRUM AT FEED	604
			FEED LINE	466
			DOWNCOMER	605

PAGE 7

SECOND STAGE SUPERHEATER METAL TEMPERATURES

SECOND STAGE SUPERHEATER METAL TEMPERATURES 1977 118 10 45 23

TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	985	965	151	149	592

TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	150	857	150	873	150

TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	956	149	961	957	953	959
TUBE NUMBER	7	8	9	10	11	12
	958	962	959	845	954	951

HEADER TEMPERATURES

METAL 951 955 FLUID 953

LUG TEMPERATURES	HEADER DISTANCE (INCHES) .875	2.125	3.375
BOILER OUTLET SUPRT	785	636	508
S.H.1 OUTLET SUPRT	867	840	819
S.H.2 SNUBBER PLATE	592	582	573
S.H.2 SNUBBER BRAKT	940	935	933

SECOND STAGE SUPERHEATER METAL TEMPERATURES 1977 118 11 19 23

TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	988	973	149	149	481

TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	150	869	150	889	150

TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	950	149	957	953	950	956
TUBE NUMBER	7	8	9	10	11	12
	954	960	956	839	949	946

HEADER TEMPERATURES

METAL 946 959 FLUID 951

LUG TEMPERATURES	HEADER DISTANCE (INCHES) .875	2.125	3.375
BOILER OUTLET SUPRT	797	651	527
S.H.1 OUTLET SUPRT	854	834	817
S.H.2 SNUBBER PLATE	599	590	582
S.H.2 SNUBBER BRAKT	947	944	941

SECOND STAGE SUPERHEATER METAL TEMPERATURES 1977 118 11 28 23

TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	990	975	149	149	493

TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	150	866	150	884	150

TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	951	149	957	953	950	956
TUBE NUMBER	7	8	9	10	11	12
	954	961	956	835	949	946

HEADER TEMPERATURES

METAL 946 957 FLUID 951

LUG TEMPERATURES	HEADER DISTANCE (INCHES) .875	2.125	3.375
BOILER OUTLET SUPRT	796	653	529
S.H.1 OUTLET SUPRT	854	835	818
S.H.2 SNUBBER PLATE	599	591	583
S.H.2 SNUBBER BRAKT	945	942	941

SECOND STAGE SUPERHEATER METAL TEMPERATURES 1977 118 12 25 23

TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	981	963	149	149	388

TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	150	863	150	879	150

TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	958	149	961	959	954	960
TUBE NUMBER	7	8	9	10	11	12
	959	964	961	852	956	953

HEADER TEMPERATURES

METAL 953 955 FLUID 954

LUG TEMPERATURES	HEADER DISTANCE (INCHES)		
	.875	2.125	3.375
BOILER OUTLET SUPRT	795	655	535
S.H.1 OUTLET SUPRT	870	850	833
S.H.2 SNUBBER PLATE	594	588	581
S.H.2 SNUBBER BRAKT	945	942	941

SECOND STAGE SUPERHEATER METAL TEMPERATURES 1977 118 12 51 23

TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	1003	986	149	149	401

TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	150	876	150	898	150

TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	963	149	971	966	964	969
TUBE NUMBER	7	8	9	10	11	12
	966	973	968	851	961	1134

HEADER TEMPERATURES

METAL 958 965 FLUID 961

LUG TEMPERATURES	HEADER DISTANCE (INCHES)		
	.875	2.125	3.375
BOILER OUTLET SUPRT	805	661	537
S.H.1 OUTLET SUPRT	862	844	829
S.H.2 SNUBBER PLATE	599	592	584
S.H.2 SNUBBER BRAKT	950	945	944

SECOND STAGE SUPERHEATER METAL TEMPERATURES 1977 118 12 51 23

TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	1003	985	149	149	367

TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	150	876	150	898	150

TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	963	149	971	966	964	970
TUBE NUMBER	7	8	9	10	11	12
	966	973	968	868	960	958

HEADER TEMPERATURES

METAL 958 965 FLUID 961

LUG TEMPERATURES	HEADER DISTANCE (INCHES)		
	.875	2.125	3.375
BOILER OUTLET SUPRT	805	661	538
S.H.1 OUTLET SUPRT	862	844	829
S.H.2 SNUBBER PLATE	600	592	584
S.H.2 SNUBBER BRAKT	950	946	944

SECOND STAGE SUPERHEATER METAL TEMPERATURES 1977 118 12 54 23

TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	987	972	149	149	360

TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	150	863	150	883	150

TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	949	149	958	954	951	958
TUBE NUMBER	7	8	9	10	11	12
	954	961	954	838	948	1140

HEADER TEMPERATURES

METAL	948	964	FLUID	953

LUG TEMPERATURES	HEADER DISTANCE (INCHES)		
	.875	2.125	3.375
BOILER OUTLET SUPRT	805	661	538
S.H.1 OUTLET SUPRT	859	844	829
S.H.2 SNUBBER PLATE	600	592	585
S.H.2 SNUBBER BRAKT	951	947	944

PAGE 8

BOILER TEMPERATURE PROFILE

BOILER TEMPERATURE PROFILE 1977 118 10 45 23

DRUM T-SAT 608

LEVEL	COLUMN									
	1	2	3	4	5	6	7	8	9	10
8	641	642	637	643	642	638	642	150	641	643
66.0	T-81	T-82	T-83	T-84	T-85	T-86	T-87	T-88	T-89	T-810
7				642		640	643	643	641	
57.2				T-74		T-76	T-77	T-78	T-79	
6	617	651	637	642	644	642	640	644	641	643
48.5	T-61	T-62	T-63	T-64	T-65	T-66	T-67	T-68	T-69	T-610
5				640		639	641	643	641	
38.8				T-54		T-56	T-57	T-58	T-59	
4	640	640	638	640	642	637	640	639	637	642
29.0	T-41	T-42	T-43	T-44	T-45	T-46	T-47	T-48	T-49	T-410
3				638		637	639	639	637	
19.2				T-34		T-36	T-37	T-38	T-39	
2	636	640	635	636	635	635	636	631	636	636
9.50	T-21	T-22	T-23	T-24	T-25	T-26	T-27	T-28	T-29	T-210
1				607		611	620	624	624	
-.2				T-14		T-16	T-17	T-18	T-19	

BOILER TEMPERATURE PROFILE 1977 118 11 19 23

DRUM T-SAT 612

LEVEL	COLUMN									
	1	2	3	4	5	6	7	8	9	10
8	654	656	651	659	655	652	655	150	655	655
66.0	T-81	T-82	T-83	T-84	T-85	T-86	T-87	T-88	T-89	T-810
7				658		654	655	656	655	
57.2				T-74		T-76	T-77	T-78	T-79	
6	629	664	654	659	660	657	653	659	655	658
48.5	T-61	T-62	T-63	T-64	T-65	T-66	T-67	T-68	T-69	T-610
5				658		655	655	659	655	
38.8				T-54		T-56	T-57	T-58	T-59	
4	657	655	657	657	659	653	656	656	652	656
29.0	T-41	T-42	T-43	T-44	T-45	T-46	T-47	T-48	T-49	T-410
3				655		653	655	653	651	
19.2				T-34		T-36	T-37	T-38	T-39	
2	652	655	652	652	651	649	649	644	649	650
9.50	T-21	T-22	T-23	T-24	T-25	T-26	T-27	T-28	T-29	T-210
1				617		620	634	636	636	
-.2				T-14		T-16	T-17	T-18	T-19	

BOILER TEMPERATURE PROFILE 1977 118 11 28 23

DRUM T-SAT 612

LEVEL	COLUMN									
	1	2	3	4	5	6	7	8	9	10
8	654	654	650	659	655	651	655	150	655	656
66.0	T-81	T-82	T-83	T-84	T-85	T-86	T-87	T-88	T-89	T-810
7				658		654	655	655	655	
57.2				T-74		T-76	T-77	T-78	T-79	
6	622	660	653	658	660	655	653	658	655	659
48.5	T-61	T-62	T-63	T-64	T-65	T-66	T-67	T-68	T-69	T-610
5				657		655	655	659	655	
38.8				T-54		T-56	T-57	T-58	T-59	
4	654	651	655	655	658	652	655	655	653	658
29.0	T-41	T-42	T-43	T-44	T-45	T-46	T-47	T-48	T-49	T-410
3				654		652	653	654	651	
19.2				T-34		T-36	T-37	T-38	T-39	
2	648	651	650	650	650	649	649	644	649	651
9.50	T-21	T-22	T-23	T-24	T-25	T-26	T-27	T-28	T-29	T-210
1				616		619	632	636	636	
-.2				T-14		T-16	T-17	T-18	T-19	

BOILER TEMPERATURE PROFILE 1977 118 12 25 23

DRUM T-SAT 607

LEVEL	COLUMN									
	1	2	3	4	5	6	7	8	9	10
8	633	633	630	636	635	631	633	150	634	636
66.0	T-81	T-82	T-83	T-84	T-85	T-86	T-87	T-88	T-89	T-810
7				635		633	634	635	634	
57.2				T-74		T-76	T-77	T-78	T-79	
6	557	645	631	635	636	634	631	636	634	636
48.5	T-61	T-62	T-63	T-64	T-65	T-66	T-67	T-68	T-69	T-610
5				634		632	631	636	634	
38.8				T-54		T-56	T-57	T-58	T-59	
4	633	630	633	633	635	630	632	634	631	636
29.0	T-41	T-42	T-43	T-44	T-45	T-46	T-47	T-48	T-49	T-410
3				633		627	630	632	630	
19.2				T-34		T-36	T-37	T-38	T-39	
2	629	630	630	629	629	628	628	625	629	630
9.50	T-21	T-22	T-23	T-24	T-25	T-26	T-27	T-28	T-29	T-210
1				605		608	617	618	620	
-.2				T-14		T-16	T-17	T-18	T-19	

BOILER TEMPERATURE PROFILE 1977 118 12 51 23

DRUM T-SAT 613

LEVEL	COLUMN									
	1	2	3	4	5	6	7	8	9	10
8	659	660	651	657	657	657	661	150	661	664
66.0	T-81	T-82	T-83	T-84	T-85	T-86	T-87	T-88	T-89	T-810
7				657		660	663	663	662	
57.2				T-74		T-76	T-77	T-78	T-79	
6	560	667	654	657	660	663	661	666	662	665
48.5	T-61	T-62	T-63	T-64	T-65	T-66	T-67	T-68	T-69	T-610
5				657		661	663	667	662	
38.8				T-54		T-56	T-57	T-58	T-59	
4	660	657	657	655	657	659	663	663	659	663
29.0	T-41	T-42	T-43	T-44	T-45	T-46	T-47	T-48	T-49	T-410
3				655		658	661	660	658	
19.2				T-34		T-36	T-37	T-38	T-39	
2	654	657	654	652	648	653	655	649	655	655
9.50	T-21	T-22	T-23	T-24	T-25	T-26	T-27	T-28	T-29	T-210
1				616		622	637	639	639	
-.2				T-14		T-16	T-17	T-18	T-19	

BOILER TEMPERATURE PROFILE 1977 118 12 51 23

DRUM T-SAT 613

LEVEL	COLUMN									
	1	2	3	4	5	6	7	8	9	10
8	660	659	651	654	659	658	661	150	661	664
66.0	T-81	T-82	T-83	T-84	T-85	T-86	T-87	T-88	T-89	T-810
7				654		660	663	664	662	
57.2				T-74		T-76	T-77	T-78	T-79	
6	562	666	654	655	664	664	661	667	663	665
48.5	T-61	T-62	T-63	T-64	T-65	T-66	T-67	T-68	T-69	T-610
5				654		661	663	667	662	
38.8				T-54		T-56	T-57	T-58	T-59	
4	660	657	657	654	660	659	663	663	659	663
29.0	T-41	T-42	T-43	T-44	T-45	T-46	T-47	T-48	T-49	T-410
3				654		658	661	661	658	
19.2				T-34		T-36	T-37	T-38	T-39	
2	654	657	654	650	650	653	656	649	655	655
9.50	T-21	T-22	T-23	T-24	T-25	T-26	T-27	T-28	T-29	T-210
1				616		622	637	639	639	
-.2				T-14		T-16	T-17	T-18	T-19	

BOILER TEMPERATURE PROFILE 1977 118 12 54 23

DRUM T-SAT 612

LEVEL	COLUMN									
	1	2	3	4	5	6	7	8	9	10
8	653	654	645	650	654	651	655	150	657	658
66.0	T-81	T-82	T-83	T-84	T-85	T-86	T-87	T-88	T-89	T-810
7				650		652	658	660	658	
57.2				T-74		T-76	T-77	T-78	T-79	
6	551	666	648	650	654	654	655	661	658	659
48.5	T-61	T-62	T-63	T-64	T-65	T-66	T-67	T-68	T-69	T-610
5				650		653	658	663	658	
38.8				T-54		T-56	T-57	T-58	T-59	
4	655	652	650	650	652	651	658	659	655	658
29.0	T-41	T-42	T-43	T-44	T-45	T-46	T-47	T-48	T-49	T-410
3				650		649	655	656	653	
19.2				T-34		T-36	T-37	T-38	T-39	
2	650	652	648	647	644	646	651	646	651	650
9.50	T-21	T-22	T-23	T-24	T-25	T-26	T-27	T-28	T-29	T-210
1				614		618	634	636	636	
-.2				T-14		T-16	T-17	T-18	T-19	

PAGE 9

FIRST STAGE SUPERHEATER TEMPERATURE PROFILE

FIRST STAGE SUPERHEATER TEMPERATURE PROFILE 1977 118 10 45 23

TUBE * 4

INLET	TS1I	TE400	609
		TE401	609
		TE402	609
OUTLET	TS1O	TE476	901
	LEG	TE459	906

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	832	149	149			
	T-46	T-41	T-42			
3	800	809	823	836	856	874
	T-36	T-31	T-32	T-33	T-34	T-35
2	696	708	721	735	760	785
	T-26	T-21	T-22	T-23	T-24	T-25
1	631	588	635	643	1345	686
	T-16	T-11	T-12	T-13	T-14	T-15

FIRST STAGE SUPERHEATER TEMPERATURE PROFILE 1977 118 11 19 23

TUBE * 4

INLET	TS11	TE400	612
		TE401	613
		TE402	613
OUTLET	TS10	TE476	881
	LEG	TE459	879

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	787	149	149			
	T-46	T-41	T-42			
3	777	786	800	812	831	848
	T-36	T-31	T-32	T-33	T-34	T-35
2	688	696	708	720	742	764
	T-26	T-21	T-22	T-23	T-24	T-25
1	634	588	635	640	1369	678
	T-16	T-11	T-12	T-13	T-14	T-15

FIRST STAGE SUPERHEATER TEMPERATURE PROFILE 1977 118 11 28 23

TUBE * 4			
INLET	TS1I	TE400	612
		TE401	612
		TE402	612
OUTLET	TS1O	TE476	883
	LEG	TE459	882

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	828	149	149			
	T-46	T-41	T-42			
3	781	789	803	814	834	850
	T-36	T-31	T-32	T-33	T-34	T-35
2	689	699	710	722	746	767
	T-26	T-21	T-22	T-23	T-24	T-25
1	634	590	635	642	1375	679
	T-16	T-11	T-12	T-13	T-14	T-15

FIRST STAGE SUPERHEATER TEMPERATURE PROFILE 1977 118 12 25 23

TUBE * 4

INLET	TS11	TE400	607
		TE401	607
		TE402	607
OUTLET	TS10	TE476	898
	LEG	TE459	902

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	883	149	149			
	T-46	T-41	T-42			
3	800	809	822	834	856	872
	T-36	T-31	T-32	T-33	T-34	T-35
2	698	708	722	736	761	785
	T-26	T-21	T-22	T-23	T-24	T-25
1	628	589	635	643	1415	687
	T-16	T-11	T-12	T-13	T-14	T-15

FIRST STAGE SUPERHEATER TEMPERATURE PROFILE 1977 118 12 51 23

TUBE * 4

INLET	TS11	TE400	614
		TE401	614
		TE402	614
OUTLET	TS10	TE476	886
	LEG	TE459	887

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	865	149	149			
	T-46	T-41	T-42			
3	780	790	804	816	835	851
	T-36	T-31	T-32	T-33	T-34	T-35
2	689	700	712	724	744	767
	T-26	T-21	T-22	T-23	T-24	T-25
1	637	593	637	644	1434	679
	T-16	T-11	T-12	T-13	T-14	T-15

FIRST STAGE SUPERHEATER TEMPERATURE PROFILE 1977 118 12 51 23

TUBE * 4

INLET	TS1I	TE400	614
		TE401	614
		TE402	614
OUTLET	TS1O	TE476	809
	LEG	TE459	890

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	867	149	149			
	T-46	T-41	T-42			
3	781	791	807	817	838	855
	T-36	T-31	T-32	T-33	T-34	T-35
2	689	700	712	725	746	767
	T-26	T-21	T-22	T-23	T-24	T-25
1	637	593	637	644	1433	679
	T-16	T-11	T-12	T-13	T-14	T-15

FIRST STAGE SUPERHEATER TEMPERATURE PROFILE 1977 118 12 54 23

TUBE * 4

INLET	TS11	TE400	612
		TE401	612
		TE402	612
OUTLET	TS10	TE476	878
	LEG	TE459	880

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	859	149	149			
	T-46	T-41	T-42			
3	780	790	804	815	833	848
	T-36	T-31	T-32	T-33	T-34	T-35
2	690	702	714	725	747	768
	T-26	T-21	T-22	T-23	T-24	T-25
1	636	593	637	644	1435	679
	T-16	T-11	T-12	T-13	T-14	T-15

PAGE 10

SECOND STAGE SUPERHEATER TEMPERATURE PROFILE

SECOND STAGE SUPERHEATER TEMPERATURE PROFILE 1977 118 10 45 23

TUBE * 4
INLET TS2I TE501 817

OUTLET TS2O TT590 954
LEG TE559 957

TURN	COLUMN 6	1	2	3	4	5
	345	300	255	210	120	30
4	951	557	149			
	T-46	T-41	T-42			
3	915	795	926	932	939	947
	T-36	T-31	T-32	T-33	T-34	T-35
2	873	881	881	889	902	909
	T-26	T-21	T-22	T-23	T-24	T-25
1	150	829	836	842	856	150
	T-16	T-11	T-12	T-13	T-14	T-15

SECOND STAGE SUPERHEATER TEMPERATURE PROFILE 1977 11 8 11 20 23

TUBE * 4
INLET TS2I TE501 815

OUTLET TS2O TT590 951
LEG TE559 953

TURN	COLUMN 6	1	2	3	4	5
	345	300	255	210	120	30
4	946 T-46	554 T-41	149 T-42			
3	310 T-36	765 T-31	920 T-32	926 T-33	932 T-34	941 T-35
2	871 T-26	878 T-21	878 T-22	886 T-23	897 T-24	904 T-25
1	150 T-16	830 T-11	834 T-12	840 T-13	854 T-14	150 T-15

SECOND STAGE SUPERHEATER TEMPERATURE PROFILE 1977 118 11 28 23

TUBE * 4
INLET TS21 TE501 813

OUTLET TS20 TT590 950
LEG TE559 953

TURN	COLUMN 6	1	2	3	4	5
	345	300	255	210	120	30
4	946	555	149			
	T-46	T-41	T-42			
3	908	793	919	926	932	940
	T-36	T-31	T-32	T-33	T-34	T-35
2	869	876	876	883	895	902
	T-26	T-21	T-22	T-23	T-24	T-25
1	150	828	832	837	852	150
	T-16	T-11	T-12	T-13	T-14	T-15

SECOND STAGE SUPERHEATER TEMPERATURE PROFILE 1977 118 12 25 23

TUBE * 4
INLET TS2I TE501 829

OUTLET TS2O TT590 955
LEG TE559 958

TURN	COLUMN 6 345	1 300	2 255	3 210	4 120	5 30
4	954 T-46	559 T-41	149 T-42			
3	922 T-36	1008 T-31	931 T-32	937 T-33	944 T-34	950 T-35
2	884 T-26	891 T-21	891 T-22	899 T-23	910 T-24	916 T-25
1	150 T-16	846 T-11	849 T-12	854 T-13	868 T-14	150 T-15

SECOND STAGE SUPERHEATER TEMPERATURE PROFILE 1977 118 12 51 23

TUBE * 4
INLET TS2I TE501 819

OUTLET TS20 TT590 962
LEG TE559 966

TURN	COLUMN 6	1	2	3	4	5
	345	300	255	210	120	30
4	959	561	149			
	T-46	T-41	T-42			
3	921	1015	932	939	946	954
	T-36	T-31	T-32	T-33	T-34	T-35
2	878	886	886	895	906	914
	T-26	T-21	T-22	T-23	T-24	T-25
1	150	839	840	847	860	150
	T-16	T-11	T-12	T-13	T-14	T-15

SECOND STAGE SUPERHEATER TEMPERATURE PROFILE 1977 118 12 51 23

TUBE * 4
INLET TS2I TE501 822

OUTLET TS2O TT590 961
LEG TE559 966

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	959	562	149			
	T-46	T-41	T-42			
3	922	1005	935	941	948	955
	T-36	T-31	T-32	T-33	T-34	T-35
2	879	888	888	897	910	916
	T-26	T-21	T-22	T-23	T-24	T-25
1	150	840	842	849	862	150
	T-16	T-11	T-12	T-13	T-14	T-15

SECOND STAGE SUPERHEATER TEMPERATURE PROFILE 1977 118 12 55 23

TUBE * 4
INLET TS2I TE501 811

OUTLET TS20 TT590 952
LEG TE559 953

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	944	553	149			
	T-46	T-41	T-42			
3	907	1011	919	924	932	939
	T-36	T-31	T-32	T-33	T-34	T-35
2	867	875	875	883	894	902
	T-26	T-21	T-22	T-23	T-24	T-25
1	150	829	832	837	851	150
	T-16	T-11	T-12	T-13	T-14	T-15

PAGE 11

WARNINGS AND ALARMS REPORT

PAGE 12

ALARM CONDITIONS

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**********************************************************

ALARM CONDITIONS          YEAR  DAY  HR MIN SEC  TEST
                          1977  118   8  59   9    23

 ALARM    INPUT    CURRENT     ALARM    CURRENT  HI-LO
NUMBER   DEVICE     VALUE      VALUE     COUNT

   35     DT215        63        60        1       HI
**********************************************************

**********************************************************

ALARM CONDITIONS          YEAR  DAY  HR MIN SEC  TEST
                          1977  118   9   0   9    23

 ALARM    INPUT    CURRENT     ALARM    CURRENT  HI-LO
NUMBER   DEVICE     VALUE      VALUE     COUNT

   35     DT215        60        60        1       HI
**********************************************************

**********************************************************

ALARM CONDITIONS          YEAR  DAY  HR MIN SEC  TEST
                          1977  118   9   0  49    23

 ALARM    INPUT    CURRENT     ALARM    CURRENT  HI-LO
NUMBER   DEVICE     VALUE      VALUE     COUNT

   35     DT215        61        60        1       HI
**********************************************************

**********************************************************

ALARM CONDITIONS          YEAR  DAY  HR MIN SEC  TEST
                          1977  118   9   1  50    23

 ALARM    INPUT    CURRENT     ALARM    CURRENT  HI-LO
NUMBER   DEVICE     VALUE      VALUE     COUNT

   35     DT215        62        60        1       HI
    7     DT301      -428         3        1       LO
**********************************************************
```

```
**********************************************************

ALARM CONDITIONS          YEAR  DAY  HR MIN SEC  TEST
                          1977  118   9   9   9    23

 ALARM    INPUT   CURRENT    ALARM   CURRENT  HI-LO
NUMBER   DEVICE    VALUE     VALUE    COUNT

    7    DT301        3         3        1      LO
**********************************************************
```

```
**********************************************************

ALARM CONDITIONS          YEAR  DAY  HR MIN SEC  TEST
                          1977  118   9  10   9    23

 ALARM    INPUT   CURRENT    ALARM   CURRENT  HI-LO
NUMBER   DEVICE    VALUE     VALUE    COUNT

    7    DT301        3         3        1      LO
**********************************************************
```

```
**********************************************************

ALARM CONDITIONS          YEAR  DAY  HR MIN SEC  TEST
                          1977  118   9  26  30    23

 ALARM    INPUT   CURRENT    ALARM   CURRENT  HI-LO
NUMBER   DEVICE    VALUE     VALUE    COUNT

    7    DT301        3         3        1      LO
**********************************************************
```

```
**********************************************************

ALARM CONDITIONS          YEAR  DAY  HR MIN SEC  TEST
                          1977  118   9  28  29    23

 ALARM    INPUT   CURRENT    ALARM   CURRENT  HI-LO
NUMBER   DEVICE    VALUE     VALUE    COUNT

    7    DT301        3         3        1      LO
**********************************************************
```

```
**********************************************************

ALARM CONDITIONS          YEAR  DAY  HR MIN SEC  TEST
                          1977  118  12  55  43    23

 ALARM    INPUT    CURRENT     ALARM    CURRENT  HI-LO
NUMBER   DEVICE     VALUE      VALUE     COUNT

    7     DT301          1          3        1       LO
**********************************************************


**********************************************************

ALARM CONDITIONS          YEAR  DAY  HR MIN SEC  TEST
                          1977  118  13   1  17    23

 ALARM    INPUT    CURRENT     ALARM    CURRENT  HI-LO
NUMBER   DEVICE     VALUE      VALUE     COUNT

    7     DT301          1          3        1       LO
**********************************************************


**********************************************************

ALARM CONDITIONS          YEAR  DAY  HR MIN SEC  TEST
                          1977  118  14  45  17    23

 ALARM    INPUT    CURRENT     ALARM    CURRENT  HI-LO
NUMBER   DEVICE     VALUE      VALUE     COUNT

    7     DT301          3          3        1       LO
**********************************************************


**********************************************************

ALARM CONDITIONS          YEAR  DAY  HR MIN SEC  TEST
                          1977  118  14  47  17    23

 ALARM    INPUT    CURRENT     ALARM    CURRENT  HI-LO
NUMBER   DEVICE     VALUE      VALUE     COUNT

    7     DT301          3          3        1       LO
**********************************************************
```

PAGE 13

ARRAY FLUX MAP

ARRAY FLUX MAP

YEAR	DAY	HR	MIN	TEST
1977	118	10	45	23

TOTAL BOILER INCIDENT FLUX 211
TOTAL S.H.#1 INCIDENT FLUX 92
TOTAL S.H.#2 INCIDENT FLUX 44
TOTAL SRE INCIDENT FLUX 340

ARRAY INPUT POWER
SECTION # 1 964
SECTION # 2 969
SECTION # 3 789
SECTION # 4 763

TOTAL INPUT POWER 3490

BOOM	IF 1	IF 2	IF 3	IF 4	IF 5	IF 6	IF 7	IF 8	IF 9	IF10	IF11	IF12
1	1080	1227	1387	1328	1299	95	752	551	480	356	232	288
2	1087	1240	1391	1332	1299	96	749	543	463	344	247	258
3	1083	1227	1378	1311	1291	943	745	551	459	328	247	254
4	1110	1268	1433	1365	1316	97	760	559	450	352	247	262
5	1102	1248	1416	1336	1299	964	760	566	463	328	258	254
6	1099	1248	1408	1332	1299	968	745	551	455	340	247	271
7	1125	1273	1433	1365	1341	986	768	566	467	344	254	258
8	1095	1244	1403	1340	1316	972	752	559	450	340	262	262
9	1087	1244	1403	1357	1308	979	760	547	446	344	247	266
10	1095	1256	1416	1374	1324	979	775	551	463	352	232	245
11	1064	1215	1374	1324	1303	957	749	539	438	336	258	266
12	1087	1244	1408	1349	1320	979	752	551	471	348	228	245
13	1083	1244	1412	1349	1337	982	760	570	467	344	232	258
14	1064	1211	1370	1324	1308	957	752	551	446	336	239	271
15	1087	1236	1403	1349	1324	982	760	551	463	344	235	271
16	1076	1231	1391	1340	1308	968	752	551	455	360	243	283
17	1049	1203	1358	1311	1266	950	718	528	438	356	235	254
18	1072	1223	1378	1319	1291	950	737	543	446	336	235	250
19	1053	1194	1358	1303	1274	936	722	520	442	344	247	258
20	1042	1186	1341	1290	1249	918	711	528	446	336	243	254
21	1049	1190	1349	1290	1253	921	707	528	438	340	239	245
22	1064	1203	1366	1315	1274	943	733	543	455	336	228	245
23	1038	1174	1333	1282	1245	914	714	528	455	340	239	258
24	1042	1194	1353	1294	1270	943	730	543	463	340	224	262
25	1049	1203	1366	1307	1283	943	737	543	459	344	224	275
26	1023	1170	1337	1290	1241	928	733	531	450	344	247	271
27	1049	1194	1362	1315	1283	950	745	543	471	340	254	254
28	1049	1203	1349	1307	1274	946	737	543	471	328	247	262
29	1026	1170	1320	1277	1253	936	722	543	455	332	228	254
30	1049	1203	1370	1315	1283	950	745	551	463	328	224	250
31	1049	1194	1366	1303	1283	943	737	539	459	344	239	258
32	1042	1182	1341	1298	1266	943	752	539	459	344	228	271
33	1064	1219	1374	1315	1291	979	760	566	450	360	228	250
34	1049	1207	1353	1294	1258	939	730	551	463	360	254	262

ARRAY FLUX MAP

YEAR	DAY	HR	MIN	TEST
1977	118	11	20	23

TOTAL BOILER INCIDENT FLUX 285
TOTAL S.H.#1 INCIDENT FLUX 115
TOTAL S.H.#2 INCIDENT FLUX 51
TOTAL SRE INCIDENT FLUX 450

ARRAY INPUT POWER
SECTION # 1 1208
SECTION # 2 1225
SECTION # 3 1207
SECTION # 4 1145

TOTAL INPUT POWER 4790

BOOM	IF 1	IF 2	IF 3	IF 4	IF 5	IF 6	IF 7	IF 8	IF 9	IF10	IF11	IF12
1	1483	1680	1858	1751	1649	1188	893	636	509	392	303	296
2	1505	1705	1891	1789	1683	1206	905	644	513	360	292	326
3	1505	1697	1874	1747	1653	1191	886	636	513	364	299	355
4	1544	1738	1916	1801	1683	1224	920	656	513	408	292	309
5	1520	1718	1891	1759	1674	1216	916	640	518	376	303	309
6	1536	1718	1883	1743	1641	1202	897	629	522	368	288	305
7	1555	1734	1903	1759	1653	1202	905	663	530	392	284	317
8	1513	1685	1841	1705	1599	1159	893	644	522	384	292	317
9	1525	1705	1866	1734	1637	1188	912	656	530	392	277	305
10	1536	1722	1891	1784	1662	1202	916	660	539	404	277	305
11	1498	1685	1853	1743	1641	1198	897	640	530	384	299	292
12	1540	1742	1916	1810	1708	1242	931	675	543	400	273	288
13	1536	1738	1920	1818	1737	1252	943	679	572	400	288	305
14	1513	1718	1891	1801	1699	1231	927	663	535	384	292	292
15	1536	1738	1924	1805	1733	1256	950	675	547	404	269	309
16	1544	1738	1920	1814	1720	1242	943	652	530	396	292	305
17	1502	1685	1849	1751	1658	1195	897	629	513	408	280	292
18	1544	1722	1908	1776	1687	1216	912	656	530	408	277	288
19	1502	1689	1858	1743	1658	1180	893	640	526	404	284	309
20	1483	1668	1841	1717	1620	1173	882	629	518	400	265	305
21	1479	1656	1837	1726	1624	1184	889	632	535	392	277	313
22	1479	1656	1824	1726	1620	1166	897	640	530	388	280	288
23	1445	1615	1783	1688	1595	1141	867	632	526	392	269	300
24	1475	1664	1849	1730	1653	1188	889	640	522	392	262	296
25	1452	1631	1824	1713	1641	1198	912	652	526	392	277	317
26	1437	1606	1791	1692	1608	1159	889	652	547	392	269	296
27	1433	1623	1803	1717	1641	1188	912	656	539	400	254	279
28	1464	1648	1841	1743	1653	1198	920	667	539	424	284	288
29	1414	1602	1774	1676	1603	1170	897	644	522	376	284	305
30	1475	1664	1849	1734	1658	1213	916	656	535	392	265	288
31	1445	1631	1820	1701	1633	1195	916	652	535	392	284	309
32	1441	1623	1808	1701	1637	1202	912	644	535	400	273	279
33	1467	1656	1845	1763	1670	1234	939	675	539	408	280	296
34	1464	1656	1841	1738	1658	1198	916	675	535	408	284	322

ARRAY FLUX MAP

YEAR	DAY	HR	MIN	TEST
1977	118	11	29	23

TOTAL BOILER INCIDENT FLUX 281
TOTAL S.H.#1 INCIDENT FLUX 115
TOTAL S.H.#2 INCIDENT FLUX 51
TOTAL SRE INCIDENT FLUX 440

ARRAY INPUT POWER
SECTION # 1 1203
SECTION # 2 1225
SECTION # 3 1144
SECTION # 4 1145

TOTAL INPUT POWER 4720

BOOM	IF 1	IF 2	IF 3	IF 4	IF 5	IF 6	IF 7	IF 8	IF 9	IF10	IF11	IF12
1	1422	1619	1828	1743	1683	1224	927	652	539	400	277	300
2	1414	1615	1824	1759	1708	1242	931	660	556	384	277	288
3	1391	1586	1791	1701	1674	1216	905	644	526	380	277	339
4	1445	1627	1841	1751	1708	1227	916	663	522	384	277	300
5	1456	1639	1812	1726	1674	1209	908	652	513	368	284	296
6	1475	1656	1808	1684	1628	1184	893	625	513	372	284	288
7	1505	1685	1845	1717	1637	1195	897	644	522	384	265	288
8	1483	1652	1808	1667	1587	1166	882	644	526	376	299	292
9	1486	1664	1833	1717	1608	1170	889	640	513	372	258	292
10	1483	1672	1858	1743	1645	1195	897	648	530	376	280	296
11	1445	1639	1828	1730	1641	1184	897	640	522	404	269	288
12	1494	1701	1887	1784	1708	1231	912	652	526	380	269	292
13	1479	1689	1883	1780	1716	1242	935	656	539	376	277	288
14	1475	1689	1874	1768	1691	1231	920	660	530	408	277	292
15	1494	1705	1899	1810	1753	1245	958	675	551	392	254	279
16	1509	1713	1891	1814	1720	1252	927	660	539	416	277	296
17	1471	1656	1820	1734	1658	1191	897	656	513	400	277	275
18	1509	1693	1874	1776	1691	1216	920	652	522	392	280	296
19	1483	1668	1849	1759	1658	1195	897	636	522	404	280	296
20	1460	1639	1820	1701	1616	1166	867	632	509	392	277	296
21	1464	1639	1820	1709	1608	1166	882	636	509	392	262	296
22	1475	1656	1849	1743	1641	1202	889	652	530	376	265	279
23	1429	1598	1774	1676	1591	1155	882	629	509	392	269	313
24	1448	1631	1816	1717	1633	1170	882	644	513	420	254	279
25	1437	1619	1808	1709	1624	1180	901	640	547	400	262	313
26	1422	1602	1783	1676	1591	1152	874	625	522	384	277	292
27	1429	1619	1808	1717	1633	1173	897	652	535	384	262	292
28	1452	1648	1824	1717	1637	1180	889	652	539	384	295	296
29	1422	1615	1778	1676	1608	1166	874	629	513	400	277	283
30	1483	1672	1849	1734	1666	1213	912	656	539	400	269	279
31	1460	1648	1816	1717	1633	1184	905	652	539	396	280	296
32	1448	1635	1808	1701	1633	1188	901	636	530	388	277	313
33	1479	1668	1849	1738	1666	1224	939	663	547	400	277	279
34	1437	1631	1816	1713	1649	1195	924	660	535	376	292	305

ARRAY FLUX MAP

YEAR	DAY	HR	MIN	TEST
1977	118	12	25	23

TOTAL BOILER INCIDENT FLUX 178
TOTAL S.H.#1 INCIDENT FLUX 77
TOTAL S.H.#2 INCIDENT FLUX 38
TOTAL SRE INCIDENT FLUX 290

ARRAY INPUT POWER
SECTION # 1 752
SECTION # 2 806
SECTION # 3 678
SECTION # 4 656

TOTAL INPUT POWER 2890

BOOM	IF 1	IF 2	IF 3	IF 4	IF 5	IF 6	IF 7	IF 8	IF 9	IF10	IF11	IF12
1	886	1021	1149	1106	1095	806	631	481	408	296	205	245
2	874	1005	1141	1114	1083	817	623	462	400	304	224	228
3	859	976	1108	1064	1083	784	619	454	396	280	209	228
4	889	1005	1128	1081	1083	799	616	462	396	292	209	233
5	908	1013	1112	1055	1049	784	597	454	387	280	228	224
6	927	1030	1108	1043	1024	763	585	446	387	280	213	228
7	950	1062	1149	1055	1024	763	616	462	379	296	213	237
8	935	1042	1133	1043	1012	748	593	442	370	284	232	228
9	935	1050	1162	1055	1033	763	589	442	374	284	202	220
10	943	1075	1187	1110	1058	770	608	462	379	288	224	224
11	927	1054	1170	1097	1066	777	616	450	396	288	213	241
12	954	1095	1216	1135	1099	810	627	458	391	296	213	224
13	958	1095	1233	1156	1124	813	623	454	387	304	213	228
14	935	1079	1199	1131	1103	806	619	450	383	304	220	245
15	950	1095	1224	1160	1116	813	642	462	396	312	202	237
16	950	1091	1224	1160	1133	828	631	473	396	300	224	233
17	920	1046	1174	1114	1074	792	608	454	387	304	217	237
18	927	1062	1191	1131	1099	810	627	473	387	284	209	245
19	912	1046	1183	1114	1083	806	616	454	396	292	220	228
20	897	1021	1158	1085	1049	770	608	450	387	296	217	241
21	901	1021	1149	1093	1058	784	616	458	379	300	213	228
22	912	1030	1158	1106	1078	799	616	473	391	296	209	228
23	867	992	1103	1064	1041	766	612	458	383	280	217	233
24	874	997	1124	1081	1062	774	619	454	396	320	224	228
25	882	1009	1141	1089	1062	792	616	454	396	296	232	224
26	867	992	1112	1064	1041	770	616	462	404	288	217	228
27	905	1030	1158	1106	1074	792	631	465	391	296	217	233
28	912	1042	1174	1118	1074	799	623	462	404	296	232	237
29	908	1030	1158	1097	1070	777	616	458	391	288	224	228
30	939	1071	1199	1114	1091	806	627	473	396	304	217	250
31	935	1062	1191	1106	1091	806	627	465	391	312	232	241
32	927	1054	1166	1106	1074	802	631	469	387	304	213	241
33	943	1071	1191	1127	1099	820	631	473	408	312	217	228
34	905	1042	1166	1106	1074	799	631	462	412	296	217	237

ARRAY FLUX MAP

YEAR	DAY	HR	MIN	TEST
1977	118	12	51	23

TOTAL BOILER INCIDENT FLUX 297
TOTAL S.H.#1 INCIDENT FLUX 120
TOTAL S.H.#2 INCIDENT FLUX 51
TOTAL SRE INCIDENT FLUX 460

ARRAY INPUT POWER

SECTION # 1	1227
SECTION # 2	1418
SECTION # 3	1059
SECTION # 4	1235
TOTAL INPUT POWER	4940

BOOM	IF 1	IF 2	IF 3	IF 4	IF 5	IF 6	IF 7	IF 8	IF 9	IF10	IF11	IF12
1	1544	1746	1970	1877	1803	1296	935	667	547	392	307	313
2	1525	1722	1949	1885	1812	1288	950	706	547	392	299	326
3	1486	1664	1887	1810	1783	1281	939	652	522	372	307	326
4	1525	1685	1874	1818	1758	1292	950	652	522	384	307	330
5	1532	1680	1833	1734	1720	1249	935	644	513	360	307	347
6	1551	1689	1808	1701	1649	1216	893	640	509	360	292	313
7	1582	1705	1824	1688	1666	1191	889	629	522	352	299	326
8	1536	1680	1799	1646	1553	1144	836	609	488	352	303	330
9	1532	1680	1820	1659	1574	1123	836	601	518	344	292	339
10	1536	1689	1853	1709	1608	1152	844	605	497	344	299	322
11	1502	1672	1833	1684	1591	1134	836	594	488	360	314	322
12	1536	1697	1866	1734	1633	1166	848	605	497	360	284	317
13	1517	1689	1858	1763	1666	1173	874	613	497	352	310	339
14	1467	1627	1808	1676	1620	1173	851	609	497	360	318	339
15	1448	1627	1824	1713	1666	1198	889	629	505	380	292	355
16	1437	1619	1833	1759	1691	1209	886	617	497	384	314	355
17	1414	1594	1799	1717	1674	1209	889	613	505	376	307	347
18	1544	1755	1983	1902	1808	1292	958	675	543	380	284	313
19	1490	1689	1899	1818	1753	1245	920	636	509	384	337	309
20	1597	1829	2049	1960	1841	1303	962	671	547	400	284	313
21	1521	1722	1941	1851	1774	1267	927	640	518	376	329	313
22	1589	1788	2012	1910	1812	1296	950	656	530	392	299	313
23	1547	1738	1958	1851	1783	1270	927	640	530	396	310	326
24	1616	1821	2024	1927	1824	1310	958	675	530	388	314	309
25	1612	1821	2016	1898	1808	1288	950	667	539	408	307	322
26	1620	1825	2016	1881	1799	1274	931	656	530	392	318	326
27	1642	1854	2058	1914	1833	1296	962	667	547	392	303	313
28	1650	1858	2066	1902	1816	1296	946	660	526	372	307	347
29	1589	1796	1987	1885	1791	1281	931	652	530	376	329	326
30	1631	1833	2033	1919	1833	1306	958	675	530	392	292	330
31	1566	1788	2024	1960	1895	1353	1011	698	564	408	333	309
32	1555	1775	2003	1935	1874	1342	992	695	556	436	307	313
33	1574	1812	2037	1960	1891	1375	1003	706	564	416	299	313
34	1551	1788	2003	1914	1853	1328	984	691	572	392	307	351

ARRAY FLUX MAP

YEAR	DAY	HR	MIN	TEST
1977	118	12	51	23

TOTAL BOILER INCIDENT FLUX 301
TOTAL S.H.#1 INCIDENT FLUX 122
TOTAL S.H.#2 INCIDENT FLUX 52
TOTAL SRE INCIDENT FLUX 470

ARRAY INPUT POWER

SECTION # 1	1241
SECTION # 2	1434
SECTION # 3	1059
SECTION # 4	1240

TOTAL INPUT POWER 4970

BOOM	IF 1	IF 2	IF 3	IF 4	IF 5	IF 6	IF 7	IF 8	IF 9	IF10	IF11	IF12
1	1544	1746	1970	1877	1803	1296	935	667	547	392	307	313
2	1525	1722	1949	1885	1812	1288	950	706	547	392	299	326
3	1486	1664	1887	1810	1783	1281	939	652	522	372	307	326
4	1525	1685	1874	1818	1758	1292	950	652	522	384	307	330
5	1532	1680	1833	1734	1720	1249	935	644	513	360	307	347
6	1551	1689	1808	1701	1649	1216	893	640	509	360	292	313
7	1582	1705	1824	1688	1666	1191	889	629	522	352	299	326
8	1536	1680	1799	1646	1553	1144	836	609	488	352	303	330
9	1532	1680	1820	1659	1574	1123	836	601	518	344	292	339
10	1536	1689	1853	1709	1608	1152	844	605	497	344	299	322
11	1502	1672	1833	1684	1591	1134	836	594	488	360	314	322
12	1536	1697	1866	1734	1633	1166	848	605	497	360	284	317
13	1517	1689	1850	1763	1666	1173	874	613	497	352	310	339
14	1467	1627	1808	1676	1620	1173	851	609	497	360	318	339
15	1467	1668	1891	1814	1749	1281	946	663	535	392	277	322
16	1483	1680	1895	1835	1774	1274	939	660	539	400	288	313
17	1456	1664	1874	1810	1733	1238	920	648	530	368	299	330
18	1544	1755	1983	1902	1808	1292	958	675	543	380	284	313
19	1559	1788	2020	1919	1833	1310	962	671	547	400	288	300
20	1597	1829	2049	1960	1841	1303	962	671	547	400	284	313
21	1589	1812	2033	1935	1824	1296	939	656	539	388	299	339
22	1650	1882	2099	1998	1887	1346	981	695	560	400	288	305
23	1604	1821	2049	1952	1849	1317	965	675	560	400	310	339
24	1623	1837	2058	1960	1858	1317	969	687	551	408	307	313
25	1635	1862	2074	1986	1883	1346	1011	698	564	400	322	313
26	1642	1854	2049	1956	1853	1332	981	687	556	396	295	330
27	1646	1878	2087	1981	1887	1350	1011	702	589	412	277	322
28	1654	1886	2095	1994	1891	1364	1011	702	572	432	303	313
29	1589	1816	2033	1935	1858	1328	992	675	560	420	292	296
30	1623	1858	2083	2002	1924	1371	1011	714	564	412	307	330
31	1566	1788	2024	1960	1895	1353	1011	698	564	408	333	309
32	1555	1775	2003	1935	1874	1342	992	695	556	436	307	313
33	1574	1812	2037	1960	1891	1375	1003	706	564	416	295	313
34	1551	1788	2003	1914	1853	1328	984	691	572	392	307	351

BOILER INCIDENT FLUX MAP

YEAR	DAY	HR	MIN	TEST
1977	118	12	51	23

AVERAGE BOILER FLUX 0
TOTAL BOILER INCIDENT FLUX 301

BOOM		IF 1	IF 2	IF 3	IF 4	IF 5(*.5)	SECTION	
1	FLUX	1544	1746	1970	1877	1803	1786	AVERAGE
	TOTAL	175	198	224	213	102	838	TOTAL
2	FLUX	1525	1722	1949	1885	1812	1775	AVERAGE
	TOTAL	173	196	221	214	103	832	TOTAL
3	FLUX	1486	1664	1887	1810	1783	1720	AVERAGE
	TOTAL	169	189	214	206	101	807	TOTAL
4	FLUX	1525	1685	1874	1818	1758	1729	AVERAGE
	TOTAL	173	191	213	207	100	811	TOTAL
5	FLUX	1532	1680	1833	1734	1720	1698	AVERAGE
	TOTAL	174	191	208	197	98	797	TOTAL
6	FLUX	1551	1689	1808	1701	1649	1683	AVERAGE
	TOTAL	176	192	205	193	94	789	TOTAL
7	FLUX	1582	1705	1824	1688	1666	1696	AVERAGE
	TOTAL	180	194	207	192	95	796	TOTAL
8	FLUX	1536	1680	1799	1646	1553	1653	AVERAGE
	TOTAL	174	191	204	187	88	775	TOTAL
9	FLUX	1532	1680	1820	1659	1574	1662	AVERAGE
	TOTAL	174	191	207	188	89	780	TOTAL
10	FLUX	1536	1689	1853	1709	1608	1687	AVERAGE
	TOTAL	174	192	211	194	91	791	TOTAL
11	FLUX	1502	1672	1833	1684	1591	1664	AVERAGE
	TOTAL	171	190	208	191	90	779	TOTAL
12	FLUX	1536	1697	1866	1734	1633	1700	AVERAGE
	TOTAL	174	193	212	197	93	797	TOTAL
13	FLUX	1517	1689	1858	1763	1666	1702	AVERAGE
	TOTAL	172	192	211	200	95	799	TOTAL
14	FLUX	1467	1627	1808	1676	1620	1642	AVERAGE
	TOTAL	167	185	205	190	92	771	TOTAL
15	FLUX	1467	1668	1891	1814	1749	1714	AVERAGE
	TOTAL	167	189	215	206	99	804	TOTAL
16	FLUX	1483	1680	1895	1835	1774	1729	AVERAGE
	TOTAL	168	191	215	208	101	811	TOTAL
17	FLUX	1456	1664	1874	1810	1733	1705	AVERAGE
	TOTAL	165	189	213	206	98	800	TOTAL

18	FLUX	1544	1755	1983	1902	1808	1797	AVERAGE
	TOTAL	175	199	225	216	103	843	TOTAL
19	FLUX	1559	1788	2020	1919	1833	1823	AVERAGE
	TOTAL	177	203	229	218	104	855	TOTAL
20	FLUX	1597	1829	2049	1960	1841	1857	AVERAGE
	TOTAL	181	208	233	223	105	871	TOTAL
21	FLUX	1589	1812	2033	1935	1824	1840	AVERAGE
	TOTAL	181	206	231	220	104	864	TOTAL
22	FLUX	1650	1882	2099	1998	1887	1905	AVERAGE
	TOTAL	187	214	238	227	107	894	TOTAL
23	FLUX	1604	1821	2049	1952	1849	1856	AVERAGE
	TOTAL	182	207	233	222	105	871	TOTAL
24	FLUX	1623	1837	2058	1960	1858	1868	AVERAGE
	TOTAL	184	209	234	223	106	876	TOTAL
25	FLUX	1635	1862	2074	1986	1883	1889	AVERAGE
	TOTAL	186	212	236	226	107	885	TOTAL
26	FLUX	1642	1854	2049	1956	1853	1873	AVERAGE
	TOTAL	187	211	233	222	105	879	TOTAL
27	FLUX	1646	1879	2087	1981	1887	1897	AVERAGE
	TOTAL	187	213	237	225	107	892	TOTAL
28	FLUX	1654	1886	2095	1994	1891	1905	AVERAGE
	TOTAL	188	214	238	227	107	894	TOTAL
29	FLUX	1589	1816	2033	1935	1858	1845	AVERAGE
	TOTAL	181	206	231	220	106	866	TOTAL
30	FLUX	1623	1858	2083	2002	1924	1895	AVERAGE
	TOTAL	184	211	237	227	109	890	TOTAL
31	FLUX	1566	1788	2024	1960	1895	1841	AVERAGE
	TOTAL	178	203	230	223	108	863	TOTAL
32	FLUX	1555	1775	2003	1935	1874	1823	AVERAGE
	TOTAL	177	202	228	220	106	856	TOTAL
33	FLUX	1574	1812	2037	1960	1891	1851	AVERAGE
	TOTAL	179	206	231	223	107	868	TOTAL
34	FLUX	1551	1788	2003	1914	1853	1818	AVERAGE
	TOTAL	176	203	228	217	105	854	TOTAL

FIRST STAGE SUPERHEATER INCIDENT FLUX MAP

YEAR	DAY	HR	MIN	TEST
1977	118	12	51	23

AVERAGE FIRST STAGE SUPERHEATER FLUX 37
TOTAL FIRST STAGE SUPERHEATER INCIDENT FLUX 122

BOOM	IF 5(*.5)	IF 6	IF 7	IF 8(*.2)	SECTION	
1	1803	1296	935	667	1210	AVERAGE
	102	147	106	15	341	TOTAL
2	1812	1288	950	706	1217	AVERAGE
	103	146	108	16	343	TOTAL
3	1783	1281	939	652	1201	AVERAGE
	101	146	107	15	339	TOTAL
4	1758	1292	950	652	1204	AVERAGE
	100	147	108	15	340	TOTAL
5	1720	1249	935	644	1175	AVERAGE
	98	142	106	15	332	TOTAL
6	1649	1216	893	640	1134	AVERAGE
	94	138	101	15	320	TOTAL
7	1666	1191	889	629	1125	AVERAGE
	95	135	101	14	318	TOTAL
8	1553	1144	836	609	1066	AVERAGE
	88	130	95	14	301	TOTAL
9	1574	1123	836	601	1062	AVERAGE
	89	128	95	14	300	TOTAL
10	1608	1152	844	605	1082	AVERAGE
	91	131	96	14	305	TOTAL
11	1591	1134	836	594	1068	AVERAGE
	90	129	95	13	301	TOTAL
12	1633	1166	848	605	1093	AVERAGE
	93	132	96	14	308	TOTAL
13	1666	1173	874	613	1112	AVERAGE
	95	133	99	14	314	TOTAL
14	1620	1173	851	609	1095	AVERAGE
	92	133	97	14	309	TOTAL
15	1749	1281	946	663	1198	AVERAGE
	99	146	107	15	338	TOTAL
16	1774	1274	939	660	1197	AVERAGE
	101	145	107	15	338	TOTAL
17	1733	1238	920	648	1168	AVERAGE
	98	141	105	15	330	TOTAL

18	1808	1292	958	675	1218	AVERAGE
	103	147	109	15	344	TOTAL
19	1833	1310	962	671	1231	AVERAGE
	104	149	109	15	347	TOTAL
20	1841	1303	962	671	1230	AVERAGE
	105	148	109	15	347	TOTAL
21	1824	1296	939	656	1214	AVERAGE
	104	147	107	15	343	TOTAL
22	1887	1346	981	695	1263	AVERAGE
	107	153	111	16	356	TOTAL
23	1849	1317	965	675	1238	AVERAGE
	105	150	110	15	349	TOTAL
24	1858	1317	969	687	1242	AVERAGE
	106	150	110	16	350	TOTAL
25	1883	1346	1011	698	1273	AVERAGE
	107	153	115	16	359	TOTAL
26	1853	1332	981	687	1251	AVERAGE
	105	151	111	16	353	TOTAL
27	1887	1350	1011	702	1276	AVERAGE
	107	153	115	16	360	TOTAL
28	1891	1364	1011	702	1282	AVERAGE
	107	155	115	16	362	TOTAL
29	1858	1328	992	675	1253	AVERAGE
	106	151	113	15	354	TOTAL
30	1924	1371	1011	714	1291	AVERAGE
	109	156	115	16	364	TOTAL
31	1895	1353	1011	698	1278	AVERAGE
	108	154	115	16	361	TOTAL
32	1874	1342	992	695	1263	AVERAGE
	106	152	113	16	356	TOTAL
33	1891	1375	1003	706	1283	AVERAGE
	107	156	114	16	362	TOTAL
34	1853	1328	984	691	1251	AVERAGE
	105	151	112	16	353	TOTAL

HORIZONTAL AVERAGES AND TOTALS

1779	1276	941	662	37	AVERAGE
35	51	37	5	122	TOTAL

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SECOND STAGE SUPERHEATER INCIDENT FLUX MAP

YEAR	DAY	HR	MIN	TEST
1977	118	12	51	23

AVERAGE SECOND STAGE SUPERHEATER FLUX 16
TOTAL SECOND STAGE SUPERHEATER INCIDENT FLUX 122

BOOM	IF 8(*.8)	IF 9	IF10(*.8)	SECTION	
1	667	547	392	536	AVERAGE
	60	62	35	341	TOTAL
2	706	547	392	548	AVERAGE
	64	62	35	343	TOTAL
3	652	522	372	515	AVERAGE
	59	59	33	339	TOTAL
4	652	522	384	519	AVERAGE
	59	59	34	340	TOTAL
5	644	513	360	506	AVERAGE
	58	58	32	332	TOTAL
6	640	509	360	503	AVERAGE
	58	57	32	320	TOTAL
7	629	522	352	502	AVERAGE
	57	59	31	318	TOTAL
8	609	488	352	483	AVERAGE
	55	55	31	301	TOTAL
9	601	518	344	490	AVERAGE
	54	58	31	300	TOTAL
10	605	497	344	483	AVERAGE
	54	56	31	305	TOTAL
11	594	488	360	481	AVERAGE
	53	55	32	301	TOTAL
12	605	497	360	488	AVERAGE
	54	56	32	308	TOTAL
13	613	497	352	488	AVERAGE
	55	56	31	314	TOTAL
14	609	497	360	489	AVERAGE
	55	56	32	309	TOTAL
15	663	535	392	530	AVERAGE
	60	60	35	338	TOTAL
16	660	539	400	533	AVERAGE
	59	61	36	338	TOTAL
17	648	530	368	516	AVERAGE
	58	60	33	330	TOTAL

18	675	543	380	533	AVERAGE
	61	61	34	344	TOTAL
19	671	547	400	539	AVERAGE
	60	62	36	347	TOTAL
20	671	547	400	539	AVERAGE
	60	62	36	347	TOTAL
21	656	539	388	528	AVERAGE
	59	61	35	343	TOTAL
22	695	560	400	552	AVERAGE
	63	63	36	356	TOTAL
23	675	560	400	546	AVERAGE
	61	63	36	349	TOTAL
24	687	551	408	548	AVERAGE
	62	62	37	350	TOTAL
25	698	564	400	554	AVERAGE
	63	64	36	359	TOTAL
26	687	556	396	547	AVERAGE
	62	63	35	353	TOTAL
27	702	589	412	569	AVERAGE
	63	66	37	360	TOTAL
28	702	572	432	568	AVERAGE
	63	64	39	362	TOTAL
29	675	560	420	552	AVERAGE
	61	63	38	354	TOTAL
30	714	564	412	563	AVERAGE
	64	64	37	364	TOTAL
31	698	564	408	557	AVERAGE
	63	64	37	361	TOTAL
32	695	556	436	561	AVERAGE
	63	63	39	356	TOTAL
33	706	564	416	562	AVERAGE
	64	64	37	362	TOTAL
34	691	572	392	553	AVERAGE
	62	64	35	353	TOTAL

HORIZONTAL AVERAGES AND TOTALS

1745	1254	924	16	AVERAGE
20	21	12	122	TOTAL

ARRAY FLUX MAP

YEAR	DAY	HR	MIN	TEST
1977	118	12	55	23

TOTAL BOILER INCIDENT FLUX 277
TOTAL S.H.#1 INCIDENT FLUX 111
TOTAL S.H.#2 INCIDENT FLUX 48
TOTAL SRE INCIDENT FLUX 430

ARRAY INPUT POWER
SECTION # 1 1085
SECTION # 2 1306
SECTION # 3 974
SECTION # 4 1095

TOTAL INPUT POWER 4460

BOOM	IF 1	IF 2	IF 3	IF 4	IF 5	IF 6	IF 7	IF 8	IF 9	IF10	IF11	IF12
1	1520	1713	1903	1784	1683	1180	867	605	505	360	284	305
2	1505	1680	1887	1784	1708	1198	882	617	522	344	299	309
3	1483	1648	1849	1747	1712	1224	874	613	497	368	277	322
4	1502	1656	1841	1751	1724	1216	882	613	497	360	284	313
5	1490	1639	1783	1680	1658	1191	859	621	488	360	299	313
6	1509	1635	1741	1613	1566	1134	851	594	480	344	280	296
7	1502	1623	1708	1583	1541	1119	832	613	492	352	284	305
8	1445	1557	1641	1512	1441	1051	791	578	488	336	277	343
9	1429	1540	1633	1487	1395	1018	768	559	459	336	277	313
10	1418	1532	1633	1449	1387	1000	768	574	480	344	265	309
11	1391	1516	1587	1407	1333	975	737	566	446	344	277	313
12	1429	1561	1633	1458	1374	1008	772	566	467	348	273	296
13	1426	1565	1666	1487	1416	1054	783	566	471	324	284	305
14	1376	1507	1633	1483	1458	1036	772	566	484	324	277	305
15	1369	1516	1649	1533	1499	1094	813	574	476	360	277	313
16	1308	1458	1633	1558	1516	1108	813	574	463	348	288	313
17	1300	1450	1649	1558	1549	1123	829	574	471	344	292	313
18	1342	1491	1716	1621	1624	1180	855	605	480	364	292	330
19	1342	1507	1708	1634	1653	1173	844	597	488	368	307	322
20	1505	1722	1933	1818	1724	1216	874	601	505	352	295	326
21	1361	1536	1737	1663	1658	1195	870	594	480	360	292	313
22	1403	1590	1787	1701	1683	1209	874	605	492	368	314	339
23	1376	1557	1766	1676	1633	1170	851	586	480	364	299	309
24	1448	1652	1841	1717	1666	1188	859	597	509	376	307	317
25	1475	1676	1849	1701	1662	1173	851	590	492	360	314	313
26	1513	1705	1866	1701	1616	1155	836	613	505	348	307	322
27	1551	1755	1937	1743	1666	1180	870	609	488	364	284	322
28	1551	1755	1941	1780	1691	1195	867	621	497	344	314	326
29	1502	1693	1899	1759	1691	1195	889	605	488	368	292	309
30	1498	1701	1908	1784	1724	1224	882	621	484	344	284	330
31	1452	1648	1828	1722	1666	1177	863	597	484	368	292	309
32	1551	1763	1974	1847	1778	1260	939	667	556	384	307	322
33	1559	1779	1987	1877	1791	1270	931	660	522	396	310	343
34	1528	1738	1924	1818	1724	1227	905	644	513	368	307	330

PAGE 14

FLOWS, PLOTS

```
SEARCH START
DAY #118 1977  TIME  8:25

SEARCH STOP
               TIME  9:53

SEARCH INTERVAL
               TIME  1: 0
NUMBER OF RECORDS =   4

ARGUMENT SELECTED :   1

FIRST  FUNCTION # 8 OPEN BOX

SECOND FUNCTION #10 TRIANGLE

THIRD  FUNCTION #17 CROSS-CIRCLE

SEARCH MODE 1

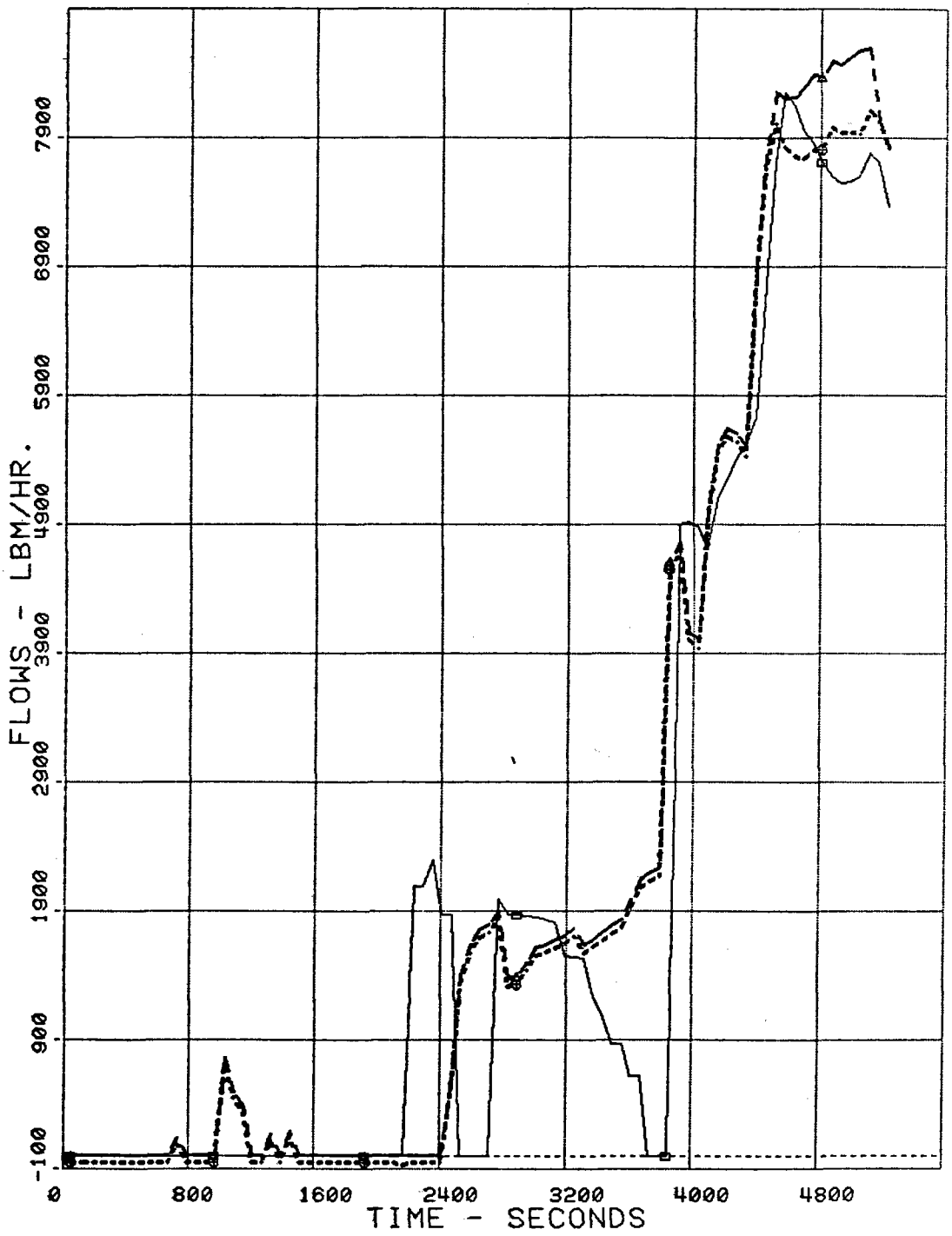
PLOT START TIME =   30300.0

STOP TIME =   35580.0

INTERVAL =      60.0

LINE PLOT HAS       88 POINTS PER FUNCTION
SCATTER PLOT HAS    44 POINTS PER FUNCTION

LINE PLOT HAS   88 POINTS PER FUNCTION
```


FLOWS - LBM/HR.
7900
6900
5900
4900
3900
2900
1900
900
-100
0
800
1600
2400
3200
4000
4800
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME  8:25

SEARCH STOP
               TIME  9:53

SEARCH INTERVAL
               TIME  1: 0
NUMBER OF RECORDS =   2

ARGUMENT SELECTED :   1

FIRST  FUNCTION # 9 OPEN BOX

SEARCH MODE 1

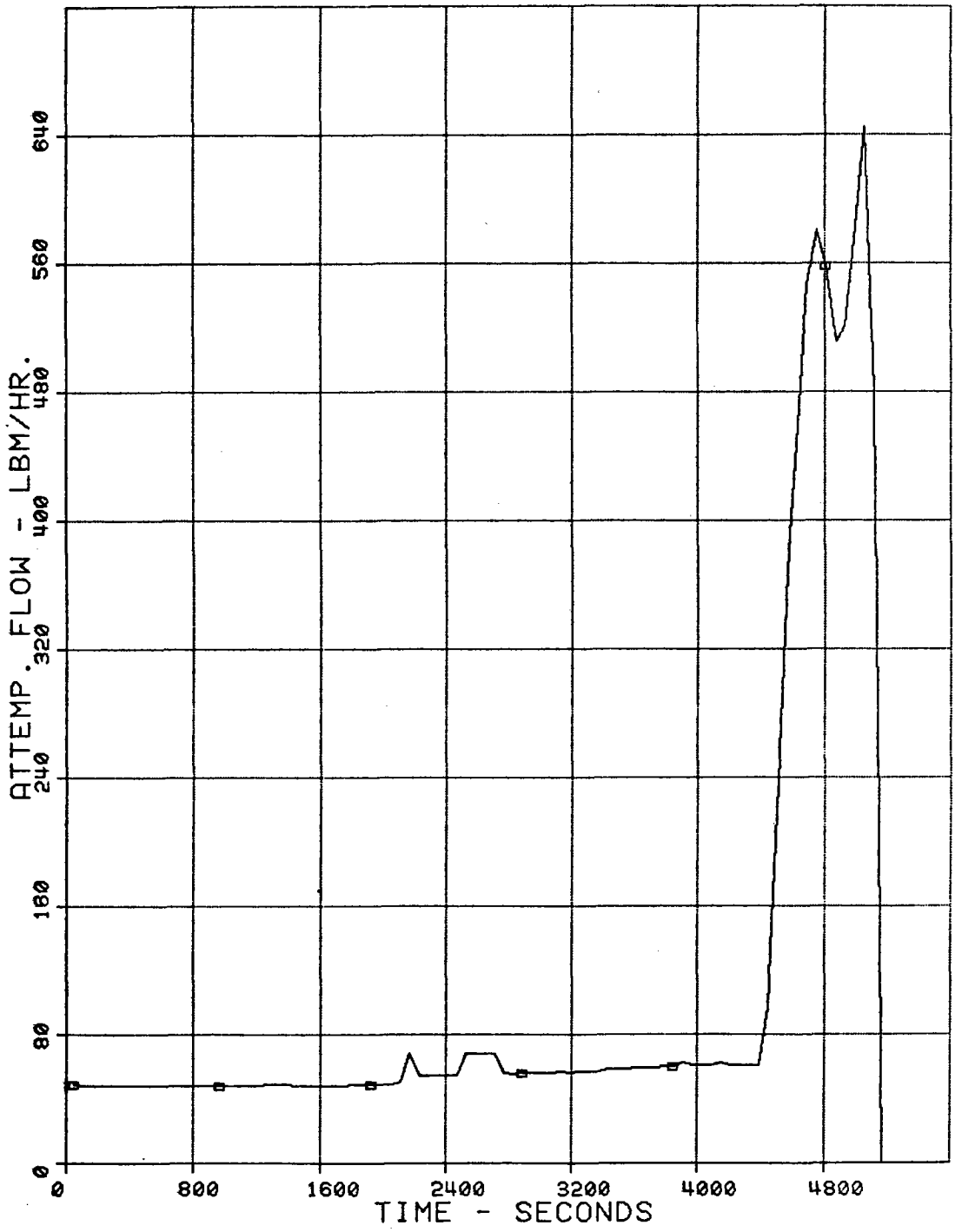
PLOT START TIME =   30300.0

STOP TIME =   35580.0

INTERVAL =      60.0

LINE PLOT HAS       88 POINTS PER FUNCTION
SCATTER PLOT HAS   44 POINTS PER FUNCTION

LINE PLOT HAS   88 POINTS PER FUNCTION
```


ATTEMP. FLOW - LBM/HR.
0
80
160
240
320
400
480
560
640
0
800
1600
2400
3200
4000
4800
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 10:45
NUMBER OF RECORDS =   4

ARGUMENT SELECTED :   1

FIRST  FUNCTION # 8 OPEN BOX

SECOND FUNCTION #10 TRIANGLE

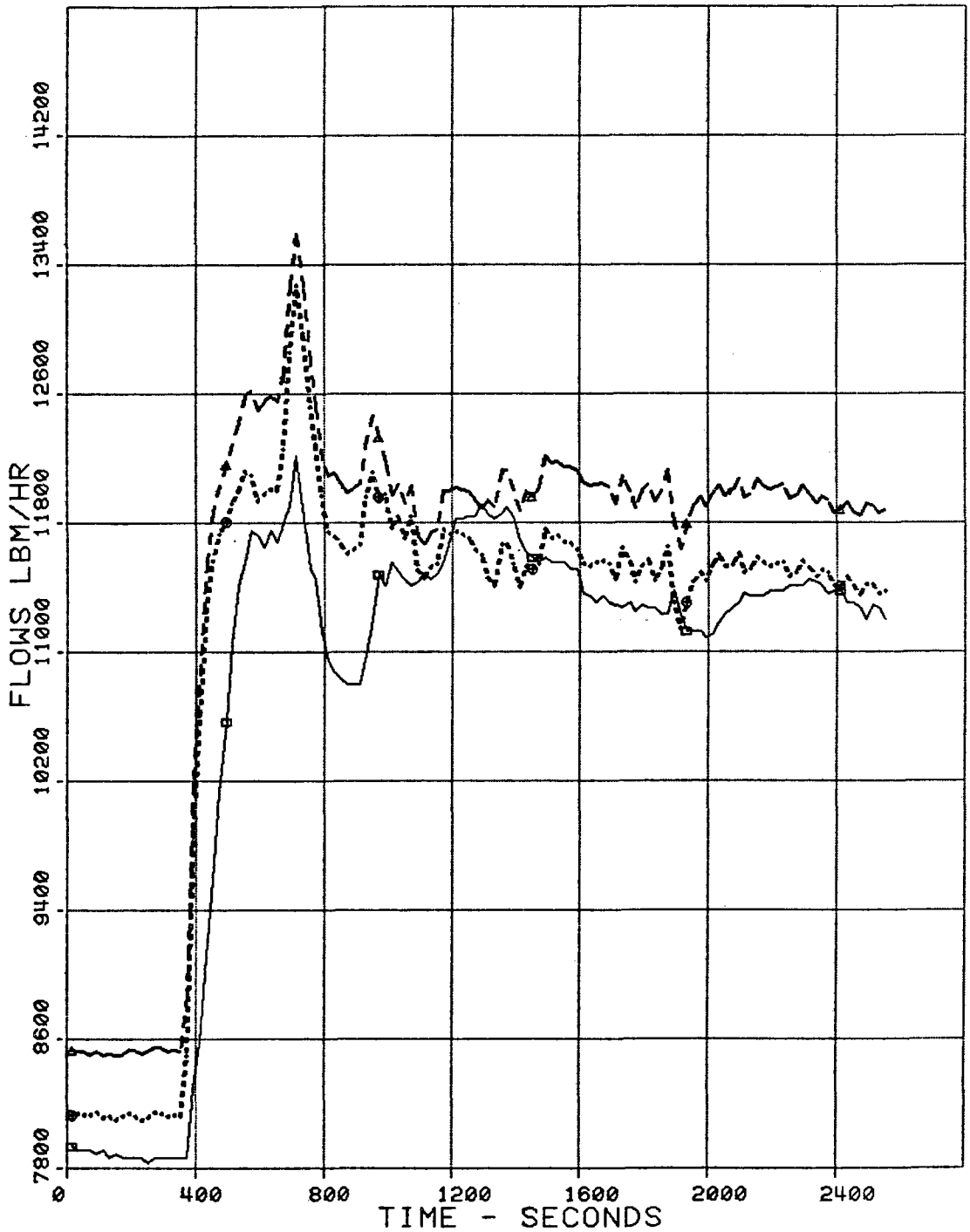
THIRD  FUNCTION #17 CROSS-CIRCLE

SEARCH MODE 2

PLOT START TIME =   38700.0

EACH    1TH POINT IS PLOTTED

LINE PLOT HAS  128 POINTS PER FUNCTION
```


FLOWS LBM/HR
7800
8600
9400
10200
11000
11800
12600
13400
14200
0
400
800
1200
1600
2000
2400
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 10:45
NUMBER OF RECORDS =   2

ARGUMENT SELECTED :   1

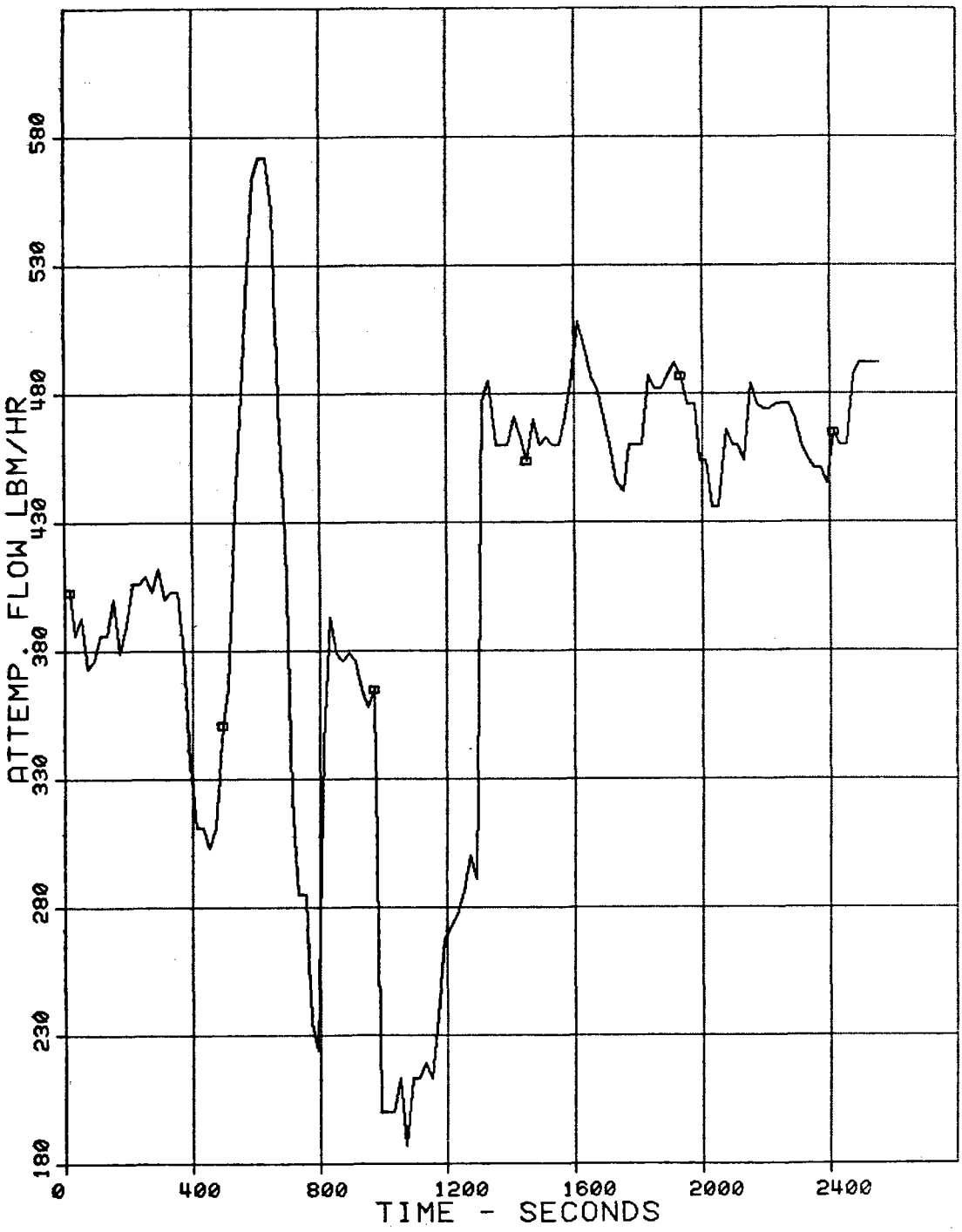
FIRST  FUNCTION # 9 OPEN BOX

SEARCH MODE 2

PLOT START TIME =   38700.0

EACH    1TH POINT IS PLOTTED

LINE PLOT HAS  128 POINTS PER FUNCTION
```


ATTEMP. FLOW LBM/HR
580
530
480
430
380
330
280
230
180
0
400
800
1200
1600
2000
2400
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 11:25

SEARCH STOP
               TIME 12:35

SEARCH INTERVAL
               TIME  0:35
NUMBER OF RECORDS =   4

ARGUMENT SELECTED :   1

FIRST  FUNCTION # 8 OPEN BOX

SECOND FUNCTION #10 TRIANGLE

THIRD  FUNCTION #17 CROSS-CIRCLE

SEARCH MODE 1

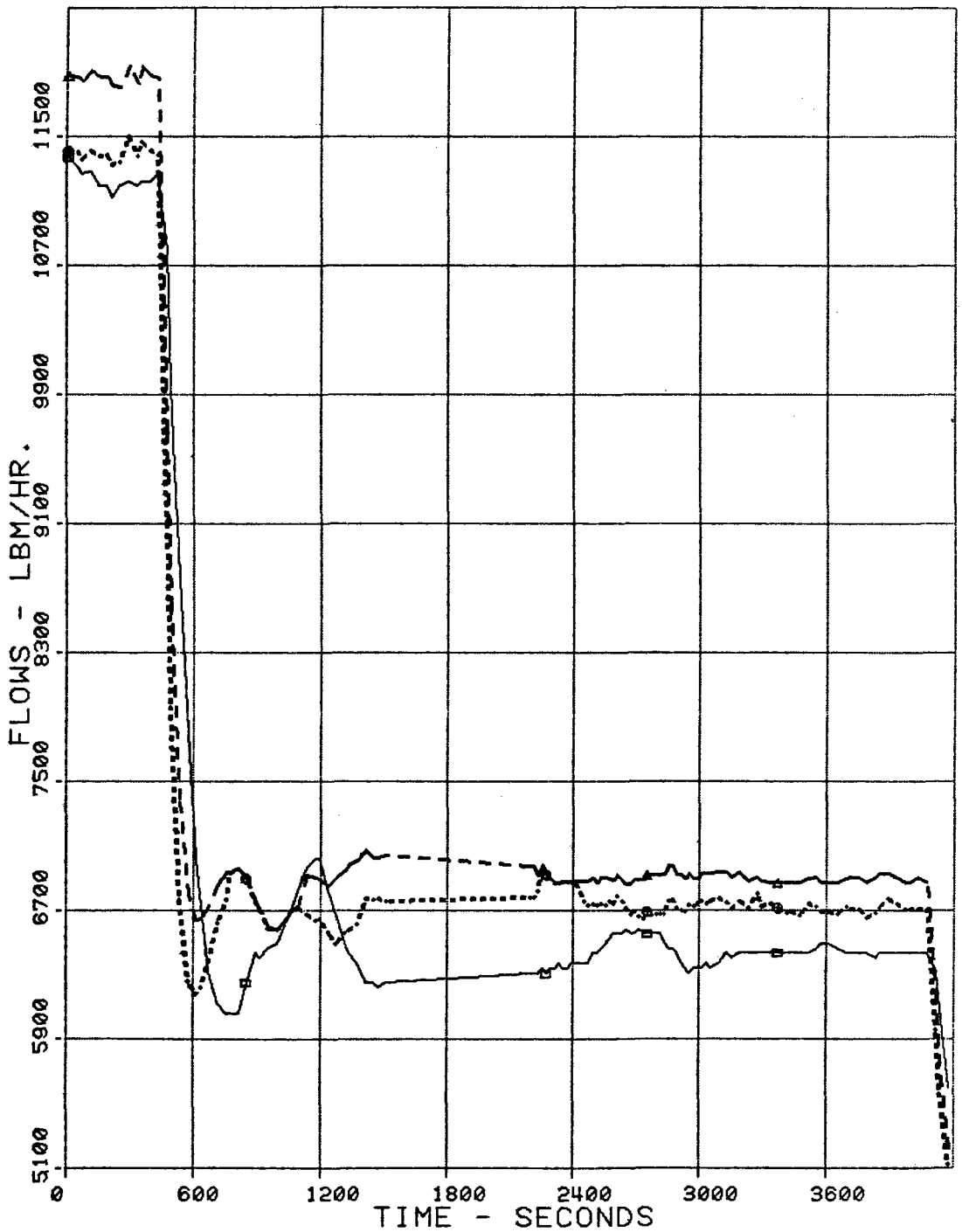
PLOT START TIME =   41100.0

STOP TIME =   45300.0

INTERVAL =      35.0

LINE PLOT HAS      120 POINTS PER FUNCTION
SCATTER PLOT HAS   60 POINTS PER FUNCTION

LINE PLOT HAS  120 POINTS PER FUNCTION
```


FLOWS - LBM/HR.
11500
10700
9900
9100
8300
7500
6700
5900
5100
0
600
1200
1800
2400
3000
3600
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 11:25

SEARCH STOP
               TIME 12:35

SEARCH INTERVAL
               TIME  0:35
NUMBER OF RECORDS =   2

ARGUMENT SELECTED :   1

FIRST  FUNCTION # 9 OPEN BOX

SEARCH MODE 1

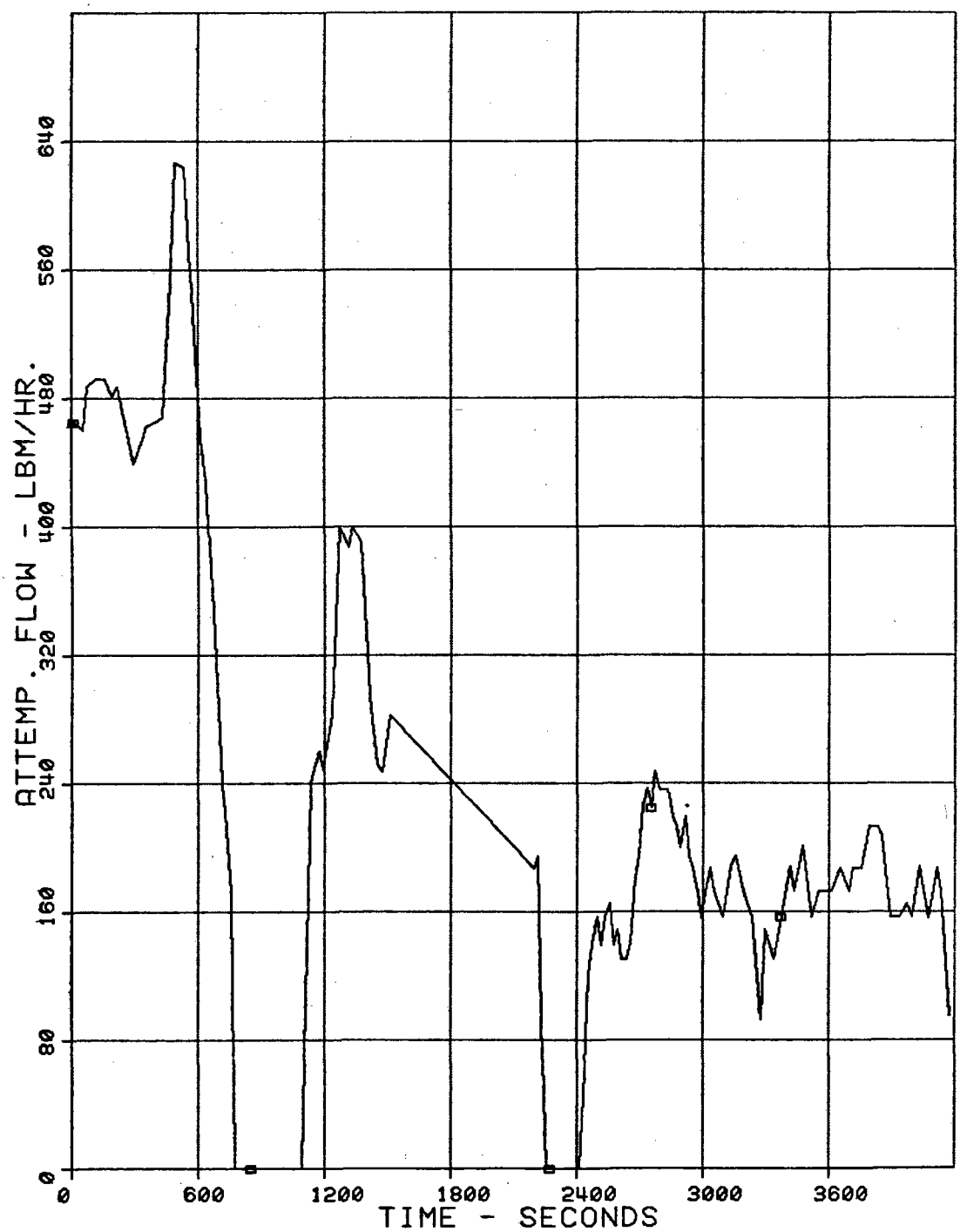
PLOT START TIME =   41100.0

STOP TIME =   45300.0

INTERVAL =      35.0

LINE PLOT HAS      120 POINTS PER FUNCTION
SCATTER PLOT HAS   60 POINTS PER FUNCTION

LINE PLOT HAS  120 POINTS PER FUNCTION
```


ATTEMP. FLOW - LBM/HR.
0
80
160
240
320
400
480
560
640
0
600
1200
1800
2400
3000
3600
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 12:35

SEARCH STOP
               TIME 12:56

SEARCH INTERVAL
               TIME  0:10
NUMBER OF RECORDS =   4

ARGUMENT SELECTED :   1

FIRST  FUNCTION # 8 OPEN BOX

SECOND FUNCTION #10 TRIANGLE

THIRD  FUNCTION #17 CROSS-CIRCLE

SEARCH MODE 1

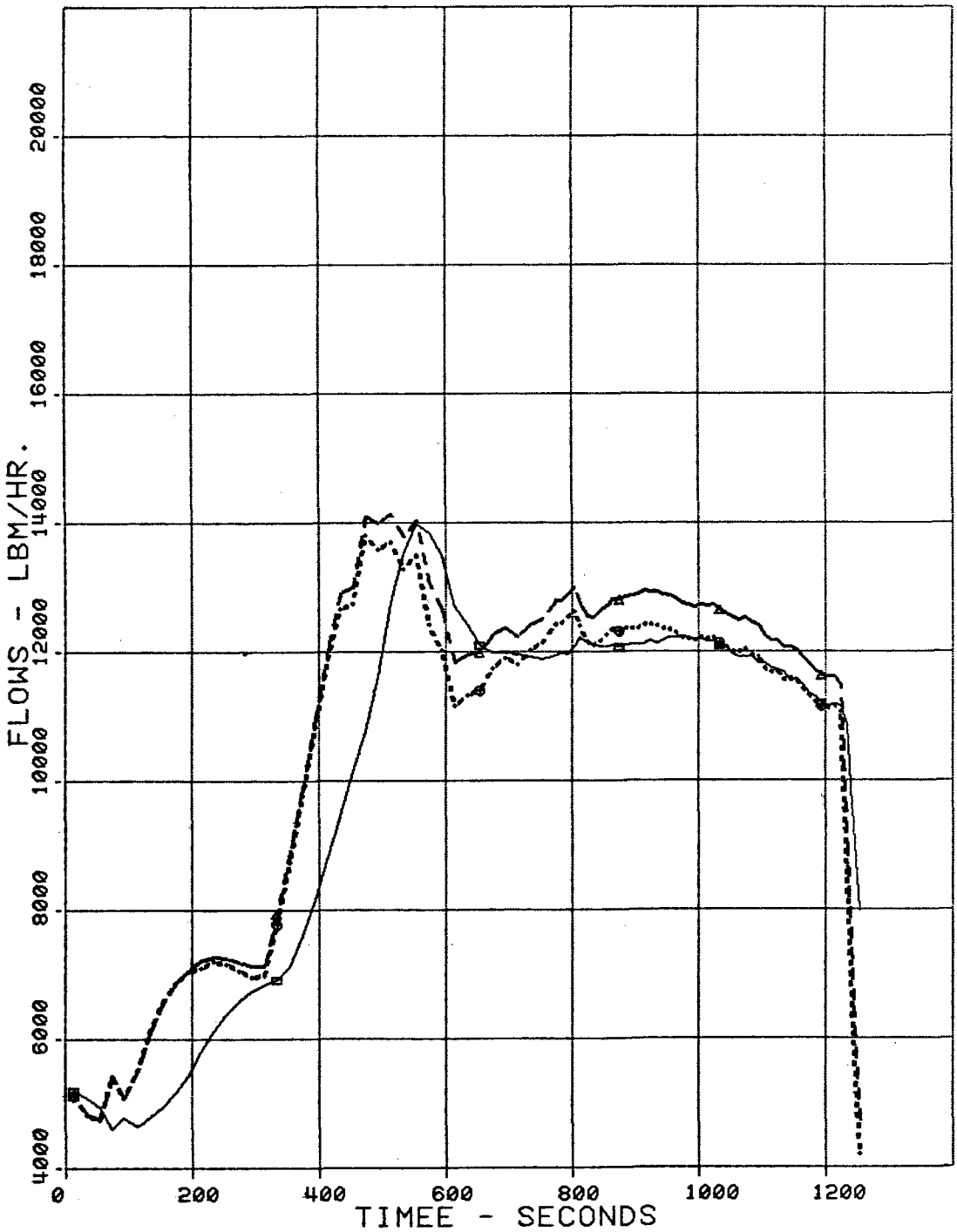
PLOT START TIME =   45300.0

STOP TIME =   46560.0

INTERVAL =      10.0

LINE PLOT HAS       87 POINTS PER FUNCTION
SCATTER PLOT HAS   43 POINTS PER FUNCTION

LINE PLOT HAS  126 POINTS PER FUNCTION
```


FLOWS - LBM/HR.
4000
6000
8000
10000
12000
14000
16000
18000
20000
0
200
400
600
800
1000
1200
TIMEE - SECONDS

```
SEARCH START
DAY #118 1977  TIME 12:35

SEARCH STOP
               TIME 12:56

SEARCH INTERVAL
              TIME  0:10
NUMBER OF RECORDS =   2

ARGUMENT SELECTED :   1

FIRST  FUNCTION # 9 OPEN BOX

SEARCH MODE 1

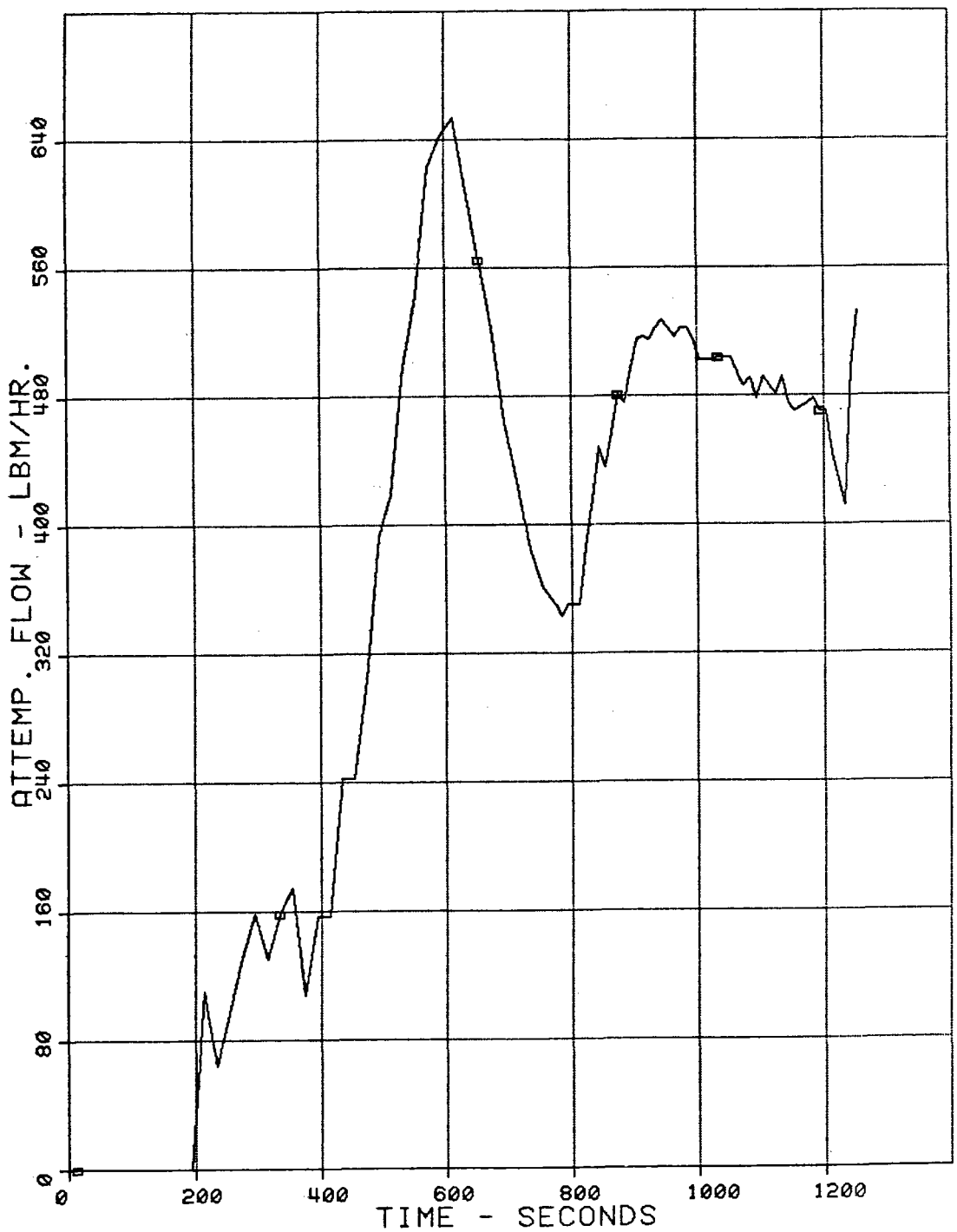
PLOT START TIME =   45300.0

STOP TIME =   46560.0

INTERVAL =      10.0

LINE PLOT HAS       87 POINTS PER FUNCTION
SCATTER PLOT HAS   43 POINTS PER FUNCTION

LINE PLOT HAS  126 POINTS PER FUNCTION
```


ATTEMP. FLOW - LBM/HR.
0
80
160
240
320
400
480
560
640
0
200
400
600
800
1000
1200
TIME - SECONDS

PAGE 15

PRESSURES, PLOTS

```
SEARCH START
DAY #118 1977  TIME  8:25

SEARCH STOP
               TIME  9:53

SEARCH INTERVAL
               TIME  1: 0
NUMBER OF RECORDS =   5

ARGUMENT SELECTED :   1

FIRST  FUNCTION #18 OPEN BOX

SECOND FUNCTION #19 TRIANGLE

THIRD  FUNCTION #20 CROSS-CIRCLE

FOURTH FUNCTION #21 CROSS-BOX

SEARCH MODE 1

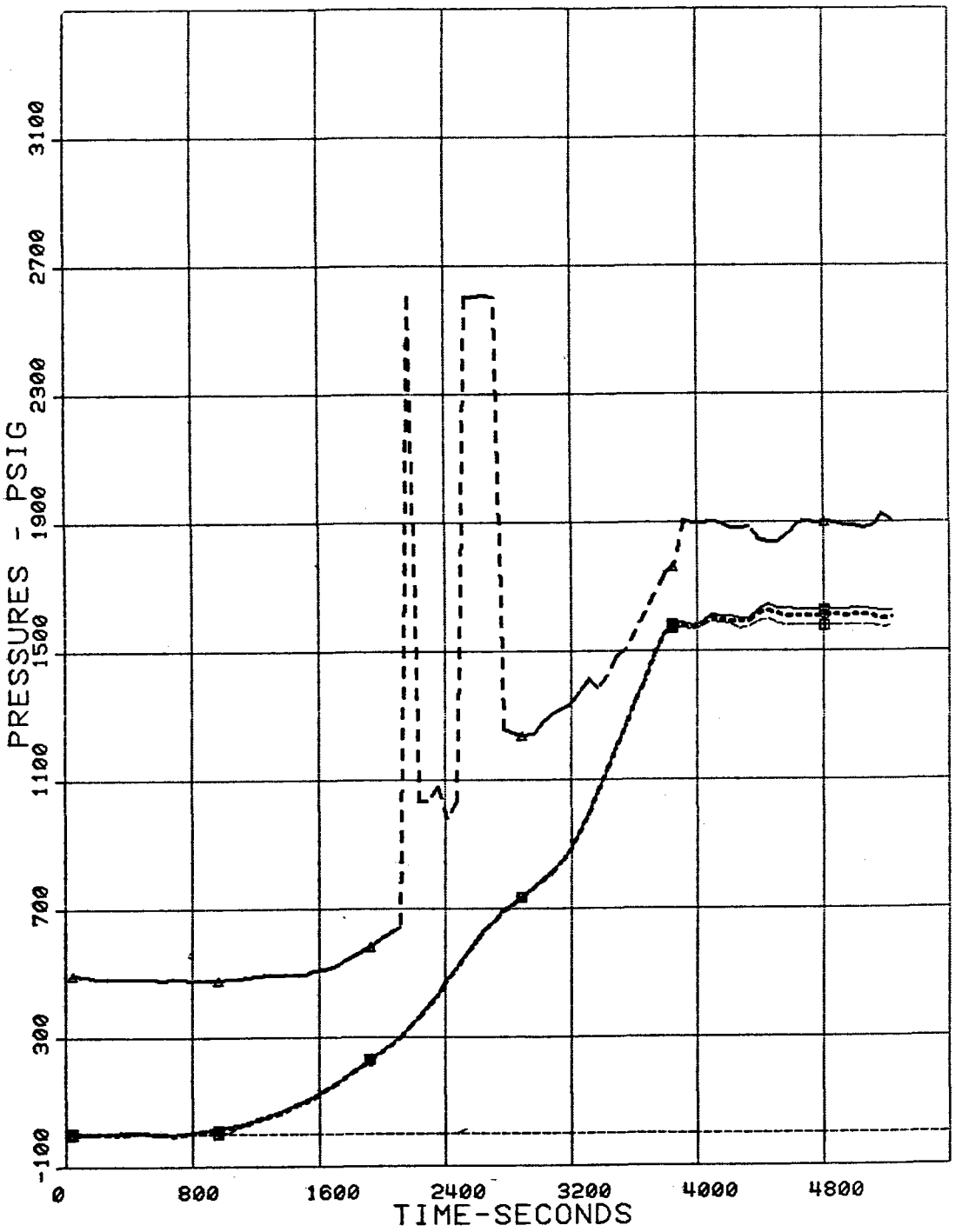
PLOT START TIME =   30300.0

STOP TIME =   35580.0

INTERVAL =      60.0

LINE PLOT HAS       88 POINTS PER FUNCTION
SCATTER PLOT HAS   44 POINTS PER FUNCTION

LINE PLOT HAS   88 POINTS PER FUNCTION
```


PRESSURES - PSIG
3100
2700
2300
1900
1500
1100
700
300
-100
0
800
1600
2400
3200
4000
4800
TIME-SECONDS

```
SEARCH START
DAY #118 1977  TIME 10:45
NUMBER OF RECORDS =   5

ARGUMENT SELECTED :   1

FIRST  FUNCTION #18 OPEN BOX

SECOND FUNCTION #19 TRIANGLE

THIRD  FUNCTION #20 CROSS-CIRCLE

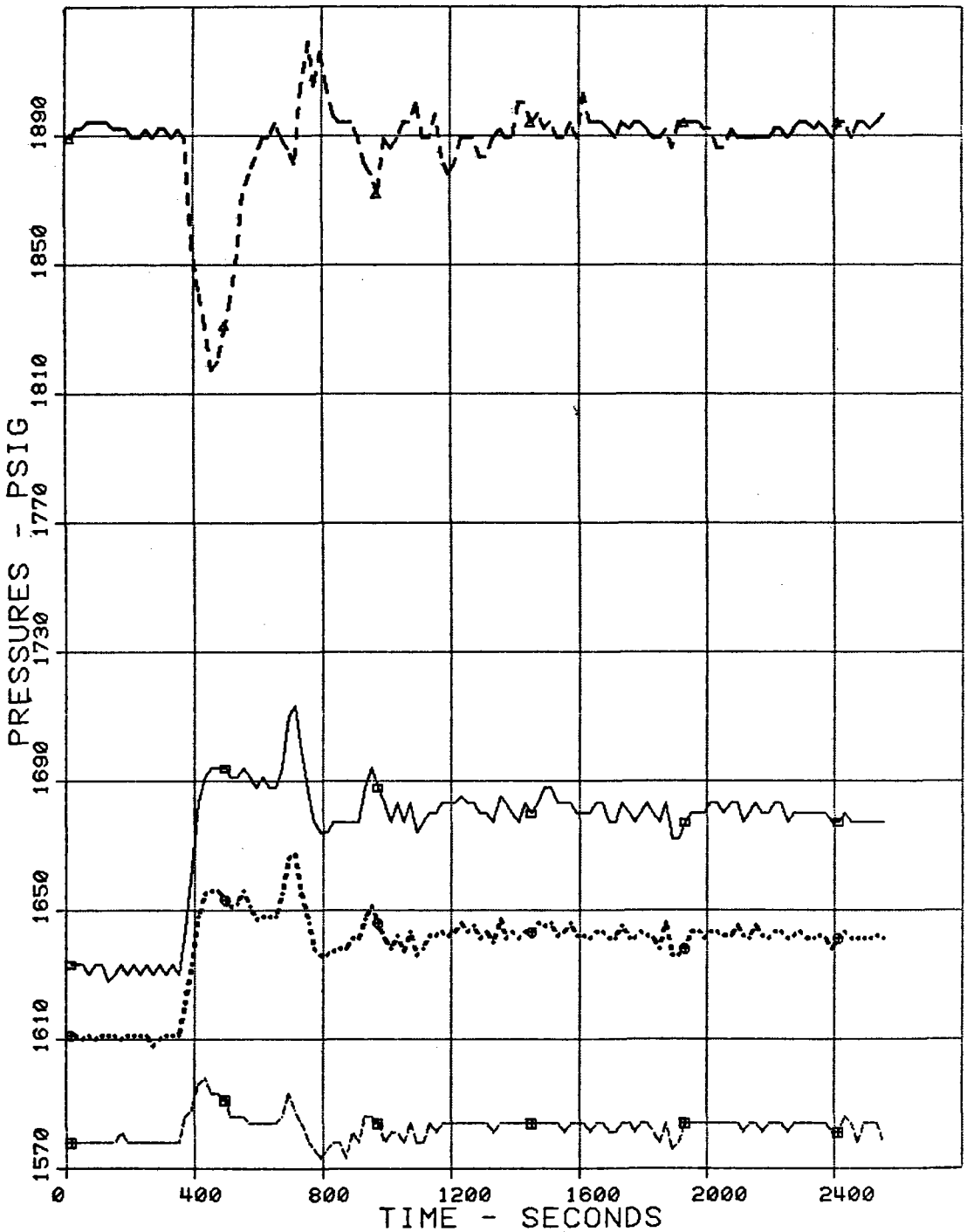
FOURTH FUNCTION #21 CROSS-BOX

SEARCH MODE 2

PLOT START TIME =   38700.0

EACH    1TH POINT IS PLOTTED

LINE PLOT HAS  128 POINTS PER FUNCTION
```


PRESSURES - PSIG
1890
1850
1810
1770
1730
1690
1650
1610
1570
0
400
800
1200
1600
2000
2400
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 11:25

SEARCH STOP
               TIME 12:35

SEARCH INTERVAL
               TIME  0:35
NUMBER OF RECORDS =   5

ARGUMENT SELECTED :   1

FIRST  FUNCTION #18 OPEN BOX

SECOND FUNCTION #19 TRIANGLE

THIRD  FUNCTION #20 CROSS-CIRCLE

FOURTH FUNCTION #21 CROSS-BOX

SEARCH MODE 1

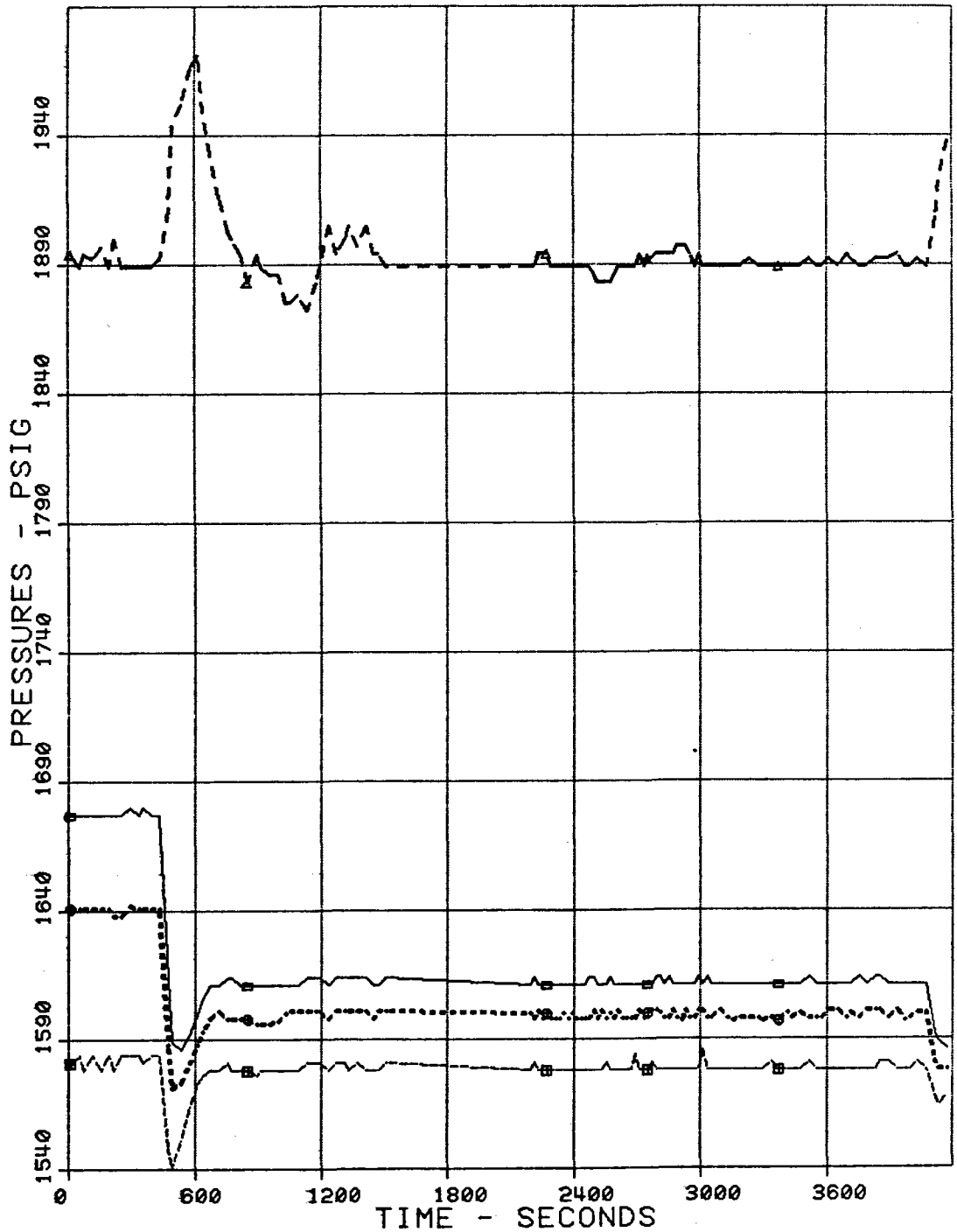
PLOT START TIME =   41100.0

STOP TIME =   45300.0

INTERVAL =      35.0

LINE PLOT HAS      120 POINTS PER FUNCTION
SCATTER PLOT HAS   60 POINTS PER FUNCTION

LINE PLOT HAS  120 POINTS PER FUNCTION
```


PRESSURES - PSIG
1940
1890
1840
1790
1740
1690
1640
1590
1540
0
600
1200
1800
2400
3000
3600
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 12:35

SEARCH STOP
               TIME 12:56

SEARCH INTERVAL
               TIME  0:10
NUMBER OF RECORDS =   5

ARGUMENT SELECTED :   1

FIRST  FUNCTION #18 OPEN BOX

SECOND FUNCTION #19 TRIANGLE

THIRD  FUNCTION #20 CROSS-CIRCLE

FOURTH FUNCTION #21 CROSS-BOX

SEARCH MODE 1

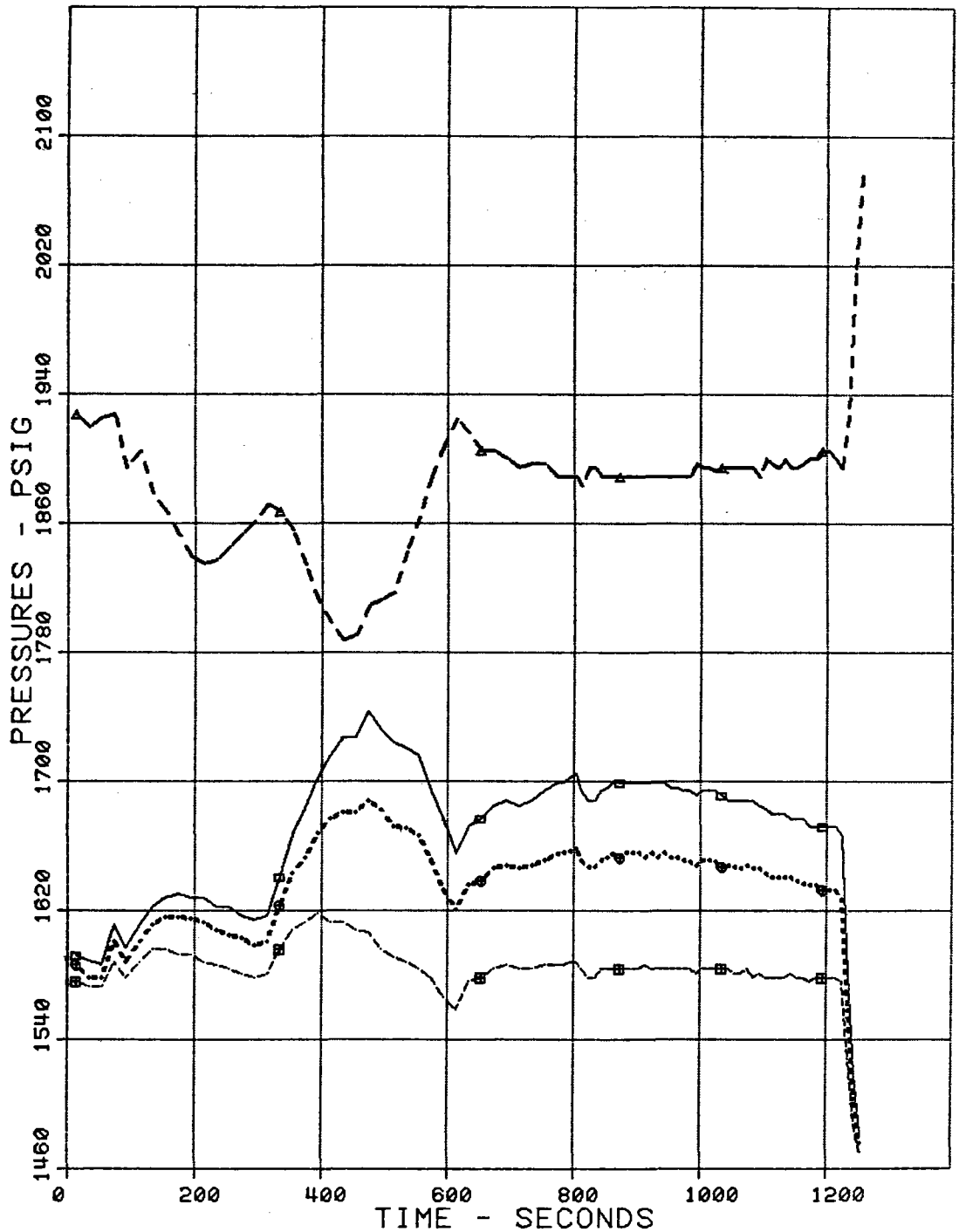
PLOT START TIME =   45300.0

STOP TIME =   46560.0

INTERVAL =      10.0

LINE PLOT HAS       87 POINTS PER FUNCTION
SCATTER PLOT HAS   43 POINTS PER FUNCTION

LINE PLOT HAS  126 POINTS PER FUNCTION
```


PRESSURES - PSIG
2100
2020
1940
1860
1780
1700
1620
1540
1460
0
200
400
600
800
1000
1200
TIME - SECONDS

PAGE 16

FLUIDS TEMPERATURES, PLOTS

```
SEARCH START
DAY #118 1977  TIME  8:25

SEARCH STOP
               TIME  9:53

SEARCH INTERVAL
               TIME  1: 0
NUMBER OF RECORDS =   7

ARGUMENT SELECTED :   1

FIRST  FUNCTION #22 OPEN BOX

SECOND FUNCTION #24 TRIANGLE

THIRD  FUNCTION #26 CROSS-CIRCLE

FOURTH FUNCTION #27 CROSS-BOX

FIFTH  FUNCTION #28 CROSS-DIAMOND

SIXTH  FUNCTION #29 ASTERISK

SEARCH MODE 1

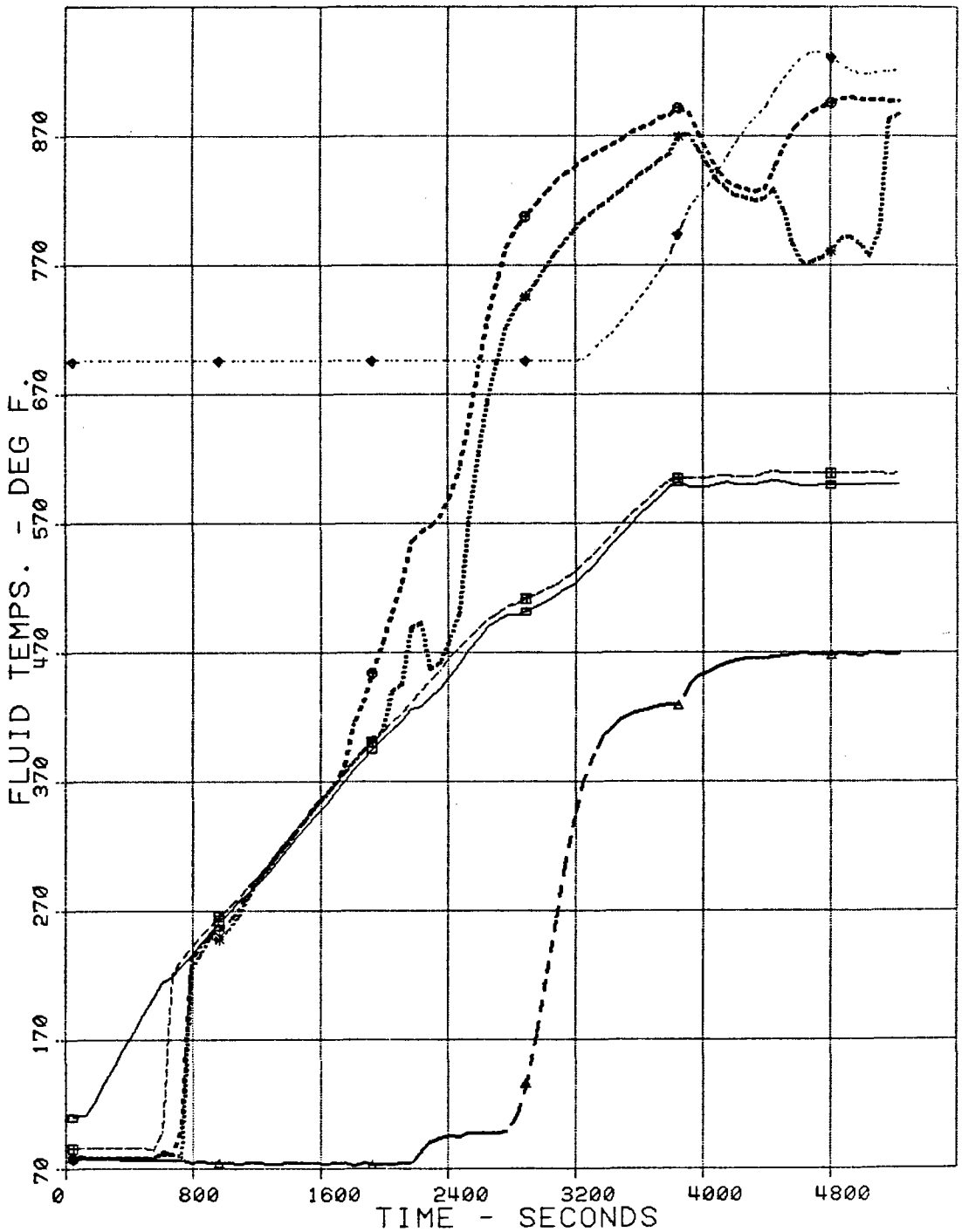
PLOT START TIME =   30300.0

STOP TIME =   35580.0

INTERVAL =      60.0

LINE PLOT HAS       88 POINTS PER FUNCTION
SCATTER PLOT HAS   44 POINTS PER FUNCTION

LINE PLOT HAS   88 POINTS PER FUNCTION
```


FLUID TEMPS. - DEG F.
70
170
270
370
470
570
670
770
870
0
800
1600
2400
3200
4000
4800
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 10:45
NUMBER OF RECORDS =   7

ARGUMENT SELECTED :   1

FIRST  FUNCTION #22 OPEN BOX

SECOND FUNCTION #24 TRIANGLE

THIRD  FUNCTION #26 CROSS-CIRCLE

FOURTH FUNCTION #27 CROSS-BOX

FIFTH  FUNCTION #28 CROSS-DIAMOND

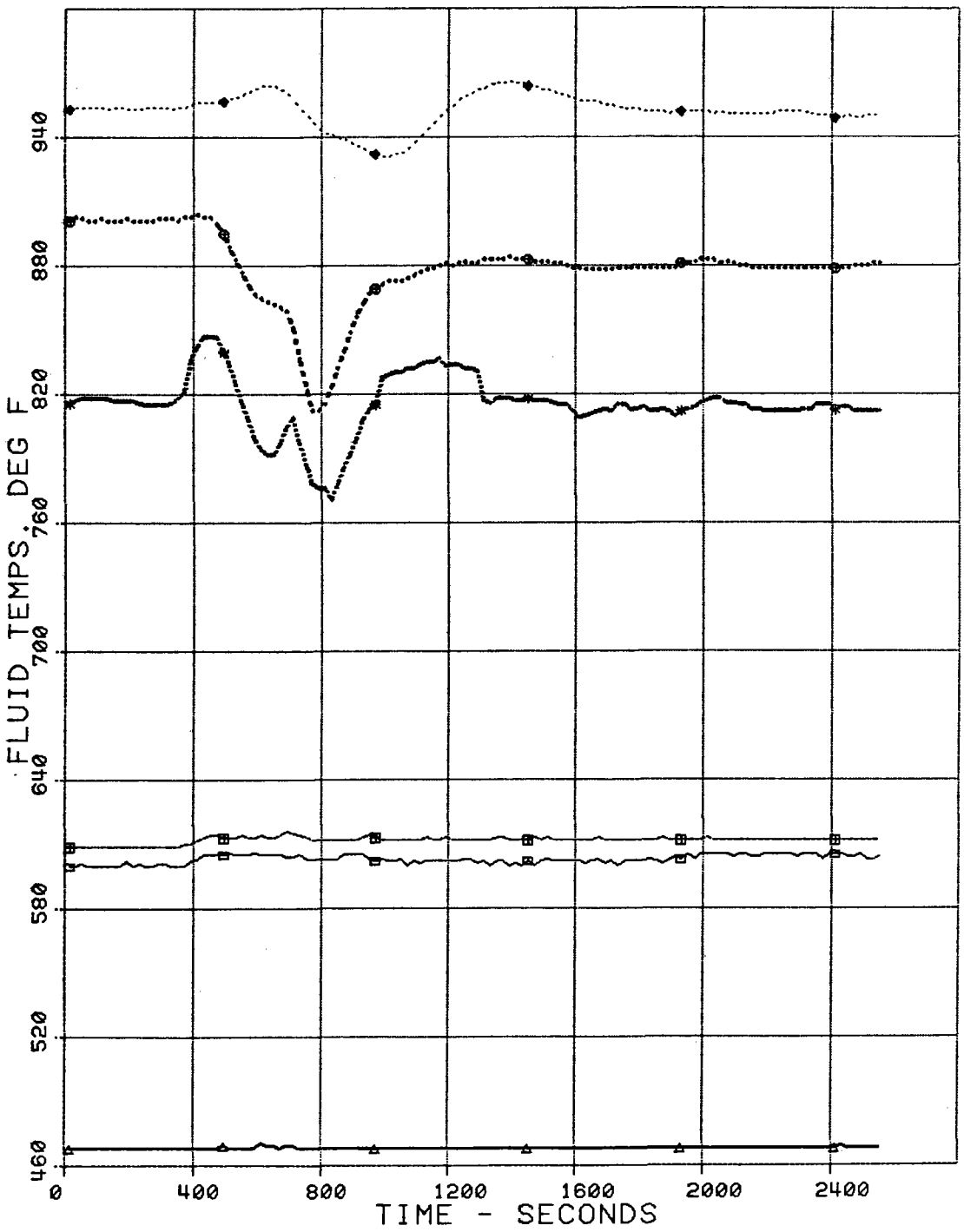
SIXTH  FUNCTION #29 ASTERISK

SEARCH MODE 2

PLOT START TIME =   38700.0

EACH    1TH POINT IS PLOTTED

LINE PLOT HAS  128 POINTS PER FUNCTION
```


FLUID TEMPS, DEG F
940
880
820
760
700
640
580
520
460
0
400
800
1200
1600
2000
2400
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 12:35

SEARCH STOP
               TIME 12:56

SEARCH INTERVAL
               TIME  0:10
NUMBER OF RECORDS =   7

ARGUMENT SELECTED :   1

FIRST  FUNCTION #22 OPEN BOX

SECOND FUNCTION #24 TRIANGLE

THIRD  FUNCTION #26 CROSS-CIRCLE

FOURTH FUNCTION #27 CROSS-BOX

FIFTH  FUNCTION #28 CROSS-DIAMOND

SIXTH  FUNCTION #29 ASTERISK

SEARCH MODE |

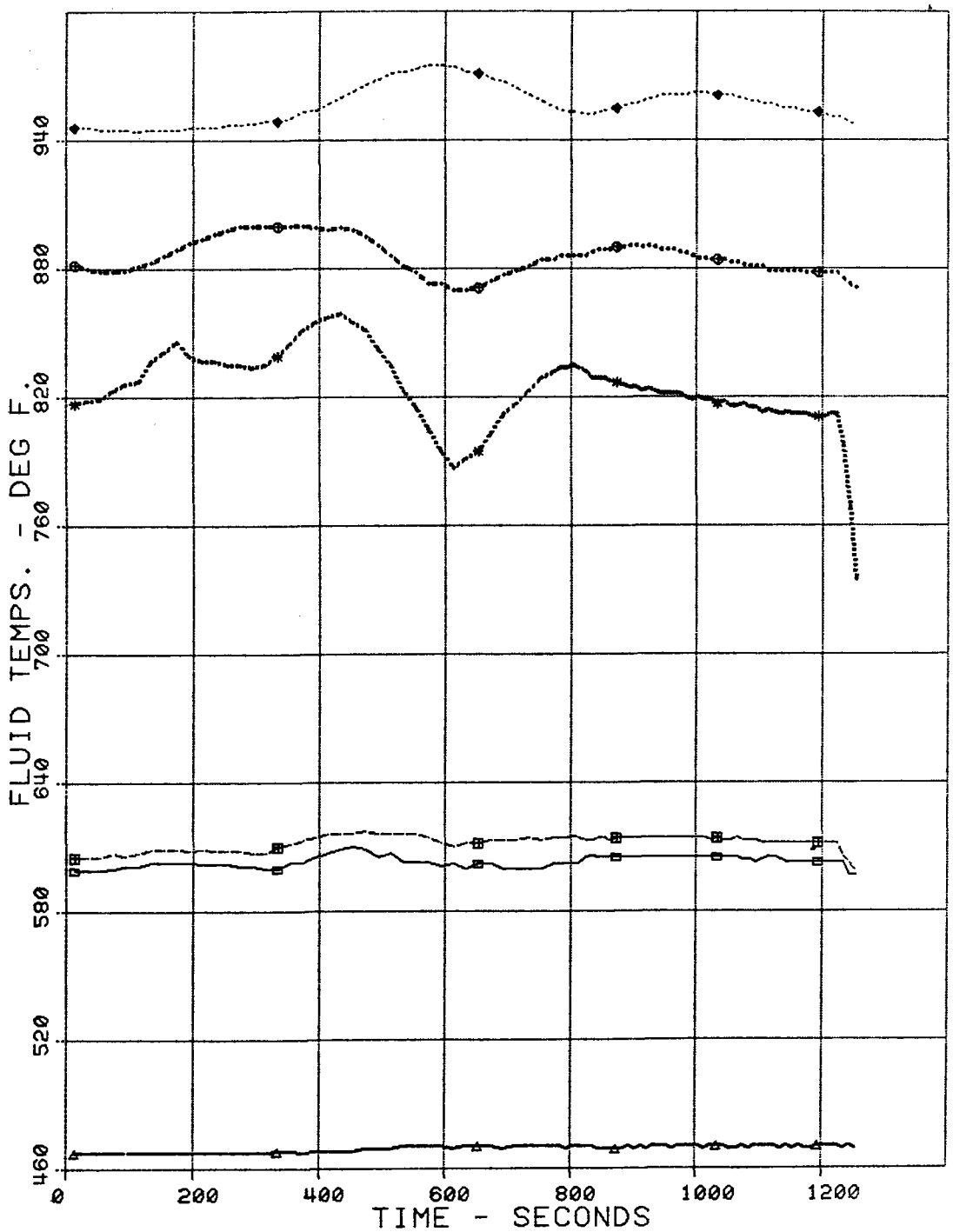
PLOT START TIME =   45300.0

STOP TIME =   46560.0

INTERVAL =      10.0

LINE PLOT HAS       87 POINTS PER FUNCTION
SCATTER PLOT HAS   43 POINTS PER FUNCTION

LINE PLOT HAS  126 POINTS PER FUNCTION
```


FLUID TEMPS. - DEG F.
940
880
820
760
700
640
580
520
460
0
200
400
600
800
1000
1200
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 11:25

SEARCH STOP
               TIME 12:35

SEARCH INTERVAL
               TIME  0:35
NUMBER OF RECORDS =   7

ARGUMENT SELECTED :   1

FIRST  FUNCTION #22 OPEN BOX

SECOND FUNCTION #24 TRIANGLE

THIRD  FUNCTION #26 CROSS-CIRCLE

FOURTH FUNCTION #27 CROSS-BOX

FIFTH  FUNCTION #28 CROSS-DIAMOND

SIXTH  FUNCTION #29 ASTERISK

SEARCH MODE 1

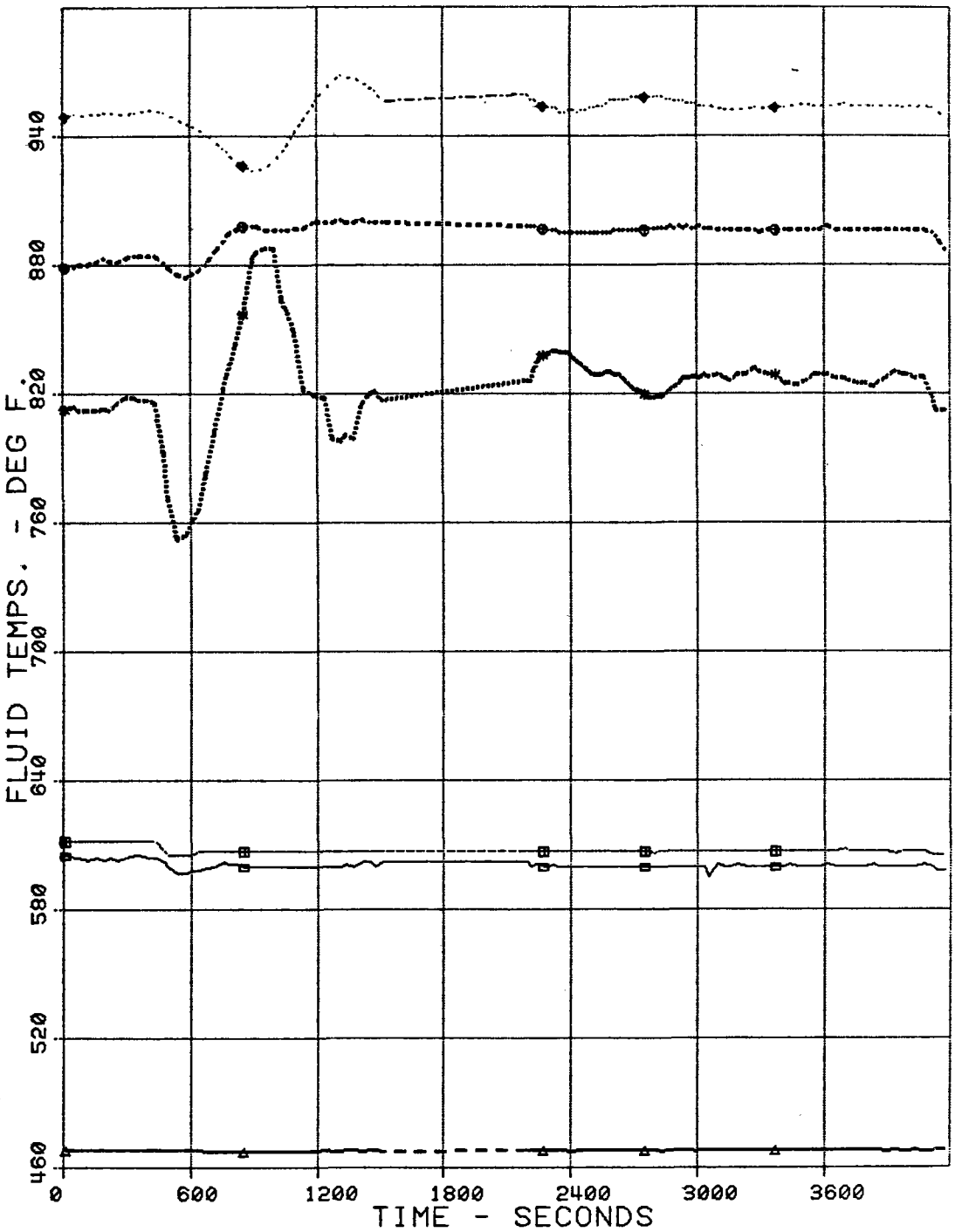
PLOT START TIME =   41100.0

STOP TIME =   45300.0

INTERVAL =      35.0

LINE PLOT HAS      120 POINTS PER FUNCTION
SCATTER PLOT HAS   60 POINTS PER FUNCTION

LINE PLOT HAS  120 POINTS PER FUNCTION
```


FLUID TEMPS. - DEG F.
940
880
820
760
700
640
580
520
460
0
600
1200
1800
2400
3000
3600
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 12:35

SEARCH STOP
               TIME 12:53

SEARCH INTERVAL
               TIME  0:10
NUMBER OF RECORDS =   5

ARGUMENT SELECTED :   1

FIRST  FUNCTION #24 OPEN BOX

SECOND FUNCTION #29 TRIANGLE

THIRD  FUNCTION #30 CROSS-CIRCLE

FOURTH FUNCTION #23 CROSS-BOX

SEARCH MODE 1

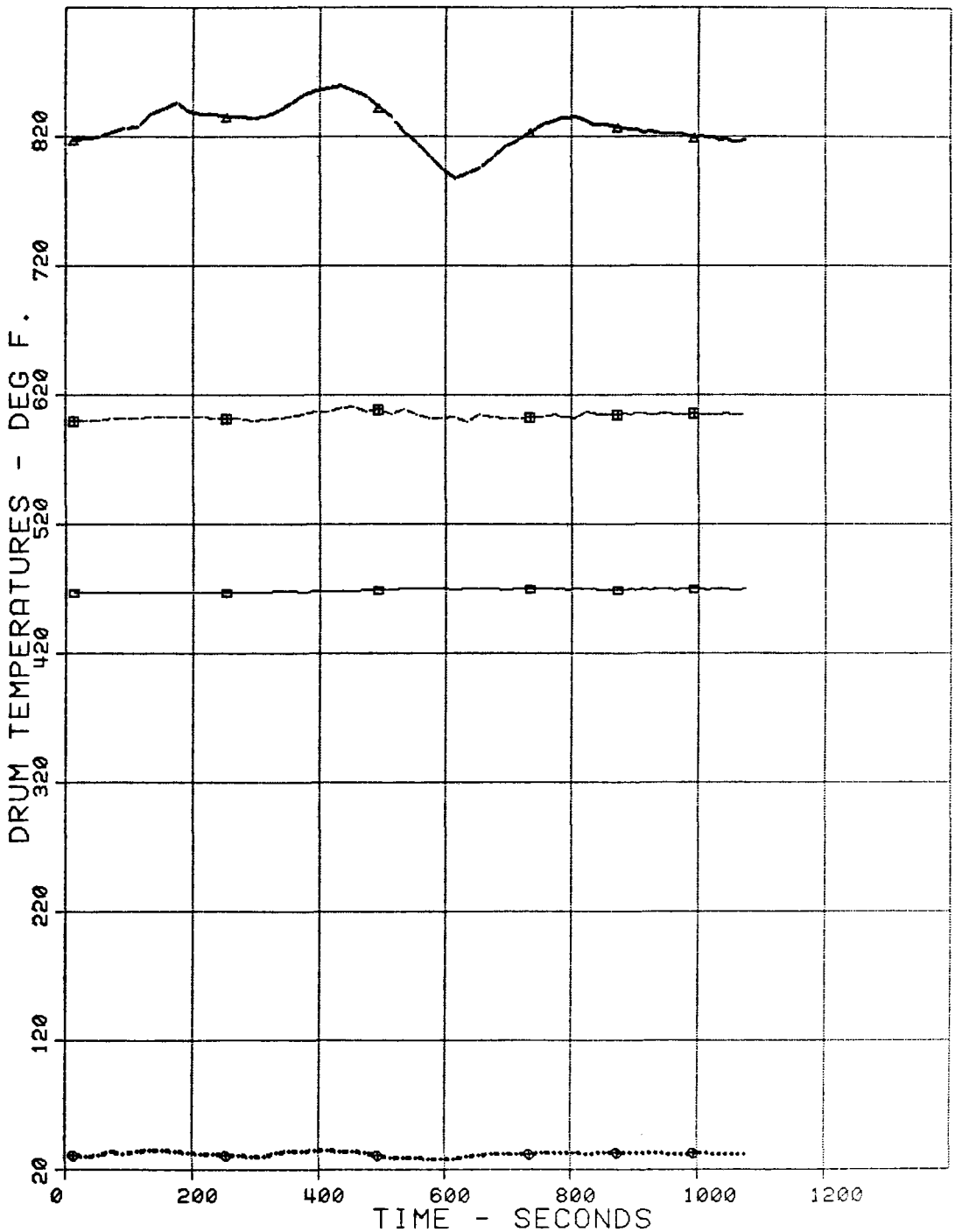
PLOT START TIME =   45300.0

STOP TIME =   46380.0

INTERVAL =      10.0

LINE PLOT HAS       69 POINTS PER FUNCTION
SCATTER PLOT HAS   34 POINTS PER FUNCTION

LINE PLOT HAS  108 POINTS PER FUNCTION
```


DRUM TEMPERATURES - DEG F.
820
720
620
520
420
320
220
120
20
0
200
400
600
800
1000
1200
TIME - SECONDS

PAGE 17

METAL TEMPERATURES, PLOTS

```
SEARCH START
DAY #118 1977  TIME  8:25

SEARCH STOP
               TIME  9:53

SEARCH INTERVAL
               TIME  1: 0
NUMBER OF RECORDS =   7

ARGUMENT SELECTED :   1

FIRST  FUNCTION #12 OPEN BOX

SECOND FUNCTION #13 TRIANGLE

THIRD  FUNCTION #14 CROSS-CIRCLE

FOURTH FUNCTION #23 CROSS-BOX

FIFTH  FUNCTION #32 CROSS-DIAMOND

SIXTH  FUNCTION #33 ASTERISK

SEARCH MODE 1

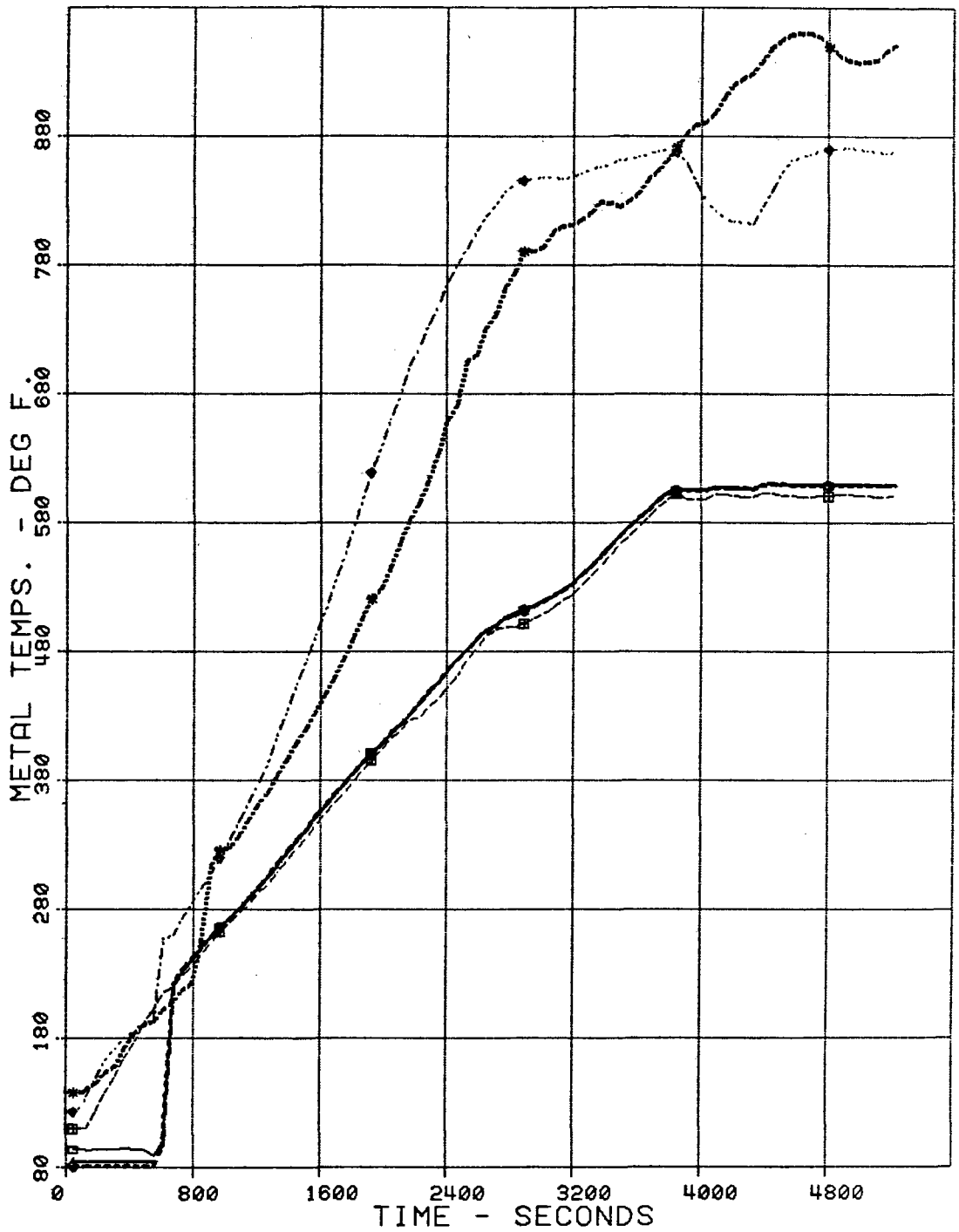
PLOT START TIME =   30300.0

STOP TIME =   35580.0

INTERVAL =      60.0

LINE PLOT HAS       88 POINTS PER FUNCTION
SCATTER PLOT HAS   44 POINTS PER FUNCTION

LINE PLOT HAS   88 POINTS PER FUNCTION
```


METAL TEMPS. - DEG F.
80
180
280
380
480
580
680
780
880
0
800
1600
2400
3200
4000
4800
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 10:45
NUMBER OF RECORDS =   7

ARGUMENT SELECTED :   1

FIRST  FUNCTION #12 OPEN BOX

SECOND FUNCTION #13 TRIANGLE

THIRD  FUNCTION #14 CROSS-CIRCLE

FOURTH FUNCTION #23 CROSS-BOX

FIFTH  FUNCTION #32 CROSS-DIAMOND

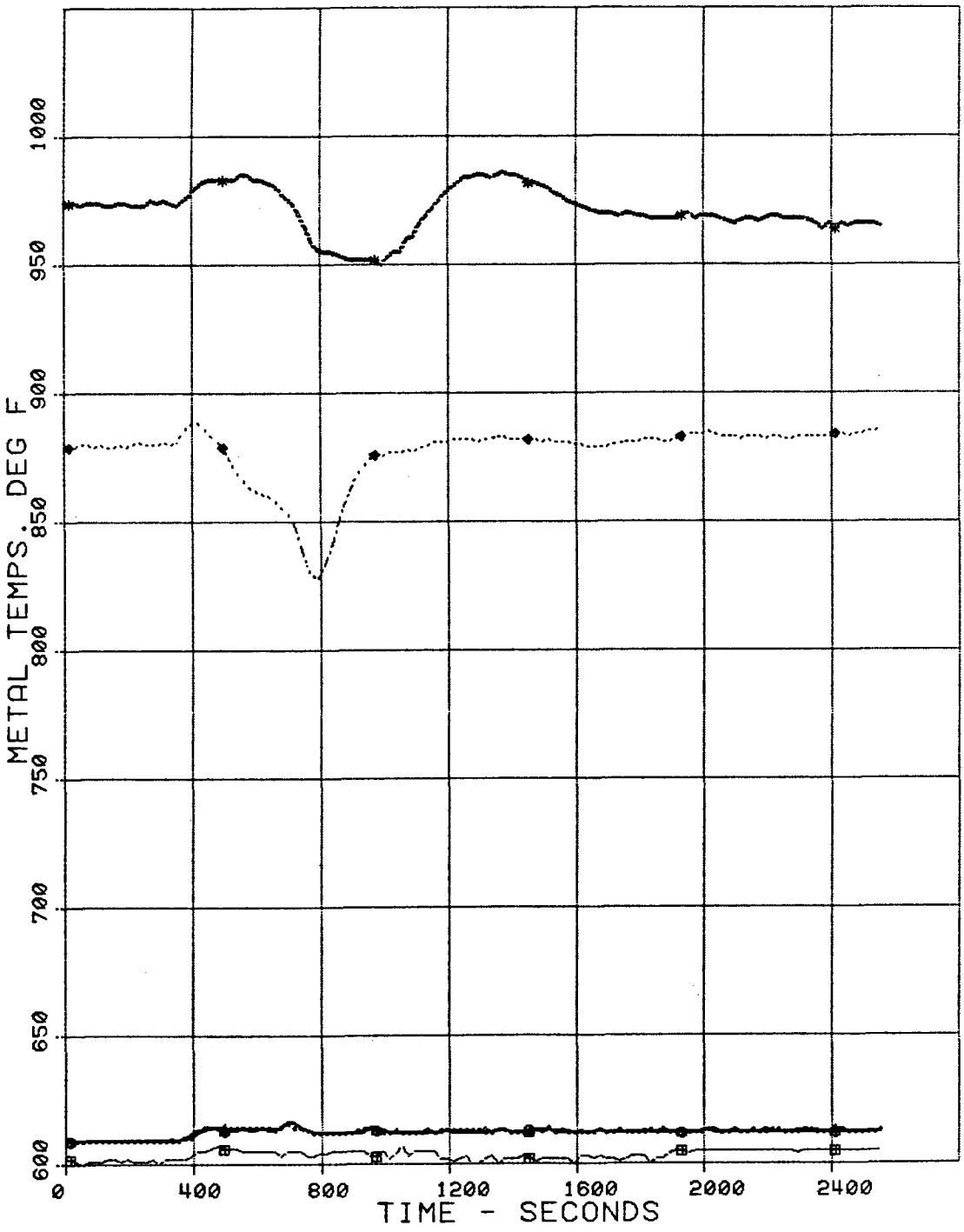
SIXTH  FUNCTION #33 ASTERISK

SEARCH MODE 2

PLOT START TIME =   38700.0

EACH    1TH POINT IS PLOTTED

LINE PLOT HAS  128 POINTS PER FUNCTION
```


METAL TEMPS. DEG F
1000
950
900
850
800
750
700
650
600
0
400
800
1200
1600
2000
2400
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 11:25

SEARCH STOP
               TIME 12:35

SEARCH INTERVAL
               TIME  0:35
NUMBER OF RECORDS =   7

ARGUMENT SELECTED :   1

FIRST  FUNCTION #12 OPEN BOX

SECOND FUNCTION #13 TRIANGLE

THIRD  FUNCTION #14 CROSS-CIRCLE

FOURTH FUNCTION #23 CROSS-BOX

FIFTH  FUNCTION #32 CROSS-DIAMOND

SIXTH  FUNCTION #33 ASTERISK

SEARCH MODE 1

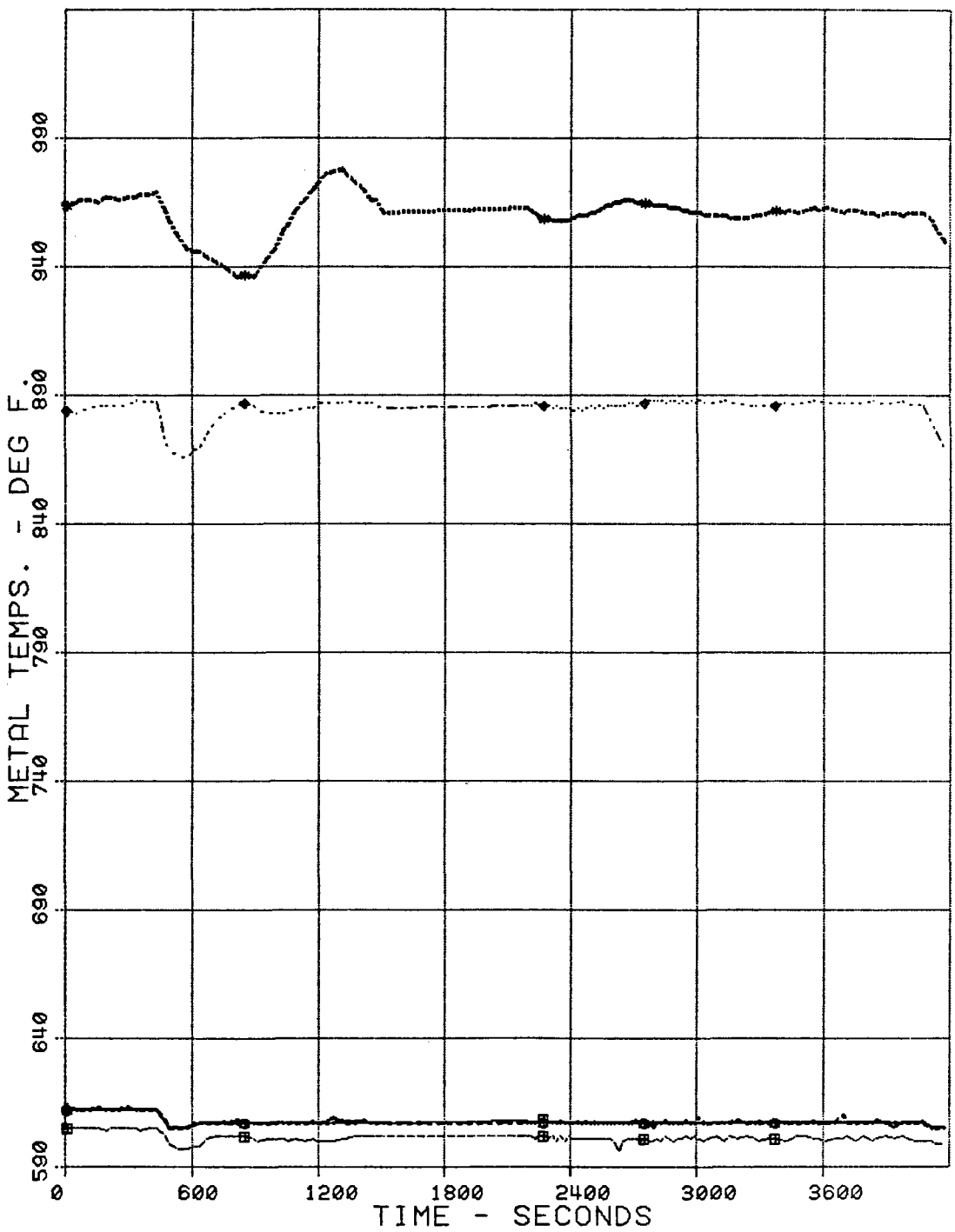
PLOT START TIME =   41100.0

STOP TIME =   45300.0

INTERVAL =      35.0

LINE PLOT HAS      120 POINTS PER FUNCTION
SCATTER PLOT HAS   60 POINTS PER FUNCTION

LINE PLOT HAS  120 POINTS PER FUNCTION
```


METAL TEMPS. - DEG F.
990
940
890
840
790
740
690
640
590
0
600
1200
1800
2400
3000
3600
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 12:35

SEARCH STOP
               TIME 12:56

SEARCH INTERVAL
               TIME  0:10
NUMBER OF RECORDS =   7

ARGUMENT SELECTED :   1

FIRST  FUNCTION #12 OPEN BOX

SECOND FUNCTION #13 TRIANGLE

THIRD  FUNCTION #14 CROSS-CIRCLE

FOURTH FUNCTION #23 CROSS-BOX

FIFTH  FUNCTION #32 CROSS-DIAMOND

SIXTH  FUNCTION #33 ASTERISK

SEARCH MODE 1

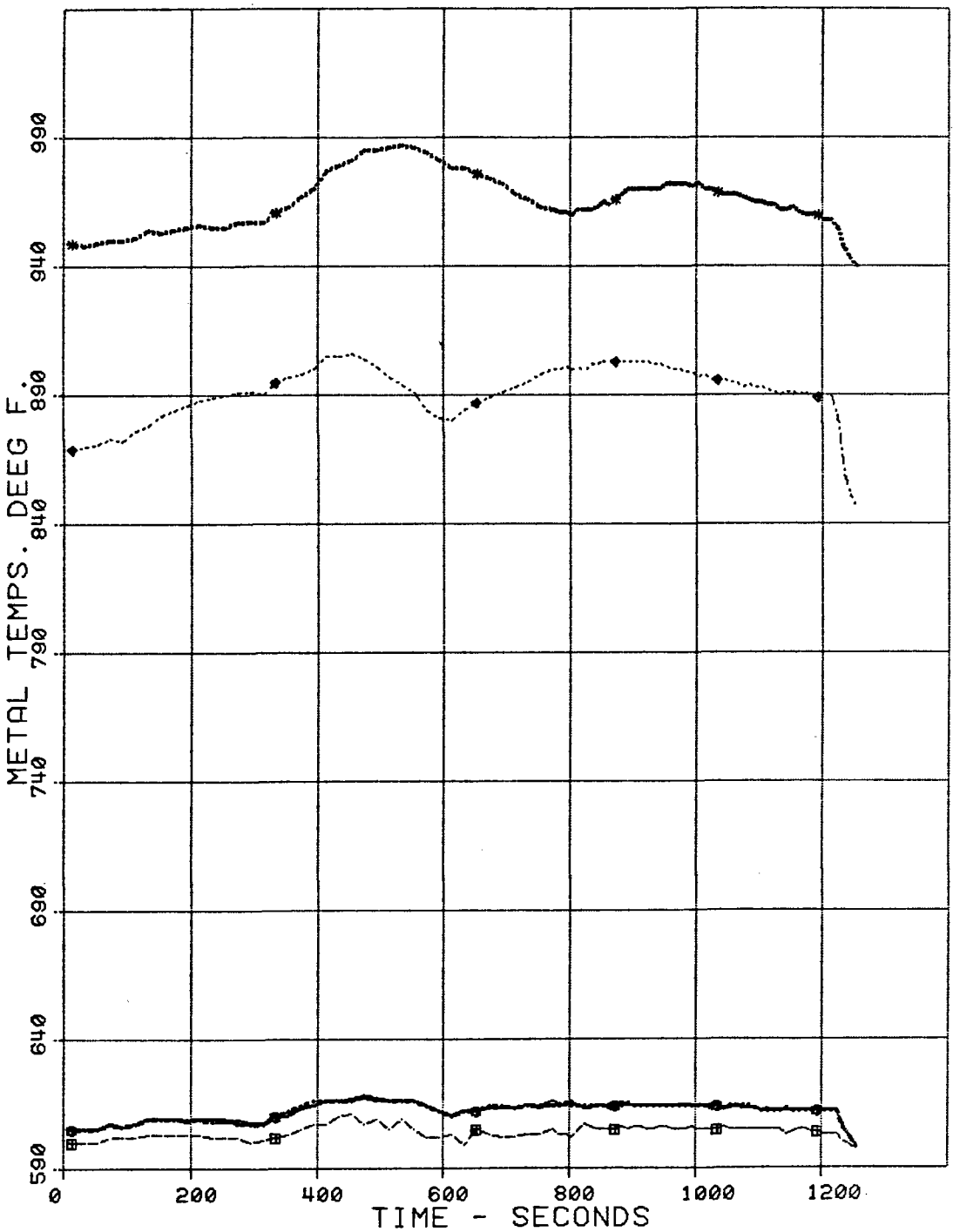
PLOT START TIME =   45300.0

STOP TIME =   46560.0

INTERVAL =      10.0

LINE PLOT HAS       87 POINTS PER FUNCTION
SCATTER PLOT HAS   43 POINTS PER FUNCTION

LINE PLOT HAS  126 POINTS PER FUNCTION
```


METAL TEMPS. DEEG F.
990
940
890
840
790
740
690
640
590
0
200
400
600
800
1000
1200
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 12:35

SEARCH STOP
               TIME 12:53

SEARCH INTERVAL
               TIME  0:10
NUMBER OF RECORDS =   5

ARGUMENT SELECTED :   1

FIRST  FUNCTION #24 OPEN BOX

SECOND FUNCTION #29 TRIANGLE

THIRD  FUNCTION #30 CROSS-CIRCLE

FOURTH FUNCTION #23 CROSS-BOX

SEARCH MODE 1

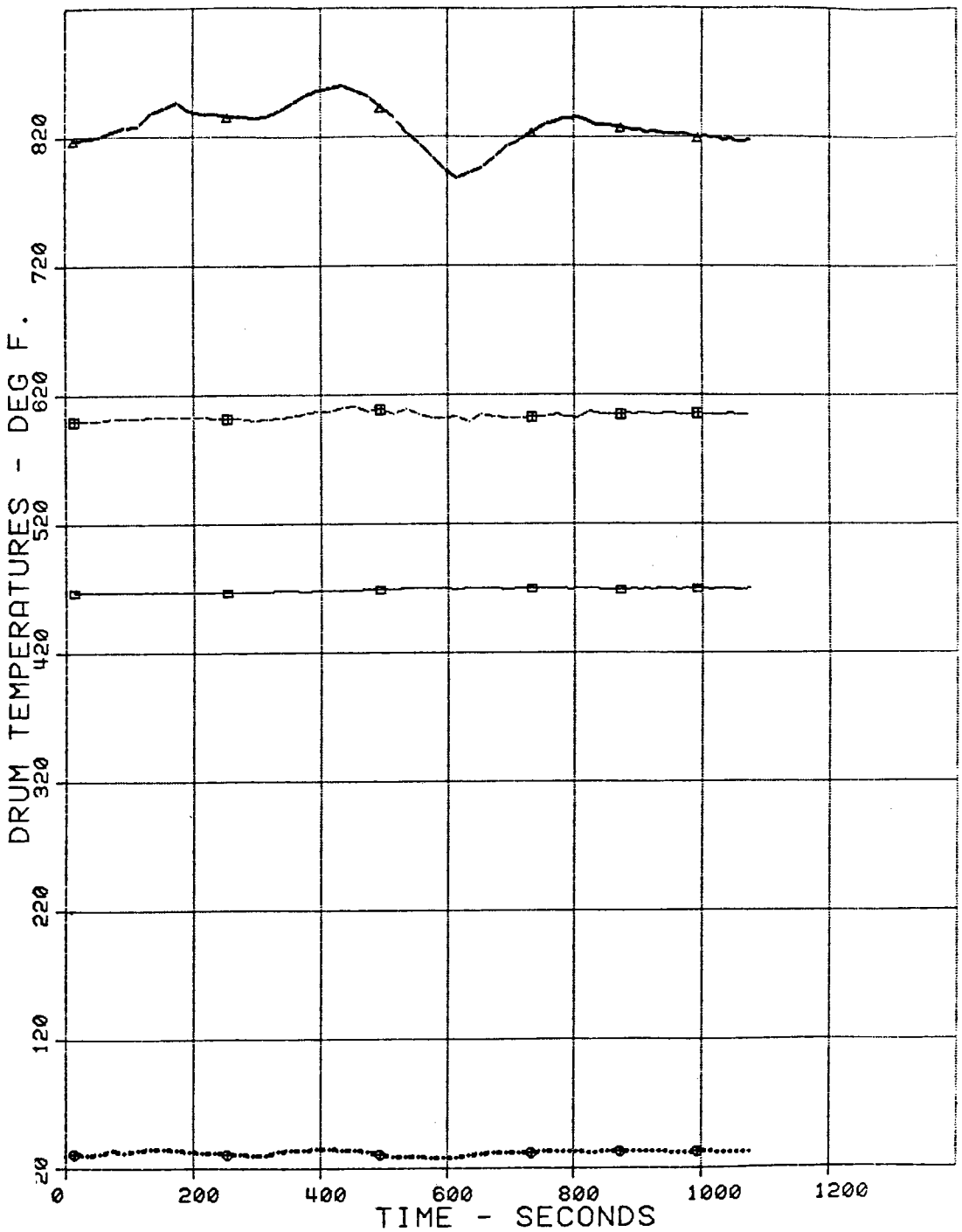
PLOT START TIME =  45300.0

STOP TIME =   46380.0

INTERVAL =      10.0

LINE PLOT HAS       69 POINTS PER FUNCTION
SCATTER PLOT HAS   34 POINTS PER FUNCTION

LINE PLOT HAS  108 POINTS PER FUNCTION
```


DRUM TEMPERATURES - DEG F.
820
720
620
520
420
320
220
120
20
0
200
400
600
800
1000
1200
TIME - SECONDS

PAGE 18

DRUM LEVEL, PLOTS

```
SEARCH START
DAY #118 1977  TIME  8:25

SEARCH STOP
               TIME  9:53

SEARCH INTERVAL
               TIME  1: 0
NUMBER OF RECORDS =   2

ARGUMENT SELECTED :   1

FIRST  FUNCTION #30 OPEN BOX

SEARCH MODE 1

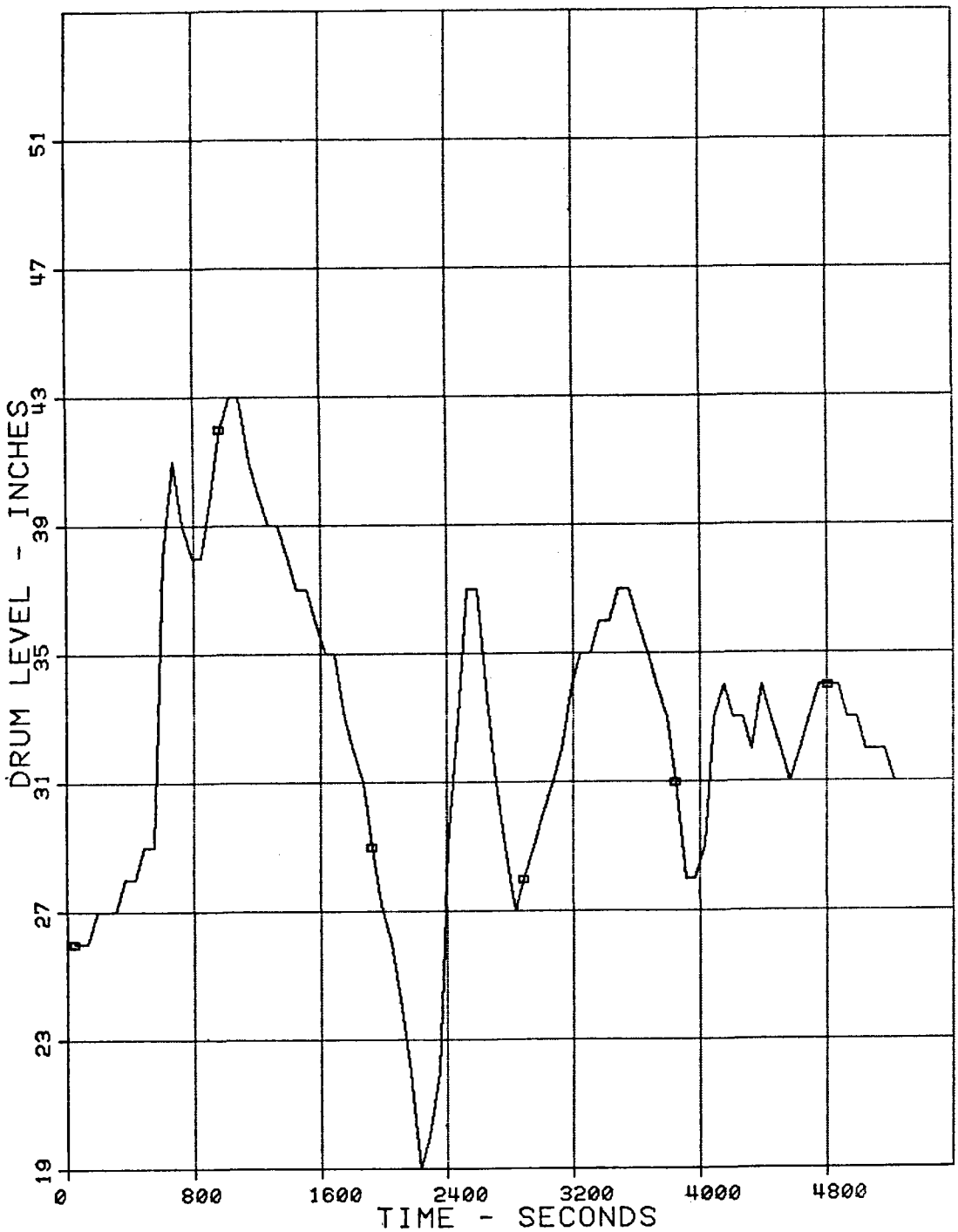
PLOT START TIME =   30300.0

STOP TIME =   35580.0

INTERVAL =      60.0

LINE PLOT HAS       88 POINTS PER FUNCTION
SCATTER PLOT HAS   44 POINTS PER FUNCTION

LINE PLOT HAS   88 POINTS PER FUNCTION
```


DRUM LEVEL - INCHES
51
47
43
39
35
31
27
23
19
0
800
1600
2400
3200
4000
4800
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 10:45
NUMBER OF RECORDS =   3

ARGUMENT SELECTED :   1

FIRST  FUNCTION #30 OPEN BOX

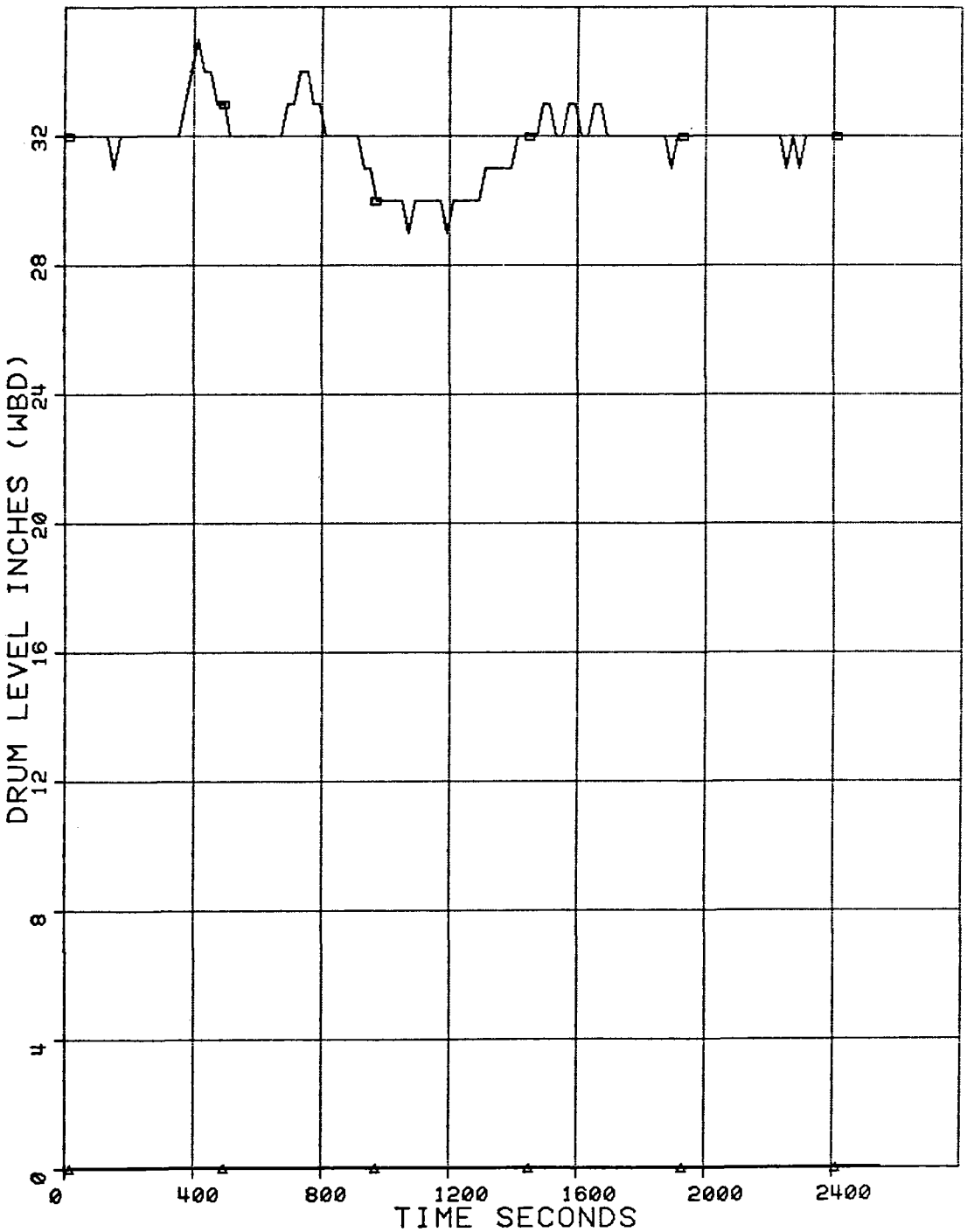
SECOND FUNCTION #11 TRIANGLE

SEARCH MODE 2

PLOT START TIME =   30700.0

EACH    1TH POINT IS PLOTTED

LINE PLOT HAS  128 POINTS PER FUNCTION
```


DRUM LEVEL INCHES (WBD)
0
4
8
12
16
20
24
28
32
0
400
800
1200
1600
2000
2400
TIME SECONDS

```
SEARCH START
DAY #118 1977  TIME 11:25

SEARCH STOP
               TIME 12:35

SEARCH INTERVAL
               TIME  0:35
NUMBER OF RECORDS =   2

ARGUMENT SELECTED :   1

FIRST  FUNCTION #30 OPEN BOX

SEARCH MODE 1

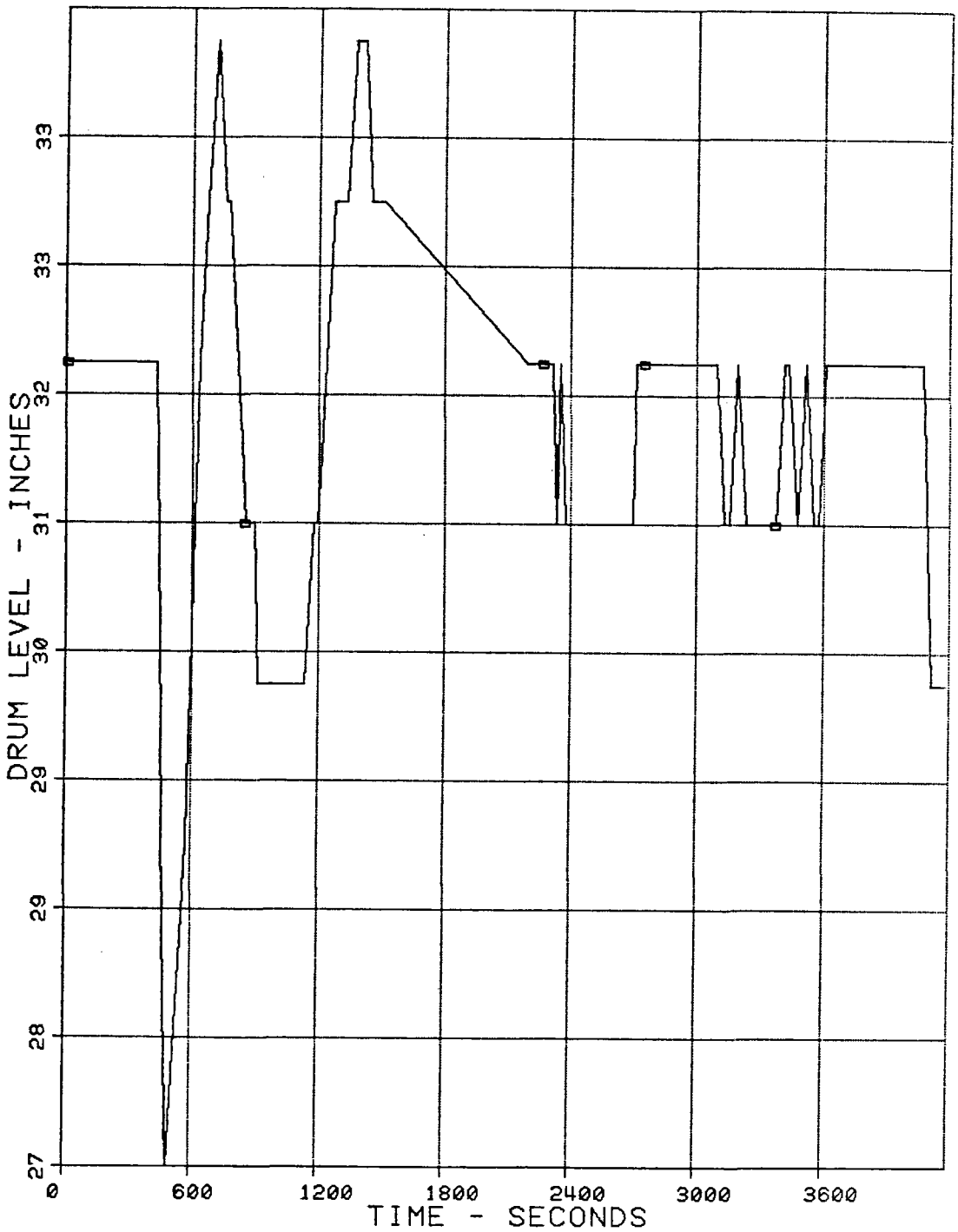
PLOT START TIME =   41100.0

STOP TIME =   45300.0

INTERVAL =      35.0

LINE PLOT HAS      120 POINTS PER FUNCTION
SCATTER PLOT HAS   60 POINTS PER FUNCTION

LINE PLOT HAS  120 POINTS PER FUNCTION
```


DRUM LEVEL - INCHES
33
33
32
31
30
29
29
28
27
0
600
1200
1800
2400
3000
3600
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 12:35

SEARCH STOP
               TIME 12:56

SEARCH INTERVAL
               TIME  0:10
NUMBER OF RECORDS =   2

ARGUMENT SELECTED :   1

FIRST  FUNCTION #30 OPEN BOX

SEARCH MODE 1

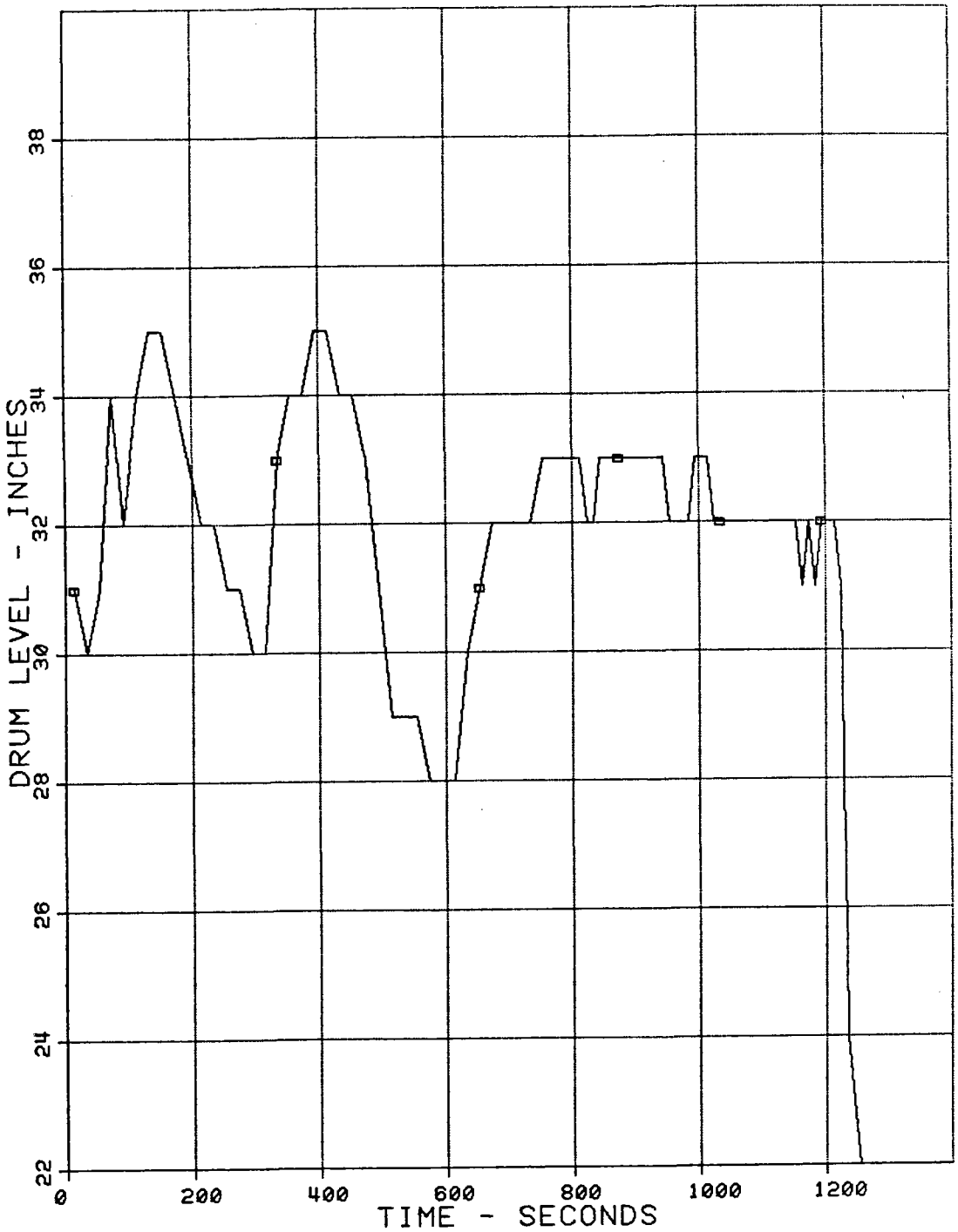
PLOT START TIME =   45300.0

STOP TIME =   46560.0

INTERVAL =      10.0

LINE PLOT HAS       87 POINTS PER FUNCTION
SCATTER PLOT HAS   43 POINTS PER FUNCTION

LINE PLOT HAS  126 POINTS PER FUNCTION
```


DRUM LEVEL - INCHES
22
24
26
28
30
32
34
36
38
0
200
400
600
800
1000
1200
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 12:35

SEARCH STOP
               TIME 12:53

SEARCH INTERVAL
               TIME  0:10
NUMBER OF RECORDS =   5

ARGUMENT SELECTED :   1

FIRST  FUNCTION #24 OPEN BOX

SECOND FUNCTION #29 TRIANGLE

THIRD  FUNCTION #30 CROSS-CIRCLE

FOURTH FUNCTION #23 CROSS-BOX

SEARCH MODE 1

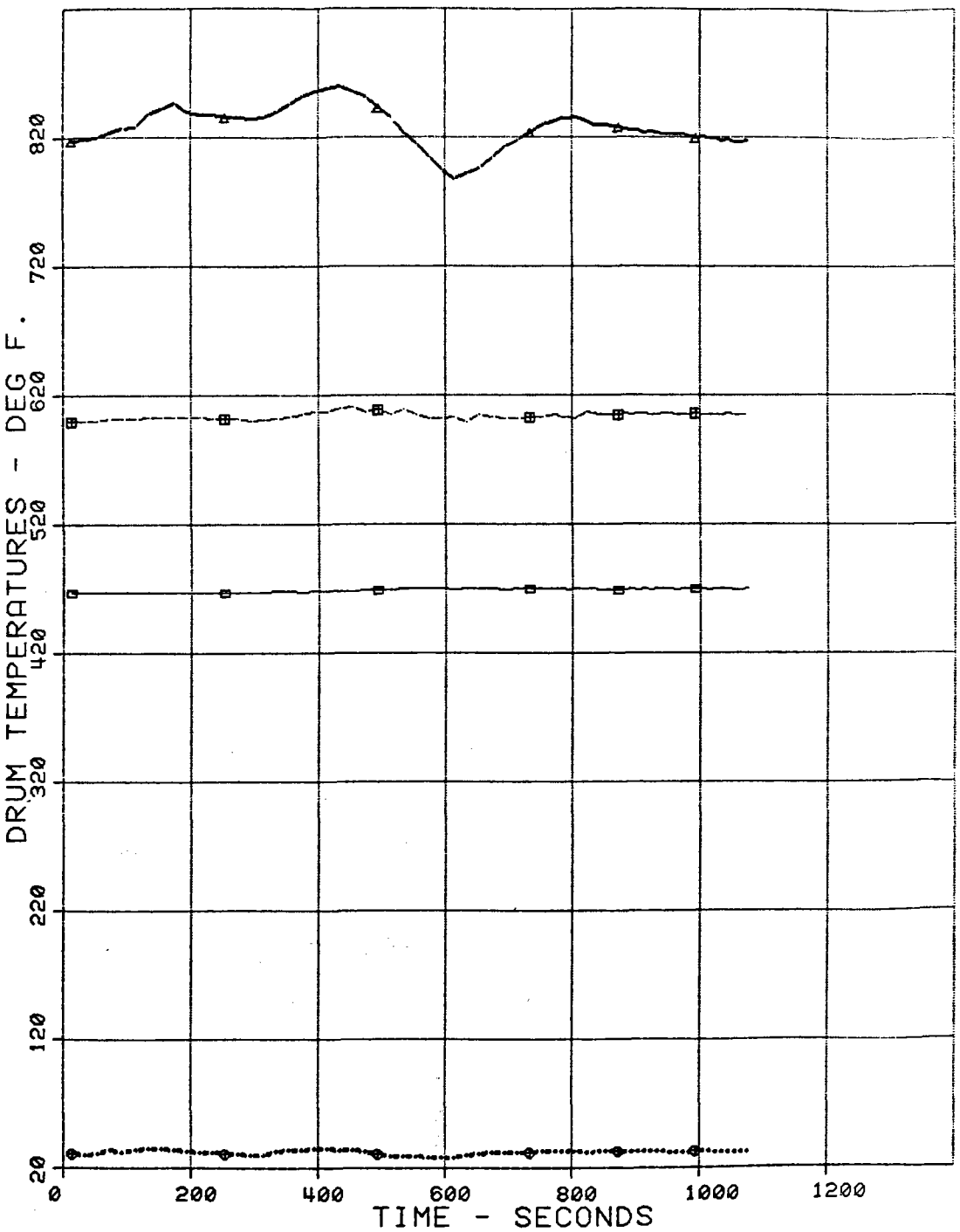
PLOT START TIME =   45300.0

STOP TIME =   46380.0

INTERVAL =      10.0

LINE PLOT HAS       69 POINTS PER FUNCTION
SCATTER PLOT HAS   34 POINTS PER FUNCTION

LINE PLOT HAS  108 POINTS PER FUNCTION
```


DRUM TEMPERATURES - DEG F.
820
720
620
520
420
320
220
120
20
0
200
400
600
800
1000
1200
TIME - SECONDS

PAGE 19

RECIRCULATION FLOW, PLOTS

PAGE 20

POWER LEVELS, PLOTS

```
SEARCH START
DAY #118 1977  TIME  8:25

SEARCH STOP
               TIME  9:53

SEARCH INTERVAL
               TIME  1: 0
NUMBER OF RECORDS =   5

ARGUMENT SELECTED :   1

FIRST  FUNCTION # 6 OPEN BOX

SECOND FUNCTION # 7 TRIANGLE

THIRD  FUNCTION #15 CROSS-CIRCLE

FOURTH FUNCTION #16 CROSS-BOX

SEARCH MODE 1

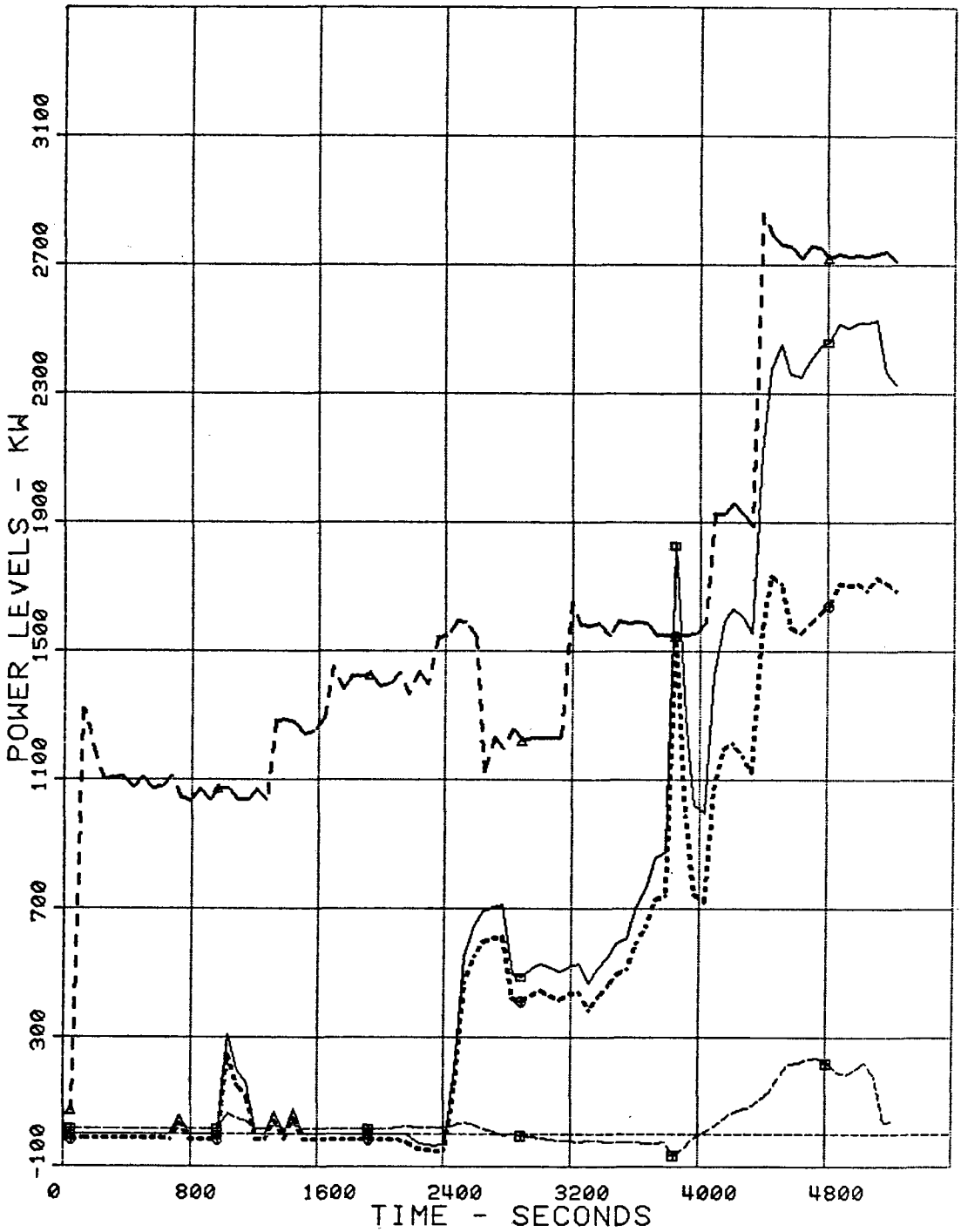
PLOT START TIME =   30300.0

STOP TIME =   35580.0

INTERVAL =      60.0

LINE PLOT HAS       88 POINTS PER FUNCTION
SCATTER PLOT HAS   44 POINTS PER FUNCTION

LINE PLOT HAS   88 POINTS PER FUNCTION
```


POWER LEVELS - KW
3100
2700
2300
1900
1500
1100
700
300
-100
0
800
1600
2400
3200
4000
4800
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 10:45
NUMBER OF RECORDS =   5

ARGUMENT SELECTED :   1

FIRST  FUNCTION # 6 OPEN BOX

SECOND FUNCTION # 7 TRIANGLE

THIRD  FUNCTION #15 CROSS-CIRCLE

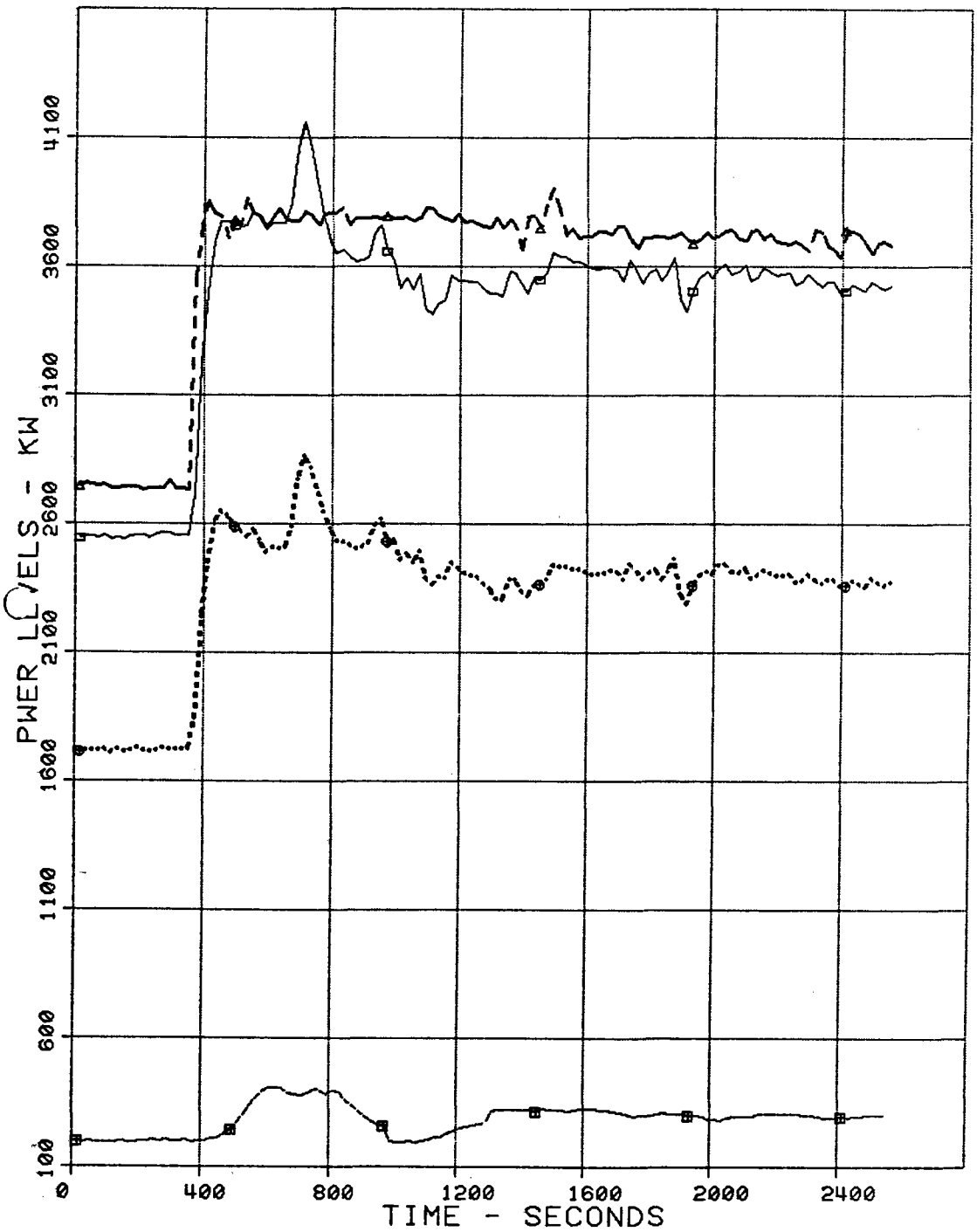
FOURTH FUNCTION #16 CROSS-BOX

SEARCH MODE 2

PLOT START TIME =   38700.0

EACH    1TH POINT IS PLOTTED

LINE PLOT HAS  128 POINTS PER FUNCTION
```


PWER LEVELS - KW
4100
3600
3100
2600
2100
1600
1100
600
100
0
400
800
1200
1600
2000
2400
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 11:25

SEARCH STOP
               TIME 12:35

SEARCH INTERVAL
               TIME  0:35
NUMBER OF RECORDS =   5

ARGUMENT SELECTED :   1

FIRST  FUNCTION # 6 OPEN BOX

SECOND FUNCTION # 7 TRIANGLE

THIRD  FUNCTION #15 CROSS-CIRCLE

FOURTH FUNCTION #16 CROSS-BOX

SEARCH MODE 1

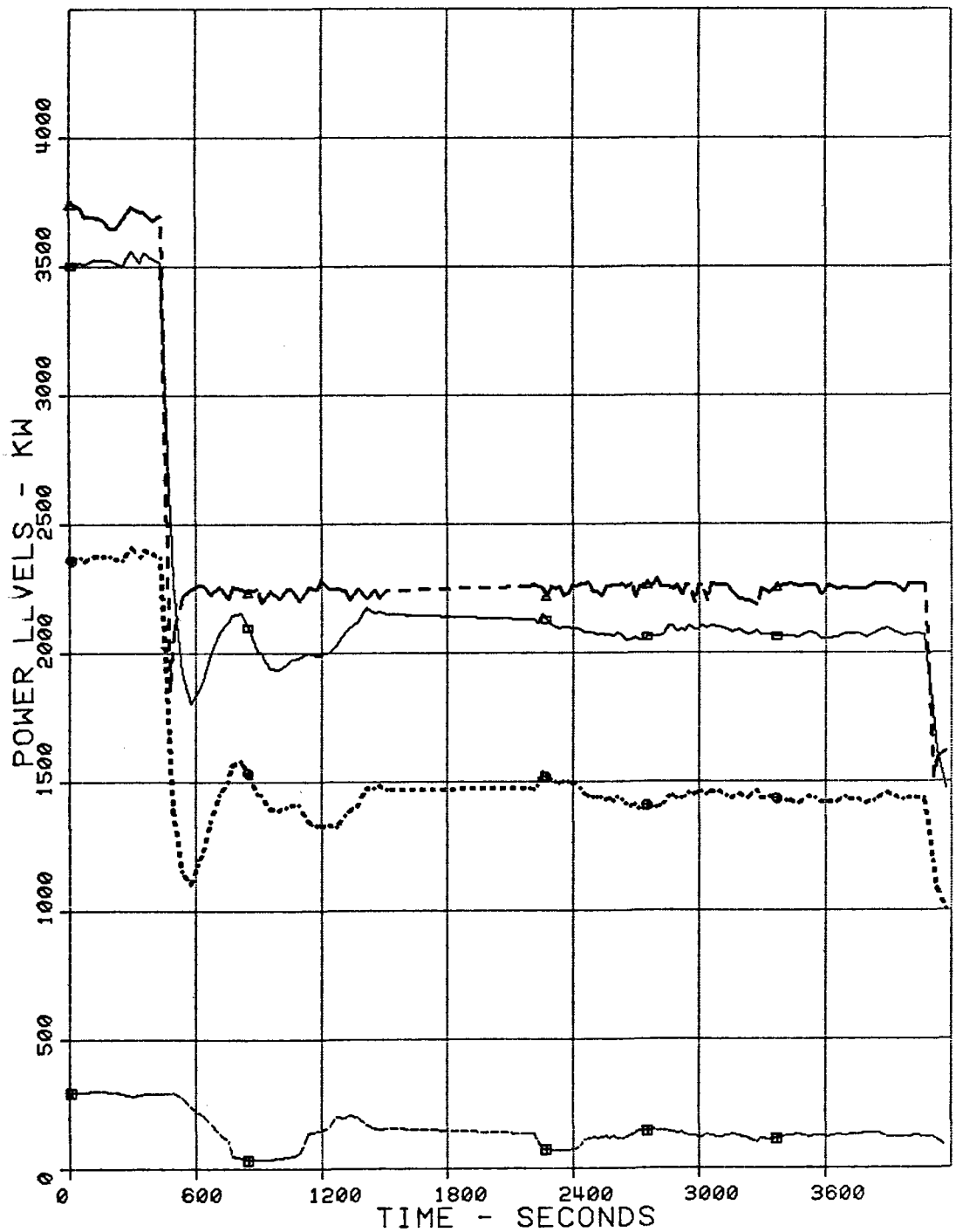
PLOT START TIME =   41100.0

STOP TIME =   45300.0

INTERVAL =      35.0

LINE PLOT HAS      120 POINTS PER FUNCTION
SCATTER PLOT HAS   60 POINTS PER FUNCTION

LINE PLOT HAS  120 POINTS PER FUNCTION
```


POWER LEVELS - KW
0
500
1000
1500
2000
2500
3000
3500
4000
0
600
1200
1800
2400
3000
3600
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 12:35

SEARCH STOP
               TIME 12:56

SEARCH INTERVAL
               TIME  0:10
NUMBER OF RECORDS =   5

ARGUMENT SELECTED :   1

FIRST  FUNCTION # 6 OPEN BOX

SECOND FUNCTION # 7 TRIANGLE

THIRD  FUNCTION #15 CROSS-CIRCLE

FOURTH FUNCTION #16 CROSS-BOX

SEARCH MODE 1

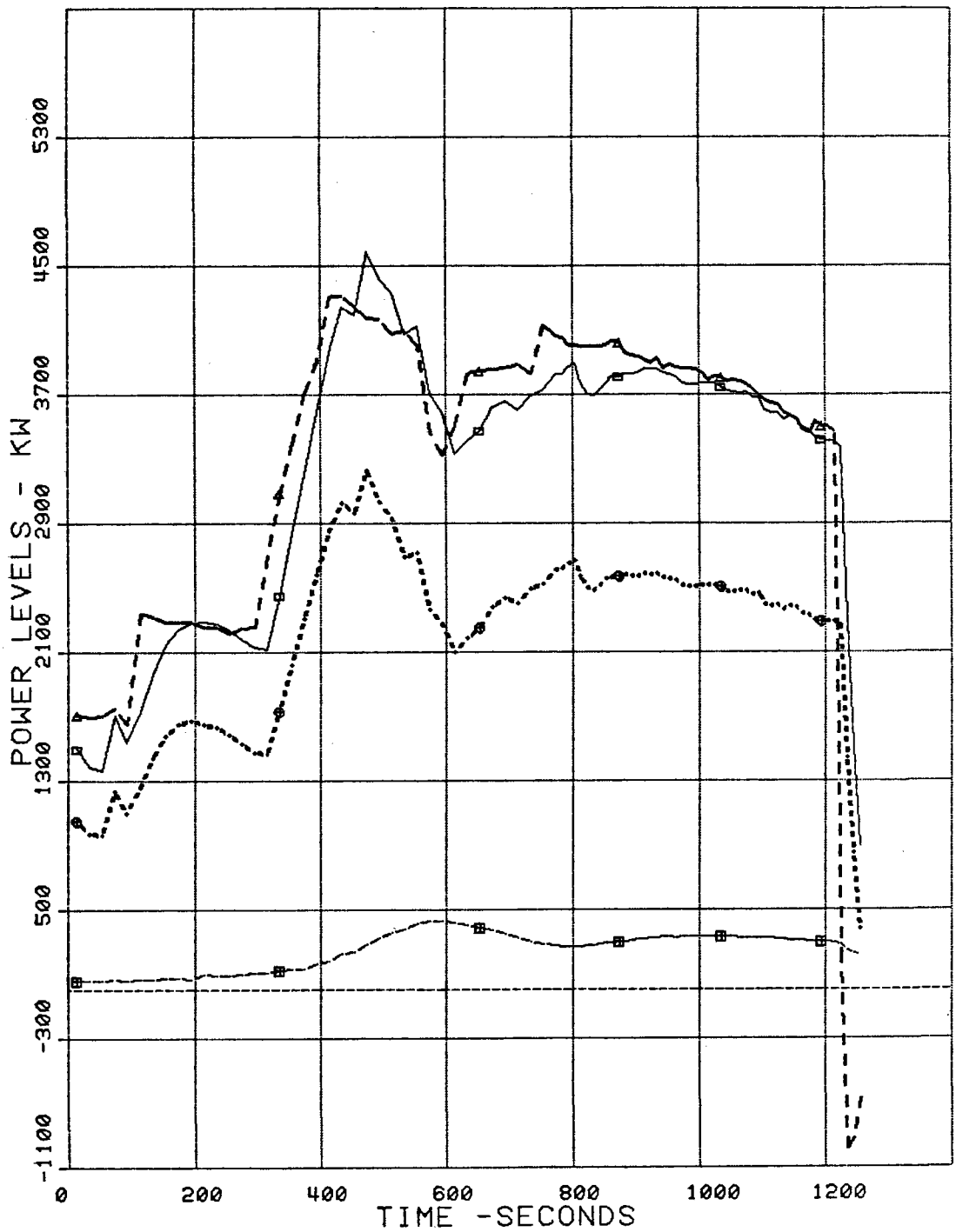
PLOT START TIME =   45300.0

STOP TIME =   46560.0

INTERVAL =      10.0

LINE PLOT HAS       87 POINTS PER FUNCTION
SCATTER PLOT HAS   43 POINTS PER FUNCTION

LINE PLOT HAS  126 POINTS PER FUNCTION
```


POWER LEVELS - KW
5300
4500
3700
2900
2100
1300
500
-300
-1100
0
200
400
600
800
1000
1200
TIME -SECONDS

```
SEARCH START
DAY #118 1977  TIME 12:35

SEARCH STOP
               TIME 12:53

SEARCH INTERVAL
               TIME  0:10
NUMBER OF RECORDS =   5

ARGUMENT SELECTED :   1

FIRST  FUNCTION #34 OPEN BOX

SECOND FUNCTION #35 TRIANGLE

THIRD  FUNCTION #36 CROSS-CIRCLE

FOURTH FUNCTION #37 CROSS-BOX

SEARCH MODE 1

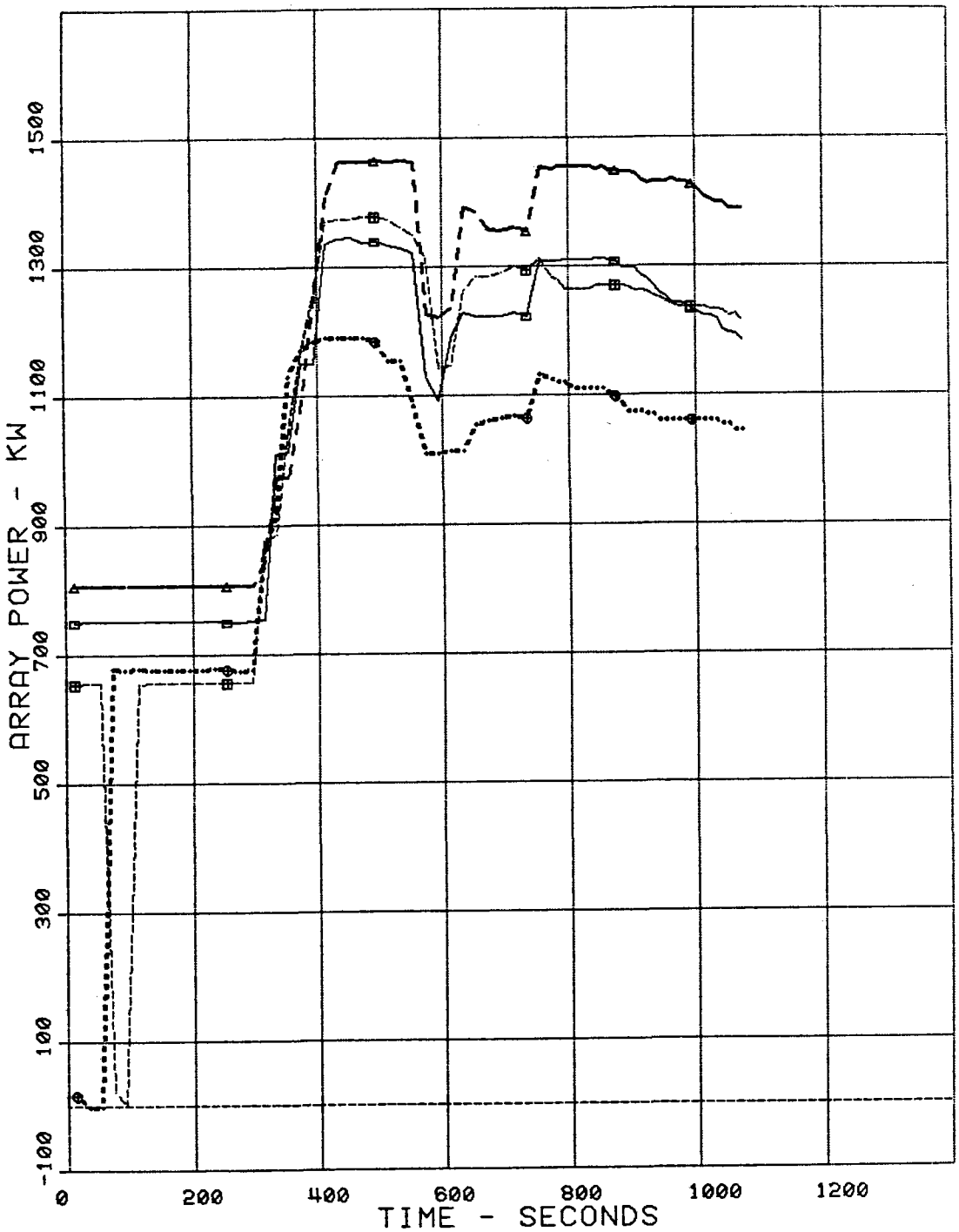
PLOT START TIME =   45300.0

STOP TIME =   46380.0

INTERVAL =      10.0

LINE PLOT HAS       69 POINTS PER FUNCTION
SCATTER PLOT HAS   34 POINTS PER FUNCTION

LINE PLOT HAS  108 POINTS PER FUNCTION
```


ARRAY POWER - KW
-100
100
300
500
700
900
1100
1300
1500
0
200
400
600
800
1000
1200
TIME - SECONDS

PAGE 21

ENTHALPY

```
SEARCH START
DAY #118 1977  TIME  8:25

SEARCH STOP
               TIME  9:53

SEARCH INTERVAL
              TIME  1: 0
NUMBER OF RECORDS =   4

ARGUMENT SELECTED :   1

FIRST  FUNCTION #60 OPEN BOX

SECOND FUNCTION #61 TRIANGLE

THIRD  FUNCTION #62 CROSS-CIRCLE

SEARCH MODE 1

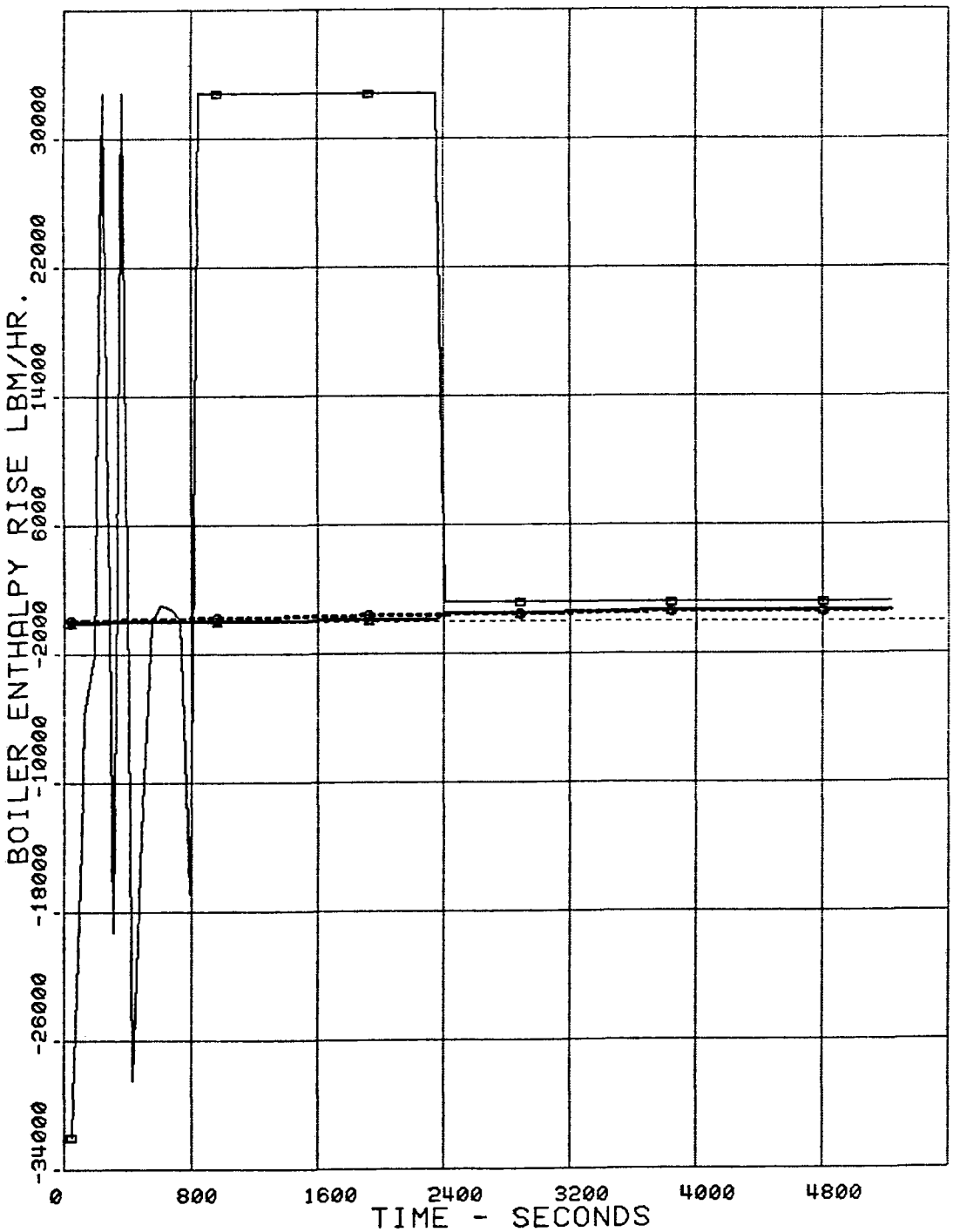
PLOT START TIME =   30300.0

STOP TIME =   35580.0

INTERVAL =      60.0

LINE PLOT HAS       88 POINTS PER FUNCTION
SCATTER PLOT HAS   44 POINTS PER FUNCTION

LINE PLOT HAS   88 POINTS PER FUNCTION
```


BOILER ENTHALPY RISE LBM/HR.
30000
22000
14000
6000
-2000
-10000
-18000
-26000
-34000
0
800
1600
2400
3200
4000
4800
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME  8:25

SEARCH STOP
               TIME  9:53

SEARCH INTERVAL
               TIME  1: 0
NUMBER OF RECORDS =   5

ARGUMENT SELECTED :   1

FIRST  FUNCTION #57 OPEN BOX

SECOND FUNCTION #58 TRIANGLE

THIRD  FUNCTION #59 CROSS-CIRCLE

FOURTH FUNCTION #60 CROSS-BOX

SEARCH MODE 1

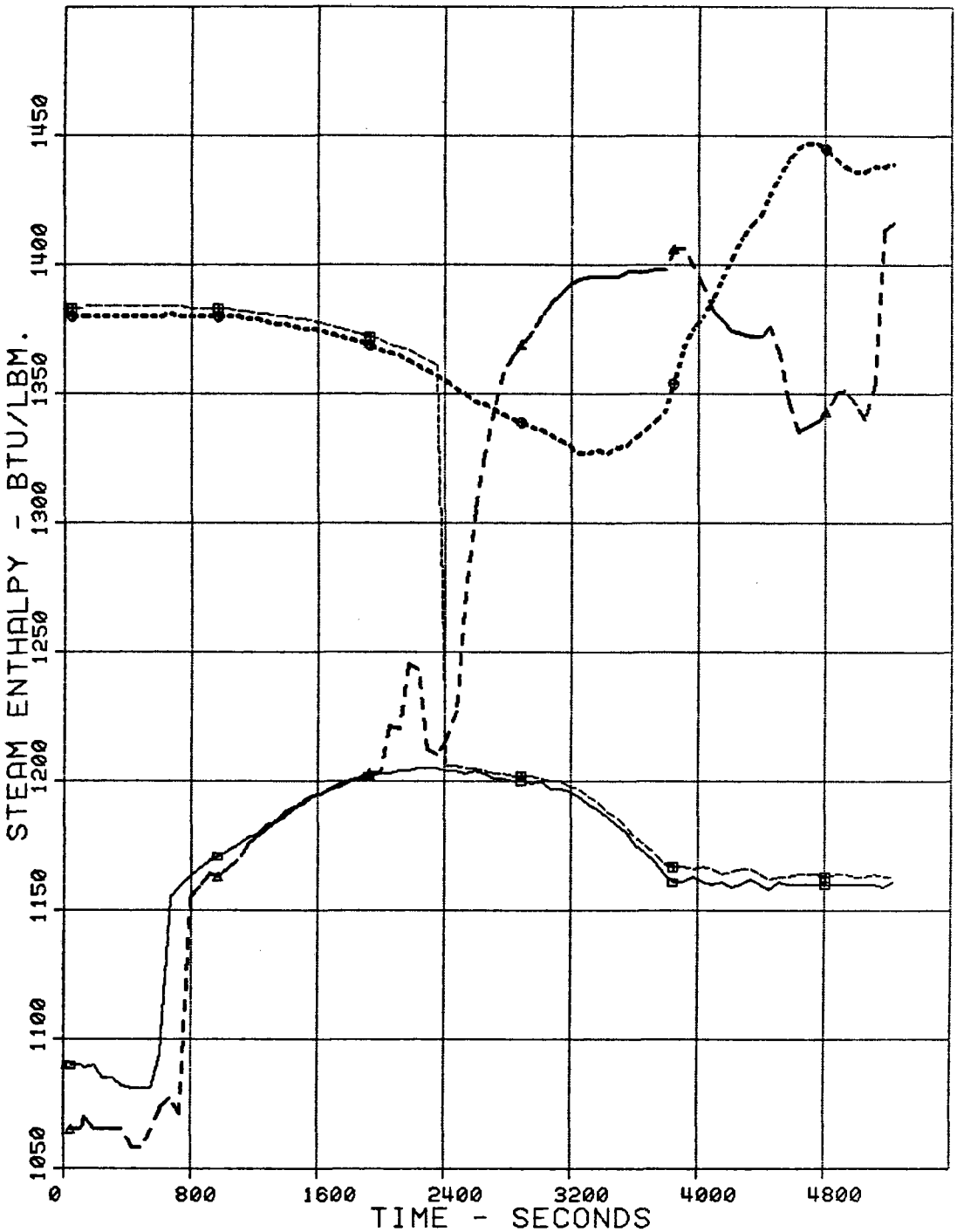
PLOT START TIME =   30300.0

STOP TIME =   35580.0

INTERVAL =      60.0

LINE PLOT HAS       88 POINTS PER FUNCTION
SCATTER PLOT HAS   44 POINTS PER FUNCTION

LINE PLOT HAS   88 POINTS PER FUNCTION
```


STEAM ENTHALPY - BTU/LBM.
1450
1400
1350
1300
1250
1200
1150
1100
1050
0
800
1600
2400
3200
4000
4800
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 10:45
NUMBER OF RECORDS =   5

ARGUMENT SELECTED :   1

FIRST  FUNCTION #57 OPEN BOX

SECOND FUNCTION #58 TRIANGLE

THIRD  FUNCTION #59 CROSS-CIRCLE

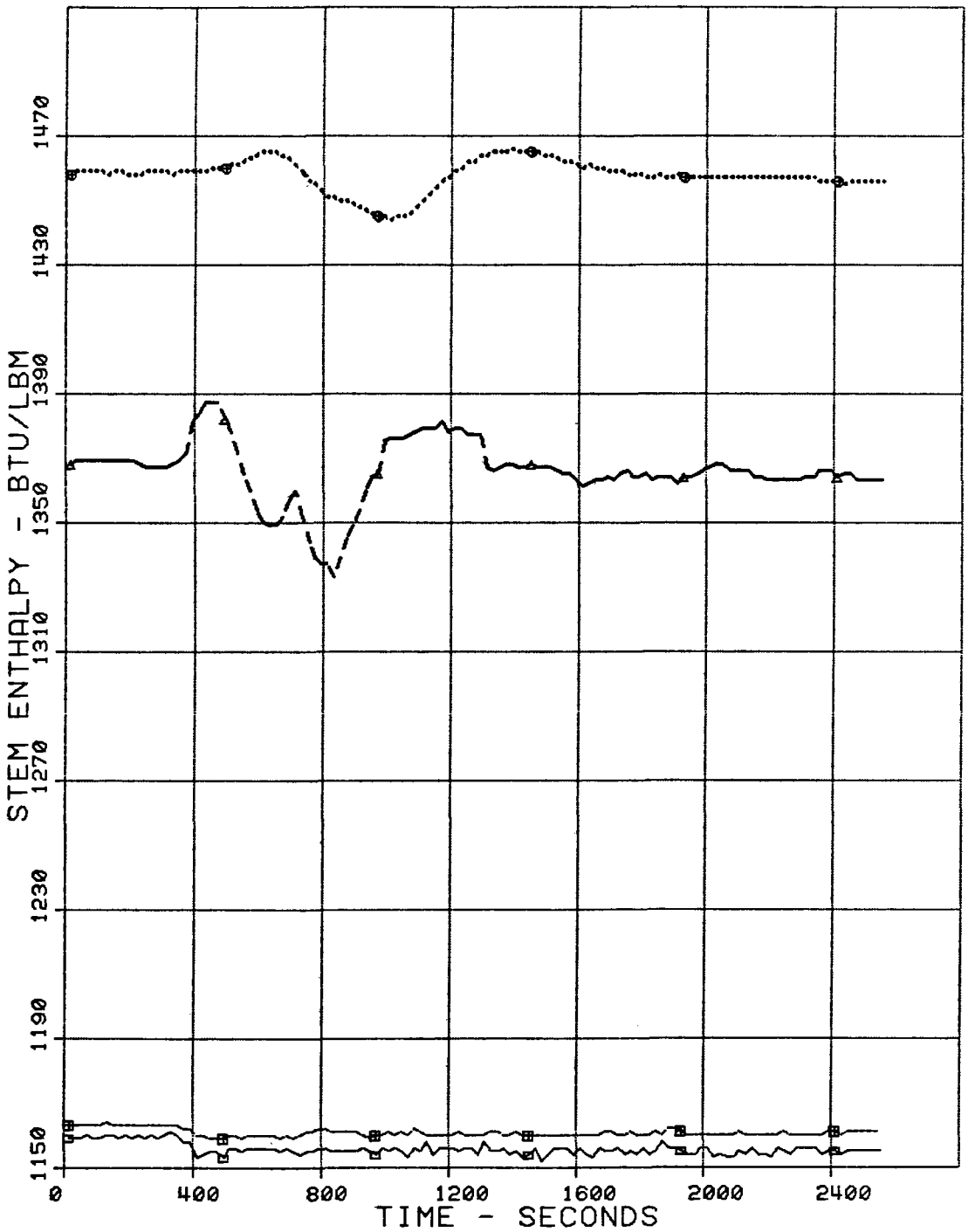
FOURTH FUNCTION #60 CROSS-BOX

SEARCH MODE 2

PLOT START TIME =   38700.0

EACH    1TH POINT IS PLOTTED

LINE PLOT HAS  128 POINTS PER FUNCTION
```


STEM ENTHALPY - BTU/LBM
1470
1430
1390
1350
1310
1270
1230
1190
1150
0
400
800
1200
1600
2000
2400
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 10:45
NUMBER OF RECORDS =   4

ARGUMENT SELECTED :   1

FIRST  FUNCTION #60 OPEN BOX

SECOND FUNCTION #61 TRIANGLE

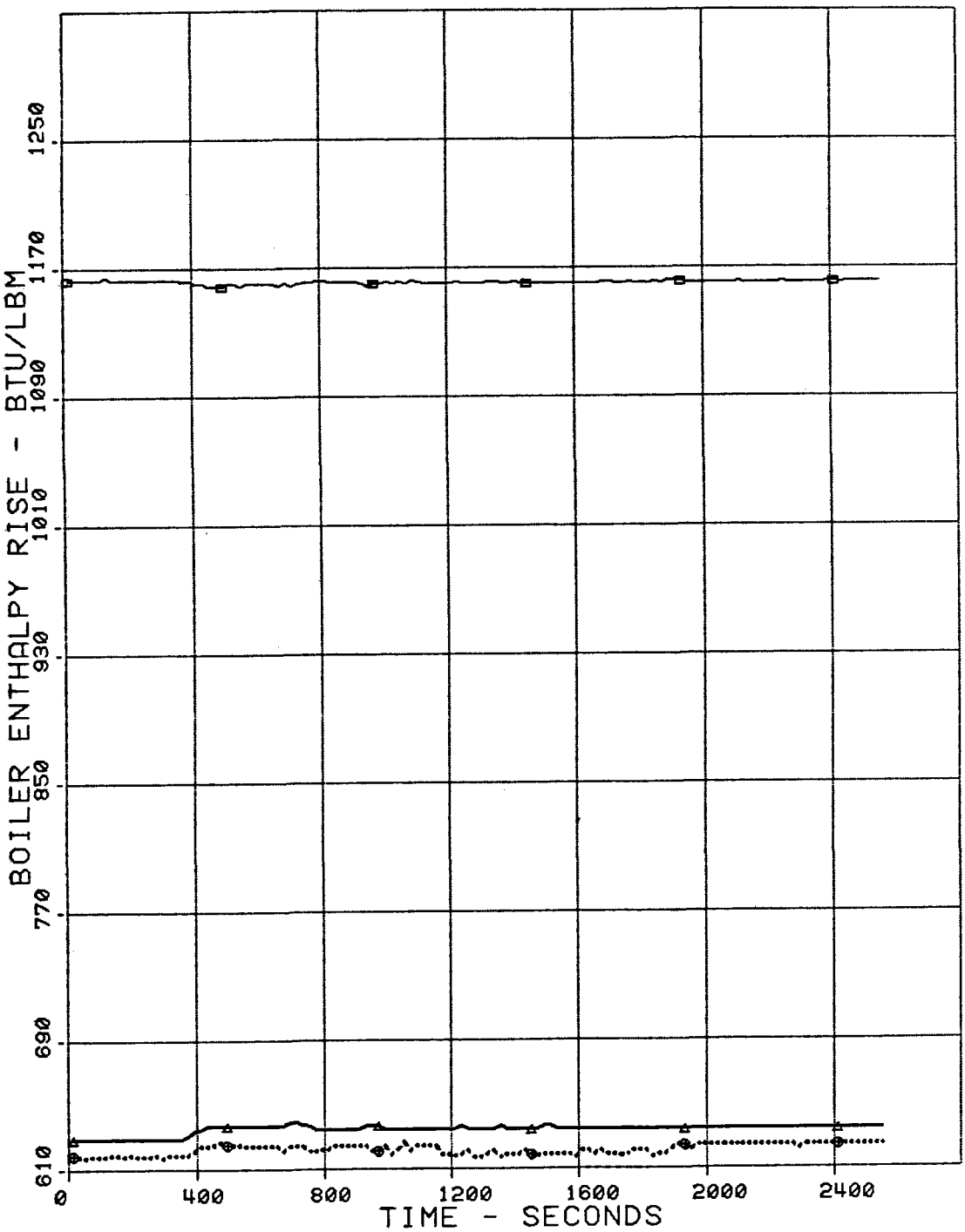
THIRD  FUNCTION #62 CROSS-CIRCLE

SEARCH MODE 2

PLOT START TIME =   38700.0

EACH    1TH POINT IS PLOTTED

LINE PLOT HAS  128 POINTS PER FUNCTION
```


BOILER ENTHALPY RISE - BTU/LBM
1250
1170
1090
1010
930
850
770
690
610
0
400
800
1200
1600
2000
2400
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 11:25

SEARCH STOP
               TIME 12:35

SEARCH INTERVAL
               TIME  0:35
NUMBER OF RECORDS =   4

ARGUMENT SELECTED :   1

FIRST  FUNCTION #60 OPEN BOX

SECOND FUNCTION #61 TRIANGLE

THIRD  FUNCTION #62 CROSS-CIRCLE

SEARCH MODE 1

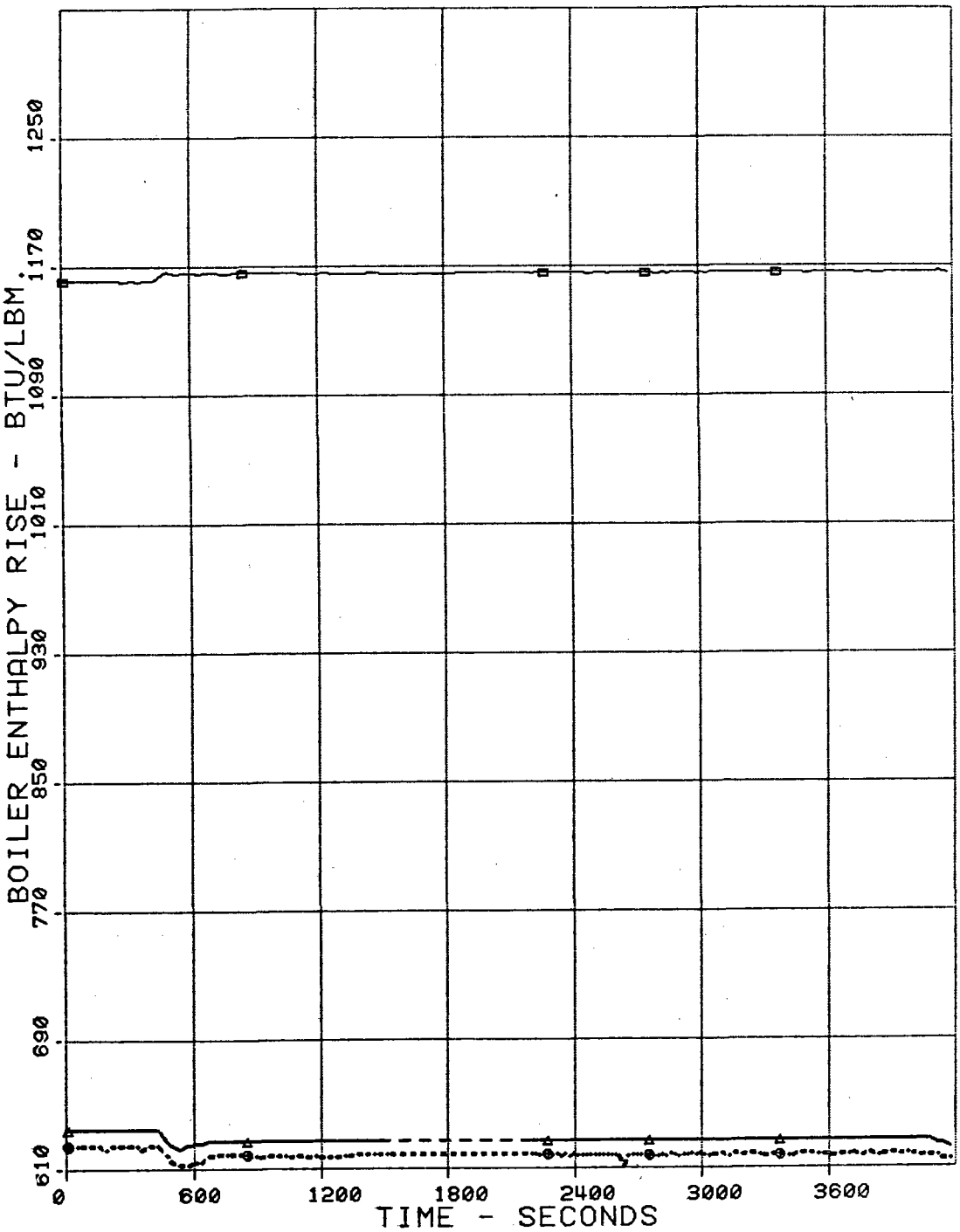
PLOT START TIME =   41100.0

STOP TIME =   45300.0

INTERVAL =      35.0

LINE PLOT HAS      120 POINTS PER FUNCTION
SCATTER PLOT HAS   60 POINTS PER FUNCTION.

LINE PLOT HAS  120 POINTS PER FUNCTION
```


BOILER ENTHALPY RISE - BTU/LBM
1250
1170
1090
1010
930
850
770
690
610
0
600
1200
1800
2400
3000
3600
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 11:25

SEARCH STOP
               TIME 12:35

SEARCH INTERVAL
               TIME  0:35
NUMBER OF RECORDS =   5

ARGUMENT SELECTED :   1

FIRST  FUNCTION #57 OPEN BOX

SECOND FUNCTION #58 TRIANGLE

THIRD  FUNCTION #59 CROSS-CIRCLE

FOURTH FUNCTION #60 CROSS-BOX

SEARCH MODE 1

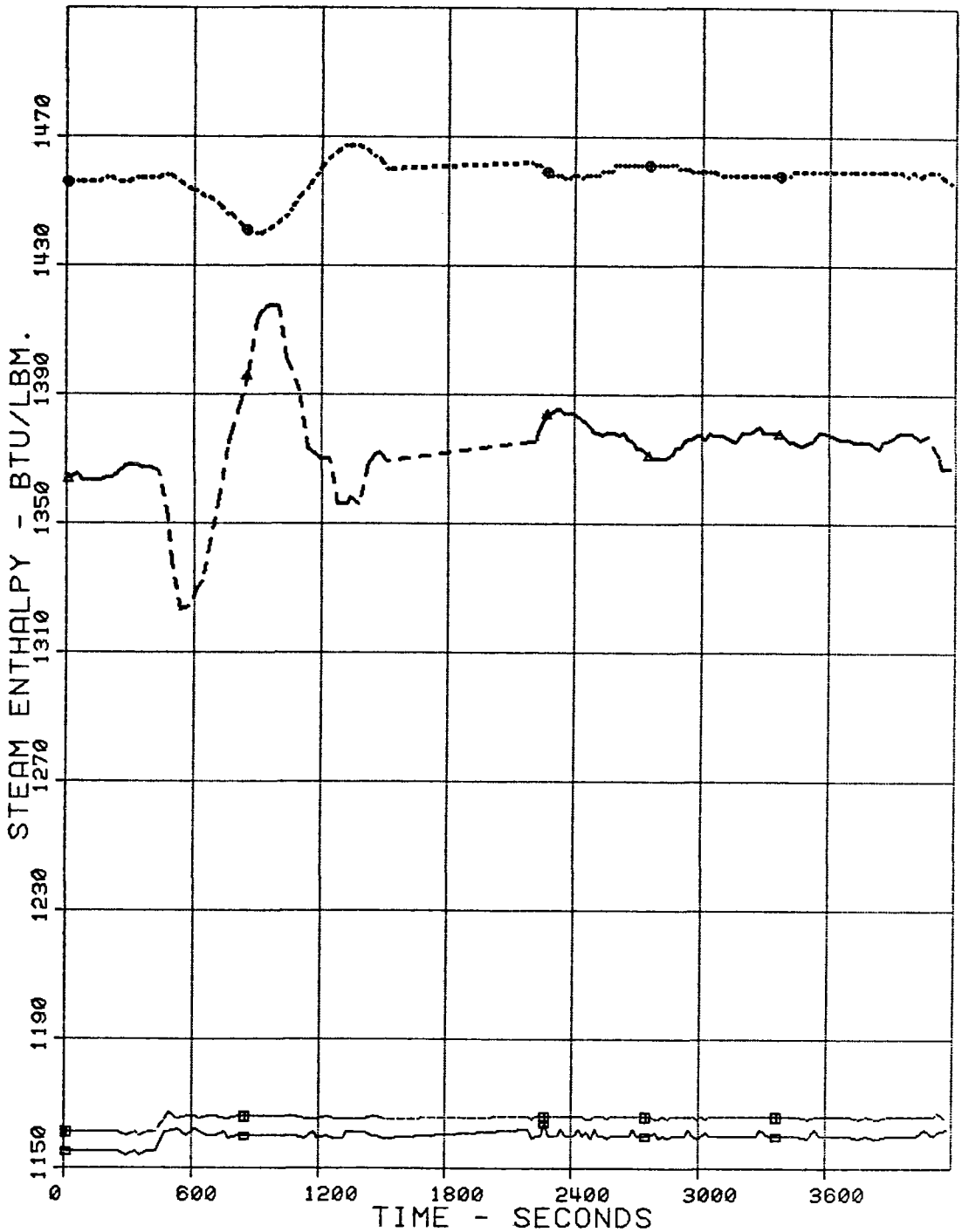
PLOT START TIME =   41100.0

STOP TIME =   45300.0

INTERVAL =      35.0

LINE PLOT HAS      120 POINTS PER FUNCTION
SCATTER PLOT HAS   60 POINTS PER FUNCTION

LINE PLOT HAS  120 POINTS PER FUNCTION
```


STEAM ENTHALPY - BTU/LBM.
1470
1430
1390
1350
1310
1270
1230
1190
1150
0
600
1200
1800
2400
3000
3600
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 12:35

SEARCH STOP
               TIME 12:56

SEARCH INTERVAL
               TIME  0:10
NUMBER OF RECORDS =   4

ARGUMENT SELECTED :   1

FIRST  FUNCTION #60 OPEN BOX

SECOND FUNCTION #61 TRIANGLE

THIRD  FUNCTION #62 CROSS-CIRCLE

SEARCH MODE 1

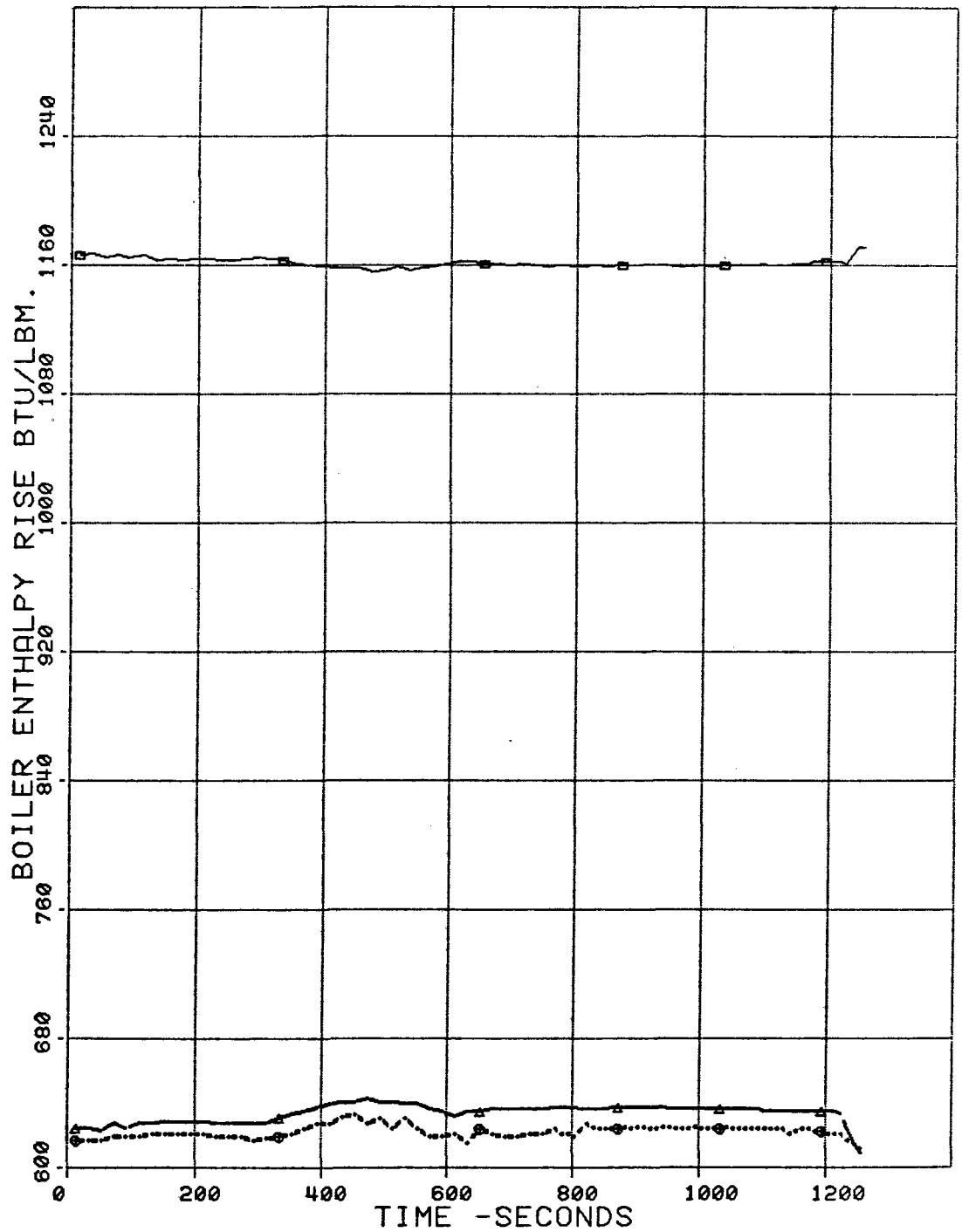
PLOT START TIME =   45300.0

STOP TIME =   46560.0

INTERVAL =      10.0

LINE PLOT HAS       87 POINTS PER FUNCTION
SCATTER PLOT HAS   43 POINTS PER FUNCTION

LINE PLOT HAS  126 POINTS PER FUNCTION
```


BOILER ENTHALPY RISE BTU/LBM.
1240
1160
1080
1000
920
840
760
680
600
0
200
400
600
800
1000
1200
TIME -SECONDS

```
SEARCH START
DAY #118 1977  TIME 12:35

SEARCH STOP
               TIME 12:56

SEARCH INTERVAL
               TIME  0:10
NUMBER OF RECORDS =   5

ARGUMENT SELECTED :   1

FIRST  FUNCTION #57 OPEN BOX

SECOND FUNCTION #58 TRIANGLE

THIRD  FUNCTION #59 CROSS-CIRCLE

FOURTH FUNCTION #60 CROSS-BOX

SEARCH MODE 1

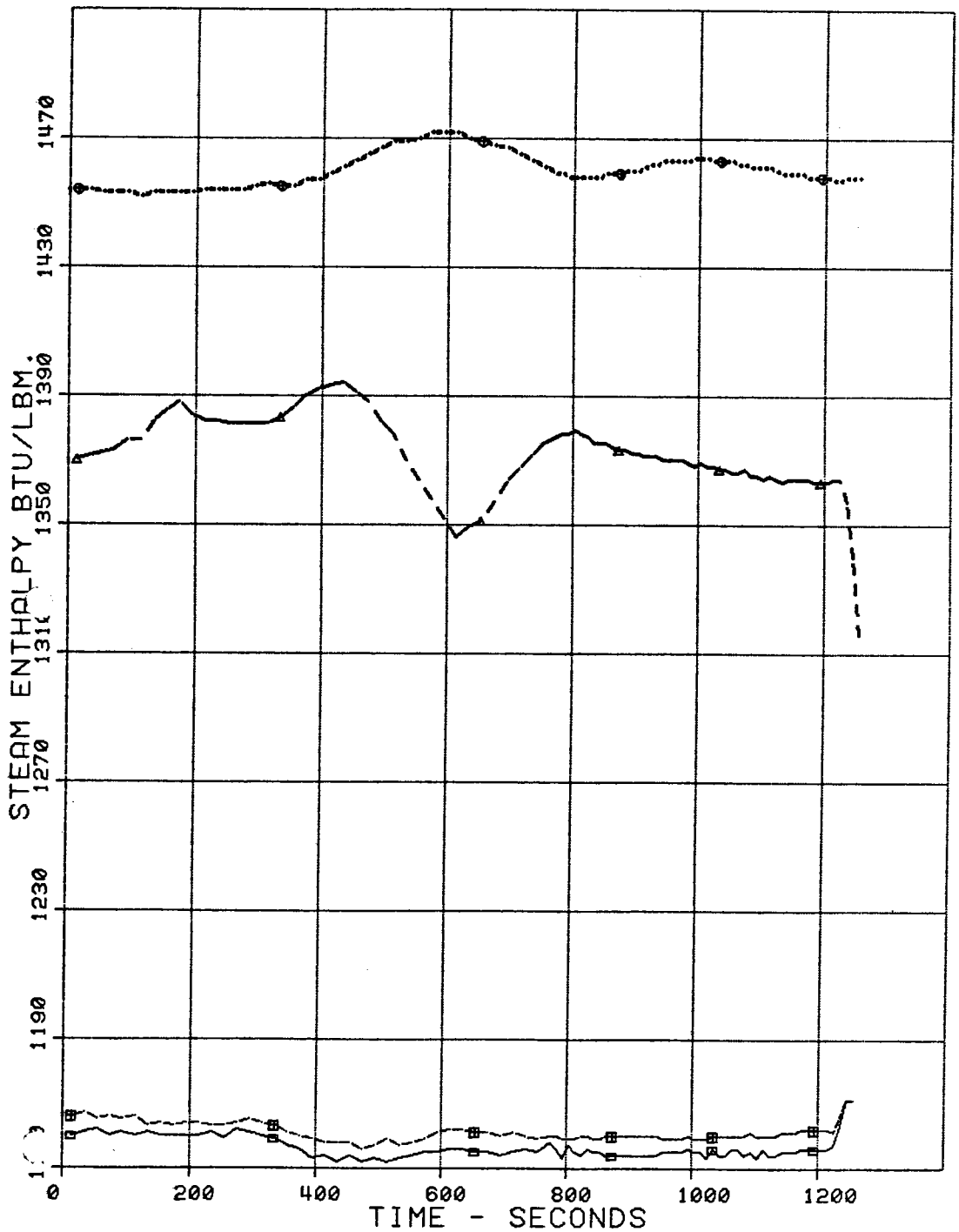
PLOT START TIME =   45300.0

STOP TIME =   46560.0

INTERVAL =      10.0

LINE PLOT HAS       87 POINTS PER FUNCTION
SCATTER PLOT HAS   43 POINTS PER FUNCTION

LINE PLOT HAS  126 POINTS PER FUNCTION
```


STEAM ENTHALPY BTU/LBM.
1470
1430
1390
1350
1310
1270
1230
1190
0
200
400
600
800
1000
1200
TIME - SECONDS

PAGE 22

RATIOS

```
SEARCH START
DAY #118 1977  TIME  8:25

SEARCH STOP
               TIME  9:53

SEARCH INTERVAL
               TIME  1: 0
NUMBER OF RECORDS =   3

ARGUMENT SELECTED :   1

FIRST  FUNCTION #51 OPEN BOX

SECOND FUNCTION #52 TRIANGLE

SEARCH MODE 1

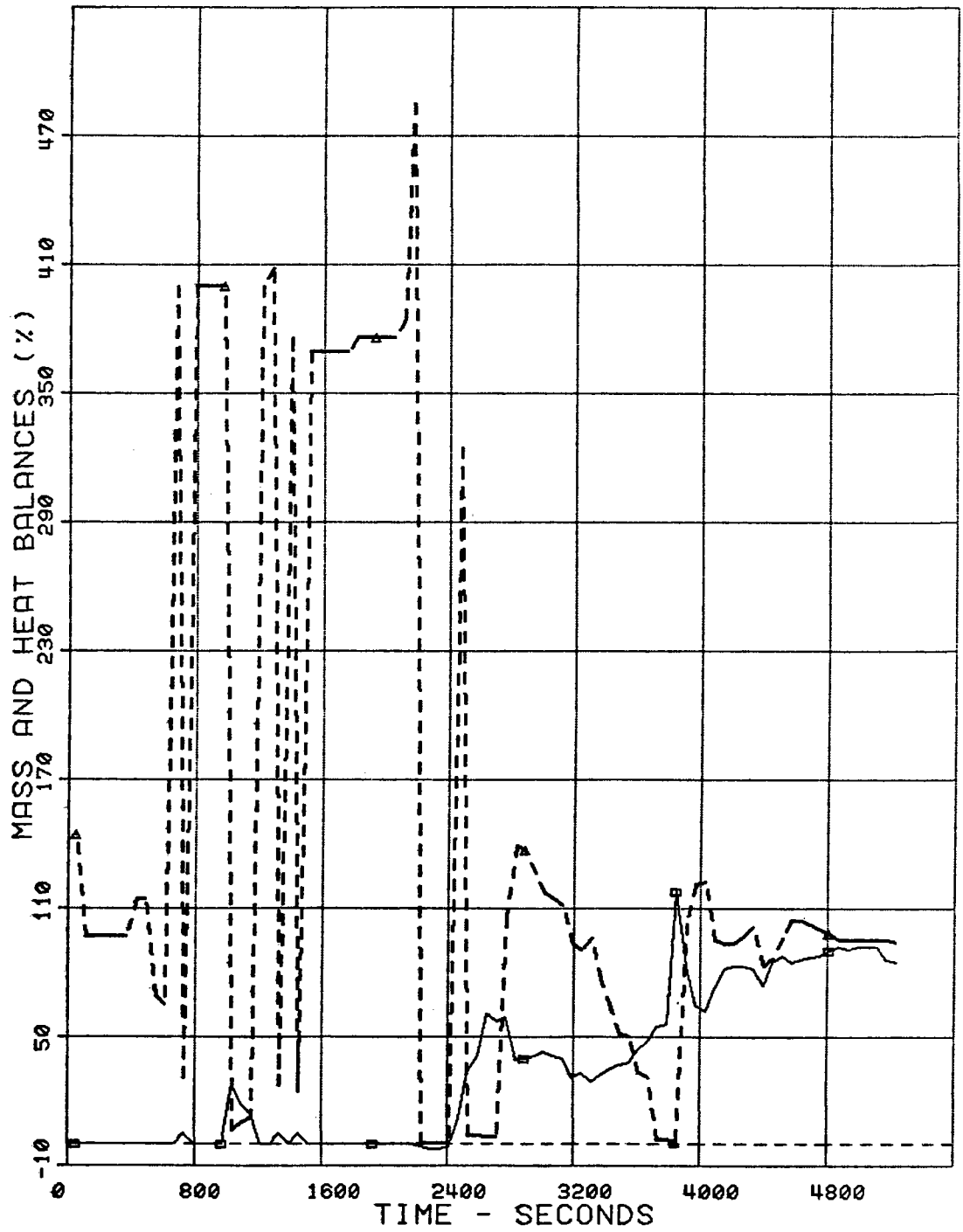
PLOT START TIME =   30300.0

STOP TIME =   35580.0

INTERVAL =      60.0

LINE PLOT HAS       88 POINTS PER FUNCTION
SCATTER PLOT HAS   44 POINTS PER FUNCTION

LINE PLOT HAS   88 POINTS PER FUNCTION
```


MASS AND HEAT BALANCES (%)
470
410
350
290
230
170
110
50
-10
0
800
1600
2400
3200
4000
4800
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 10:45
NUMBER OF RECORDS =   3

ARGUMENT SELECTED :   1

FIRST  FUNCTION #51 OPEN BOX

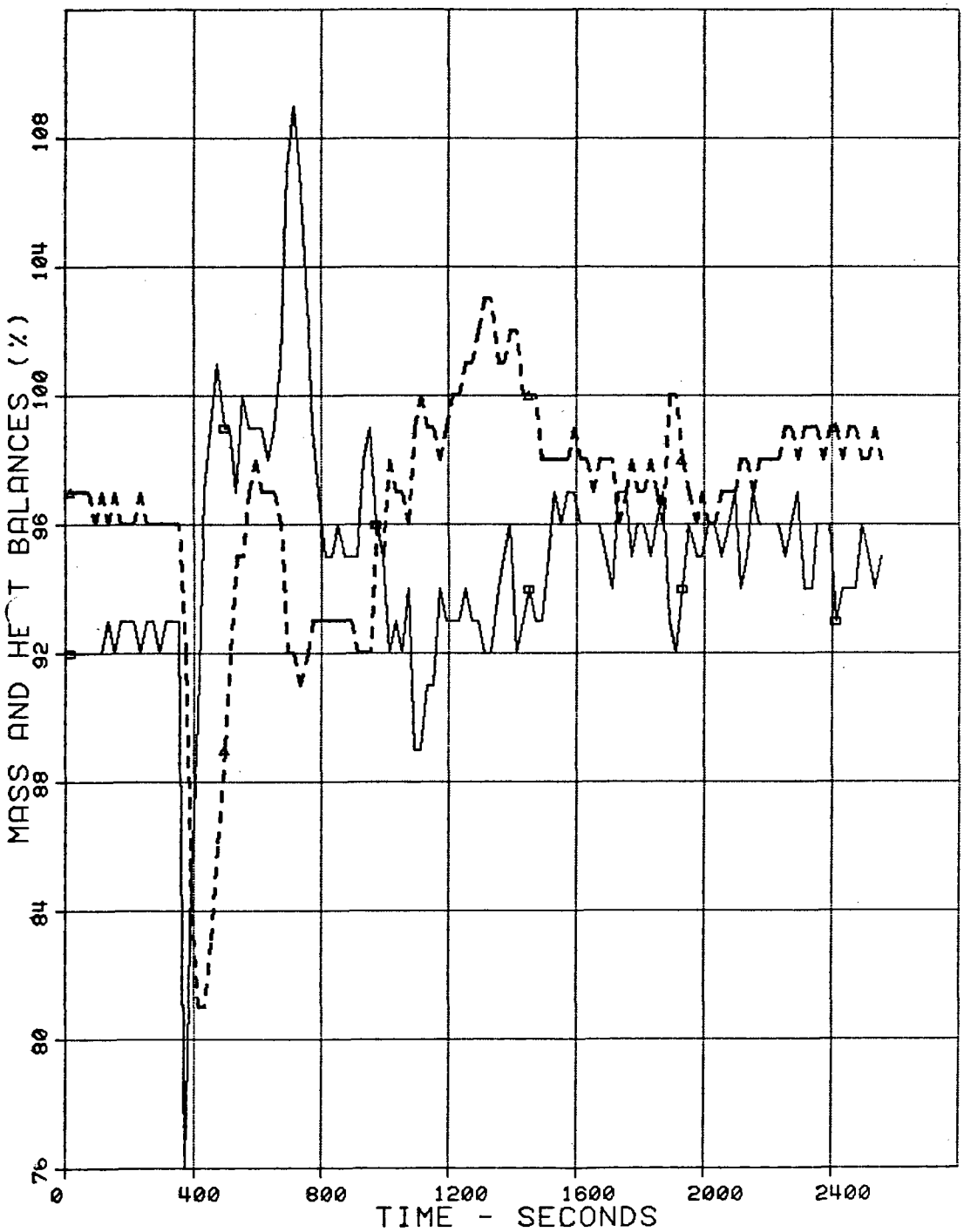
SECOND FUNCTION #52 TRIANGLE

SEARCH MODE 2

PLOT START TIME =   38700.0

EACH    1TH POINT IS PLOTTED

LINE PLOT HAS  128 POINTS PER FUNCTION
```


MASS AND HEAT BALANCES (%)
108
104
100
96
92
88
84
80
76
0
400
800
1200
1600
2000
2400
TIME - SECONDS

```
SEARCH START
DAY #118 1977  TIME 11:25

SEARCH STOP
               TIME 12:35

SEARCH INTERVAL
               TIME  0:35
NUMBER OF RECORDS =   3

ARGUMENT SELECTED :   1

FIRST  FUNCTION #51 OPEN BOX

SECOND FUNCTION #52 TRIANGLE

SEARCH MODE 1

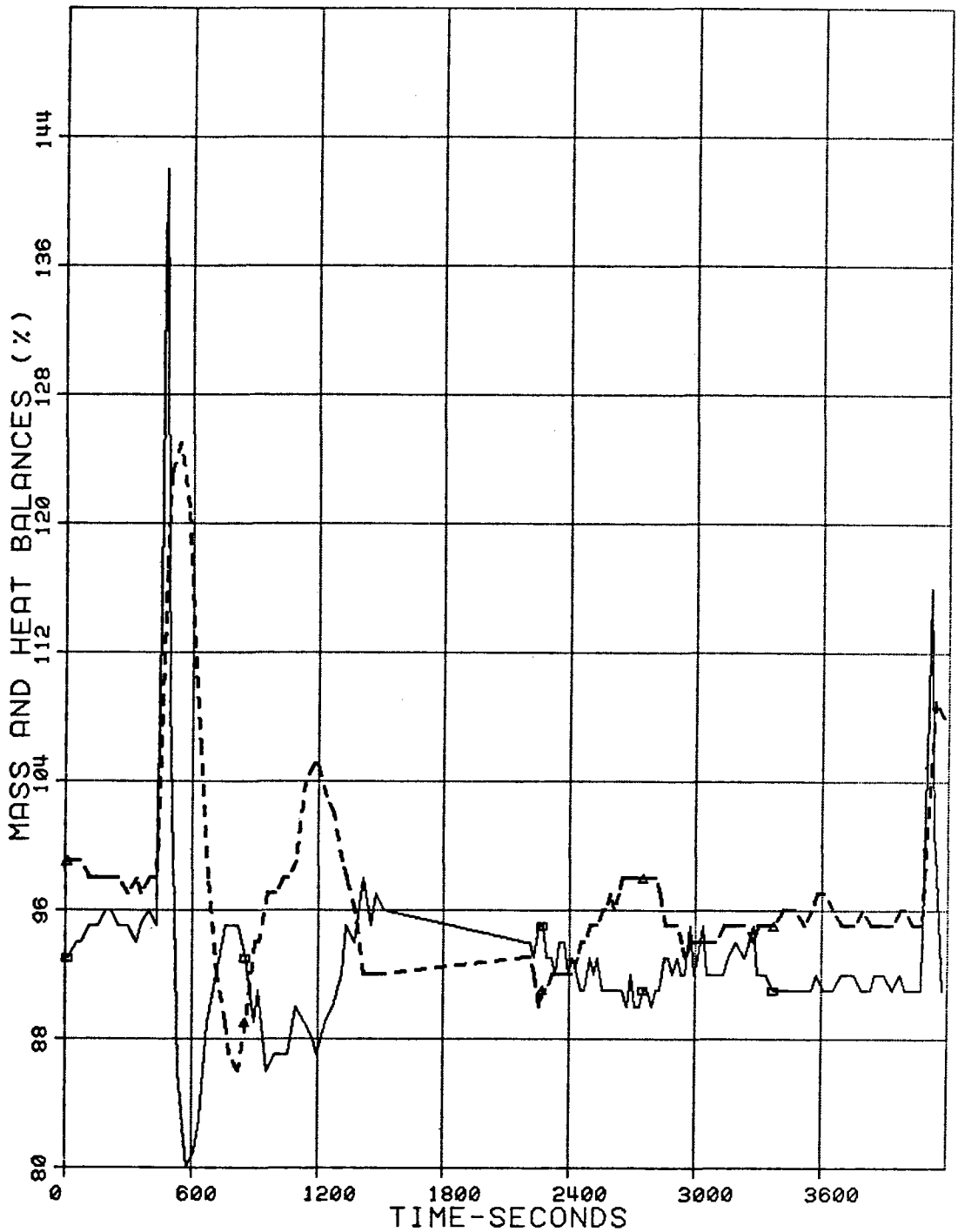
PLOT START TIME =   41100.0

STOP TIME =   45300.0

INTERVAL =      35.0

LINE PLOT HAS      120 POINTS PER FUNCTION
SCATTER PLOT HAS   60 POINTS PER FUNCTION

LINE PLOT HAS  120 POINTS PER FUNCTION
```


MASS AND HEAT BALANCES (%)
144
136
128
120
112
104
96
88
80
0
600
1200
1800
2400
3000
3600
TIME-SECONDS

```
SEARCH START
DAY #118 1977  TIME 12:35

SEARCH STOP
               TIME 12:56

SEARCH INTERVAL
               TIME  0:10
NUMBER OF RECORDS =   3

ARGUMENT SELECTED :   1

FIRST  FUNCTION #51 OPEN BOX

SECOND FUNCTION #52 TRIANGLE

SEARCH MODE 1

PLOT START TIME =   45300.0

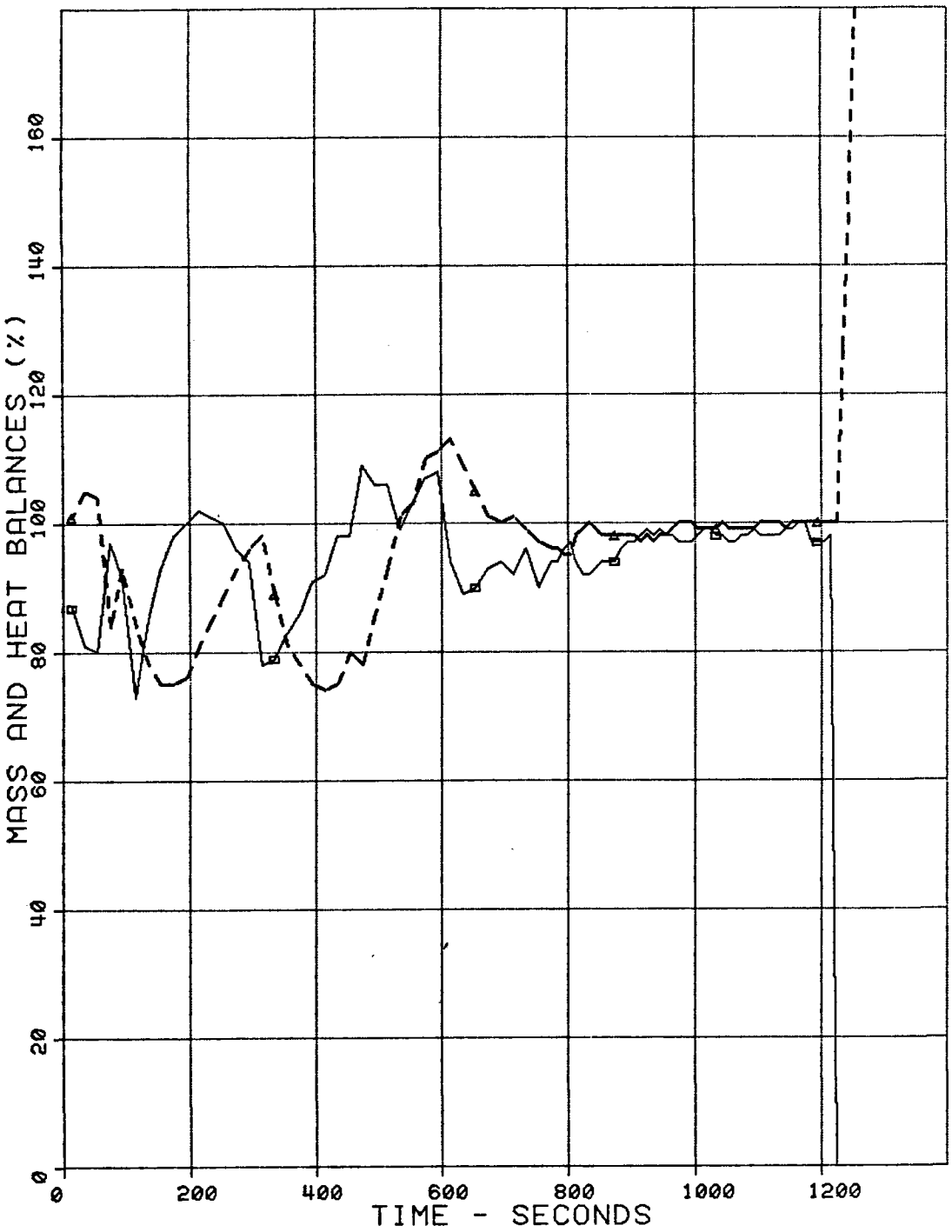
STOP TIME =   46560.0

INTERVAL =      10.0

LINE PLOT HAS       87 POINTS PER FUNCTION
SCATTER PLOT HAS   43 POINTS PER FUNCTION

LINE PLOT HAS  126 POINTS PER FUNCTION
```

```
/RDIN  : 03  UN @605358
/RDIN  : 03  UN @605358
```


MASS AND HEAT BALANCES (%)
0
20
40
60
80
100
120
140
160
0
200
400
600
800
1000
1200
TIME - SECONDS