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ERDA 10MW<sub>e</sub> SOLAR PILOT PLANT SUBSYSTEM RESEARCH  
EXPERIMENTS, STEAM GENERATOR TESTS AT NORTHERN STATES  
POWER RIVERSIDE STATION

Volume VII: Test Number 22

April 26, 1977

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

Honeywell, Inc.  
Energy Resources Center  
Minneapolis, Minnesota



**U.S. Department of Energy**

075 (TIC)



**Solar Energy**

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ERDA 10 MWe SOLAR PILOT PLANT  
SUBSYSTEM RESEARCH EXPERIMENTS

VOLUME VII  
STEAM GENERATOR TEST NO. 22  
NORTHERN STATES POWER RIVERSIDE STATION

APRIL 26, 1977

ERDA CONTRACT E(04-3)-1109

**Honeywell**

Energy Resources Center  
2600 RIDGWAY PARKWAY,  
MINNEAPOLIS, MINNESOTA 55413

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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		3.0	480-V CIRCUIT BREAKER TRIPS
4	3/17	4.55	SATURATION CHECK OF T/C 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 TRANSIENT: RADIANT ARRAY	4.1/3.0	5.1.1 5.1.3	- 100 LAMPS FAILED - DAC RECORDING STOPPED
18	4/15	10.5	TRANSIENT: DRUM SHRINK-SWELL TRANSIENT: POWER RAMP CLOUD OBSTRUCTION ATTEMPERATOR POWER		5.1.4 5.1.5 5.1.6 5.1.2 5.1.7	- DURING "SHRINK SWELL" - 154 LAMPS FAILED - DAC REMOTE CABINET OUTAGES
19	4/18	6.7	TRIP: RECIRCULATION PUMP FEEDWATER PUMP RECIRCULATION PUMP STABILITY STEADY STATE		6.1.2 6.1.4 --- ---	NONE NONE
20	4/19	10.5	TRANSIENT: POWER STEP INCREASE TRIP: HELIOSTAT - 800°F TRIP: HELIOSTAT - 700°F TRIP: HELIOSTAT - 595°F TRANSIENT: SHRINK-SWELL (REPEAT) TUNE ATTEMPERATOR CONTROL		6.1.1 6.1.1 6.1.1 5.1.4 ---	LOW NSP WATER RESERVES
21	4/21 4/22	29.5	ASYMMETRIC HEAT INPUT	3.8/2.7	7.1.1 7.1.2	20 LAMPS FAILED DAC INTERMITTENT LOW NSP WATER SUPPLY SCR COOLING WATER PLUGGED SIMULATOR ZONE 1
22	4/26	11.75	STEADY STATE AND TRANSIENT TESTS - WITH AUTOMATIC ATTEMPERATION		4.0 5.0	FAILED 31 LAMPS LEAKAGE AT ATTEMPERATOR WATER SUPPLY FLANGE
23	4/28	4.5	MAXIMUM POWER STEADY STATE HEAT BALANCE	5.0/3.85	4.0	FAILED 350 LAMPS

\*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. 22

DATE: April 26, 1977

Test Objectives

1. To reperform the transient tests (Refer to Appendix A):
  - a) Main steam step (5.1.1).
  - b) Radiant array step (5.1.3 and 5.1.7).
  - c) Drum level shrink and swell (5.1.4).
  - d) Radiant array ramp (5.1.5).
  - e) Cloud disturbance (5.1.6).
2. To take steady state data at several power levels.

Description

The test operation went very smoothly. The water supply flanged joint to the attemperator leaked at 11 pounds per hour during the testing. The automatic attemperation performed reasonably well; however, it is felt that attemperator response could be improved if adequate time (and lamps) were available.

Problems Encountered

Attemperator water leakage.

31 lamps out of service.

## 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 <sup>®</sup>	0-100 micromhos/cm <sup>++</sup>
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,  $\rho = 2.06 \text{ lb}_m/\text{ft}^3$

\*\*lb/hr. at 440°F,  $\rho = 52.52 \text{ lb}_m/\text{ft}^3$

(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)
<u>OPERATOR SUMMARY</u> <u>BOILER DRUM</u>			
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 /Hour	FT-1
W-BD	Flow, blowdown	Lbs <sub>m</sub> /Hour	FT-260
<u>PUMP</u>			
W-B	Flow, boiler recirculation	Lbs <sub>m</sub> /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
<u>SUPERHEATER 1</u>			
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 <sub>m</sub> /Hour	FT-480
<u>SUPERHEATER 2</u>			
TE-	Temperature, thermocouples	°F	TE-520-540; 506-509; 550-554; 555-566
T-S20	Temperature, steam, superheater outlet	°F	TT-590
P-S20	Pressure, steam, superheater outlet	psig	PT-590
W-S2	Flow, superheater	Lbs <sub>m</sub> /Hour	FT-3
<u>POWER</u>			
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)
<u>PERFORMANCE SUMMARY</u>			
<u>BOILER DRUM</u>			
P-D	Pressure, drum	psig	PT-230
T-D	Temperature, drum	°F	CALC.
H-GD	Enthalpy, drum steam	BTU/Lb <sub>m</sub>	CALC.
H-FD	Enthalpy, drum water	BTU/Lb <sub>m</sub>	CALC.
N-CR	Recirculation ratio (2)	Dimensionless	CALC.
<u>FEEDWATER</u>			
P-FW	Pressure, feedwater	psig	PT-1
T-FW	Temperature, feedwater	°F	TE-19
W-FW	Flow, feedwater	Lb <sub>m</sub> /Hour	FT-1
H-FW	Enthalpy, feedwater	BTU/Lb <sub>m</sub>	CALC.
<u>FLOW CIRCUITS</u>			
T-DC	Temperature, downcomer	°F	TE-300
T-SUB	Temperature, pump suction subcooling	°F	CALC.
W-B	Flow, boiler recirculation	Lbs <sub>m</sub> /Hour	FT-310
W-BC1	Flow, boiler circuit (Transmitter #1)	Lb <sub>m</sub> /Hour	FT-350
W-BC2	Flow, boiler circuit (Transmitter #2)	Lb <sub>m</sub> /Hour	FT-351
W-BC3	Flow, boiler circuit (Transmitter #3)	Lb <sub>m</sub> /Hour	FT-352
X-B	Quality, boiler steam (3)	Dimensionless	CALC.
<u>SUPERHEATERS</u>			
<u>S.H. Stage 1</u>			
W-SI	Flow, superheater #1	Lb <sub>m</sub> /Hour	WS2-WATT
T-S1I	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 <sub>m</sub>	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)
<u>ATTEMPERATOR</u>			
P-ATT	Pressure, attemperator water inlet	psig	PT-1
T-ATT	Temperature, attemperator water inlet	°F	TE-480
W-ATT	Flow, attemperator water	Lb <sub>m</sub> /Hour	FT-480
H-ATT	Enthalpy, attemperator water	BTU/Lb <sub>m</sub>	CALC.
<u>S.H. Stage 2</u>			
W-S2	Flow, superheater #2	Lb <sub>m</sub> /Hour	FT-3
T-S2I	Temperature, superheater #2 inlet	°F	TE-500,501
T-S2O	Temperature, steam, superheater outlet	°F	TT 590
P-S2O	Pressure, steam, superheater outlet	°F	PT 590
H-S2O	Enthalpy, steam, superheater outlet	BTU/Lb <sub>m</sub>	CALC.
<u>BOILER</u>			
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 <sub>m</sub>	CALC.
R-BI	Density, boiler inlet	Lb <sub>m</sub> /Ft <sup>m</sup>	CALC.
R-GD	Density, drum steam	Lb <sub>m</sub> /Ft	CALC.
R-FD	Density, drum water	Lb <sub>m</sub> /Ft	CALC.
<u>POWER</u>			
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								
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	-295	377	376	375	374	373	372	371	370
HOT SPOT (300°)									
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 BETWEEN ADJACENT SENSORS IF 1 THROUGH IF 10.
IF 10	6 INCHES FROM CEILING	
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 - TS11
- 28 - TS20
- 29 - TS21

## 2.4 METAL TEMPS. DEG. F.

- 12 - TE400
- 13 - TE401
- 14 - TE402 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

0 = 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-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	TE400		
13	TE401	Superheater #1 Inlet Temperature	
14	TE402		
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

98

TEST NO. 22  
DEV. NO. \_\_\_\_\_  
PAGE 1 OF 6

DATE 26 Apr

Time	OPERATOR ACTION	COMMENTS
808	Start Recirc Pump	Head To. at DAC Working
859	20% Power To Zones 3 & 4	
0915	Superheater drains open	
0932	OPEN CU1 TO 95%	
0935	OPEN CU2 10%	
0936	OPEN CU1 TO 80%	
0937	OPEN CU1 TO 80%	
0937	OPEN CU2 30%	
0939	OPEN CU1 TO 70%	
0939	OPEN CU2 50%	
0943	OPEN CU1 TO 60%	
0944	CL0 CU2	
0945	OPEN CU1 TO 50%	
0950	CL0 Superheater drains & WATER SAMPLE	
0952	BOTTLED up 13hr got shrink & THEN A LARGE SWELL	
0955	OPEN VALVE 22	
1000	OPEN CU 10	

TEST NO. 22  
 DEV. NO. \_\_\_\_\_  
 PAGE 2 OF 6

99

DATE 26 APR 77

Time	OPERATOR ACTION	Comments
1019	OPEN CV1 TO 80%	
1023	OPEN CV1 TO 70%	
1023	30% POWER TO ZONES 3 & 4 10% POWER TO 1 & 2	
1101	40% POWER TO ZONES 1, 2, 3, & 4.	
1105	ALL AUTO. OPERATION	ATTemp. Set To 925°F
1110	ATTemp. Flow	
1136	Changed ATTemp. Setting To 955°F.	
1258	TAKE DAE SUMMARY	
1305	WATER SAMPLE OPEN	
1319	" " CLO	
1324	Put Simulator ON DATA-TRAC Following	Preparatory To Power Ramp Transient
1345	Measured Leakage of Attenuator Water AT INLET TO ATTENUATOR	Leaks at 10.84 Pounds Per Hour.  Phosphate Concentration is 3 PPM.
1357	ADD 3 MINUTES PHOSPHATE	
1432	DATA TRAC OFF	
1439	45% POWER TO ZONES 1 & 2	



100

TEST NO. 22  
DEV. NO. \_\_\_\_\_  
PAGE 3 OF 6DATE 26 APR

TIME	OPERATOR ACTION	COMMENTS
1438	POWER DOWN TO 35% ON ZONES 3+4	45% ZONES 1+2 35% ZONES 3+4
1447	46.5% POWER ON ZONE 1 42% POWER ON ZONE 2	BALANCE POWER ON SIMPSON

DATE 26 APRTEST NO. 22

101

DEV. NO. \_\_\_\_\_

PAGE 4 OF 6

TIME	OPERATOR ACTION	COMMENTS
1507	Attenuator Valve in MAN. Steam Valve in MANUAL 6% STEP INCREASE IN STEAM FLOW	<u>5% Steam Control Valve POSITION STEP CHANGE TRANSIENT</u> (From 49% to 51.5%) (5.1.1)
1517	Return Steam Valve To PREVIOUS POSITION - Put in Auto	
1525	Attenuator on AUTOMATIC	When Steam Temp. Returned To Set point.
1538	Attenuator in MANUAL Steam Valve in MANUAL 20% STEP INCREASE IN STEAM FLOW.	<u>20% STEAM CONTROL VALVE POSITION STEP CHANGE TRANSIENT</u> (5.1.1)
1559	Return Steam Valve To ORIGINAL POSITION	
1610	STEAM VALVE IN AUTO Attenuator in Auto	
1637	STEAM & Attenuator VALVE on MANUAL Power Level Reduced by 10% Zone 1 41.85% Zone 2 37.8% Zone 3 31.5% Zone 4 31.5%	<u>Simulator Output STEP DECREASE (5.1.3)</u>
1653	INCREASE Power To Normal Zone 1 46.5% Zone 2 42% Zone 3 35% Zone 4 35%	

102

DATE 26 APR 77

TEST NO. 22  
DEV. NO. \_\_\_\_\_  
PAGE 5 OF 6

TIME	OPERATOR ACTION	COMMENTS
1710 1712	PUT ATTAMP ON AUTO. PUT STEAM VALVE ON AUTO.	
1722	STEAM VALVE CV-1 on MAN. ATTAMP VALVE CV-485 on MAN. FEEDWATER VALVE CV-2, on MAN. 20% STEP DECREASE IN POWER Zone 1 37.2% Zone 2 33.6% Zone 3 28% Zone 4 28% FEEDWATER VALVE IN AUTO AFTER 200 SECONDS  FEEDWATER VALVE on Manual INCREASE POWER TO NORMAL Zone 1 46.5% Zone 2 42% Zone 3 35% Zone 4 35%	<u>DRUM LEVEL SHRINK AND SWELL TRANSIENT</u> (S.1.4)
1750	FEEDWATER VALVE IN AUTO AFTER 200 SECONDS	
1808	ATTAMPENATOR AND STEAM VALVES IN AUTOMATIC	
1825	REDUCE POWER BY 10% Zone 1 41.85% Zone 2 37.8% Zone 3 31.5% Zone 4 31.5%	ALL CONTROLS IN AUTO  <u>STEP DECREASE IN SOLAR SIMULATOR OUTPUT</u> (S.1.7)
1846	INCREASE POWER TO NORMAL Zone 1 46.5% Zone 2 42% Zone 3 35% Zone 4 35%	

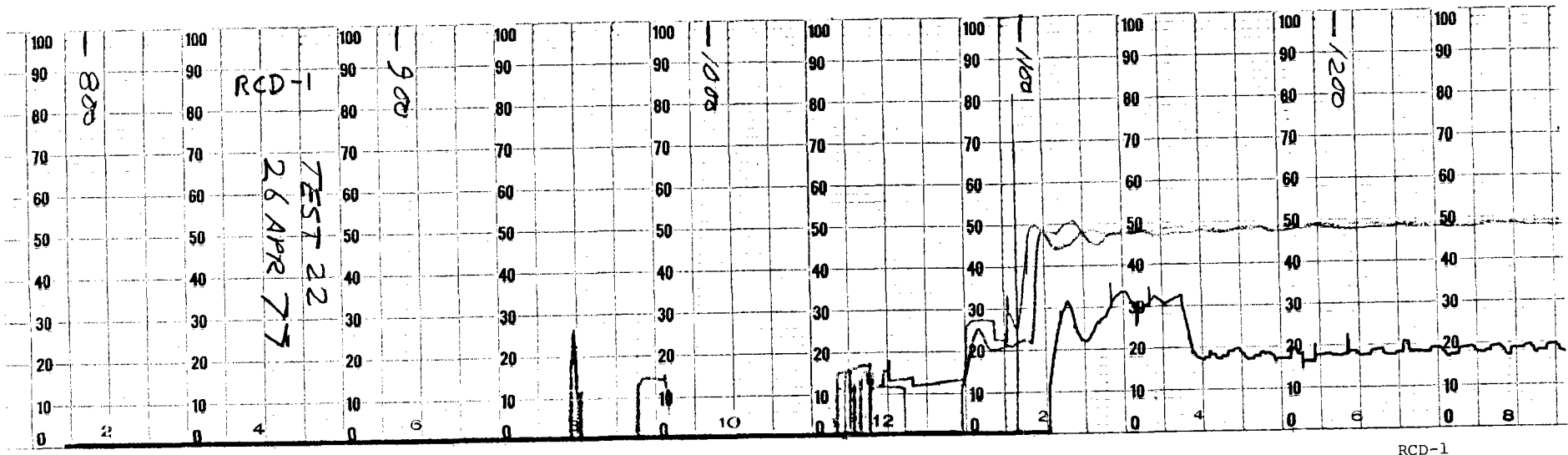
TEST NO. 22  
 DEV. NO. \_\_\_\_\_  
 PAGE 6 OF 6

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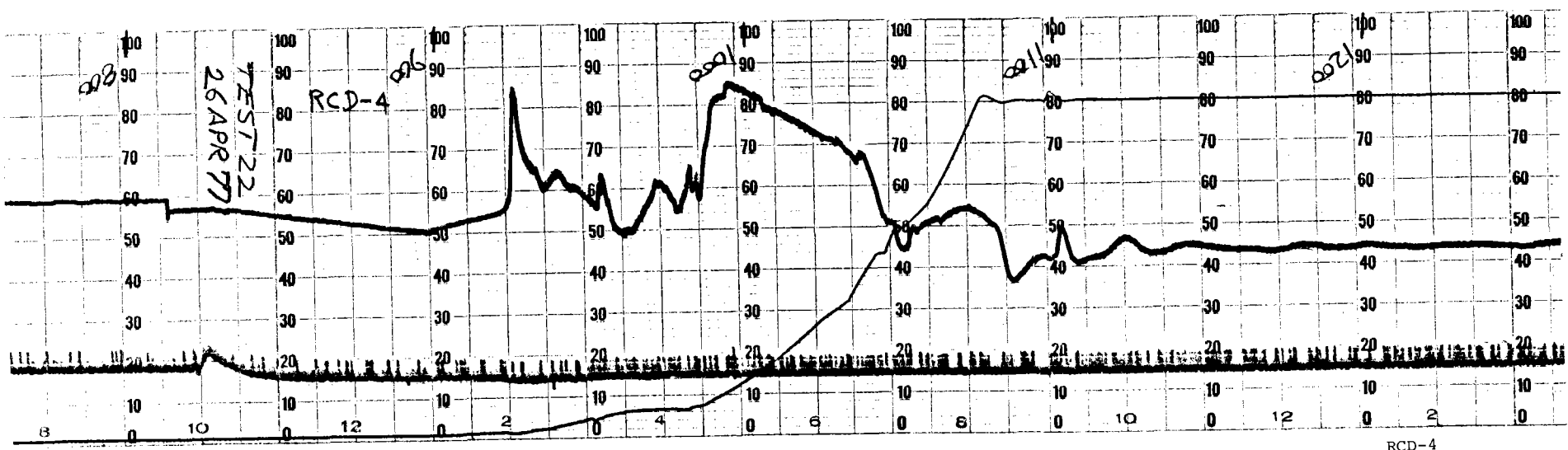
DATE 26 Apr 77

Time	OPERATOR ACTION	Comments
1907	Change Power To the Following Zone 1 49.3% Zone 2 44.5% Zone 3 29.5% Zone 4 29.5%	<u>Simulated Cloud Disturbance (5.1.6)</u>
1930	Resume Normal Power Zone 1 46.5% 2 42% 3 35% 4 35%	
2004	TAKE DAC SUMMARY	"40%" Heat Balance.
2007	Reduce Power 25% Zone 1 34.875% Zone 2 31.5% Zone 3 26.25% Zone 4 26.25%	25% Step Power Change
2044	TAKE DAC SUMMARY	"30%" Heat Balance  We will Not Do A "20%" because The Control System would Likely Never Settle Down at that Low of a Power Setting.
2046	Unpower The Simulator	On Automatic
2051	Open Steam Valve f Feedwater - Bring Unit Down	Steam on Manual AT 75% Feedwater on Auto
2145 2210	Open 13.8 KV Breaker. Unpower Recirc Pump.	-

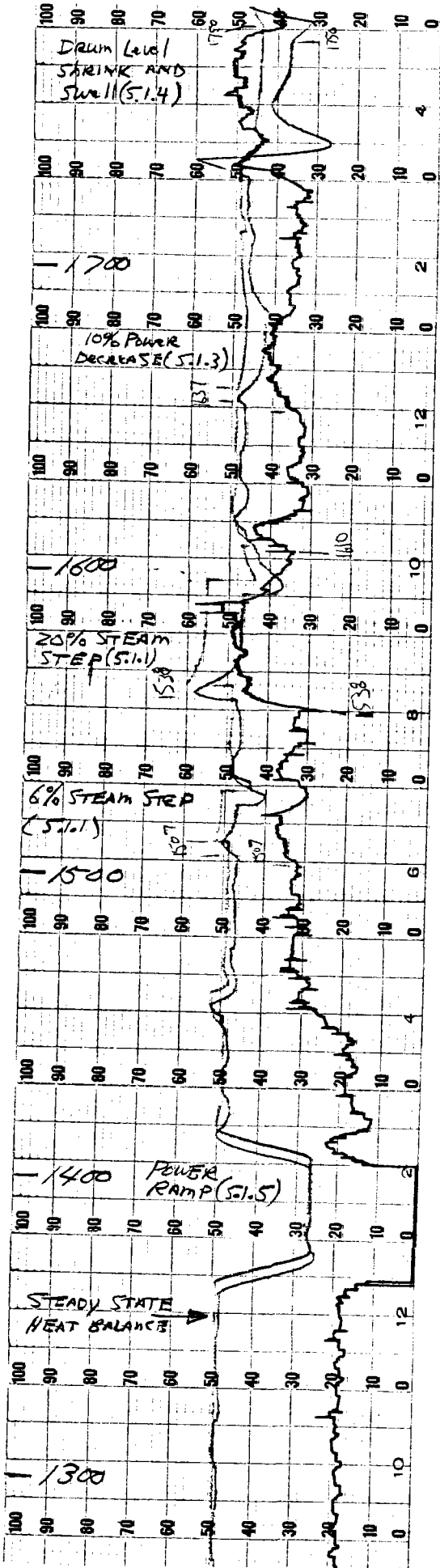
SECTION 3  
DATA SHEETS: RECORDER CHARTS



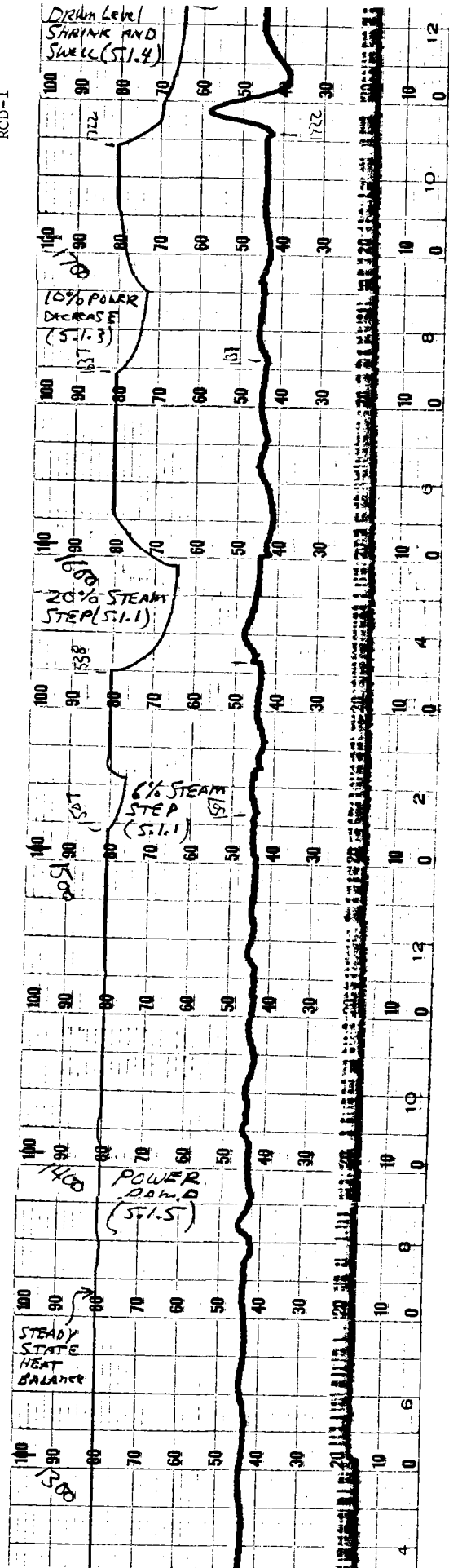
RCD-1



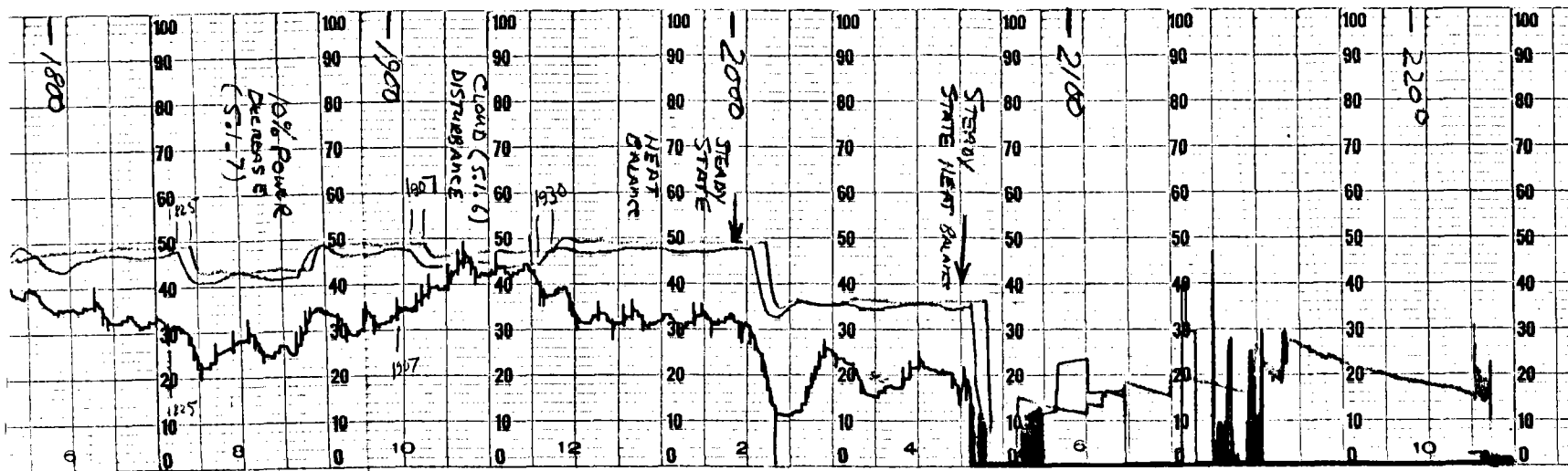
RCD-4



RCD-1

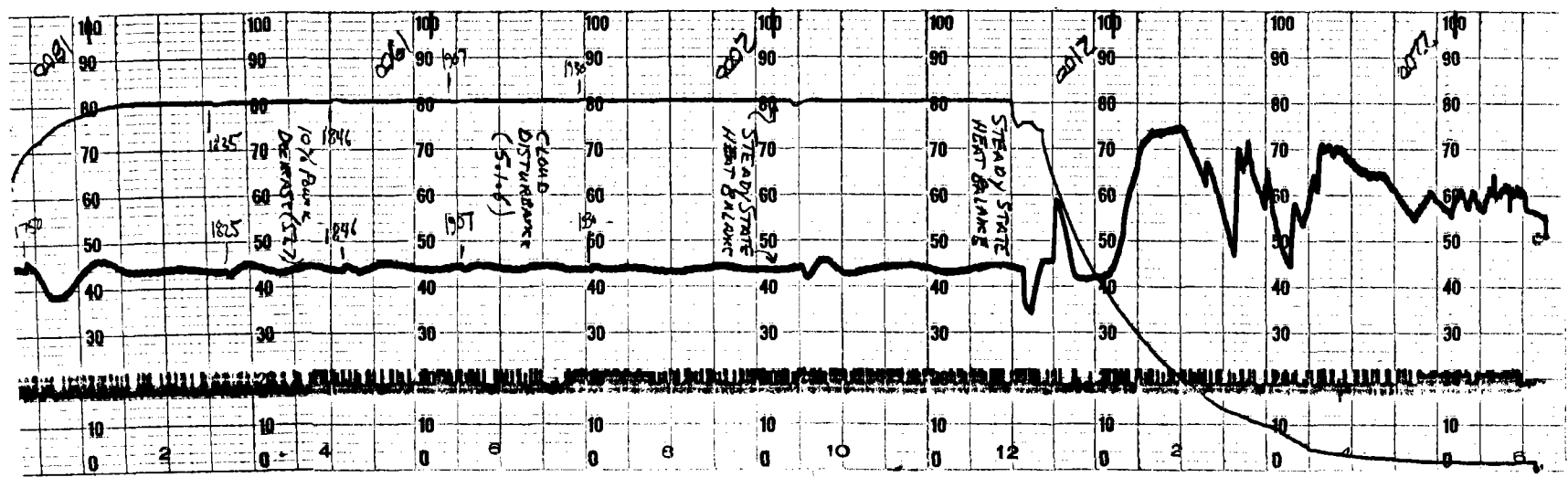


RCD-4



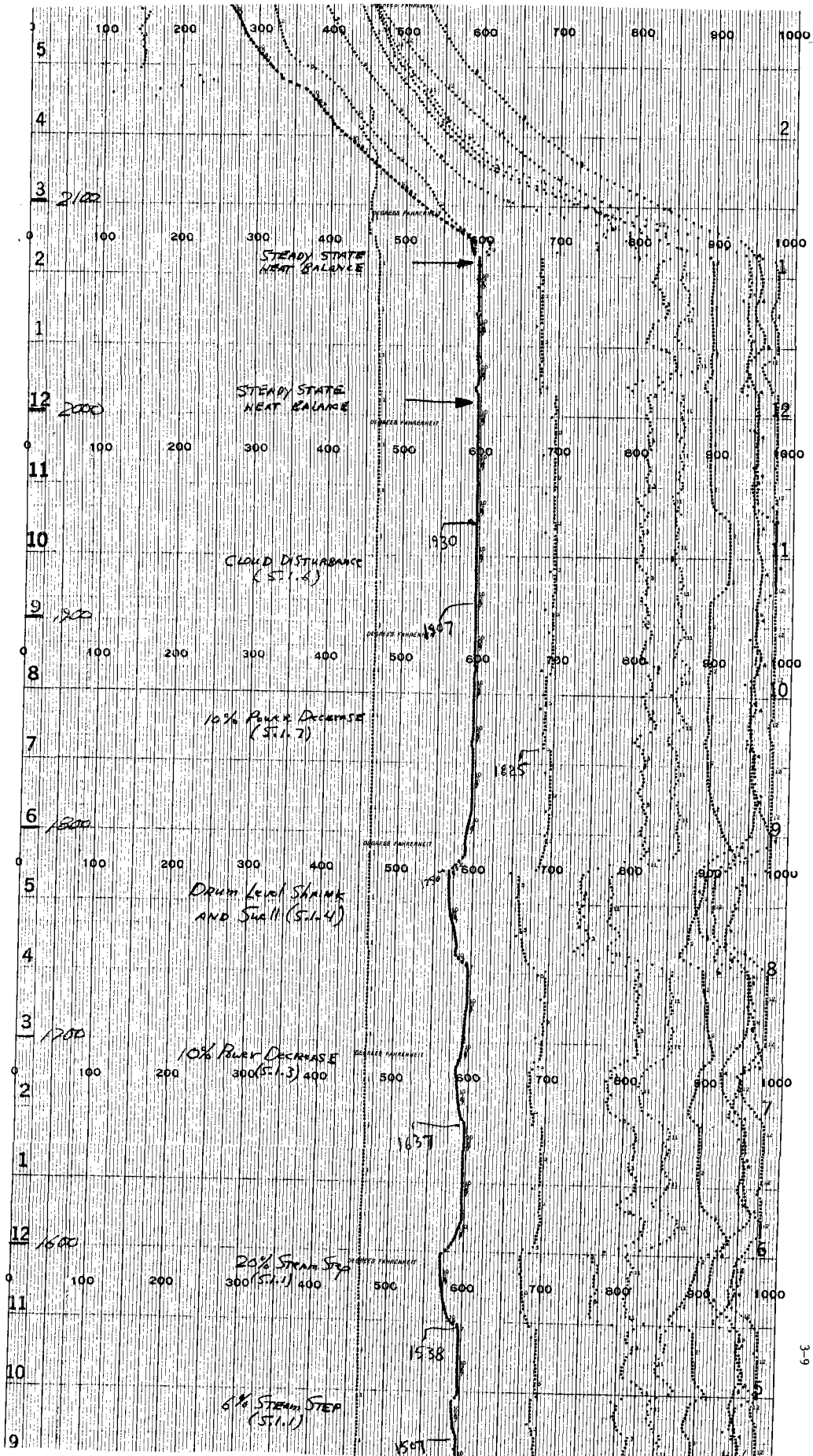
RCD-1

3-5



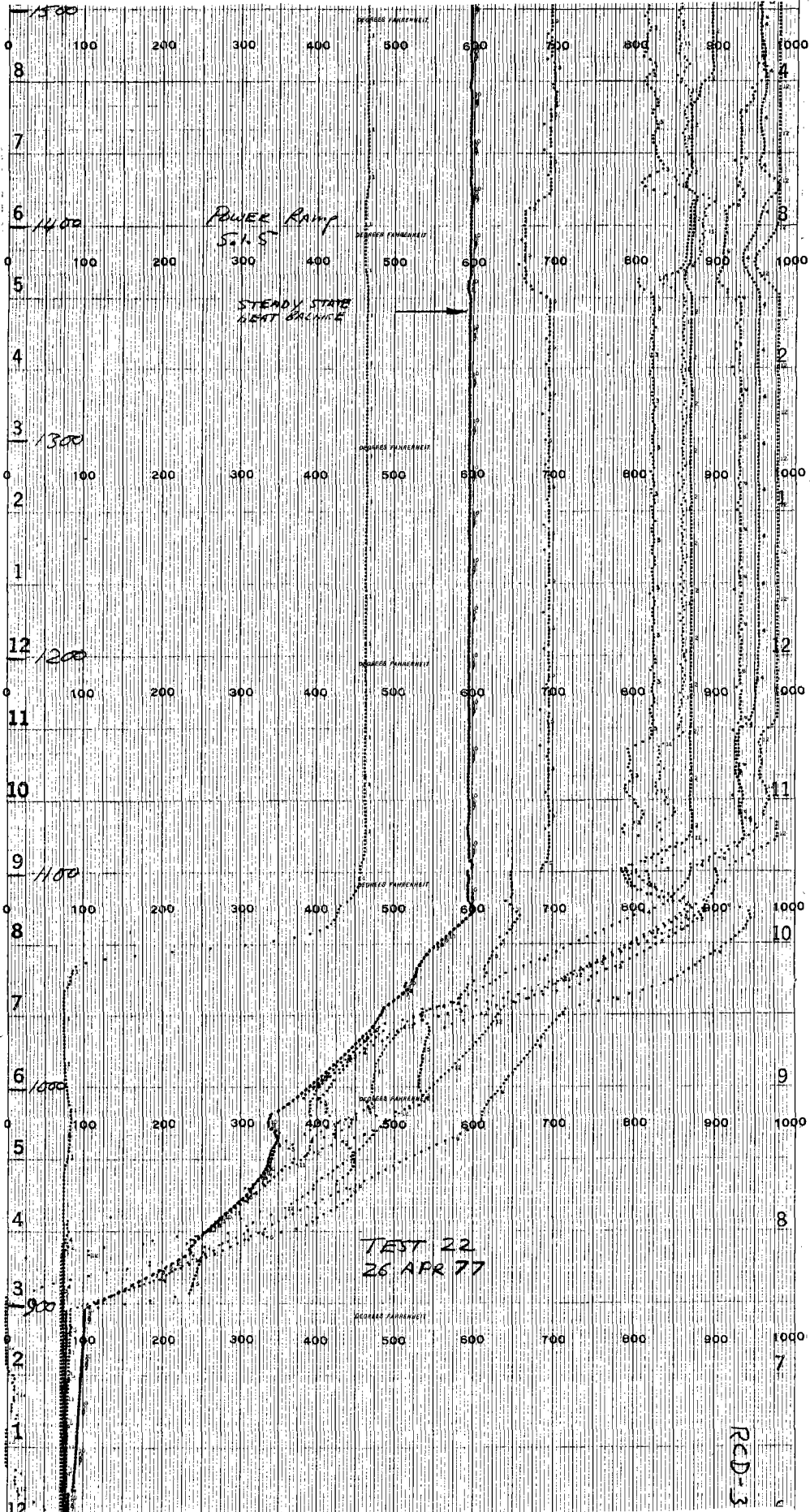
RCD-4





KOD-3

3-9



RCD-3

3-11

SECTION 4  
DATA SHEETS: DATA ACQUISITION SYSTEM TABULATION  
AND PLOT PRINTOUTS

PAGE 1  
OPERATOR SUMMARY

\*\*\*\*\*  
 OPERATOR SUMMARY 1977 116 13 38 22  
 -----

BOILER  
 -----

DRUM  
 P-D 1633  
 T-D 608  
 L-D 32  
 W-FW 8380  
 W-BD 0

PUMP  
 W-R 87930  
 T-DC 602  
 T-SUB -6  
 T-PC 67

SUPERHEATER 1  
 -----

INLET METAL	OUTLET METAL
TE405 700	TE450 149
TE406 674	TE451 149
TE407 702	TE452 933
TE408 670	TE453 150
TE409 696	TE454 615

T-S11 609  
 W-ATT 137

SUPERHEATER 2  
 -----

INLET METAL	OUTLET METAL
TE505 150	TE550 984
TE506 150	TE551 149
TE507 867	TE552 961
TE508 150	TE553 985
TE509 883	TE554 149

T-S20 954  
 P-S20 1578  
 W-S2 8792

POWER  
 -----

BOILER ABS. KW	1822	NET INPUT KW	2801
S.H. *1 ABS. KW	626	TOTAL ABSORBED KW	2624
S.H. *2 ABS. KW	175	POWER RATIO	.9367

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*****
OPERATOR SUMMARY
-----
BOILER
-----
DRUM
P-D      1592
T-D      605
L-D      31
W-FW    4521
W-BD      0

PUMP
W-B     88010
T-DC    602
T-SUB   -3
T-PC    67

SUPERHEATER 1
-----
INLET METAL      OUTLET METAL
TE405    665      TE450    149
TE406    650      TE451    149
TE407    671      TE452    917
TE408    655      TE453    150
TE409    644      TE454    613

T-S11    605

W-ATT     0

SUPERHEATER 2
-----
INLET METAL      OUTLET METAL
TE505    150      TE550    980
TE506    150      TE551    149
TE507    891      TE552    958
TE508    150      TE553    975
TE509    905      TE554    149

T-S20    955
P-S20    1578
W-S2     4634

POWER
-----
BOILER ABS. KW      979      NET INPUT KW      1598
S.H. *1 ABS. KW     339      TOTAL ABSORBED KW 1385
S.H. *2 ABS. KW      66      POWER RATIO       .8667
*****

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*Bottom of  
cloud trans.*

\*\*\*\*\*  
 OPERATOR SUMMARY 1977 116 14 33 22  
 -----

BOILER  
 -----

DRUM

P-D 1633  
 T-D 608  
 L-D 31  
 W-FW 8380  
 W-BD 0

PUMP

W-B 87000  
 T-DC 602  
 T-SUB -6  
 T-PC 68

SUPERHEATER 1  
 -----

INLET METAL	OUTLET METAL
TE405 699	TE450 149
TE406 664	TE451 149
TE407 702	TE452 933
TE408 674	TE453 150
TE409 702	TE454 675

T-S11 609

W-ATT 127

SUPERHEATER 2  
 -----

INLET METAL	OUTLET METAL
TE505 150	TE550 982
TE506 150	TE551 149
TE507 864	TE552 963
TE508 150	TE553 985
TE509 801	TE554 149

T-S20 955

P-S20 1581

W-S2 8834

POWER  
 -----

BOILER ABS. KW	1840	NET INPUT KW	2806
S.H. *1 ABS. KW	630	TOTAL ABSORBED KW	2643
S.H. *2 ABS. KW	173	POWER RATIO	.9420

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\*\*\*\*\*  
 OPERATOR SUMMARY 1977 116 15 5 22  
 -----

BOILER  
 -----

DRUM		PUMP	
P-D	1633	W-B	87850
T-D	608	T-DC	602
L-D	32	T-SUB	-6
W-FW	8093	T-PC	68
W-BD	0		

SUPERHEATER 1  
 -----

INLET METAL		OUTLET METAL	
TE405	699	TE450	149
TE406	675	TE451	149
TE407	706	TE452	958
TE408	683	TE453	150
TE409	687	TE454	696

T-S11 609

W-ATT 417

SUPERHEATER 2  
 -----

INLET METAL		OUTLET METAL	
TE505	150	TE550	980
TE506	150	TE551	149
TE507	857	TE552	965
TE508	150	TE553	986
TE509	876	TE554	149

T-S20 954

P-S20 1584

W-S2 8737

POWER  
 -----

BOILER ABS. KW	1747	NET INPUT KW	2803
S.H. *1 ABS. KW	641	TOTAL ABSORBED KW	2602
S.H. *2 ABS. KW	214	POWER RATIO	.9283

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\*\*\*\*\*  
 OPERATOR SUMMARY 1977 116 20 4 22  
 -----

BOILER  
 -----

DRUM

P-D 1636  
 T-D 609  
 L-D 31  
 W-FW 8234  
 W-BD 0

PUMP

W-B 87850  
 T-DC 602  
 T-SUB -7  
 T-PC 70

SUPERHEATER 1  
 -----

INLET METAL	OUTLET METAL
TE405 702	TE450 149
TE406 673	TE451 149
TE407 707	TE452 955
TE408 679	TE453 150
TE409 695	TE454 938

T-S11 610

W-ATT 397

SUPERHEATER 2  
 -----

INLET METAL	OUTLET METAL
TE505 150	TE550 981
TE506 150	TE551 149
TE507 861	TE552 964
TE508 150	TE553 995
TE509 879	TE554 149

T-S20 953

P-S20 1506

W-S2 8788

POWER  
 -----

BOILER ABS. KW	1752	NET INPUT KW	2744
S.H. *1 ABS. KW	644	TOTAL ABSORBED KW	2603
S.H. *2 ABS. KW	206	POWER RATIO	.9484

\*\*\*\*\*

\*\*\*\*\*  
 OPERATOR SUMMARY 1977 116 20 45 22  
 -----

BOILER  
 -----

DRUM

P-D 1611  
 T-D 607  
 L-D 32  
 W-FW 5888  
 W-BD 0

PUMP

W-B 87850  
 T-DC 602  
 T-SUB -5  
 T-PC 70

SUPERHEATER 1  
 -----

INLET METAL	OUTLET METAL
TE405 681	TE450 149
TE406 660	TE451 149
TE407 679	TE452 944
TE408 667	TE453 150
TE409 679	TE454 932

SUPERHEATER 2  
 -----

INLET METAL	OUTLET METAL
TE505 150	TE550 976
TE506 150	TE551 149
TE507 856	TE552 956
TE508 150	TE553 975
TE509 876	TE554 149

T-S11 607

T-S20 953

W-ATT 171

P-S20 1586

W-S2 6403

POWER  
 -----

BOILER ABS. KW	1335	NET INPUT KW	2100
S.H. *1 ABS. KW	478	TOTAL ABSORBED KW	1930
S.H. *2 ABS. KW	116	POWER RATIO	.9191

\*\*\*\*\*

PAGE 2  
PERFORMANCE SUMMARY

\*\*\*\*\*  
 PERFORMANCE SUMMARY 1977 116 13 38 22  
 -----

BOILER

DRUM  
 P-D 1633  
 T-D 608  
 H-GD 1157  
 H-FD 628  
 N-CR 1.0159  
 FEEDWATER  
 P-FW 1883  
 T-FW 472  
 W-FW 8380  
 H-FW 455

SUPERHEATERS

S.H. STAGE 1  
 W-S1 8655  
 T-S1I 609  
 T-S1O 873  
 P-S1O 1611  
 H-S1O 1406  
 ATTEMPERATOR  
 P-ATT 1883  
 T-ATT 458  
 W-ATT 137  
 H-ATT 439

BOILER

L-D 32  
 T-BI 601  
 H-BI 636  
 R-BI 39.068  
 R-GD 4.1003  
 R-FD 41.663

FLOW CIRCUITS

T-DC 602  
 T-SUB -6  
 W-B 87930  
 W-BC1 9753  
 W-BC2 9753  
 W-BC3 9495  
 X-B 19.022

S.H. STAGE 2

W-S2 8792  
 T-S2I 829  
 T S2O 954  
 P-S2O 1578  
 H-S2O 1459

ARRAY - KW

ZONE 1 872  
 ZONE 2 918  
 ZONE 3 904  
 ZONE 4 890  
 TOTAL 3584

POWER

-----  
 BOILER ABS. KW 1822 NET INPUT KW 2801  
 S.H. \*1 ABS. KW 626 TOTAL ABSORBED KW 2624  
 S.H. \*2 ABS. KW 175 POWER RATIO .9367

\*\*\*\*\*

\*\*\*\*\*  
 PERFORMANCE SUMMARY 1977 116 14 4 22  
 -----

BOILER

-----  
 DRUM  
 P-D 1592  
 T-D 695  
 H-GD 1160  
 H-FD 624  
 N-CR 1.8992  
 FEEDWATER  
 P-FW 1883  
 T-FW 468  
 W-FW 4521  
 H-FW 450

SUPERHEATERS

-----  
 S.H. STAGE 1  
 W-S1 4534  
 T-S11 605  
 T-S10 876  
 P-S10 1582  
 H-S10 1410  
 ATTEMPERATOR  
 P-ATT 1883  
 T-ATT 364  
 W-ATT 0  
 H-ATT 338

BOILER

-----  
 L-D 31  
 T-BI 600  
 H-BI 636  
 R-BI 39.068  
 R-GD 3.9584  
 R-FD 41.913

FLOW CIRCUITS

T-DC 602  
 T-SUB -3  
 W-B 98010  
 W-BC1 9847  
 W-BC2 9847  
 W-BC3 9592  
 X-B 10.298

S.H. STAGE 2

W-S2 4534  
 T-S2I 871  
 T S20 955  
 P-S20 1578  
 H-S20 1459

ARRAY - KW

ZONE 1 496  
 ZONE 2 518  
 ZONE 3 513  
 ZONE 4 503  
 TOTAL 2030

POWER

-----  
 BOILER ABS. KW 979      NET INPUT KW 1598  
 S.H. \*1 ABS. KW 339      TOTAL ABSORBED KW 1385  
 S.H. \*2 ABS. KW 66      POWER RATIO .8667

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 PERFORMANCE SUMMARY 1977 116 14 33 22  
 -----

## BOILER

-----  
 DRUM  
 P-D 1633  
 T-D 608  
 H-GD 1157  
 H-FD 628  
 N-CR 1.0001  
 FEEDWATER  
 P-FW 1883  
 T-FW 472  
 W-FW 8380  
 H-FW 455

## SUPERHEATERS

-----  
 S.H. STAGE 1  
 W-S1 8707  
 T-S11 609  
 T-S10 873  
 P-S10 1611  
 H-S10 1406  
 ATTEMPERATOR  
 P-ATT 1883  
 T-ATT 458  
 W-ATT 127  
 H-ATT 439

## BOILER

-----  
 L-D 31  
 T-BI 600  
 H-BI 636  
 R-BI 39.068  
 R-GD 4.1003  
 R-FD 41.663

## FLOW CIRCUITS

T-DC 602  
 T-SUB -6  
 W-B 87090  
 W-BC1 9763  
 W-BC2 9735  
 W-BC3 9446  
 X-B 19.136

## S.H. STAGE 2

W-S2 8834  
 T-S2I 825  
 T S20 955  
 P-S20 1581  
 H-S20 1450

## ARRAY - KW

ZONE 1 863  
 ZONE 2 925  
 ZONE 3 906  
 ZONE 4 890  
 TOTAL 3584

## POWER

-----  
 BOILER ABS. KW 1840 NET INPUT KW 2806  
 S.H. \*1 ABS. KW 630 TOTAL ABSORBED KW 2643  
 S.H. \*2 ABS. KW 173 POWER RATIO .9429

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\*\*\*\*\*  
 PERFORMANCE SUMMARY 1977 116 15 5 22

-----  
 BOILER

DRUM  
 P-D 1633  
 T-D 608  
 H-GD 1157  
 H-FD 628  
 N-CR 1.0559  
 FEEDWATER  
 P-FW 1889  
 T-FW 472  
 W-FW 8093  
 H-FW 455

-----  
 SUPERHEATERS

S.H. STAGE 1  
 W-S1 8320  
 T-S1I 609  
 T-S1O 898  
 P-S1O 1613  
 H-S1O 1422  
 ATTEMPERATOR  
 P-ATT 1099  
 T-ATT 463  
 W-ATT 417  
 H-ATT 445

-----  
 BOILER

L-D 32  
 T-BI 602  
 H-BI 636  
 R-BI 39.068  
 R-GD 4.1003  
 R-FD 41.663

FLOW CIRCUITS

T-DC 602  
 T-SUB -6  
 W-B 87850  
 W-BC1 9630  
 W-BC2 9658  
 W-BC3 9340  
 X-B 19.286

S.H. STAGE 2

W-S2 8737  
 T-S2I 816  
 T S2O 954  
 P-S2O 1584  
 H-S2O 1459

ARRAY - KW

ZONE 1 1000  
 ZONE 2 971  
 ZONE 3 794  
 ZONE 4 780  
 TOTAL 3545

-----  
 POWER

BOILER ABS. KW	1747	NET INPUT KW	2803
S.H. *1 ABS. KW	641	TOTAL ABSORBED KW	2602
S.H. *2 ABS. KW	214	POWER RATIO	.9283

\*\*\*\*\*

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 PERFORMANCE SUMMARY 1977 116 20 4 22  
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## BOILER

DRUM  
 P-D 1636  
 T-D 609  
 H-GD 1158  
 H-FD 630  
 N-CR 1.0470  
 FEEDWATER  
 P-FW 1886  
 T-FW 473  
 W-FW 8234  
 H-FW 456

## SUPERHEATERS

S.H. STAGE 1  
 W-S1 8391  
 T-S1I 610  
 T-S1O 898  
 P-S1O 1613  
 H-S1O 1422  
 ATTEMPERATOR  
 P-ATT 1886  
 T-ATT 464  
 W-ATT 397  
 H-ATT 446

## BOILER

L-D 31  
 T-BI 602  
 H-BI 636  
 R-BI 39.068  
 R-GD 4.0925  
 R-FD 41.562

## FLOW CIRCUITS

T-DC 602  
 T-SUB -7  
 W-B 87850  
 W-BC1 9772  
 W-BC2 9772  
 W-BC3 9515  
 X-B 18.401

## S.H. STAGE 2

W-S2 8788  
 T-S2I 819  
 T S2O 953  
 P-S2O 1586  
 H-S2O 1458

## ARRAY - KW

ZONE 1 1002  
 ZONE 2 971  
 ZONE 3 799  
 ZONE 4 780  
 TOTAL 3552

## POWER

-----  
 BOILER ABS. KW 1752 NET INPUT KW 2744  
 S.H. \*1 ABS. KW 644 TOTAL ABSORBED KW 2503  
 S.H. \*2 ABS. KW 206 POWER RATIO .9484

\*\*\*\*\*



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*****
PERFORMANCE SUMMARY                                     1977 116 20 45 22
-----
BOILER                                               SUPERHEATERS
-----
DRUM
P-D      1611
T-D      607
H-GD     1160
H-FD     627
N-CR    1.4097
FEEDWATER
P-FW     1003
T-FW     471
W-FW     5000
H-FW     454

FLOW CIRCUITS
T-DC     602
T-SUB    -5
W-B      87050
W-BC1    9772
W-BC2    9715
W-BC3    9515
X-B     13.727

S.H. STAGE 1
W-S1     6232
T-S1I    607
T-S10    897
P-S10    1597
H-S10    1422
ATTEMPERATOR
P-ATT    1003
T-ATT    459
W-ATT    171
H-ATT    440

S.H. STAGE 2
W-S2     6403
T-S2I    827
T S20    953
P-S20    1506
H-S20    1450

BOILER
L-D      32
T-BI     602
H-BI     636
R-BI    39.068
R-GD    4.0102
R-FD    41.735

ARRAY - KW
ZONE 1   752
ZONE 2   727
ZONE 3   590
ZONE 4   586
TOTAL   2663

POWER
-----
BOILER ABS. KW      1335   NET INPUT KW      2100
S.H. *1 ABS. KW     478   TOTAL ABSORBED KW 1930
S.H. *2 ABS. KW     116   POWER RATIO       .9191
*****

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PAGE 3

BASE DATA REPORT -- METAL TEMPERATURES

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*****
BASE DATA REPORT - METAL TEMPERATURES
-----
1977  116  13  38  22

TE 210-217  593  601  611  253  547  597  467  601

TE 330-339  641  361  643  638  640  651  640  640  639  641
TE 340-349  643  638  643  643  643  642  642  640  637  609
TE 350-359  641  644  643  637  638  641  642  641  639  639
TE 360-369  637  611  641  643  641  643  643  641  637  624
TE 370-379  150  643  644  645  643  641  633  625  641  641
TE 380-389  642  642  640  639  638  625  643  645  644  638

TE 405-409  700  674  702  678  696
TE 450-459  149  149  933  150  615  886  859  459  867  877
TE 460-466  150  885  106  880  874  868  873
TE 420-429  632  592  634  640  1318  679  688  699  710  722
TE 430-439  744  766  778  787  800  811  831  846  895  149
TE 440      149

TE 505-509  150  150  867  150  883
TE 550-554  984  149  961  905  149
TE 555-560  950  954  149  959  957  953
TE 561-566  959  957  964  959  858  953
TE 520-529  150  840  847  852  864  150  881  888  888  895
TE 530-539  905  910  917  991  927  932  939  946  950  556
TE 540      149

TE 470-471  855  858      TE 570-571  1145  952

TE 601-606  797  656  536  849  829  813
TE 607-612  597  589  582  946  942  940
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 BASE DATA REPORT - METAL TEMPERATURES  
 -----

1977 116 14 4 22

TE 210-217	592	599	607	255	545	593	463	598		
TE 330-339	624	351	624	617	625	634	618	618	623	623
TE 340-349	624	623	626	625	624	624	624	623	623	603
TE 350-359	624	626	625	621	623	623	624	624	622	624
TE 360-369	622	606	625	625	624	624	624	624	622	613
TE 370-379	150	625	627	627	625	624	619	615	624	625
TE 380-389	625	625	624	624	622	614	625	625	625	623
TE 405-409	665	650	671	655	644					
TE 450-459	149	149	917	150	613	889	867	494	870	880
TE 460-466	150	886	101	884	881	881	885			
TE 420-429	624	593	633	640	1352	683	693	705	717	729
TE 430-439	753	775	788	797	809	821	839	855	856	149
TE 440	149									
TE 505-509	150	150	891	150	905					
TE 550-554	980	149	958	975	149					
TE 555-560	959	964	149	966	964	958				
TE 561-566	965	963	966	966	860	963				
TE 520-529	150	876	888	892	904	150	917	921	921	927
TE 530-539	936	939	943	1001	949	954	957	963	965	564
TE 540	149									
TE 470-471	856	855				TE 570-571	1106	943		
TE 601-606	787	651	533	850	829	813				
TE 607-612	592	585	579	937	933	933				

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 BASE DATA REPORT - METAL TEMPERATURES  
 -----

1977 116 14 33 22

TE 210-217	592	602	611	256	548	598	466	603		
TE 330-339	641	366	643	638	642	652	642	642	638	641
TE 340-349	643	639	643	642	642	642	642	640	637	609
TE 350-359	641	645	643	636	638	641	642	641	639	641
TE 360-369	637	613	642	643	641	643	643	641	638	624
TE 370-379	150	642	644	643	641	640	633	626	630	639
TE 380-389	639	639	637	637	637	625	642	643	643	637
TE 405-409	699	664	702	674	702					
TE 450-459	149	149	933	150	675	884	857	556	867	876
TE 460-466	150	884	95	879	874	866	872			
TE 420-429	630	598	633	640	1386	679	688	699	710	722
TE 430-439	744	766	779	787	800	811	831	846	861	149
TE 440	149									
TE 505-509	150	150	864	150	881					
TE 550-554	982	149	963	985	149					
TE 555-560	949	957	149	961	958	954				
TE 561-566	960	958	965	959	861	955				
TE 520-529	150	835	844	849	862	150	879	887	887	895
TE 530-539	905	912	918	981	929	934	940	949	953	558
TE 540	149									
TE 470-471	853	856		TE 570-571	1081	954				
TE 601-606	799	660	538	847	829	815				
TE 607-612	597	589	582	948	945	944				

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 BASE DATA REPORT - METAL TEMPERATURES 1977 116 15 5 22  
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TE 210-217	593	601	611	258	548	598	467	602		
TE 330-339	642	367	641	636	643	654	641	641	640	641
TE 340-349	642	637	645	643	643	642	640	639	640	609
TE 350-359	642	644	642	635	638	640	642	639	637	637
TE 360-369	636	611	642	642	639	641	641	639	636	622
TE 370-379	150	643	644	644	641	638	631	624	641	641
TE 380-389	641	641	638	637	636	624	641	641	638	635
TE 405-409	699	675	706	683	697					
TE 450-459	149	149	958	150	696	911	884	566	893	900
TE 460-466	150	910	92	906	901	895	900			
TE 420-429	630	603	635	642	1431	685	695	707	720	732
TE 430-439	758	783	797	806	820	831	852	870	905	149
TE 440	149									
TE 505-509	150	150	857	150	876					
TE 550-554	980	149	965	986	149					
TE 555-560	951	956	149	960	956	953				
TE 561-566	959	958	965	959	873	954				
TE 520-529	150	826	835	840	856	150	874	881	891	889
TE 530-539	902	909	914	1001	926	932	937	946	950	556
TE 540	149									
TE 470-471	877	878		TE 570-571	1111	954				
TE 601-606	801	661	540	868	847	829				
TE 607-612	597	590	503	948	945	944				

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 BASE DATA REPORT - METAL TEMPERATURES  
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1977 116 20 4 22  
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TE 210-217	594	603	611	260	549	598	460	604		
TE 330-339	642	350	640	636	643	655	640	640	640	641
TE 340-349	642	637	644	643	643	642	641	640	636	609
TE 350-359	642	644	642	635	638	640	641	639	639	630
TE 360-369	636	611	641	642	639	641	639	639	636	622
TE 370-379	150	641	641	641	630	637	631	625	630	630
TE 380-389	630	630	636	635	635	624	643	644	642	636
TE 405-409	702	673	707	679	695					
TE 450-459	149	149	955	150	930	900	801	631	891	890
TE 460-466	150	900	49	903	890	893	897			
TE 420-429	631	598	634	642	1765	685	696	707	719	731
TE 430-439	756	701	795	805	817	029	850	868	879	149
TE 440	149									
TE 505-509	150	150	861	150	879					
TE 550-554	981	149	964	985	149					
TE 555-560	951	954	149	959	956	953				
TE 561-566	959	957	963	950	830	953				
TE 520-529	150	830	839	844	859	150	876	883	883	890
TE 530-539	902	907	914	946	923	930	937	945	949	556
TE 540	149									
TE 470-471	876	800				TE 570-571	1212	954		
TE 601-606	799	660	540	870	851	835				
TE 607-612	597	590	582	944	941	940				

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 BASE DATA REPORT - METAL TEMPERATURES  
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1977 116 20 45 22  
 -----

TE 210-217	592	600	610	259	548	596	466	602		
TE 330-339	631	363	631	627	633	645	630	630	630	630
TE 340-349	631	620	633	633	633	631	630	629	626	605
TE 350-359	629	631	629	624	629	630	631	630	629	629
TE 360-369	627	600	632	632	630	630	631	630	627	617
TE 370-379	150	632	634	633	632	629	624	618	631	631
TE 380-389	631	630	629	629	627	617	632	633	632	627
TE 405-409	601	660	679	667	679					
TE 450-459	149	149	944	150	932	911	884	648	893	900
TE 460-466	150	907	42	904	901	900	905			
TE 420-429	627	593	634	642	1790	687	696	709	722	736
TE 430-439	760	785	798	808	822	834	855	872	883	149
TE 440	149									
TE 505-509	150	150	856	150	876					
TE 550-554	976	149	956	975	149					
TE 555-560	951	956	149	958	956	951				
TE 561-566	959	956	961	957	834	953				
TE 520-529	150	838	847	852	867	150	883	888	888	896
TE 530-539	907	912	919	936	927	932	939	946	950	556
TE 540	149									
TE 470-471	877	877		TE 570-571	1156	952				
TE 601-606	796	658	537	871	851	834				
TE 607-612	594	580	580	944	940	938				

\*\*\*\*\*



PAGE 4  
BASE DATA REPORT -- FLUID

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 BASE DATA REPORT - FLUID 1977 116 12 54 ~~2102~~  
 -----

*Recirc. Rebal.*

TEMPERATURES - FLUID  
 -----

TE 19	21
TE 260	68
TE 300	106
TE 301	106
TE 306	62
TE 310	107
TE 311	107
TE 400	77
TE 401	69
TE 402	68
TE 476	67
TE 480	69
TE 501	66
TT 590	696

PRESSURES  
 -----

PT 1	8
PT 2	8
PT 3	1
PT 230	-2
PT 475	0
PT 590	4

FLOWS  
 -----

FT 1	0
FT 3	146
FT 260	13
FT 310	120980
FT 350	13505
FT 351	13064
FT 352	13547
FT 400	0

*F.E. 123241  
 Δ 1.8%  
 Ave = 13693*

LEVELS  
 -----

LT 210	30
LT 211	31

FT 13	6930
PUMP JACKET	61

\*\*\*\*\*

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 BASE DATA REPORT - FLUID 1977 116 12 56 ~~2102~~

-----  
 TEMPERATURES - FLUID

TE 19 21  
 TE 260 69  
 TE 300 108  
 TE 301 107  
 TE 306 62  
 TE 310 100  
 TE 311 108  
 TE 400 70  
 TE 401 69  
 TE 402 70  
 TE 476 68  
 TE 480 70  
 TE 501 66  
 TT 590 696

LEVELS

-----  
 LT 210 30  
 LT 211 31

PRESSURES

-----  
 PT 1 0  
 PT 2 0  
 PT 3 1  
 PT 230 0  
 PT 475 1  
 PT 590 4

-----  
 FLOWS

-----  
 FT 1 0  
 FT 3 146  
 FT 260 13  
 FT 310 121920  
 FT 350 13748  
 FT 351 13690  
 FT 352 13487  
 FT 400 0

FT 13 9850  
 PUMP JACKET 61

*Recirc. Rebal.*

*351  
 354  
 357*

\*\*\*\*\*

ARDIN : 03 UN @60535B

\*\*\*\*\*  
 BASE DATA REPORT - FLUID  
 -----  
 1977 116 12 57 ~~2102~~

*Recirc. Rebal.*

TEMPERATURES - FLUID  
 -----

TE 19	20
TE 260	69
TE 300	100
TE 301	100
TE 306	63
TE 310	100
TE 311	100
TE 400	70
TE 401	70
TE 402	70
TE 470	67
TE 400	69
TE 501	65
TT 590	696

PRESSURES  
 -----

PT 1	0
PT 2	5
PT 3	1
PT 230	0
PT 475	1
PT 590	4

FLOWS  
 -----

FT 1	0
FT 3	140
FT 260	13
FT 310	122870
FT 350	13575
FT 351	13091
FT 352	13934
FT 400	0

350  
 353  
 356

LEVELS  
 -----

LT 210	30
LT 211	31

FT 13	8510
PUMP JACKET	61

\*\*\*\*\*

\*\*\*\*\*  
 BASE DATA REPORT - FLUID  
 -----

1977 116 13 38 22  
 -----

TEMPERATURES - FLUID  
 -----

TE 19	472
TE 260	399
TE 300	602
TE 301	601
TE 306	67
TE 310	601
TE 311	601
TE 400	610
TE 401	609
TE 402	610
TE 476	873
TE 480	458
TE 501	829
TT 590	954

LEVELS  
 -----

LT 210	32
LT 211	33

PRESSURES  
 -----

PT 1	1883
PT 2	1581
PT 3	98
PT 230	1633
PT 475	1611
PT 590	1578

FLOWS  
 -----

FT 1	8380
FT 3	8792
FT 260	0
FT 310	87930
FT 350	9753
FT 351	9753
FT 352	9495
FT 430	137

FT 13	136110
PUMP JACKET	65

\*\*\*\*\*

\*\*\*\*\*  
 BASE DATA REPORT - FLUID 1977 116 14 5 22  
 -----

TEMPERATURES - FLUID  
 -----

TE 19	468
TE 260	311
TE 300	602
TE 301	601
TE 306	67
TE 310	601
TE 311	600
TE 400	605
TE 401	605
TE 402	606
TE 476	076
TE 480	352
TE 501	871
TT 590	955

LEVELS  
 -----

LT 210	31
LT 211	33

PRESSURES  
 -----

PT 1	1883
PT 2	1584
PT 3	99
PT 230	1592
PT 475	1502
PT 590	1578

FLOWS  
 -----

FT 1	4521
FT 3	4534
FT 260	0
FT 310	87930
FT 350	9781
FT 351	9725
FT 352	9524
FT 400	0

FT 13	137720
PUMP JACKET	67

\*\*\*\*\*

\*\*\*\*\*  
 BASE DATA REPORT - FLUID 1977 116 14 33 22  
 -----

TEMPERATURES - FLUID  
 -----

TE 19	472
TE 260	251
TE 300	602
TE 301	601
TE 306	68
TE 310	600
TE 311	600
TE 400	609
TE 401	609
TE 402	609
TE 476	873
TE 480	458
TE 501	825
TT 590	955

LEVELS  
 -----

LT 210	31
LT 211	33

PRESSURES  
 -----

PT 1	1883
PT 2	1581
PT 3	98
PT 230	1633
PT 475	1611
PT 590	1581

FLOWS  
 -----

FT 1	8380
FT 3	8834
FT 260	0
FT 310	87080
FT 350	9763
FT 351	9735
FT 352	9446
FT 480	127

FT 13	135290
PUMP JACKET	67

\*\*\*\*\*

\*\*\*\*\*  
 BASE DATA REPORT - FLUID 1977 116 15 5 22  
 -----

TEMPERATURES - FLUID  
 -----

TE 19	472
TE 260	200
TE 300	602
TE 301	601
TE 306	68
TE 310	602
TE 311	600
TE 400	609
TE 401	609
TE 402	610
TE 476	898
TE 480	463
TE 501	816
TT 590	954

LEVELS  
 -----

LT 210	32
LT 211	34

PRESSURES  
 -----

PT 1	1889
PT 2	1586
PT 3	98
PT 230	1633
PT 475	1613
PT 590	1584

FLOWS  
 -----

FT 1	8093
FT 3	8737
FT 260	0
FT 310	87850
FT 350	9630
FT 351	9658
FT 352	9340
FT 490	417

FT 13	135200
PUMP JACKET	68

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\*\*\*\*\*  
 BASE DATA REPORT - FLUID  
 -----  
 1977 116 20 4 22  
 -----

TEMPERATURES - FLUID  
 -----

TE 19	473
TE 260	122
TE 300	602
TE 301	601
TE 306	70
TE 310	602
TE 311	602
TE 400	610
TE 401	610
TE 402	610
TE 476	898
TE 480	464
TE 501	819
TT 590	953

LEVELS  
 -----

LT 210	31
LT 211	33

PRESSURES  
 -----

PT 1	1886
PT 2	1586
PT 3	98
PT 230	1636
PT 475	1613
PT 590	1586

FLOWS  
 -----

FT 1	8234
FT 3	8788
FT 260	0
FT 310	87850
FT 350	9772
FT 351	9772
FT 352	9515
FT 480	397

FT 13	128960
PUMP JACKET	68

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\*\*\*\*\*  
 BASE DATA REPORT - FLUID 1977 116 20 45 22  
 -----

TEMPERATURES - FLUID  
 -----

TE 19	472
TE 260	122
TE 300	602
TE 301	602
TE 306	70
TE 310	602
TE 311	600
TE 400	607
TE 401	607
TE 402	607
TE 476	898
TE 480	459
TE 501	829
TT 590	953

LEVELS  
 -----

LT 210	32
LT 211	33

PRESSURES  
 -----

PT 1	1883
PT 2	1586
PT 3	98
PT 230	1611
PT 475	1597
PT 590	1504

FLOWS  
 -----

FT 1	5918
FT 3	6435
FT 260	0
FT 310	86920
FT 350	9715
FT 351	9715
FT 352	9428
FT 430	193

FT 13	108360
PUMP JACKET	69

\*\*\*\*\*

PAGE 5

COOLING WATER TEMPERATURE

\*\*\*\*\*  
 COOLING WATER TEMPERATURES 1977 116 13 38 22  
 -----

INLET TEMPERATURE TE 26 63

OUTLET TEMPERATURES

RECIRCULATION PUMP TT 306 67  
 PUMP JACKET TE 613 65

FLUX BOOM TT 16 95

POWER CONTROLLERS TT 23 66

ARRAY POINTS

FACET 12 FACET 3 FACET 6 FACET 9

BUSBAR COOLERS

TE 700 97 TE 701 95 TE 702 100 TE 703 97

REFLECTOR COOLERS

TE 704 83 TE 705 85 TE 706 76 TE 707 93

UPPER SKIRT

TE 708 70

LOWER SKIRT

TE 709 85

AMBIENT AIR

TE 710 124

ARRAY & FLUX BOOM OUTLET TE 24 83

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\*\*\*\*\*  
 COOLING WATER TEMPERATURES 1977 116 14 5 22  
 -----

INLET TEMPERATURE TE 26 63

OUTLET TEMPERATURES

RECIRCULATION PUMP TT 306 67  
 PUMP JACKET TE 613 67

FLUX BOOM TT 16 87

POWER CONTROLLERS TT 23 65

ARRAY POINTS

FACET 12		FACET 3		FACET 6		FACET 9	
BUSBAR COOLERS							
TE 700	86	TE 701	88	TE 702	85	TE 703	89

REFLECTOR COOLERS

TE 704	74	TE 705	78	TE 706	85	TE 707	86
--------	----	--------	----	--------	----	--------	----

UPPER SKIRT	LOWER SKIRT	AMBIENT AIR
TE 708 70	TE 709 70	TE 710 113

ARRAY & FLUX BOOM OUTLET TE 24 74

\*\*\*\*\*

\*\*\*\*\*  
 COOLING WATER TEMPERATURES 1977 116 14 33 22  
 -----

INLET TEMPERATURE TE 26 63

OUTLET TEMPERATURES

RECIRCULATION PUMP TT 306 68  
 PUMP JACKET TE 613 67

FLUX BOOM TT 16 96

POWER CONTROLLERS TT 23 67

ARRAY POINTS

FACET 12		FACET 3		FACET 6		FACET 9	
BUSBAR COOLERS							
TE 700	101	TE 701	100	TE 702	104	TE 703	96

REFLECTOR COOLERS

TE 704	78	TE 705	85	TE 706	86	TE 707	94
--------	----	--------	----	--------	----	--------	----

UPPER SKIRT

TE 708 70

LOWER SKIRT

TE 709 81

AMBIENT AIR

TE 710 124

ARRAY & FLUX BOOM OUTLET TE 24 83

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\*\*\*\*\*  
 COOLING WATER TEMPERATURES 1977 116 15 5 22  
 -----

INLET TEMPERATURE      TE 26      64

OUTLET TEMPERATURES

RECIRCULATION PUMP      TT 306      68  
 PUMP JACKET              TE 613      68

FLUX BOOM                TT 16      96

POWER CONTROLLERS      TT 23      67

ARRAY POINTS

FACET 12		FACET 3		FACET 6		FACET 9	
BUSBAR COOLERS							
TE 700	99	TE 701	100	TE 702	97	TE 703	102

REFLECTOR COOLERS

TE 704	82	TE 705	88	TE 706	86	TE 707	95
--------	----	--------	----	--------	----	--------	----

UPPER SKIRT		LOWER SKIRT		AMBIENT AIR	
TE 708	71	TE 709	78	TE 710	123

ARRAY & FLUX BOOM OUTLET      TE 24      83

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COOLING WATER TEMPERATURES                                1977 116 20 4 22
-----
INLET TEMPERATURE      TE 26   65

OUTLET TEMPERATURES
RECIRCULATION PUMP     TT 306   70
PUMP JACKET            TE 613   68

FLUX BOOM              TT 16   100

POWER CONTROLLERS     TT 23   60

ARRAY POINTS
  FACET 12             FACET 3             FACET 6             FACET 9
BUSBAR COOLERS
TE 700   102   TE 701   101   TE 702   99   TE 703   101

REFLECTOR COOLERS
TE 704   85   TE 705   89   TE 706   89   TE 707   94

UPPER SKIRT           LOWER SKIRT         AMBIENT AIR
TE 708   72   TE 709   85   TE 710   129

ARRAY & FLUX BOOM OUTLET  TE 24   86

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 COOLING WATER TEMPERATURES 1977 116 20 45 22  
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INLET TEMPERATURE TE 26 65

OUTLET TEMPERATURES

RECIRCULATION PUMP TT 306 70  
 PUMP JACKET TE 613 69

FLUX BOOM TT 16 101

POWER CONTROLLERS TT 23 68

ARRAY POINTS

FACET 12		FACET 3		FACET 6		FACET 9	
BUSBAR COOLERS							
TE 700	98	TE 701	97	TE 702	104	TE 703	101

REFLECTOR COOLERS

TE 704	85	TE 705	85	TE 706	78	TE 707	91
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UPPER SKIRT	LOWER SKIRT	AMBIENT AIR
TE 708 75	TE 709 82	TE 710 124

ARRAY & FLUX BOOM OUTLET TE 24 83

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FIRST STAGE SUPERHEATER METAL TEMPERATURES

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 FIRST STAGE SUPERHEATER METAL TEMPERATURES 1977 116 13 38 22  
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## TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	149	933	149	615	150

## TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	674	702	700	695	670

## TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	959	459	867	877	150	885
TUBE NUMBER	7	8	9	10	11	12
	106	880	874	868	873	886

## HEADER TEMPERATURES

METAL	885	858	FLUID	873
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## DRUM TEMPERATURES

GUSSET PLATE	DRUM	597	STEAM LEVEL	611
	BRACKET	547	WATER LEVEL	593
	BASE	253	DRUM AT FEED	601
			FEED LINE	467
			DOWNCOMER	

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 FIRST STAGE SUPERHEATER METAL TEMPERATURES      1977 116 14 33 22  
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TUBE OUTLET METAL TEMPERATURES  
 TUBE NUMBER      2      5      4      11      8  
 ANGLE REF-N      300      210      240      30      120  
                   149      933      149      675      150

TUBE INLET METAL TEMPERATURES  
 TUBE NUMBER      6      9      4      3      12  
 ANGLE REF-N      300      210      0      30      120  
                   664      702      699      702      674

TUBE-TO-TUBE OUTLET TEMPERATURES  
 TUBE NUMBER      1      2      3      4      5      6  
                   857      556      867      876      150      884  
 TUBE NUMBER      7      8      9      10      11      12  
                   95      879      874      866      872      884

HEADER TEMPERATURES  
 METAL      884      856      FLUID      873

DRUM TEMPERATURES  
 GUSSET PLATE      DRUM      598      STEAM LEVEL      611  
                   BRACKET      540      WATER LEVEL      592  
                   BASE      256      DRUM AT FEED      602  
   FEED LINE      466  
   DOWNCOMER      603

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FIRST STAGE SUPERHEATER METAL TEMPERATURES          1977 116 15 5 22
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TUBE OUTLET METAL TEMPERATURES
TUBE NUMBER      2      5      4      11      8
ANGLE REF-N      300    210    240    30     120
                  149    958    149    696    150

TUBE INLET METAL TEMPERATURES
TUBE NUMBER      6      9      4      3      12
ANGLE REF-N      300    210    0      30     120
                  675    705    699    687    683

TUBE-TO-TUBE OUTLET TEMPERATURES
TUBE NUMBER      1      2      3      4      5      6
                  804    566    893    900    150    910
TUBE NUMBER      7      8      9      10     11     12
                  92     906    901    895    900    911

HEADER TEMPERATURES
METAL      911    878      FLUID      898

DRUM TEMPERATURES
GUSSET PLATE  DRUM      598    STEAM LEVEL      611
                BRACKET  548    WATER LEVEL      593
                BASE     258    DRUM AT FEED     601
                                FEED LINE      467
                                DOWNCOMER     602

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 FIRST STAGE SUPERHEATER METAL TEMPERATURES      1977   116   20   45   22  
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## TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	149	944	149	932	150

## TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	660	687	681	664	667

## TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	884	649	893	901	150	906
TUBE NUMBER	7	8	9	10	11	12
	42	904	900	900	905	910

## HEADER TEMPERATURES

METAL	910	877	FLUID	898
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## DRUM TEMPERATURES

GUSSET PLATE	DRUM	596	STEAM LEVEL	608
	BRACKET	547	WATER LEVEL	592
	BASE	259	DRUM AT FEED	601
			FEED LINE	466
			DOWNCOMER	602

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SECOND STAGE SUPERHEATER METAL TEMPERATURES

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 SECOND STAGE SUPERHEATER METAL TEMPERATURES      1977 116 13 38 22  
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## TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	984	961	149	149	985

## TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	150	867	150	883	150

## TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	954	149	959	957	953	959
TUBE NUMBER	7	8	9	10	11	12
	957	964	959	858	953	950

## HEADER TEMPERATURES

METAL	950	952	FLUID	954
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## LUG TEMPERATURES

	HEADER DISTANCE (INCHES)		
	.875	2.125	3.375
BOILER OUTLET SUPRT	797	656	536
S.H.1 OUTLET SUPRT	849	829	813
S.H.2 SNUBBER PLATE	597	589	582
S.H.2 SNUBBER BRAKT	946	942	940

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 SECOND STAGE SUPERHEATER METAL TEMPERATURES      1977 116 14 5 22  
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TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	978	958	149	149	975

TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	150	891	150	905	150

TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	964	149	966	964	958	964
TUBE NUMBER	7	8	9	10	11	12
	963	966	967	870	963	959

HEADER TEMPERATURES

METAL	959	944	FLUID	955
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LUG TEMPERATURES

	HEADER DISTANCE (INCHES)		
	.875	2.125	3.375
BOILER OUTLET SUPRT	787	651	533
S.H.1 OUTLET SUPRT	850	829	815
S.H.2 SNUBBER PLATE	593	503	579
S.H.2 SNUBBER BRAKT	938	933	933

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 SECOND STAGE SUPERHEATER METAL TEMPERATURES      1977   116   14   33   22  
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## TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	982	963	149	149	985

## TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	150	864	150	801	150

## TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	957	149	961	958	954	960
TUBE NUMBER	7	8	9	10	11	12
	958	965	959	861	955	949

## HEADER TEMPERATURES

METAL	949	954	FLUID	955
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## LUG TEMPERATURES

	HEADER DISTANCE (INCHES)		
	.875	2.125	3.375
BOILER OUTLET SUPRT	799	660	538
S.H.1 OUTLET SUPRT	847	829	815
S.H.2 SNUBBER PLATE	597	589	582
S.H.2 SNUBBER BRAKT	948	945	944

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 SECOND STAGE SUPERHEATER METAL TEMPERATURES      1977 116 15 5 22  
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## TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	980	965	149	149	986

## TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	150	857	150	876	150

## TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	956	149	960	956	953	959
TUBE NUMBER	7	8	9	10	11	12
	950	965	959	873	954	951

## HEADER TEMPERATURES

METAL	951	954	FLUID	954
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## LUG TEMPERATURES

	HEADER DISTANCE (INCHES)
	.875    2.125    3.375
BOILER OUTLET SUPRT	801    661    540
S.H.1 OUTLET SUPRT	968    847    829
S.H.2 SNUBBER PLATE	597    590    583
S.H.2 SNUBBER BRKT	948    945    944

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 SECOND STAGE SUPERHEATER METAL TEMPERATURES 1977 116 20 4 22  
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## TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	581	964	149	149	985

## TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	150	861	150	879	150

## TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	954	149	959	956	953	959
TUBE NUMBER	7	8	9	10	11	12
	957	963	950	830	953	951

## HEADER TEMPERATURES

METAL	951	954	FLUID	953
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## LUG TEMPERATURES

	HEADER DISTANCE (INCHES)		
	.875	2.125	3.375
BOILER OUTLET SUPRT	799	660	540
S.H.1 OUTLET SUPRT	870	851	835
S.H.2 SNUBBER PLATE	597	590	582
S.H.2 SNUBBER BRAKT	944	941	940

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 SECOND STAGE SUPERHEATER METAL TEMPERATURES      1977   116   20   45   22  
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## TUBE OUTLET METAL TEMPERATURES

TUBE NUMBER	2	5	4	11	8
ANGLE REF-N	300	210	240	30	120
	975	956	149	149	975

## TUBE INLET METAL TEMPERATURES

TUBE NUMBER	6	9	4	3	12
ANGLE REF-N	300	210	0	30	120
	150	859	150	877	150

## TUBE-TO-TUBE OUTLET TEMPERATURES

TUBE NUMBER	1	2	3	4	5	6
	954	149	958	955	951	958
TUBE NUMBER	7	8	9	10	11	12
	956	960	957	839	953	951

## HEADER TEMPERATURES

METAL	951	952	FLUID	953
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## LUG TEMPERATURES

	HEADER DISTANCE (INCHES)		
	.875	2.125	3.375
BOILER OUTLET SUPRT	796	658	538
S.H.1 OUTLET SUPRT	872	851	834
S.H.2 SNUBBER PLATE	594	597	500
S.H.2 SNUBBER BRAKT	944	940	938

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BOILER TEMPERATURE PROFILE



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 BOILER TEMPERATURE PROFILE 1977 116 13 38 22  
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DRUM T-SAT 608

LEVEL	COLUMN									
	1	2	3	4	5	6	7	8	9	10
8 66.0	641 T-81	640 T-82	639 T-83	643 T-84	641 T-85	638 T-86	641 T-87	150 T-88	641 T-89	643 T-810
7 57.2				643 T-74		641 T-76	643 T-77	643 T-79	641 T-79	
6 48.5	361 T-61	651 T-62	641 T-63	643 T-64	644 T-65	642 T-66	641 T-67	644 T-68	642 T-69	645 T-610
5 38.8				642 T-54		641 T-56	643 T-57	645 T-58	642 T-59	
4 29.0	643 T-41	640 T-42	643 T-43	642 T-44	643 T-45	639 T-46	643 T-47	643 T-48	640 T-49	644 T-410
3 19.2				640 T-34		639 T-36	641 T-37	641 T-38	639 T-39	
2 9.50	638 T-21	640 T-22	638 T-23	637 T-24	637 T-25	637 T-26	637 T-27	633 T-28	638 T-29	638 T-210
1 -.2				609 T-14		611 T-16	624 T-17	625 T-18	625 T-19	

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 BOILER TEMPERATURE PROFILE 1977 116 14 5 22  
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DRUM T-SAT 605

LEVEL	COLUMN									
	1	2	3	4	5	6	7	8	9	10
8 66.0	624 T-81	624 T-82	623 T-83	626 T-84	624 T-85	623 T-86	624 T-87	150 T-88	624 T-89	625 T-910
7 57.2				624 T-74		623 T-76	624 T-77	625 T-78	624 T-79	
6 48.5	356 T-61	634 T-62	623 T-63	624 T-64	626 T-65	624 T-66	624 T-67	626 T-68	625 T-69	626 T-610
5 38.8				624 T-54		624 T-56	624 T-57	625 T-58	624 T-59	
4 29.0	624 T-41	624 T-42	624 T-43	624 T-44	625 T-45	622 T-46	624 T-47	624 T-48	622 T-49	625 T-410
3 19.2				623 T-34		624 T-36	624 T-37	624 T-38	624 T-39	
2 9.50	623 T-21	624 T-22	623 T-23	623 T-24	621 T-25	622 T-26	621 T-27	610 T-28	622 T-29	623 T-210
1 -.2				603 T-14		606 T-16	613 T-17	614 T-18	614 T-19	

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 BOILER TEMPERATURE PROFILE 1977 116 14 33 22  
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DRUM T-SAT 608

LEVEL	COLUMN									
	1	2	3	4	5	6	7	8	9	10
8 66.0	641 T-81	542 T-82	638 T-83	643 T-84	641 T-85	638 T-86	642 T-87	150 T-88	638 T-89	642 T-810
7 57.2				642 T-74		641 T-76	643 T-77	642 T-78	639 T-79	
6 48.5	366 T-61	652 T-62	641 T-63	642 T-64	645 T-65	642 T-66	641 T-67	644 T-68	639 T-69	643 T-610
5 38.8				642 T-54		641 T-56	643 T-57	643 T-58	639 T-59	
4 29.0	643 T-41	642 T-42	643 T-43	642 T-44	643 T-45	639 T-46	643 T-47	641 T-48	637 T-49	643 T-410
3 19.2				640 T-34		641 T-36	641 T-37	640 T-38	637 T-39	
2 9.50	638 T-21	642 T-22	639 T-23	637 T-24	636 T-25	637 T-26	638 T-27	633 T-28	637 T-29	637 T-210
1 -1.2				609 T-14		613 T-16	624 T-17	626 T-18	625 T-19	

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 BOILER TEMPERATURE PROFILE  
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 DRUM T-SAT 608  
 -----  
 1977 116 15 5 22  
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LEVEL	1	2	3	4	5	COLUMN	6	7	8	9	10
8 66.0	642 T-81	643 T-82	640 T-83	645 T-84	642 T-85	639 T-86	642 T-87	150 T-88	641 T-89	641 T-810	
7 57.2				643 T-74		640 T-76	642 T-77	643 T-78	641 T-79		
6 48.5	367 T-61	654 T-62	641 T-63	643 T-64	644 T-65	642 T-66	639 T-67	644 T-68	641 T-69	641 T-610	
5 38.8				642 T-54		639 T-56	641 T-57	644 T-58	641 T-59		
4 29.0	641 T-41	641 T-42	642 T-43	640 T-44	642 T-45	637 T-46	641 T-47	641 T-48	639 T-49	638 T-410	
3 19.2				639 T-34		637 T-36	639 T-37	638 T-38	637 T-39		
2 9.50	636 T-21	641 T-22	637 T-23	640 T-24	635 T-25	636 T-26	636 T-27	631 T-28	636 T-29	635 T-210	
1 -.2				609 T-14		611 T-16	622 T-17	624 T-18	624 T-19		

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 BOILER TEMPERATURE PROFILE 1977 116 20 4 22  
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DRUM T-SAT 609

LEVEL	COLUMN									
	1	2	3	4	5	6	7	8	9	10
8 66.0	642 T-81	643 T-82	640 T-83	644 T-84	642 T-85	638 T-85	641 T-87	150 T-88	638 T-89	643 T-810
7 57.2				643 T-74		640 T-76	642 T-77	641 T-78	638 T-79	
6 48.5	358 T-61	655 T-62	641 T-63	643 T-64	644 T-65	641 T-66	639 T-67	641 T-68	639 T-69	644 T-610
5 38.8				642 T-54		639 T-56	641 T-57	641 T-58	638 T-59	
4 29.0	640 T-41	640 T-42	642 T-43	641 T-44	642 T-45	638 T-46	639 T-47	638 T-48	636 T-49	642 T-410
3 19.2				640 T-34		638 T-36	638 T-37	637 T-38	635 T-39	
2 9.50	636 T-21	640 T-22	637 T-23	636 T-24	635 T-25	636 T-26	636 T-27	631 T-28	635 T-29	636 T-210
1 - .2				609 T-14		611 T-16	622 T-17	625 T-18	624 T-19	

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 BOILER TEMPERATURE PROFILE  
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1977 116 20 45 22  
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DRUM T-SAT 607

LEVEL	COLUMN									
	1	2	3	4	5	6	7	8	9	10
8 66.0	631 T-81	633 T-82	629 T-83	633 T-84	631 T-85	628 T-86	630 T-87	150 T-88	631 T-89	632 T-810
7 57.2				633 T-74		630 T-76	630 T-77	632 T-78	631 T-79	
6 48.5	354 T-61	644 T-62	629 T-63	633 T-64	633 T-65	631 T-66	628 T-67	634 T-68	632 T-69	633 T-610
5 38.8				631 T-54		630 T-56	629 T-57	634 T-58	631 T-59	
4 29.0	631 T-41	630 T-42	630 T-43	631 T-44	631 T-45	628 T-46	629 T-47	631 T-48	629 T-49	632 T-410
3 19.2				629 T-34		629 T-36	628 T-37	629 T-38	628 T-39	
2 9.50	627 T-21	630 T-22	628 T-23	626 T-24	626 T-25	627 T-26	627 T-27	625 T-28	627 T-29	627 T-210
1 -.2				605 T-14		608 T-16	617 T-17	623 T-18	617 T-19	

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FIRST STAGE SUPERHEATER TEMPERATURE PROFILE

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 FIRST STAGE SUPERHEATER TEMPERATURE PROFILE      1977 116 13 38 22  
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TUBE \* 4

INLET	TS11	TE400	610
		TE401	609
		TE402	610
OUTLET	TS10	TE476	873
	LEG	TE459	877

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	895 T-46	149 T-41	149 T-42			
3	778 T-36	787 T-31	800 T-32	811 T-33	831 T-34	846 T-35
2	688 T-26	699 T-21	710 T-22	722 T-23	744 T-24	766 T-25
1	632 T-16	592 T-11	634 T-12	640 T-13	1318 T-14	679 T-15

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 FIRST STAGE SUPERHEATER TEMPERATURE PROFILE      1977   116   14   5   22  
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TUBE \* 4

INLET	TS11	TE400	605
		TE401	605
		TE402	605
OUTLET	TS10	TE476	876
LEG		TE459	891

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	855 T-46	149 T-41	149 T-42			
3	788 T-36	797 T-31	810 T-32	821 T-33	839 T-34	855 T-35
2	693 T-26	705 T-21	717 T-22	729 T-23	753 T-24	775 T-25
1	624 T-16	594 T-11	633 T-12	640 T-13	1353 T-14	683 T-15

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 FIRST STAGE SUPERHEATER TEMPERATURE PROFILE      1977 116 14 33 22  
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TUBE \* 4

INLET TS11 TE400      609  
           TE401      609  
           TE402      609  
 OUTLET TS10 TE476      873  
        LEG TE459      876

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	861 T-46	149 T-41	149 T-42			
3	779 T-36	787 T-31	800 T-32	811 T-33	831 T-34	846 T-35
2	688 T-26	699 T-21	710 T-22	722 T-23	744 T-24	766 T-25
1	630 T-16	598 T-11	633 T-12	640 T-13	1386 T-14	679 T-15

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 FIRST STAGE SUPERHEATER TEMPERATURE PROFILE      1977 116 15 5 22  
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TUBE \* 4

INLET	TS11	TE400	610
		TE401	610
		TE402	609
OUTLET	TS10	TE476	897
	LEG	TE459	900

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	906 T-46	149 T-41	149 T-42			
3	795 T-35	804 T-31	819 T-32	831 T-33	851 T-34	868 T-35
2	695 T-26	707 T-21	719 T-22	731 T-23	758 T-24	781 T-25
1	631 T-16	602 T-11	635 T-12	642 T-13	1434 T-14	685 T-15

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 FIRST STAGE SUPERHEATER TEMPERATURE PROFILE      1977 116 20 45 22  
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TUBE \* 4

INLET TS11 TE400      607  
                   TE401      607  
                   TE402      607  
 OUTLET TS10 TE476      897  
        LEG TE459      900

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	883 T-46	149 T-41	149 T-42			
3	800 T-36	809 T-31	822 T-32	834 T-33	855 T-34	872 T-35
2	698 T-26	708 T-21	721 T-22	735 T-23	760 T-24	785 T-25
1	628 T-16	593 T-11	634 T-12	642 T-13	1798 T-14	686 T-15

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 FIRST STAGE SUPERHEATER TEMPERATURE PROFILE      1977 116 20 4 22  
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TUBE \* 4

INLET	TS11	TE400	610
		TE401	610
		TE402	610
OUTLET	TS10	TE476	898
	LEG	TE459	898

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	879 T-46	149 T-41	149 T-42			
3	795 T-36	805 T-31	817 T-32	829 T-33	850 T-34	868 T-35
2	696 T-26	707 T-21	719 T-22	731 T-23	756 T-24	781 T-25
1	631 T-16	590 T-11	634 T-12	642 T-13	1765 T-14	685 T-15

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PAGE 10

SECOND STAGE SUPERHEATER TEMPERATURE PROFILE

\*\*\*\*\*  
 SECOND STAGE SUPERHEATER TEMPERATURE PROFILE      1977 116 13 38 22  
 -----

TUBE \* 4  
 INLET TS2I TE501 829  
 OUTLET TS20 TT590 954  
       LEG TE559 957

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	950 T-46	556 T-41	149 T-42			
3	917 T-36	991 T-31	927 T-32	932 T-33	939 T-34	946 T-35
2	881 T-26	888 T-21	888 T-22	895 T-23	905 T-24	910 T-25
1	150 T-16	840 T-11	847 T-12	852 T-13	864 T-14	150 T-15

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 SECOND STAGE SUPERHEATER TEMPERATURE PROFILE      1977 116 14 5 22  
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TUBE \* 4

INLET TS21 TE501 871

OUTLET TS20 TT590 956

LEG TE559 964

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	965 T-46	564 T-41	149 T-42			
3	944 T-35	1002 T-31	950 T-32	955 T-33	958 T-34	963 T-35
2	917 T-26	921 T-21	921 T-22	927 T-23	936 T-24	939 T-25
1	150 T-16	876 T-11	888 T-12	893 T-13	904 T-14	150 T-15

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 SECOND STAGE SUPERHEATER TEMPERATURE PROFILE      1977 116 14 33 22  
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TUBE \* 4  
 INLET TS21 TE501 825

OUTLET TS20 TT590 955  
 LEG TE559 958

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	953 T-46	558 T-41	149 T-42			
3	918 T-36	981 T-31	929 T-32	934 T-33	940 T-34	949 T-35
2	879 T-26	887 T-21	887 T-22	895 T-23	905 T-24	912 T-25
1	150 T-16	835 T-11	844 T-12	849 T-13	862 T-14	150 T-15

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\*\*\*\*\*  
 SECOND STAGE SUPERHEATER TEMPERATURE PROFILE      1977 116 15 7 22  
 -----

TUBE \* 4  
 INLET TS2I TE501    818  
 OUTLET TS20 TT590    954  
        LEG TE559    956

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	949 T-46	556 T-41	149 T-42			
3	913 T-36	993 T-31	924 T-32	930 T-33	937 T-34	944 T-35
2	874 T-26	882 T-21	882 T-22	890 T-23	900 T-24	907 T-25
1	150 T-16	830 T-11	839 T-12	944 T-13	857 T-14	150 T-15

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 SECOND STAGE SUPERHEATER TEMPERATURE PROFILE      1977 116 20 4 22  
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TUBE \* 4  
 INLET TS2I TE501 819

OUTLET TS20 TT590 953  
 LEG TE559 956

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	949 T-46	556 T-41	149 T-42			
3	914 T-36	946 T-31	923 T-32	930 T-33	937 T-34	945 T-35
2	876 T-26	883 T-21	883 T-22	890 T-23	902 T-24	907 T-25
1	150 T-16	830 T-11	839 T-12	844 T-13	859 T-14	150 T-15

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 SECOND STAGE SUPERHEATER TEMPERATURE PROFILE      1977 116 20 45 22  
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TUBE \* 4

INLET TS21 TE501 831

OUTLET TS20 TT590 952

LEG TE559 954

TURN	COLUMN					
	6	1	2	3	4	5
	345	300	255	210	120	30
4	950 T-46	556 T-41	149 T-42			
3	919 T-36	936 T-31	927 T-32	931 T-33	939 T-34	946 T-35
2	884 T-26	889 T-21	899 T-22	896 T-23	907 T-24	913 T-25
1	150 T-16	839 T-11	847 T-12	852 T-13	866 T-14	150 T-15

\*\*\*\*\*

PAGE 11  
WARNINGS AND ALARMS REPORT

PAGE 12  
ALARM CONDITIONS

```

*****
ALARM CONDITIONS      YEAR  DAY  HR  MIN  SEC  TEST
                    1977  116  11  18  39   22

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  116  11  22  38   22

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  116  13  58  5   22

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  116  13  59  6   22

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  116  13  53  46   22

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  116  14   3  46   22

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  116  21   8  41   22

ALARM  INPUT  CURRENT  ALARM  CURRENT  HI-LO
NUMBER DEVICE  VALUE    VALUE    COUNT
    1   LT211   48         47         1     HI
*****

```



PAGE 13  
ARRAY FLUX MAP

## ARRAY FLUX MAP

YEAR	DAY	HR	MIN	TEST
1977	116	13	39	22

TOTAL BOILER INCIDENT FLUX	221
TOTAL S.H.#1 INCIDENT FLUX	99
TOTAL S.H.#2 INCIDENT FLUX	43
TOTAL SRE INCIDENT FLUX	358

ARRAY INPUT POWER	
SECTION # 1	872
SECTION # 2	918
SECTION # 3	984
SECTION # 4	898

TOTAL INPUT POWER	3580
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ROOM	IF 1	IF 2	IF 3	IF 4	IF 5	IF 6	IF 7	IF 8	IF 9	IF 10	IF 11	IF 12
1	1194	1334	1458	1361	1291	954	730	539	442	336	239	258
2	1285	1355	1474	1374	1299	964	749	547	459	348	239	254
3	1194	1343	1466	1340	1278	943	718	535	455	324	258	254
4	1232	1384	1508	1391	1320	964	749	531	442	328	228	258
5	1232	1376	1508	1382	1308	954	722	528	459	340	247	254
6	1216	1371	1499	1374	1287	943	722	531	429	324	254	262
7	1224	1384	1524	1416	1324	961	737	539	446	344	254	258
8	1186	1343	1483	1365	1299	943	718	528	442	344	247	254
9	1175	1338	1474	1361	1283	936	726	531	455	360	235	258
10	1178	1343	1487	1378	1291	943	737	543	459	344	239	279
11	1148	1306	1441	1328	1253	918	722	528	446	328	247	258
12	1178	1334	1478	1365	1299	936	718	543	446	336	235	245
13	1175	1334	1466	1357	1291	928	722	528	438	328	239	283
14	1148	1293	1416	1328	1266	914	703	512	438	328	243	262
15	1156	1318	1441	1340	1274	936	711	528	429	340	228	254
16	1148	1293	1428	1344	1274	928	738	539	446	348	232	262
17	1125	1268	1399	1387	1245	903	707	524	429	324	247	254
18	1148	1285	1433	1332	1258	925	722	535	458	344	224	254
19	1148	1277	1488	1315	1258	983	718	528	442	344	235	254
20	1133	1268	1488	1315	1237	907	699	512	438	344	262	258
21	1144	1281	1488	1315	1249	925	714	528	429	328	254	262
22	1159	1289	1428	1332	1274	932	714	528	446	368	258	279
23	1129	1268	1391	1298	1233	903	692	528	438	344	247	262
24	1156	1293	1433	1328	1258	914	722	535	455	344	224	254
25	1148	1289	1433	1332	1253	918	714	528	442	356	239	258
26	1118	1268	1391	1298	1237	908	703	528	446	336	235	262
27	1156	1301	1441	1340	1274	932	722	531	455	344	239	258
28	1156	1301	1441	1344	1274	914	707	528	463	344	247	258
29	1129	1273	1399	1315	1241	914	707	535	455	348	232	252
30	1148	1306	1437	1340	1274	932	733	535	446	348	254	258
31	1156	1306	1441	1344	1283	943	737	535	458	344	258	254
32	1133	1285	1428	1328	1266	929	714	528	446	348	239	262
33	1163	1318	1441	1357	1291	946	745	551	467	352	239	288
34	1159	1301	1424	1340	1283	939	733	551	459	352	247	258

## ARRAY FLUX MAP

YEAR DAY HR MIN TEST  
1977 116 14 5 22

TOTAL BOILER INCIDENT FLUX 135  
TOTAL S.H.#1 INCIDENT FLUX 57  
TOTAL S.H.#2 INCIDENT FLUX 32  
TOTAL SRE INCIDENT FLUX 220

ARRAY INPUT POWER  
SECTION # 1 499  
SECTION # 2 518  
SECTION # 3 513  
SECTION # 4 506

TOTAL INPUT POWER 2040

BOOM	IF 1	IF 2	IF 3	IF 4	IF 5	IF 6	IF 7	IF 8	IF 9	IF10	IF11	IF12
1	737	824	887	817	787	594	479	388	328	260	187	199
2	737	828	899	829	791	612	494	365	341	264	198	203
3	737	824	887	812	783	594	482	388	337	244	198	224
4	768	848	933	846	799	597	490	388	345	256	198	220
5	764	848	920	846	799	612	494	384	328	260	202	203
6	730	828	899	825	791	604	479	388	328	252	198	216
7	760	856	924	846	816	612	494	384	337	264	194	203
8	737	832	899	842	799	590	479	380	337	264	198	220
9	733	832	899	829	791	597	479	372	320	256	190	203
10	733	832	904	838	791	597	479	380	328	260	194	203
11	707	811	883	808	774	583	482	361	320	256	198	211
12	730	828	899	825	787	590	475	365	328	264	187	207
13	730	824	904	825	791	604	475	372	337	248	202	211
14	718	799	883	821	774	583	467	361	328	256	194	211
15	722	815	887	821	791	590	479	380	332	272	194	211
16	718	803	883	812	791	594	471	388	337	280	202	224
17	699	774	849	783	766	572	463	361	328	244	194	211
18	707	791	866	804	758	579	479	372	328	272	194	216
19	703	782	858	791	758	579	479	376	328	260	194	220
20	692	756	854	787	749	565	463	365	324	260	187	203
21	699	774	849	791	758	568	463	357	328	252	187	199
22	707	786	874	808	774	579	471	365	328	264	187	224
23	688	774	849	783	749	561	463	376	328	264	202	203
24	703	778	849	796	758	568	467	388	341	296	202	211
25	707	795	874	804	758	576	463	368	328	272	194	224
26	692	774	849	804	758	561	460	357	324	260	194	194
27	707	786	874	808	770	583	479	380	337	264	194	228
28	707	795	874	804	774	568	475	372	328	252	198	203
29	692	782	849	796	754	576	463	357	328	264	194	211
30	707	799	891	812	766	583	479	388	328	264	209	211
31	714	799	874	800	774	583	479	376	328	260	202	211
32	703	791	858	796	774	583	471	372	332	264	183	228
33	714	807	874	812	783	612	486	388	337	280	199	220
34	707	799	858	808	770	579	479	372	341	252	202	203

## ARRAY FLUX MAP

YEAR	DAY	HR	MIN	TEST
1977	116	14	34	22

TOTAL BOILER INCIDENT FLUX	224
TOTAL S.H.#1 INCIDENT FLUX	92
TOTAL S.H.#2 INCIDENT FLUX	44
TOTAL SRE INCIDENT FLUX	368

ARRAY INPUT POWER	
SECTION # 1	863
SECTION # 2	925
SECTION # 3	906
SECTION # 4	858

TOTAL INPUT POWER	3580
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BOOM	IF 1	IF 2	IF 3	IF 4	IF 5	IF 6	IF 7	IF 8	IF 9	IF10	IF11	IF12
1	1178	1326	1445	1357	1295	943	745	566	455	356	224	254
2	1201	1343	1470	1365	1299	950	737	547	455	340	247	279
3	1186	1326	1441	1332	1256	946	733	535	446	328	262	288
4	1235	1376	1503	1395	1316	957	749	531	442	340	247	262
5	1224	1371	1508	1374	1303	943	730	528	459	336	247	262
6	1209	1359	1487	1365	1295	943	718	528	442	340	232	262
7	1224	1376	1516	1399	1320	957	737	531	446	344	250	250
8	1186	1338	1474	1365	1274	928	722	520	459	344	247	254
9	1178	1334	1470	1349	1274	928	722	520	446	336	228	241
10	1209	1384	1541	1458	1374	1000	768	566	463	360	243	245
11	1186	1355	1500	1424	1341	986	752	543	459	352	269	262
12	1194	1353	1520	1424	1349	1000	760	543	459	352	277	258
13	1205	1390	1533	1441	1374	1015	768	551	459	348	258	258
14	1186	1343	1499	1420	1349	986	775	543	463	360	254	258
15	1178	1351	1499	1432	1366	986	764	543	450	352	235	258
16	1170	1334	1491	1416	1358	1000	760	551	476	368	262	262
17	1148	1293	1458	1374	1316	964	737	535	459	356	254	258
18	1182	1322	1491	1407	1341	972	760	551	455	368	243	292
19	1171	1310	1466	1399	1324	964	745	547	459	344	247	254
20	1148	1285	1433	1353	1287	943	722	535	455	328	247	258
21	1133	1268	1399	1294	1233	910	695	512	442	344	232	254
22	1148	1293	1437	1332	1270	928	718	531	455	344	235	262
23	1133	1268	1403	1311	1233	907	699	520	438	328	232	245
24	1148	1281	1424	1328	1253	921	722	520	463	328	239	262
25	1156	1306	1445	1349	1266	925	722	531	455	336	239	254
26	1129	1268	1400	1315	1241	903	692	504	433	340	239	271
27	1156	1297	1433	1340	1258	914	718	535	455	336	224	245
28	1159	1293	1433	1328	1266	914	718	520	438	340	254	254
29	1133	1285	1408	1307	1249	910	699	520	438	344	247	258
30	1163	1306	1441	1349	1274	943	733	535	446	336	235	245
31	1159	1306	1437	1340	1283	939	722	528	446	344	247	258
32	1140	1285	1412	1332	1266	918	714	528	429	336	239	254
33	1167	1310	1445	1365	1303	957	737	543	467	344	250	245
34	1148	1310	1437	1340	1274	939	733	547	467	344	250	254

## ARRAY FLUX MAP

YEAR	DAY	HR	MIN	TEST
1977	116	15	7	22

TOTAL BOILER INCIDENT FLUX	214
TOTAL S.H.#1 INCIDENT FLUX	93
TOTAL S.H.#2 INCIDENT FLUX	44
TOTAL SRE INCIDENT FLUX	350

ARRAY INPUT POWER	
SECTION # 1	1000
SECTION # 2	971
SECTION # 3	794
SECTION # 4	760

TOTAL INPUT POWER	3550
-------------------	------

ROOM	IF 1	IF 2	IF 3	IF 4	IF 5	IF 6	IF 7	IF 8	IF 9	IF10	IF11	IF12
1	1102	1244	1403	1357	1324	986	768	570	471	360	232	298
2	1114	1277	1424	1365	1349	1008	775	551	463	344	254	271
3	1102	1260	1412	1357	1337	990	745	551	446	352	247	262
4	1148	1301	1474	1407	1374	1011	779	559	463	344	232	275
5	1140	1301	1470	1399	1358	1015	760	559	455	360	273	271
6	1129	1293	1466	1395	1366	1000	764	543	455	344	247	262
7	1140	1310	1497	1428	1387	1015	791	559	459	352	247	254
8	1102	1273	1433	1392	1349	986	760	559	471	336	243	266
9	1102	1260	1449	1391	1345	993	752	566	463	344	239	254
10	1102	1277	1458	1407	1366	1015	779	563	471	352	235	262
11	1000	1252	1424	1357	1320	979	752	555	455	352	247	262
12	1110	1273	1441	1395	1345	997	760	559	476	364	232	275
13	1110	1273	1449	1407	1374	1000	783	566	459	340	232	258
14	1072	1236	1399	1357	1328	993	760	547	463	344	262	262
15	1007	1244	1424	1382	1345	1000	760	547	455	360	239	279
16	1000	1236	1424	1378	1349	1000	764	559	463	352	262	288
17	1053	1194	1358	1315	1207	950	745	539	450	344	262	250
18	1072	1219	1391	1340	1308	972	745	551	446	352	239	250
19	1064	1211	1383	1332	1287	939	745	539	459	336	258	250
20	1057	1186	1349	1307	1262	921	718	528	450	340	243	254
21	1045	1186	1353	1298	1249	925	730	528	459	332	228	262
22	1072	1211	1383	1311	1274	939	737	551	446	348	243	258
23	1057	1190	1349	1290	1241	925	714	539	446	344	243	262
24	1057	1207	1358	1294	1245	936	730	547	463	360	232	262
25	1064	1211	1378	1315	1266	936	737	563	463	344	258	279
26	1045	1194	1349	1294	1253	918	714	528	455	328	239	262
27	1064	1211	1374	1307	1270	928	730	539	463	328	239	258
28	1060	1219	1387	1315	1266	939	745	551	459	344	243	245
29	1049	1194	1341	1282	1245	918	722	528	446	332	247	262
30	1072	1211	1378	1324	1283	943	737	559	463	328	224	258
31	1061	1219	1378	1324	1291	950	737	551	463	336	262	254
32	1049	1194	1353	1303	1274	939	737	535	459	336	235	245
33	1072	1231	1395	1336	1308	979	749	543	463	360	243	279
34	1057	1207	1366	1315	1278	954	752	531	450	349	258	292

## ARRAY FLUX MAP

YEAR	DAY	HR	MIN	TEST
1977	116	28	6	22

TOTAL BOILER INCIDENT FLUX	215
TOTAL S.H.#1 INCIDENT FLUX	93
TOTAL S.H.#2 INCIDENT FLUX	44
TOTAL SRE INCIDENT FLUX	350

ARRAY INPUT POWER	
SECTION # 1	1002
SECTION # 2	971
SECTION # 3	799
SECTION # 4	780

TOTAL INPUT POWER	3550
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BOOM	IF 1	IF 2	IF 3	IF 4	IF 5	IF 6	IF 7	IF 8	IF 9	IF10	IF11	IF12
1	1076	1236	1399	1353	1341	997	775	566	471	340	232	254
2	1095	1260	1424	1391	1358	1008	772	559	459	364	239	258
3	1095	1248	1416	1361	1341	986	772	551	463	336	258	262
4	1137	1293	1474	1420	1387	1036	798	574	476	348	243	279
5	1133	1301	1487	1420	1383	1018	783	566	459	336	247	254
6	1133	1297	1470	1412	1374	1004	760	555	459	352	239	292
7	1149	1318	1491	1420	1367	1022	772	547	455	336	254	254
8	1118	1285	1458	1395	1358	993	749	539	438	336	254	292
9	1102	1268	1437	1365	1316	961	745	520	446	336	247	305
10	1114	1285	1466	1391	1328	979	737	535	450	340	243	279
11	1087	1256	1428	1353	1295	954	718	520	442	336	247	279
12	1110	1273	1441	1382	1308	961	722	528	438	348	243	279
13	1118	1277	1458	1412	1353	997	760	539	455	344	232	250
14	1080	1244	1408	1357	1337	990	745	547	455	344	235	271
15	1099	1268	1441	1391	1366	997	760	551	450	356	232	250
16	1095	1256	1428	1382	1366	997	764	551	455	360	243	279
17	1072	1219	1391	1349	1303	979	737	547	446	340	243	262
18	1087	1227	1403	1361	1320	968	768	547	446	360	243	258
19	1072	1211	1383	1340	1287	961	737	539	450	344	247	262
20	1057	1194	1349	1303	1258	925	718	535	446	348	232	292
21	1061	1194	1358	1298	1262	928	722	531	442	344	228	254
22	1050	1223	1383	1319	1270	943	730	535	446	344	232	275
23	1057	1194	1341	1282	1245	914	707	528	442	336	247	271
24	1064	1211	1370	1303	1258	936	719	531	446	352	254	245
25	1072	1219	1374	1303	1266	943	730	531	463	324	247	245
26	1049	1194	1349	1290	1249	921	707	531	463	336	243	258
27	1072	1219	1383	1315	1266	932	745	547	450	344	217	258
28	1076	1227	1387	1307	1270	943	737	543	463	332	254	275
29	1042	1198	1341	1282	1249	914	722	535	455	360	247	258
30	1072	1227	1399	1324	1283	939	745	547	450	344	228	262
31	1064	1219	1387	1311	1287	950	737	535	446	344	239	254
32	1049	1194	1341	1307	1270	950	737	535	459	344	243	275
33	1064	1227	1383	1332	1320	986	760	559	459	336	232	254
34	1057	1211	1366	1324	1291	964	752	551	467	336	239	262

\*\*\*\*\*

## ARRAY FLUX MAP

YEAR DAY HR MIN TEST  
1977 116 20 45 22

TOTAL BOILER INCIDENT FLUX 166  
TOTAL S.H.#1 INCIDENT FLUX 73  
TOTAL S.H.#2 INCIDENT FLUX 37  
TOTAL SRE INCIDENT FLUX 270

## ARRAY INPUT POWER

SECTION # 1 754  
SECTION # 2 727  
SECTION # 3 598  
SECTION # 4 586

TOTAL INPUT POWER 2670

ROOM	IF 1	IF 2	IF 3	IF 4	IF 5	IF 6	IF 7	IF 8	IF 9	IF10	IF11	IF12
1	840	964	1078	1047	1024	763	619	458	396	304	217	237
2	859	972	1100	1068	1049	792	631	454	379	328	213	245
3	844	976	1099	1047	1041	777	612	442	379	296	213	245
4	889	1013	1141	1106	1003	810	638	462	387	304	202	228
5	882	1013	1141	1097	1074	792	619	469	396	304	213	245
6	882	1009	1137	1089	1049	784	612	450	374	296	228	228
7	839	1025	1153	1106	1070	806	616	450	379	300	202	220
8	867	988	1124	1060	1024	766	585	442	374	284	232	237
9	859	992	1120	1051	1016	763	597	442	370	296	202	228
10	867	997	1133	1064	1024	766	589	442	387	292	198	224
11	836	972	1099	1034	991	741	570	434	362	292	209	228
12	867	997	1120	1068	1024	766	585	454	374	289	205	220
13	867	997	1133	1064	1049	784	600	454	379	300	217	241
14	848	976	1103	1064	1033	777	604	442	374	288	220	241
15	859	980	1112	1009	1058	813	616	458	374	304	209	220
16	844	968	1103	1068	1041	781	616	458	387	300	213	220
17	829	943	1070	1030	1016	752	593	442	387	296	209	220
18	840	959	1097	1055	1024	756	608	442	396	296	202	224
19	829	939	1058	1013	1004	738	597	458	391	296	217	224
20	825	931	1053	1005	974	741	581	434	370	296	217	245
21	829	939	1058	1013	983	730	585	454	379	296	209	220
22	832	947	1062	1013	974	727	581	442	379	296	217	224
23	813	931	1033	984	958	723	578	427	379	300	202	224
24	825	939	1058	997	974	727	578	442	379	304	220	224
25	836	947	1074	1013	974	741	581	442	379	312	224	237
26	810	922	1041	993	962	705	555	427	383	296	217	241
27	836	947	1066	1013	979	727	585	442	379	304	209	224
28	829	943	1066	1022	987	727	578	446	374	296	217	228
29	821	931	1041	997	966	723	566	434	387	296	213	237
30	829	955	1070	1026	987	734	593	442	391	296	217	220
31	817	939	1062	1013	974	741	589	446	370	296	209	228
32	810	927	1041	997	983	727	585	442	370	308	209	241
33	829	947	1074	1026	1008	763	600	454	387	304	205	224
34	813	931	1058	1022	991	741	612	454	396	296	209	220

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PAGE 14  
FLOWS, PLOTS



SEARCH START  
DAY #116 1977 TIME 13:33  
NUMBER OF RECORDS = 4

ARGUMENT SELECTED : 1

FIRST FUNCTION \* 8 OPEN BOX

SECOND FUNCTION \*10 TRIANGLE

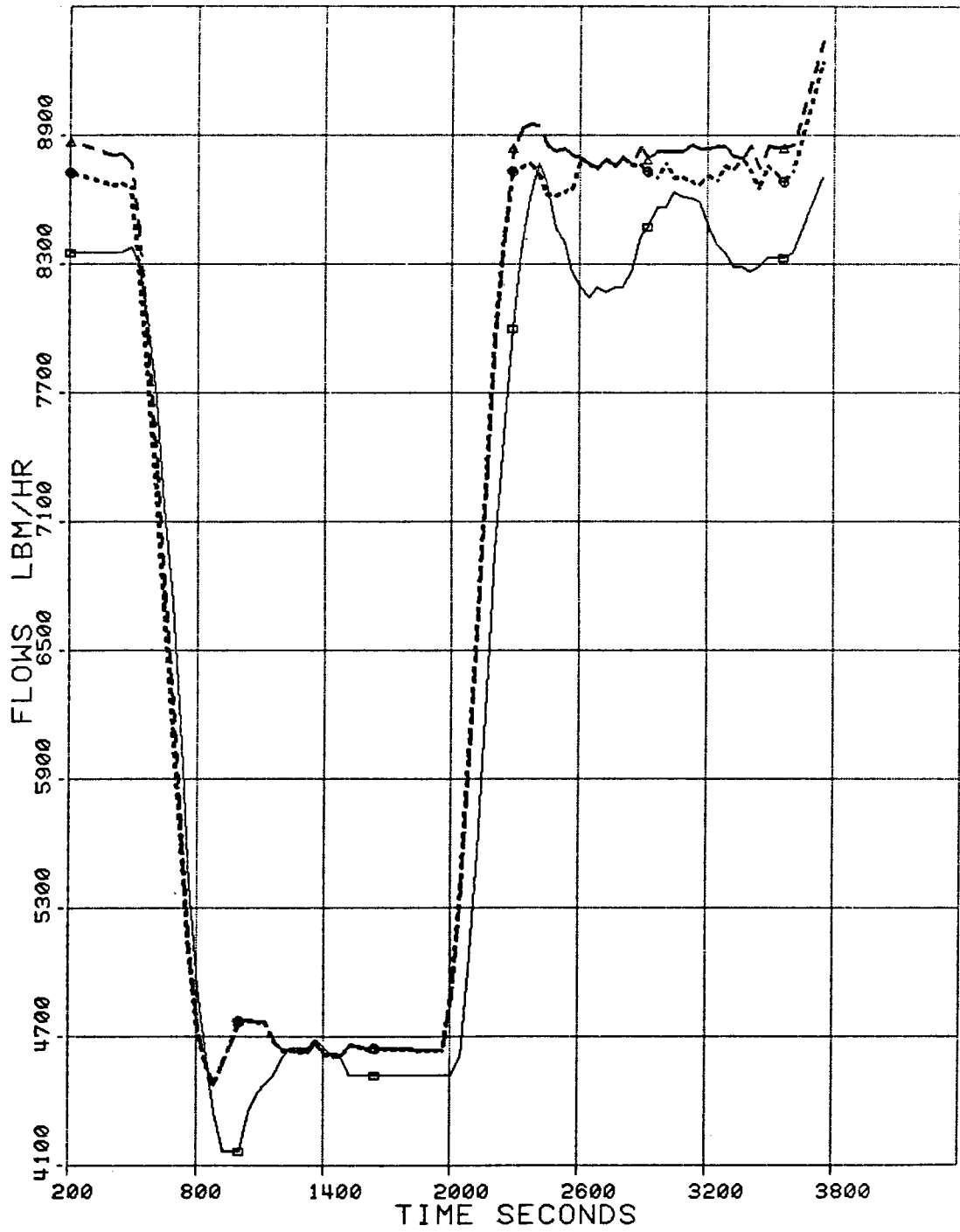
THIRD FUNCTION \*17 CROSS-CIRCLE

SEARCH MODE 2

PLOT START TIME = 48700.0

EACH 2TH POINT IS PLOTTED

LINE PLOT HAS 83 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 13:33  
NUMBER OF RECORDS = 2

ARGUMENT SELECTED : 1

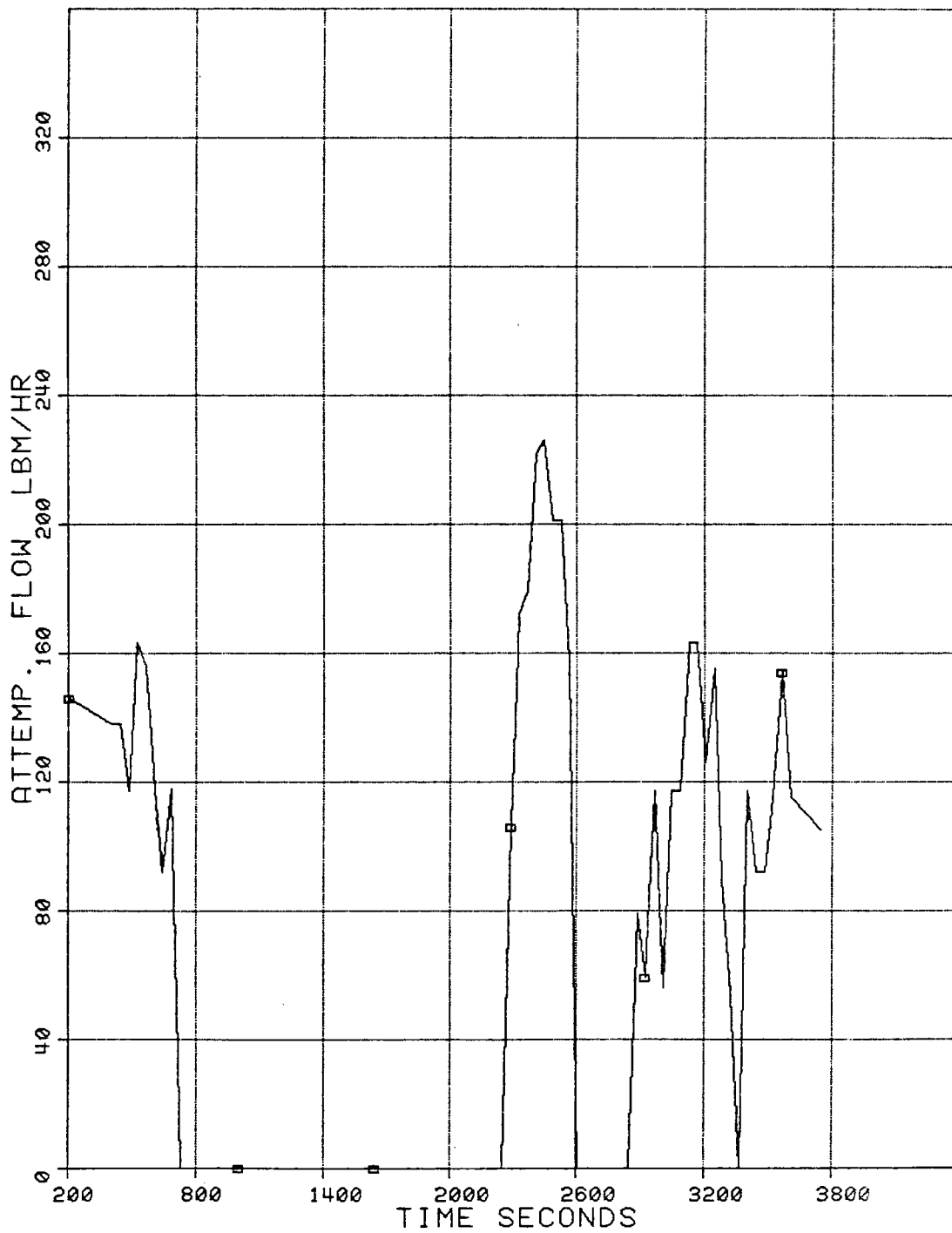
FIRST FUNCTION \* 9 OPEN BOX

SEARCH MODE 2

PLOT START TIME = 48780.0

EACH 2TH POINT IS PLOTTED

LINE PLOT HAS 83 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 15: 0  
NUMBER OF RECORDS = 2

ARGUMENT SELECTED : 1

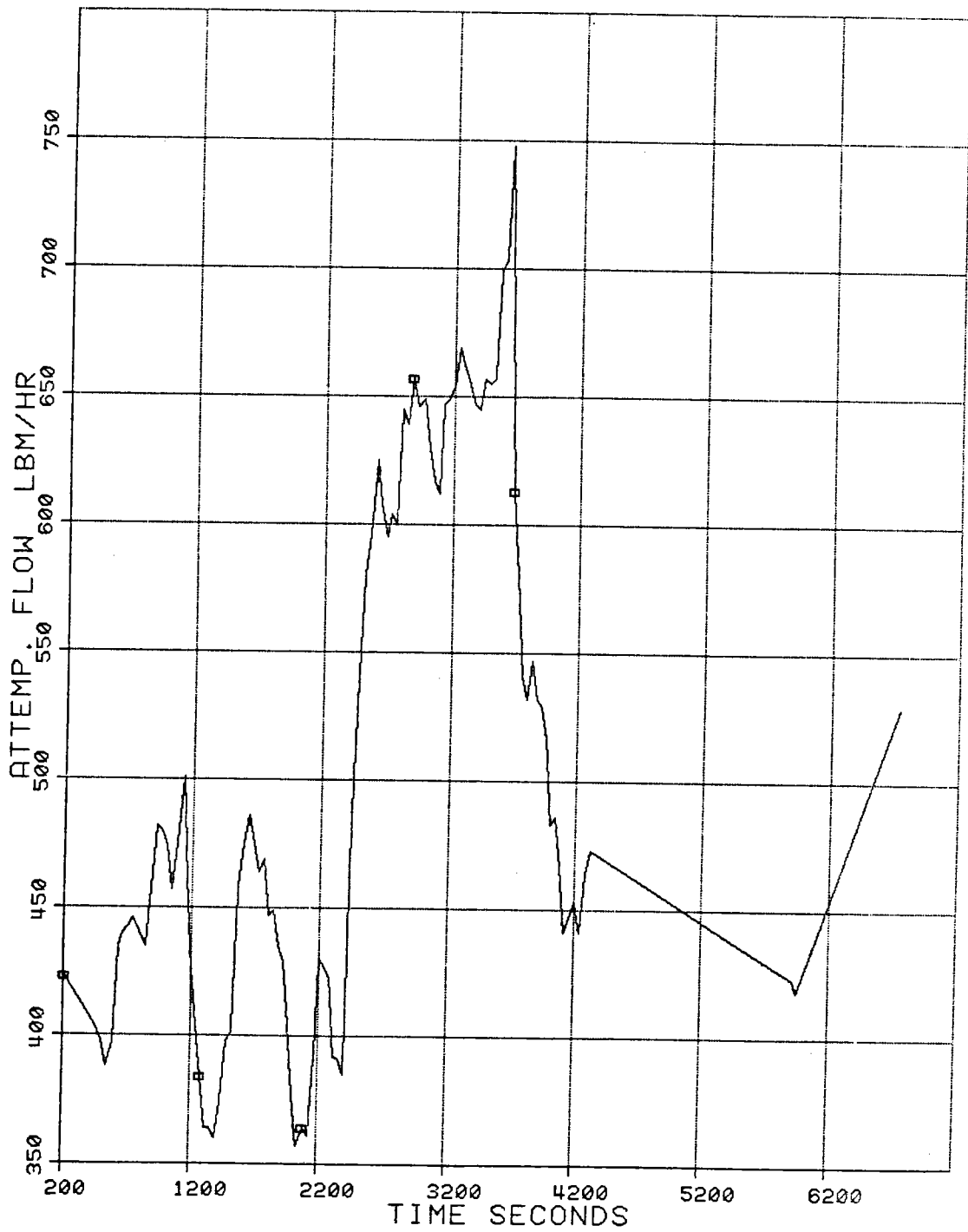
FIRST FUNCTION \* 9 OPEN BOX

SEARCH MODE 2

PLOT START TIME = 54000.0

EACH 2TH POINT IS PLOTTED

LINE PLOT HAS 100 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 15: 0  
NUMBER OF RECORDS = 4

ARGUMENT SELECTED : 1

FIRST FUNCTION # 8 OPEN BOX

SECOND FUNCTION #10 TRIANGLE

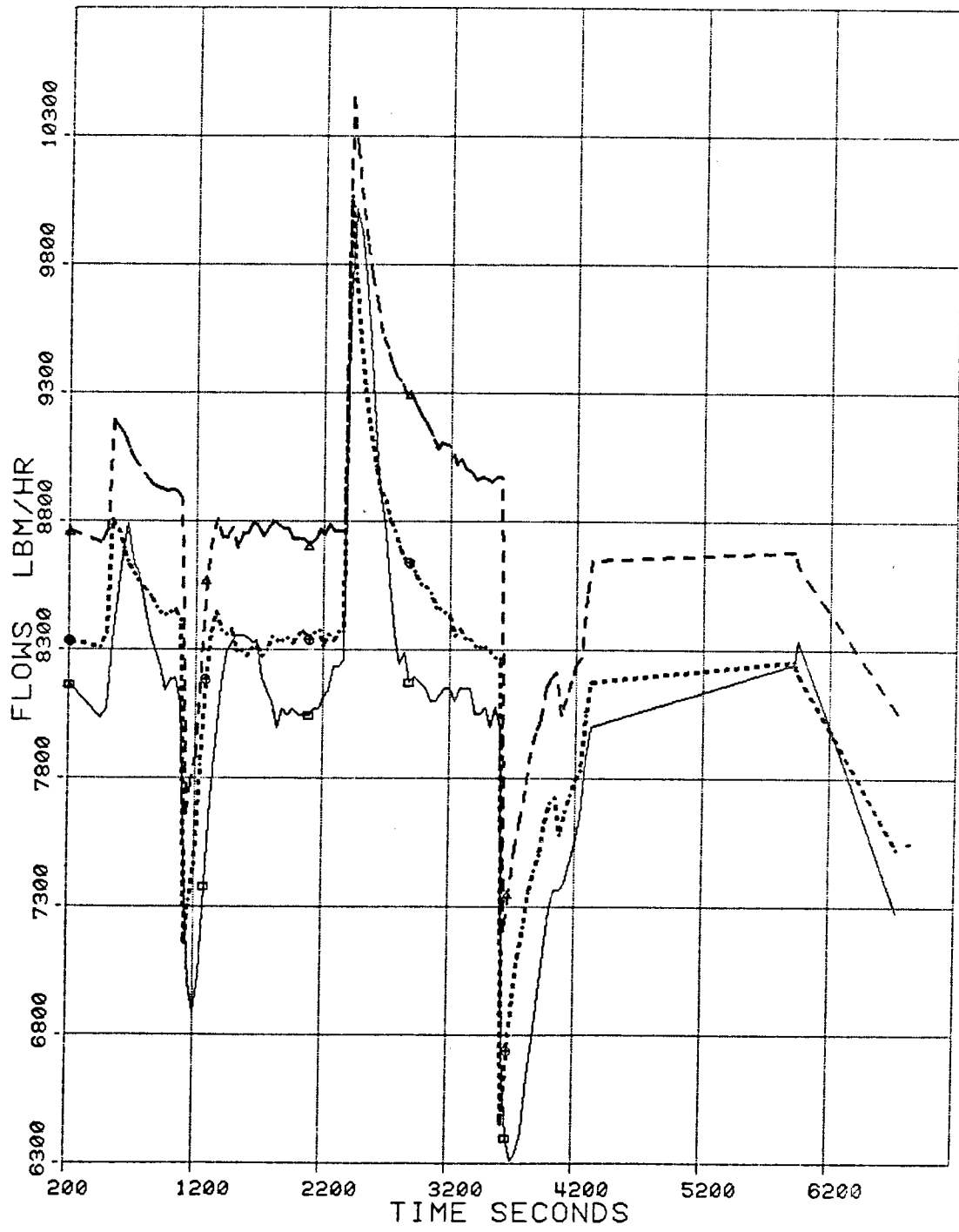
THIRD FUNCTION #17 CROSS-CIRCLE

SEARCH MODE 2

PLOT START TIME = 54000.0

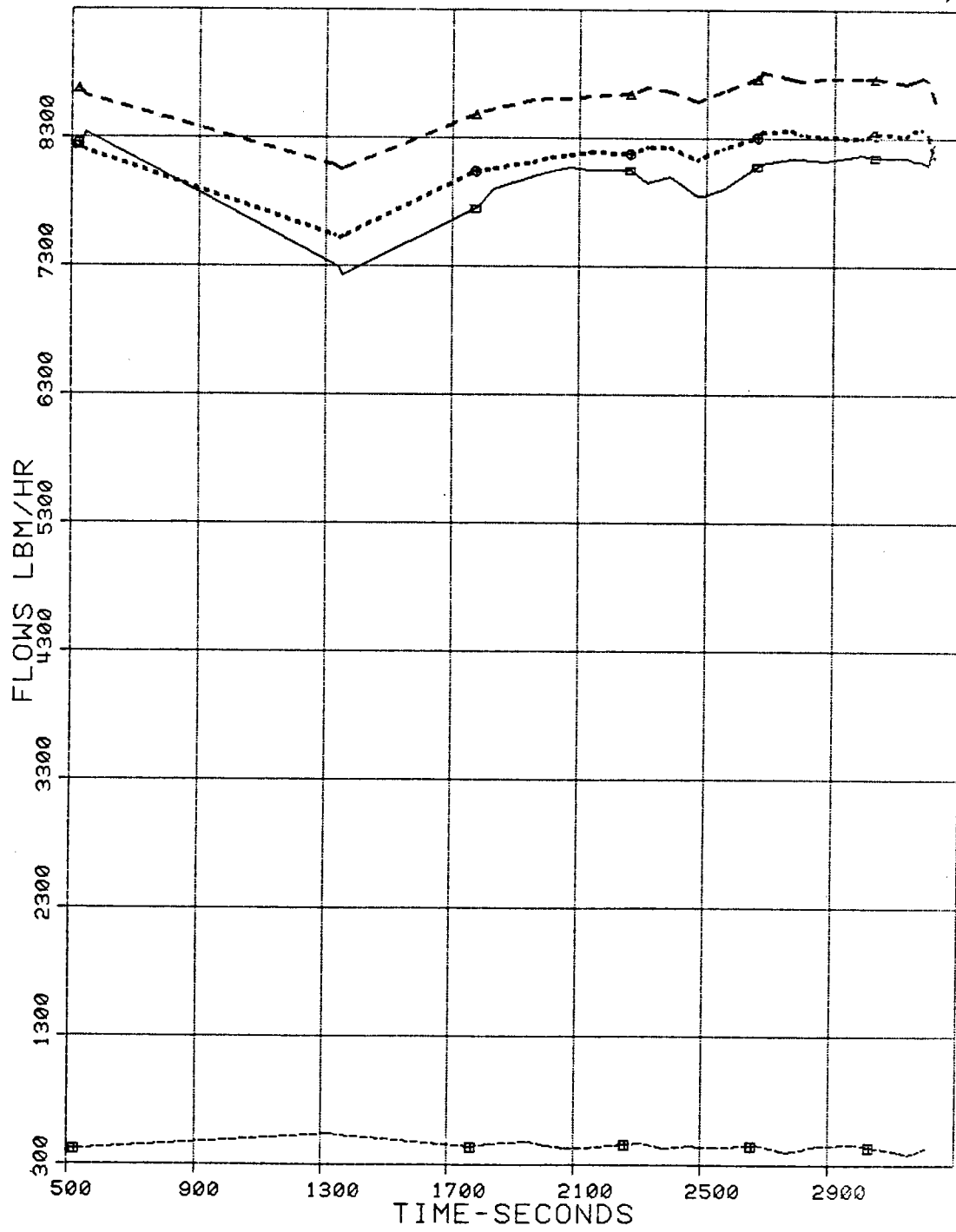
EACH 2TH POINT IS PLOTTED

LINE PLOT HAS 100 POINTS PER FUNCTION

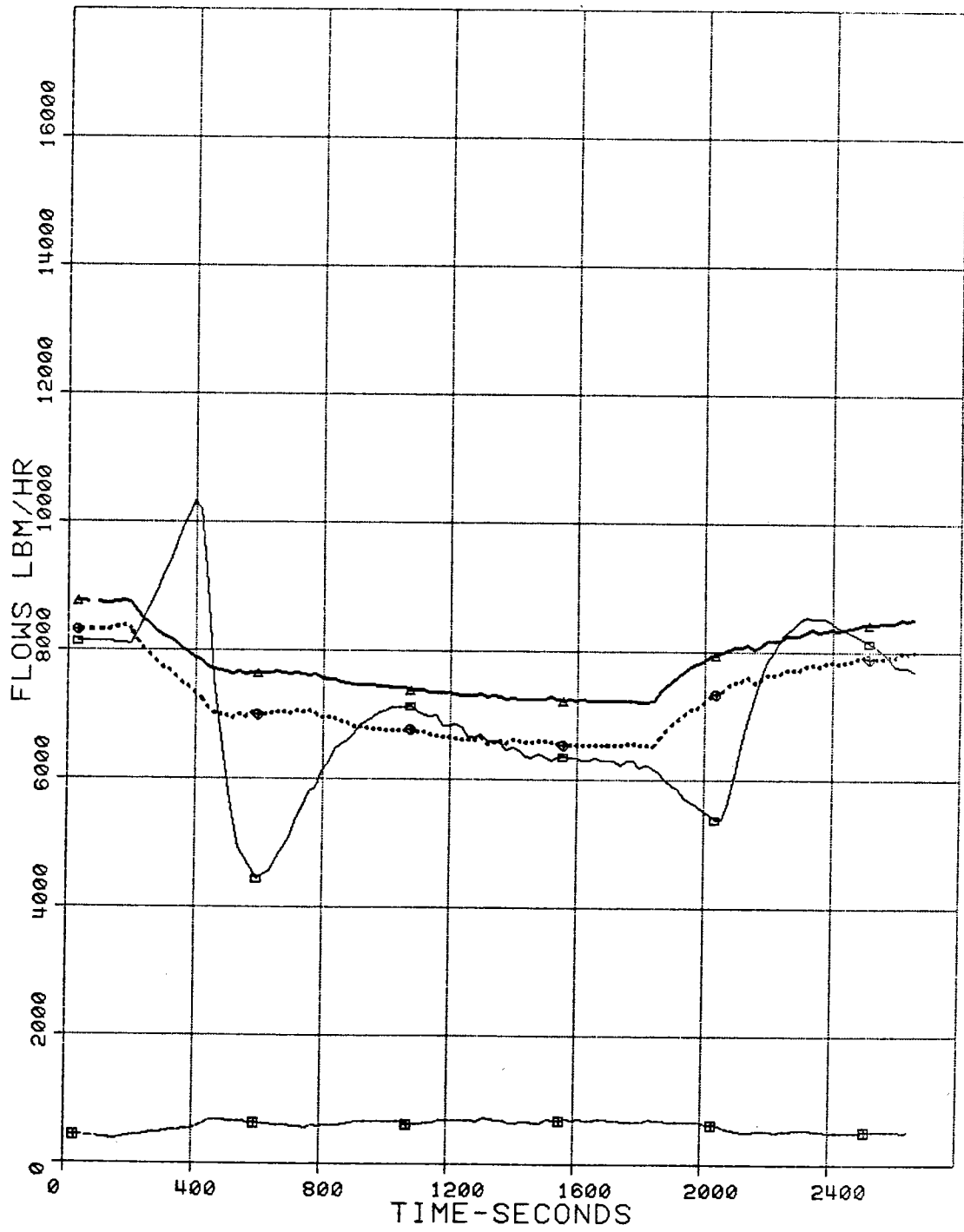




SEARCH START  
DAY #116 1977 TIME 16:30  
NUMBER OF RECORDS = 5  
ARGUMENT SELECTED : 1  
FIRST FUNCTION \* 8 OPEN BOX  
SECOND FUNCTION \*10 TRIANGLE  
THIRD FUNCTION \*17 CROSS-CIRCLE  
FOURTH FUNCTION \* 9 CROSS-BOX  
SEARCH MODE 2  
PLOT START TIME = 59400.0  
EACH 1TH POINT IS PLOTTED  
LINE PLOT HAS 30 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 17:20  
NUMBER OF RECORDS = 5  
  
ARGUMENT SELECTED : 1  
  
FIRST FUNCTION \* 8 OPEN BOX  
SECOND FUNCTION \*10 TRIANGLE  
THIRD FUNCTION \*17 CROSS-CIRCLE  
FOURTH FUNCTION \* 9 CROSS-BOX  
  
SEARCH MODE 2  
  
PLOT START TIME = 62400.0  
EACH 1TH POINT IS PLOTTED  
  
LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 18:24  
NUMBER OF RECORDS = 2

ARGUMENT SELECTED : 1

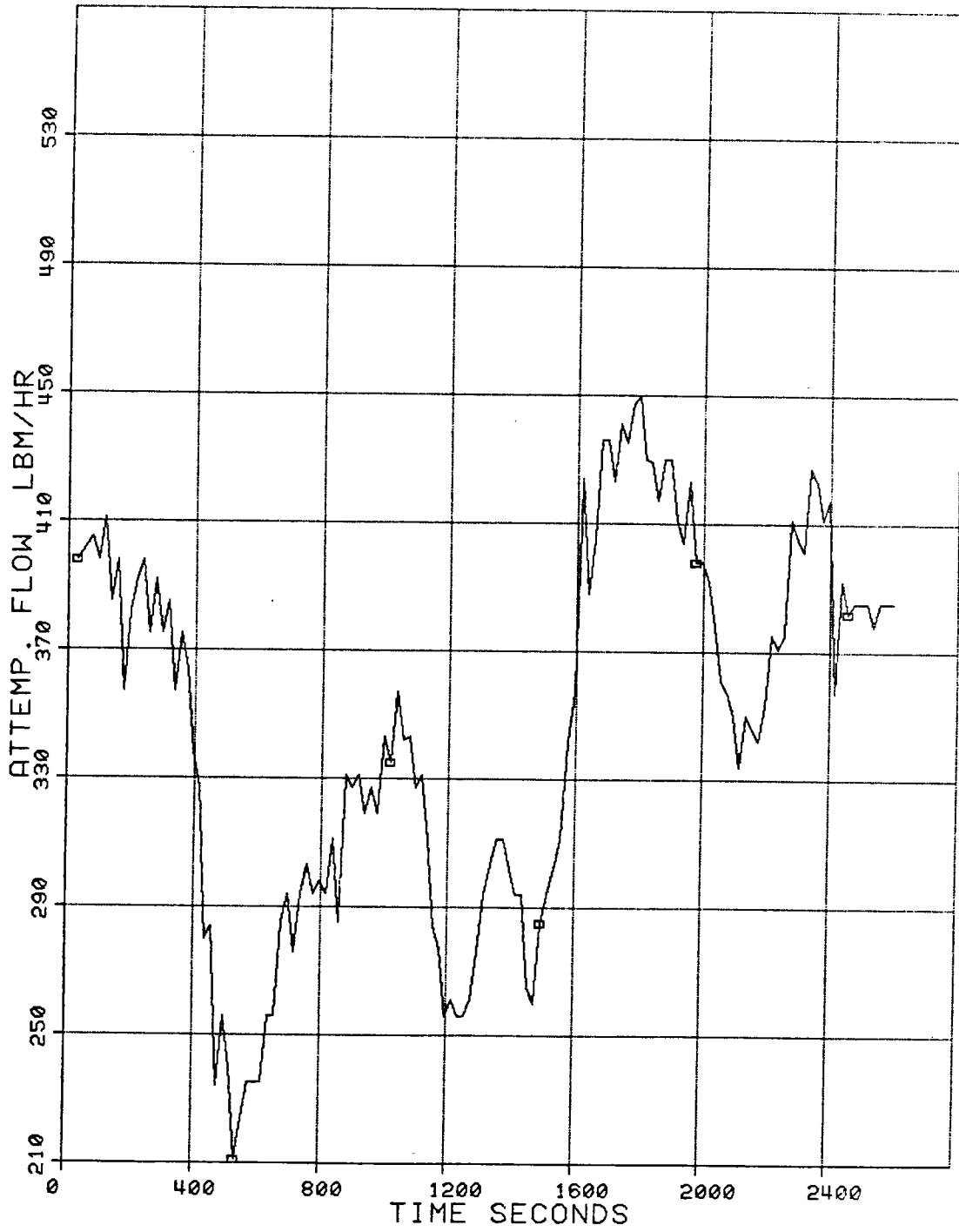
FIRST FUNCTION # 9 OPEN BOX

SEARCH MODE 2

PLOT START TIME = 66240.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 18:24  
NUMBER OF RECORDS = 4

ARGUMENT SELECTED : 1

FIRST FUNCTION # 8 OPEN BOX

SECOND FUNCTION #10 TRIANGLE

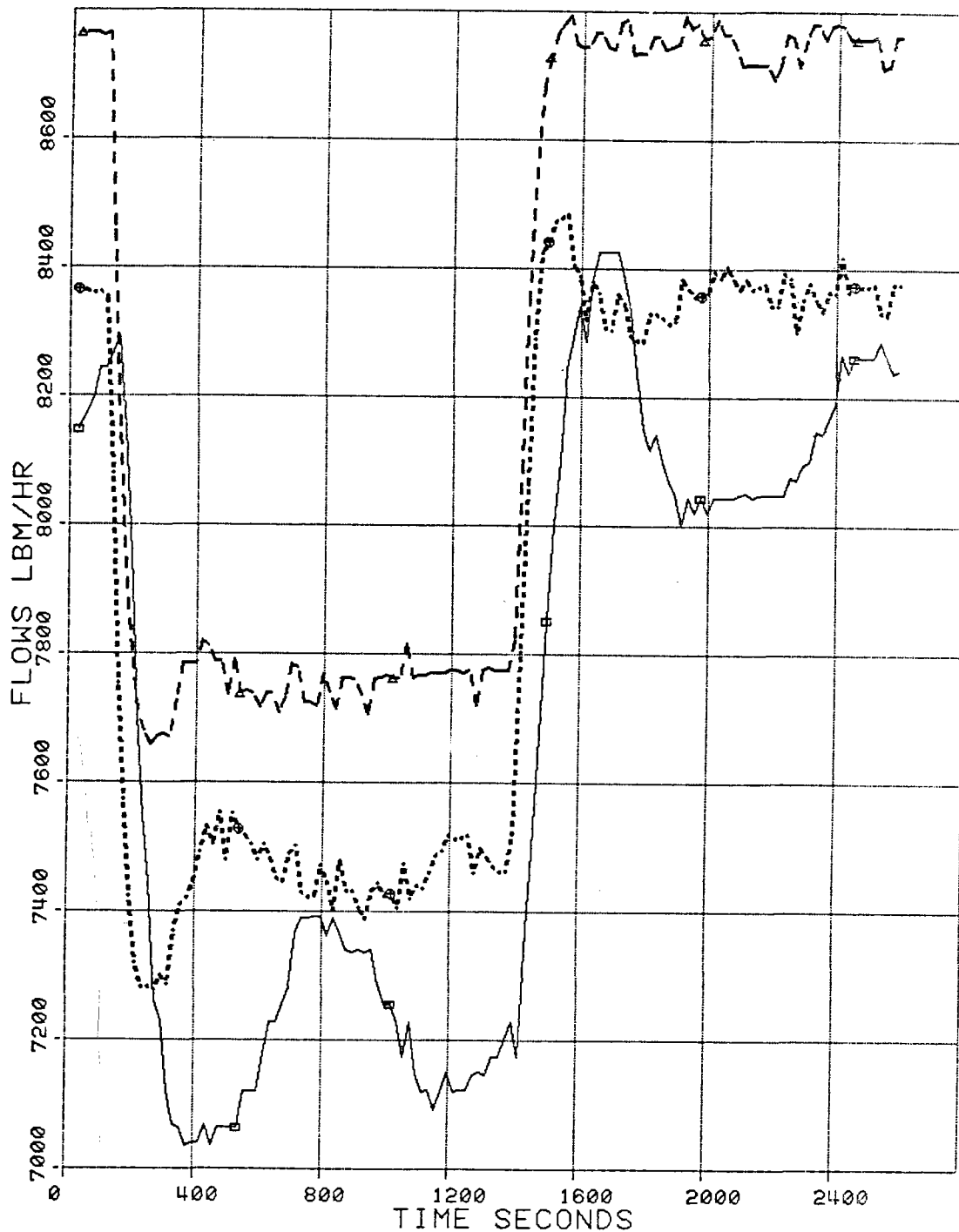
THIRD FUNCTION #17 CROSS-CIRCLE

SEARCH MODE 2

PLOT START TIME = 66240.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION





SEARCH START  
DAY #116 1977 TIME 19: 0  
NUMBER OF RECORDS = 2

ARGUMENT SELECTED : 1

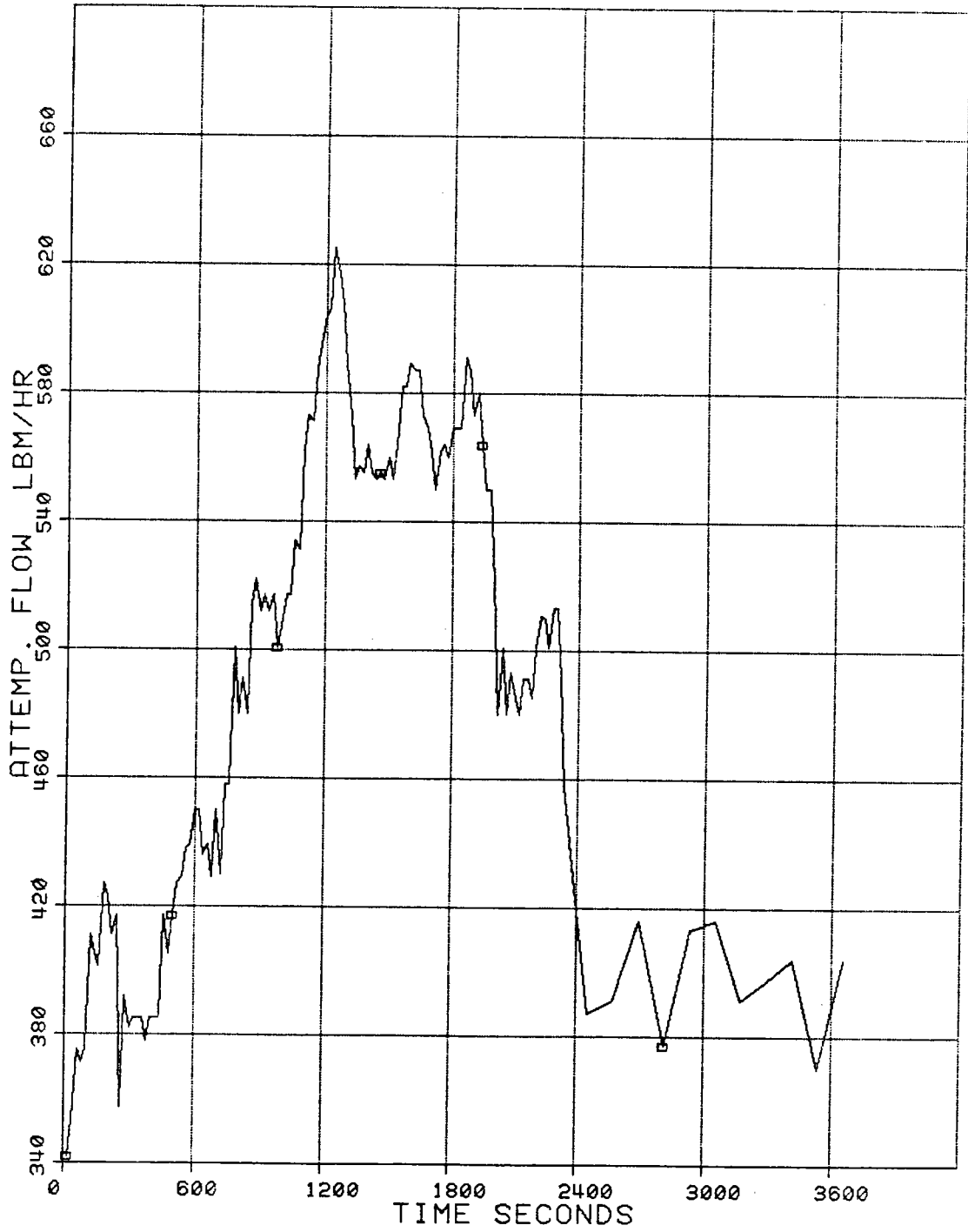
FIRST FUNCTION • 9 OPEN BOX

SEARCH MODE 2

PLOT START TIME = 68400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 19: 0  
NUMBER OF RECORDS = 4

ARGUMENT SELECTED : 1

FIRST FUNCTION \* 8 OPEN BOX

SECOND FUNCTION \*10 TRIANGLE

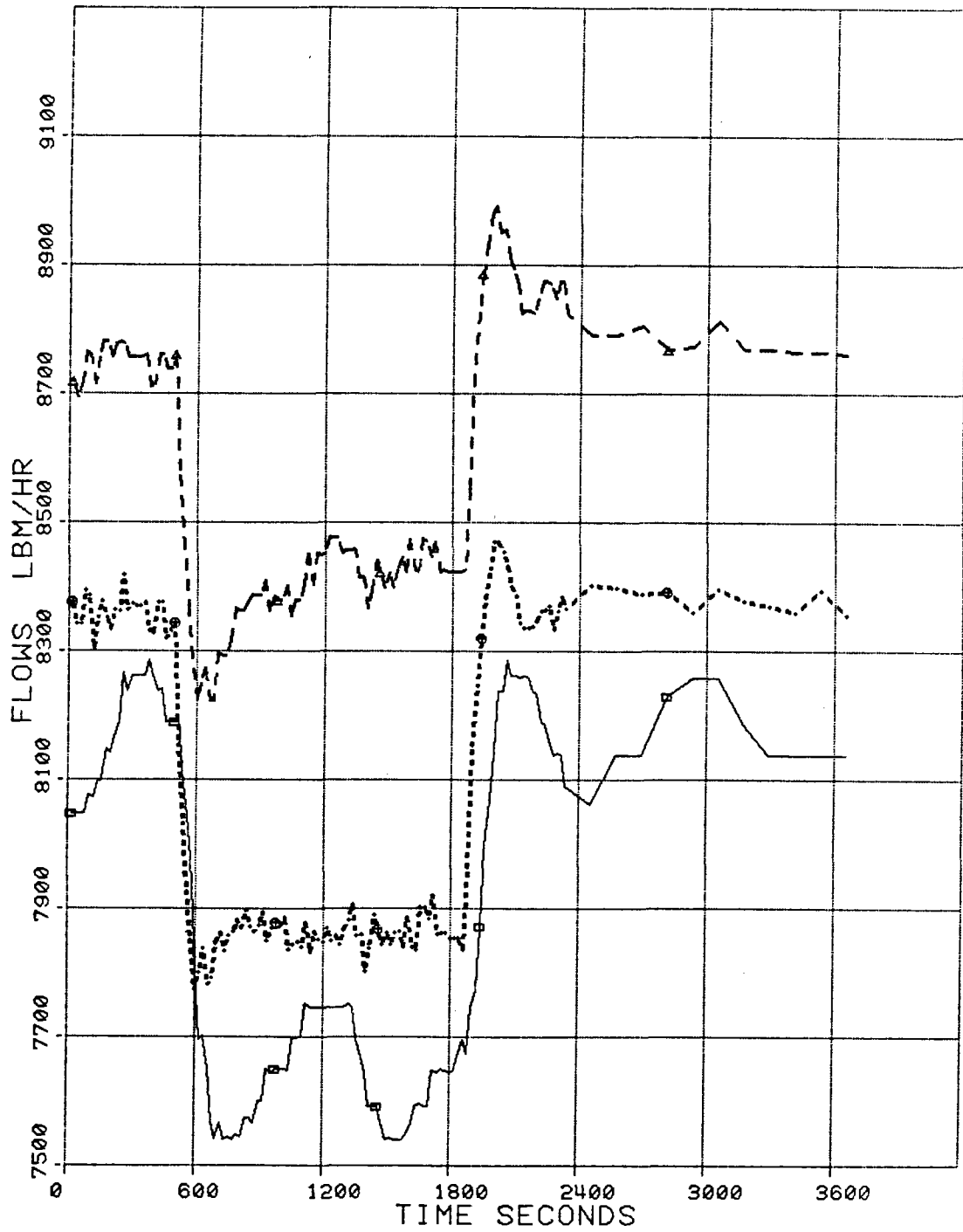
THIRD FUNCTION \*17 CROSS-CIRCLE

SEARCH MODE 2

PLOT START TIME = 68400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 20: 0  
NUMBER OF RECORDS \* 4

ARGUMENT SELECTED : 1

FIRST FUNCTION \* 8 OPEN BOX

SECOND FUNCTION \*10 TRIANGLE

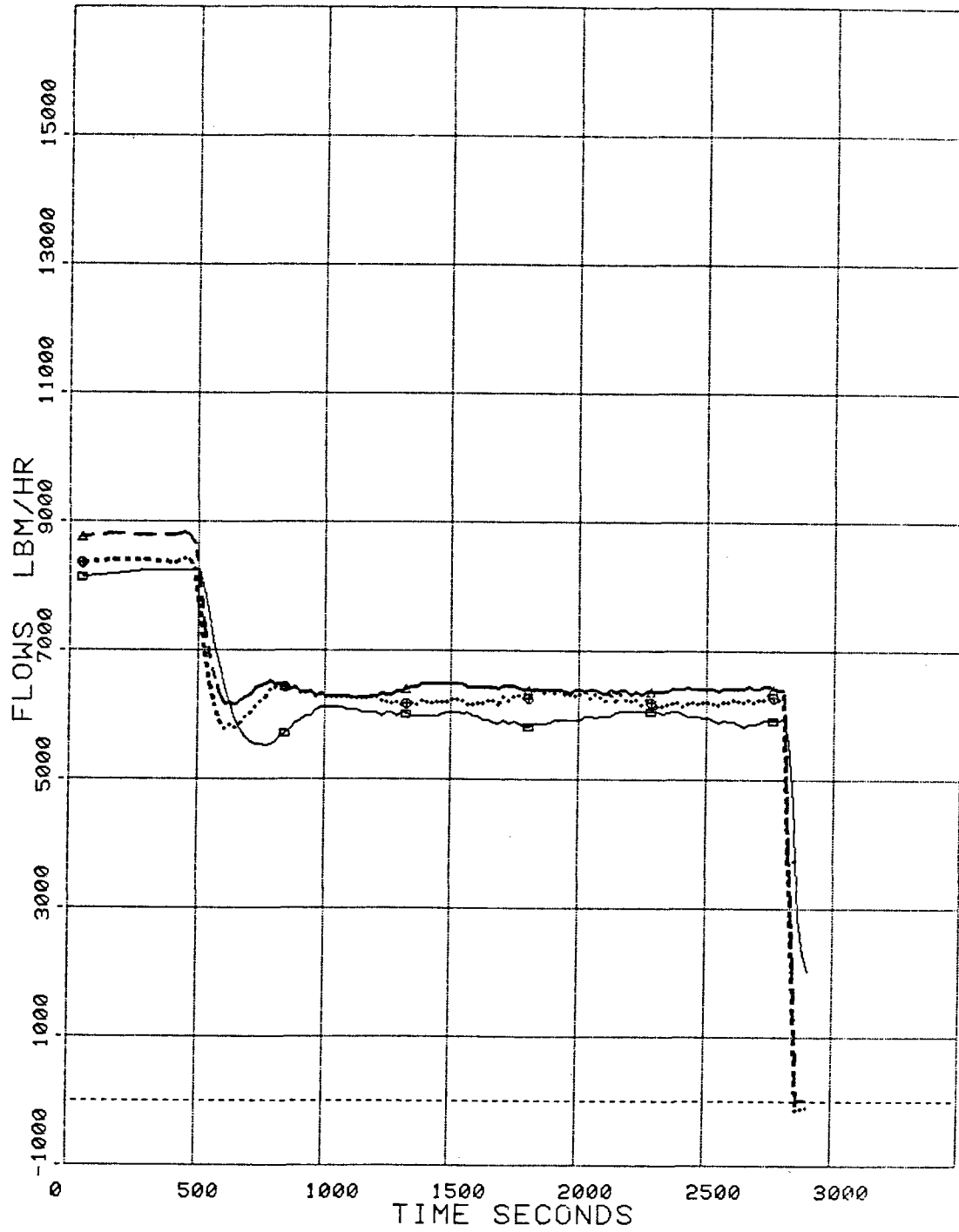
THIRD FUNCTION \*17 CROSS-CIRCLE

SEARCH MODE 2

PLOT START TIME = 72000.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 20: 0  
NUMBER OF RECORDS = 2

ARGUMENT SELECTED : 1

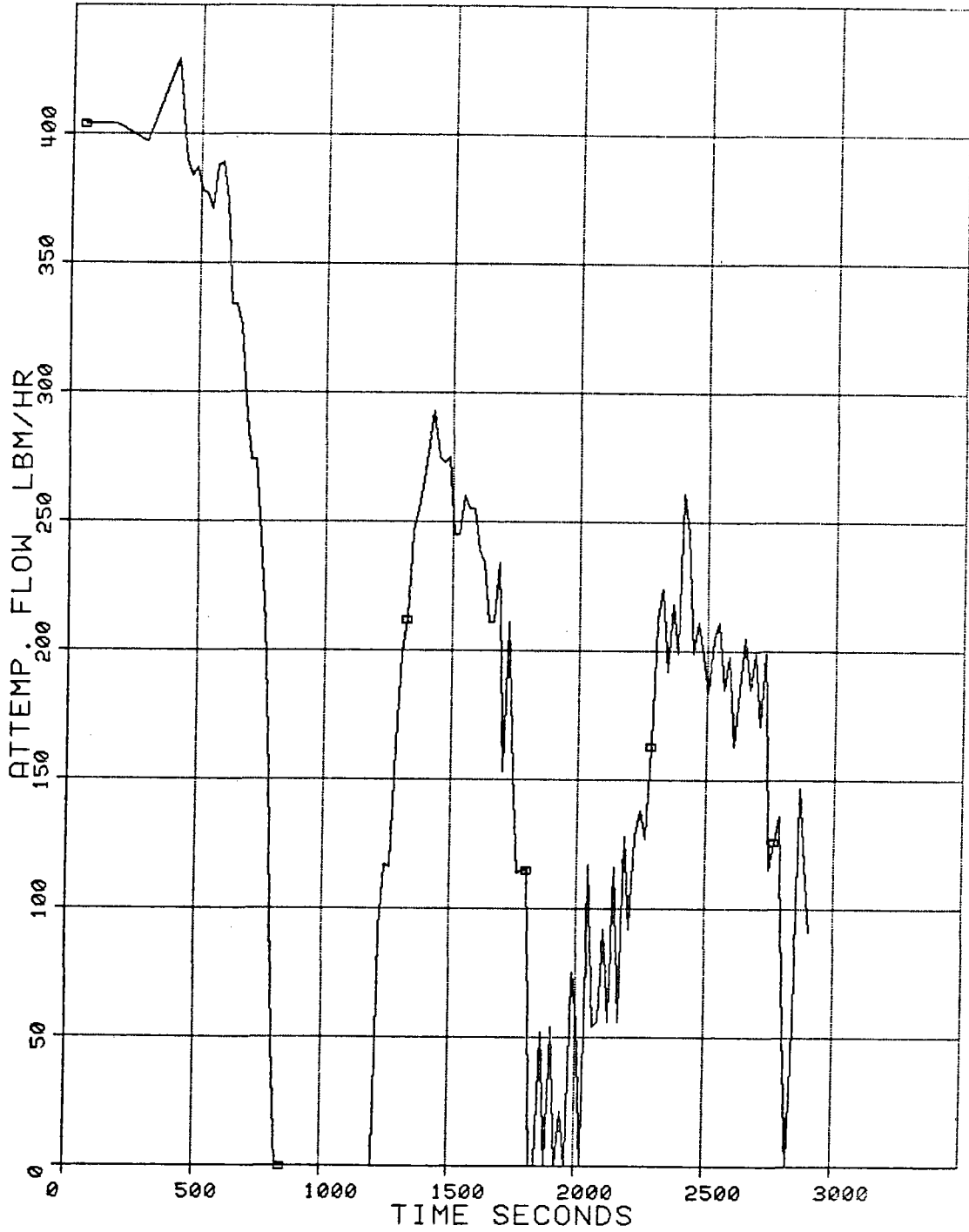
FIRST FUNCTION \* 0 OPEN BOX

SEARCH MODE 2

PLOT START TIME = 72000.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION





PAGE 15  
PRESSURES, PLOTS

SEARCH START  
DAY #116 1977 TIME 13:33  
NUMBER OF RECORDS = 5

ARGUMENT SELECTED : 1

FIRST FUNCTION #18 OPEN BOX

SECOND FUNCTION #19 TRIANGLE

THIRD FUNCTION #20 CROSS-CIRCLE

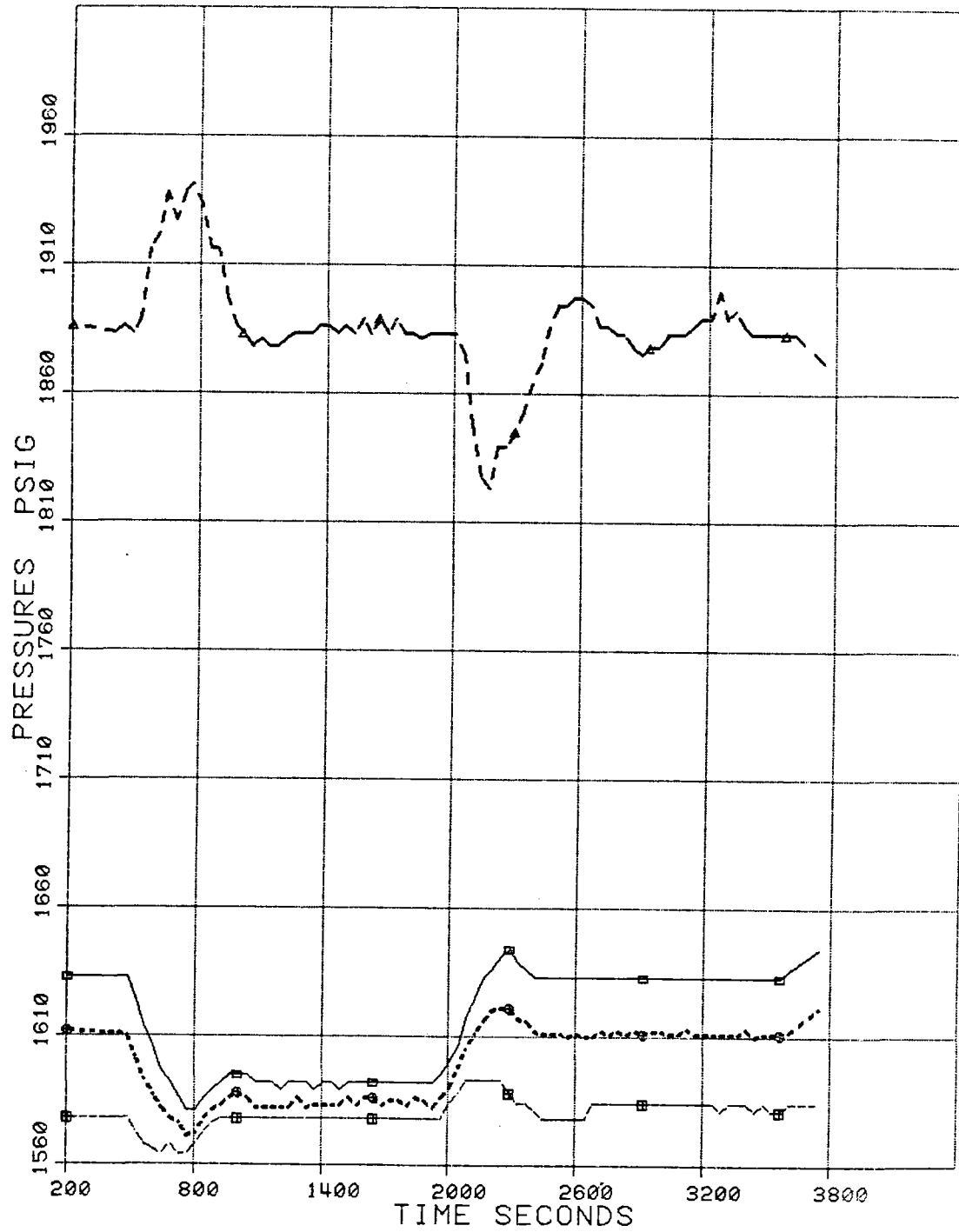
FOURTH FUNCTION #21 CROSS-BOX

SEARCH MODE 2

PLOT START TIME = 48780.0

EACH 2TH POINT IS PLOTTED

LINE PLOT HAS 83 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 15: 0  
NUMBER OF RECORDS = 5

ARGUMENT SELECTED : 1

FIRST FUNCTION #18 OPEN BOX

SECOND FUNCTION #19 TRIANGLE

THIRD FUNCTION #20 CROSS-CIRCLE

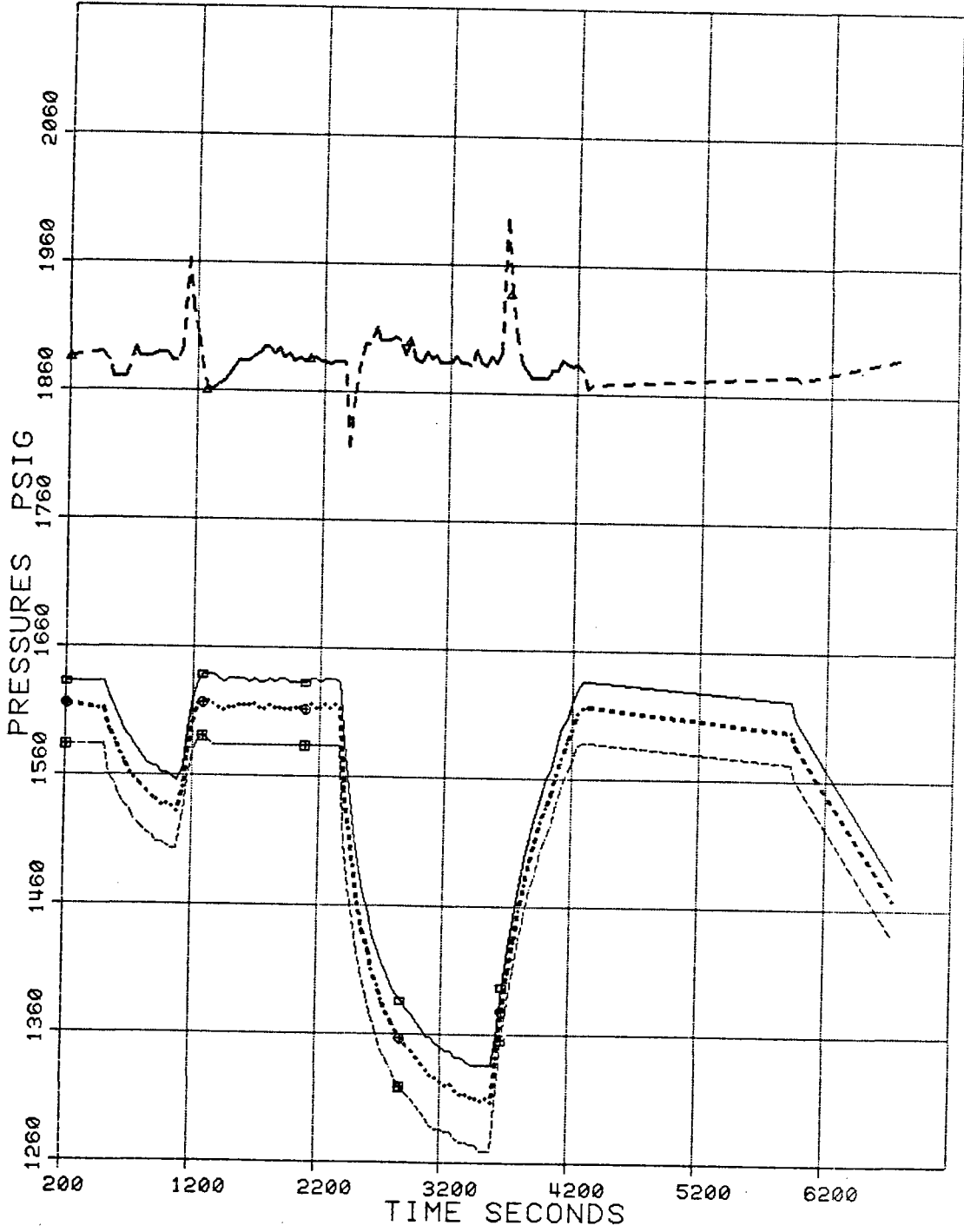
FOURTH FUNCTION #21 CROSS-BOX

SEARCH MODE 2

PLOT START TIME = 54000.0

EACH 2TH POINT IS PLOTTED

LINE PLOT HAS 100 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 16:30  
NUMBER OF RECORDS = 5

ARGUMENT SELECTED : 1

FIRST FUNCTION #18 OPEN BOX

SECOND FUNCTION #19 TRIANGLE

THIRD FUNCTION #20 CROSS-CIRCLE

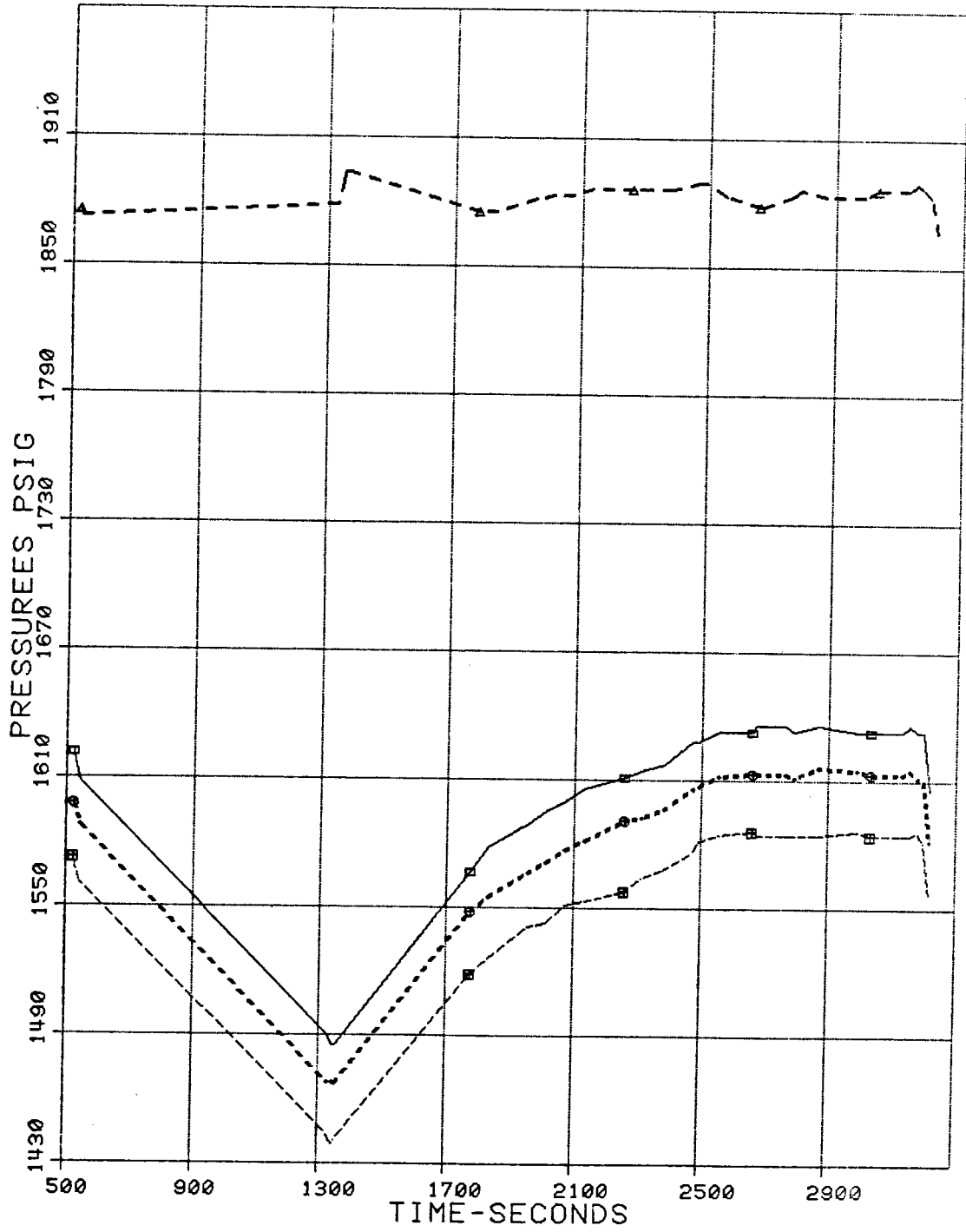
FOURTH FUNCTION #21 CROSS-BOX

SEARCH MODE 2

PLOT START TIME = 59400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 30 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 17:20  
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

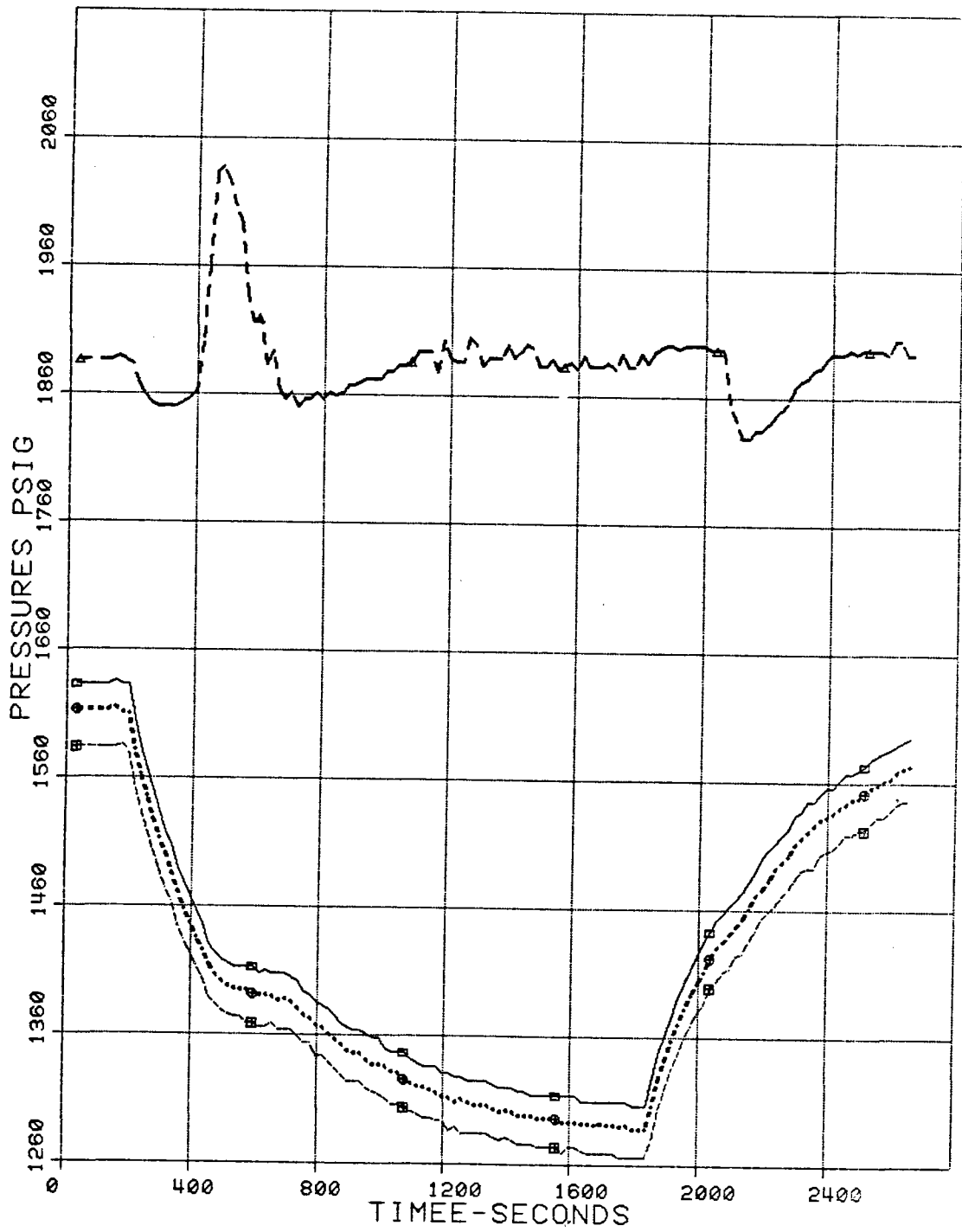
SEARCH MODE 2

PLOT START TIME = 62400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION





SEARCH START  
DAY #116 1977 TIME 18:24  
NUMBER OF RECORDS = 5

ARGUMENT SELECTED : 1

FIRST FUNCTION #18 OPEN BOX

SECOND FUNCTION #19 TRIANGLE

THIRD FUNCTION #20 CROSS-CIRCLE

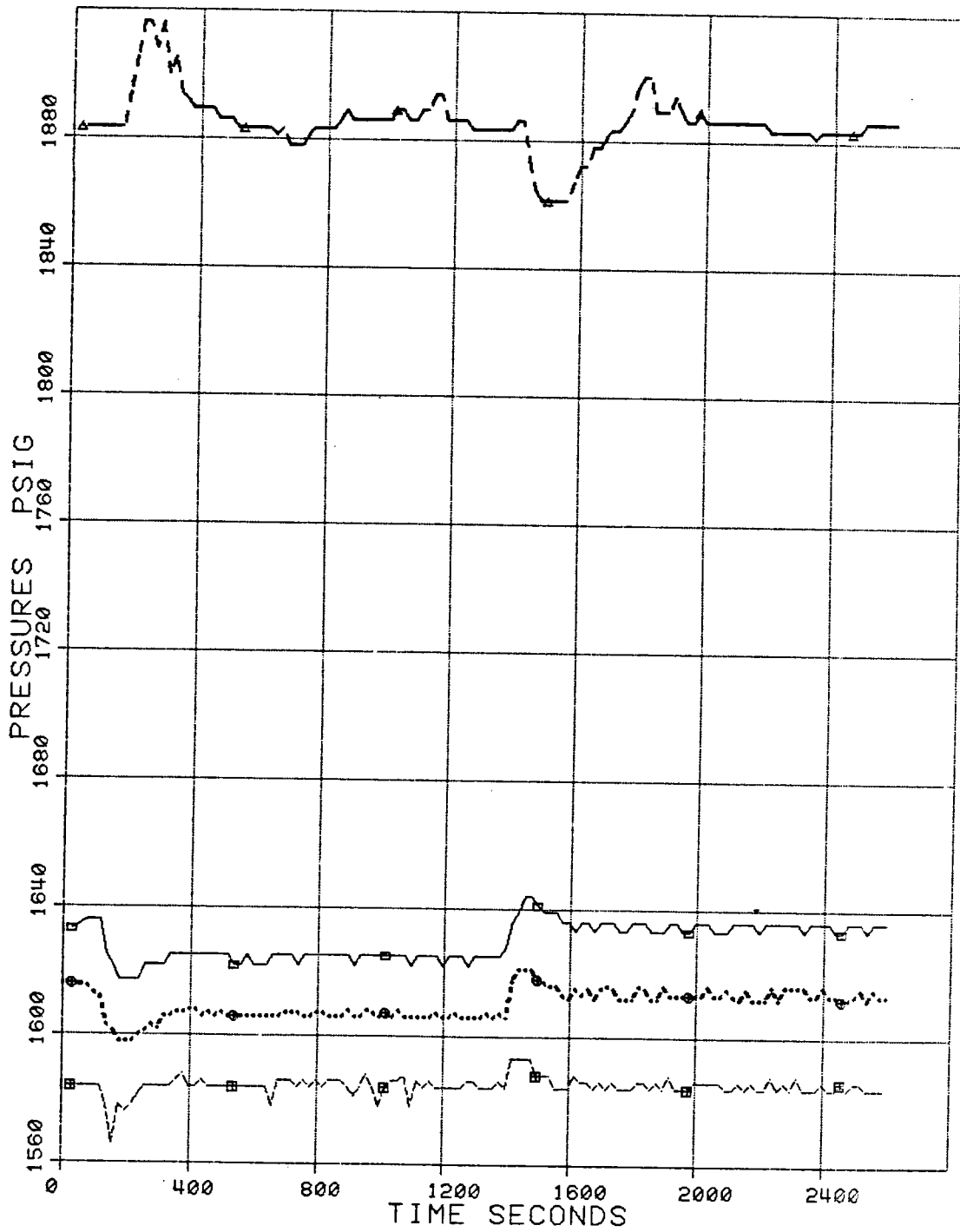
FOURTH FUNCTION #21 CROSS-BOX

SEARCH MODE 2

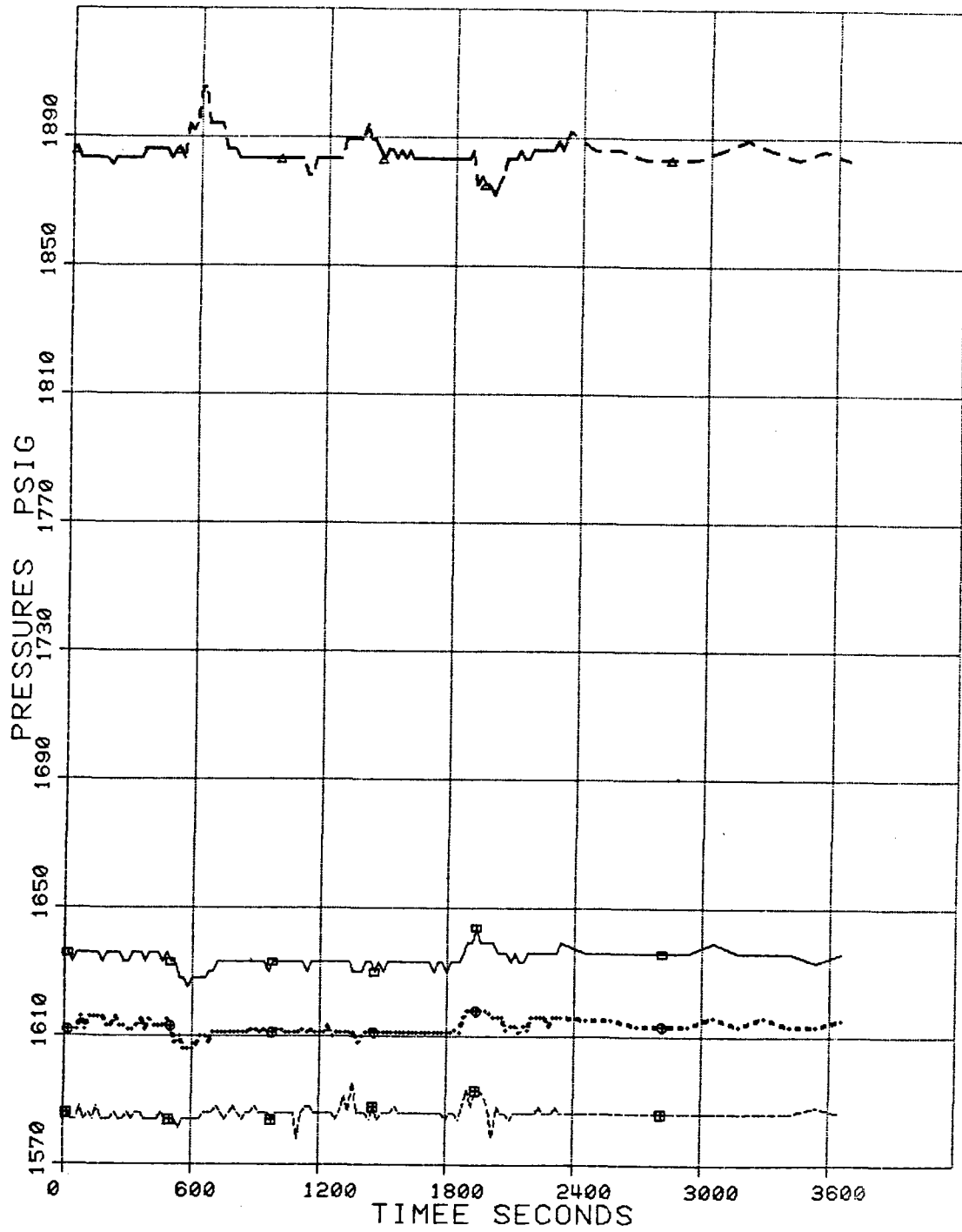
PLOT START TIME = 66240.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 120 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 19: 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 2  
  
PLOT START TIME = 68400.0  
  
EACH 1TH POINT IS PLOTTED  
  
LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 20: 0  
NUMBER OF RECORDS = 5

ARGUMENT SELECTED : 1

FIRST FUNCTION #18 OPEN BOX

SECOND FUNCTION #19 TRIANGLE

THIRD FUNCTION #20 CROSS-CIRCLE

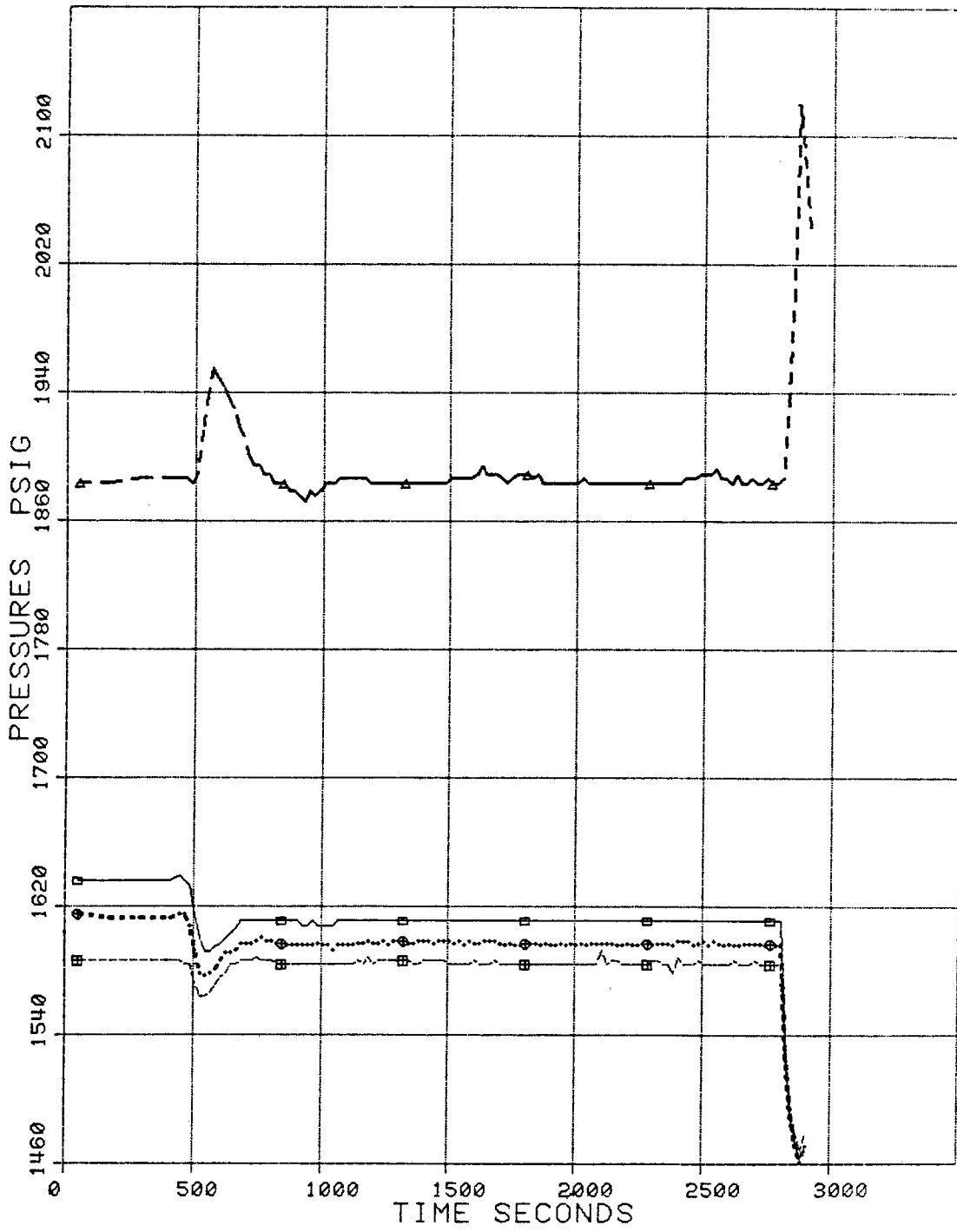
FOURTH FUNCTION #21 CROSS-BOX

SEARCH MODE 2

PLOT START TIME = 72000.0

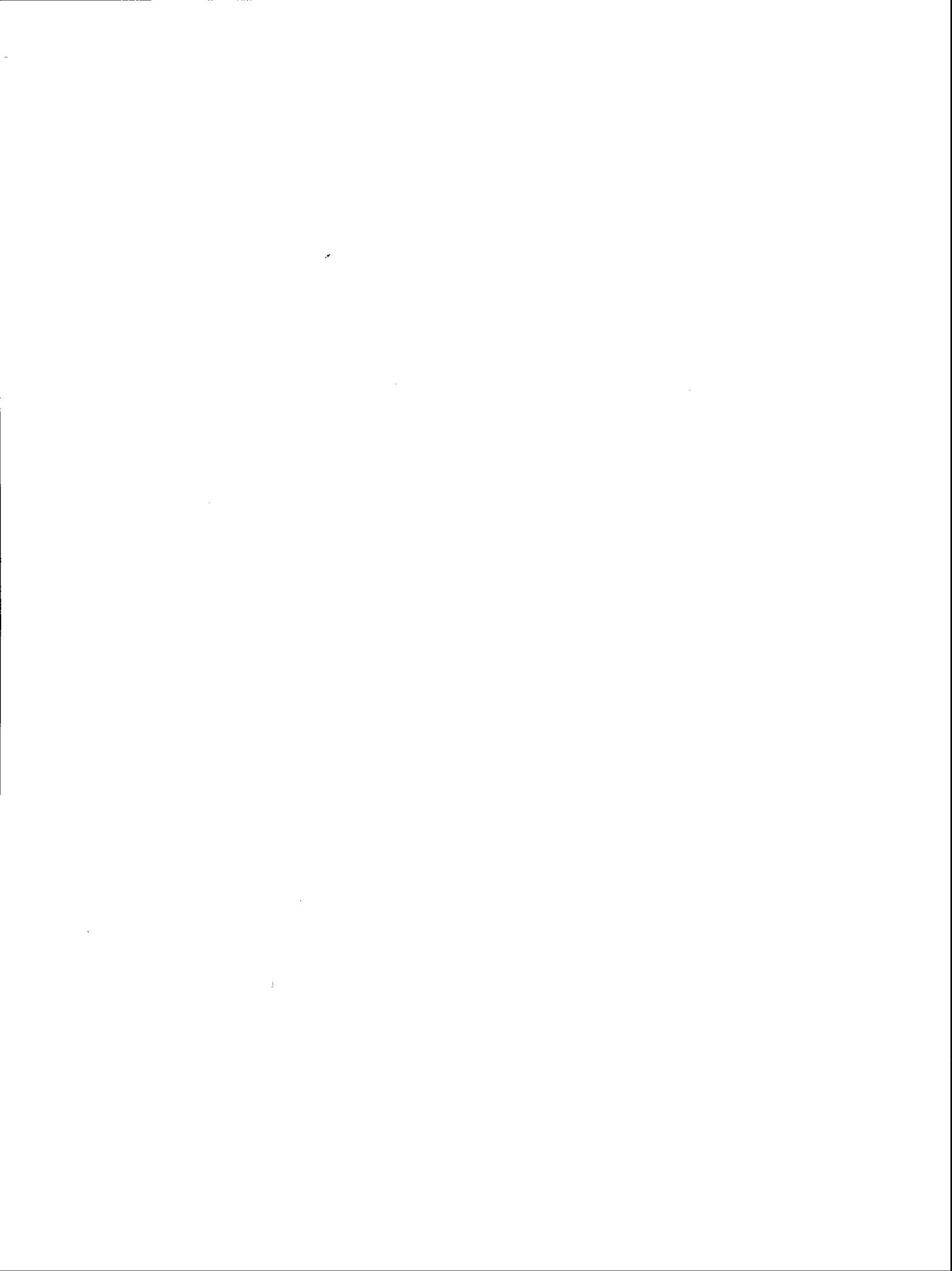
EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION









SEARCH START  
DAY #116 1977 TIME 13:33  
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

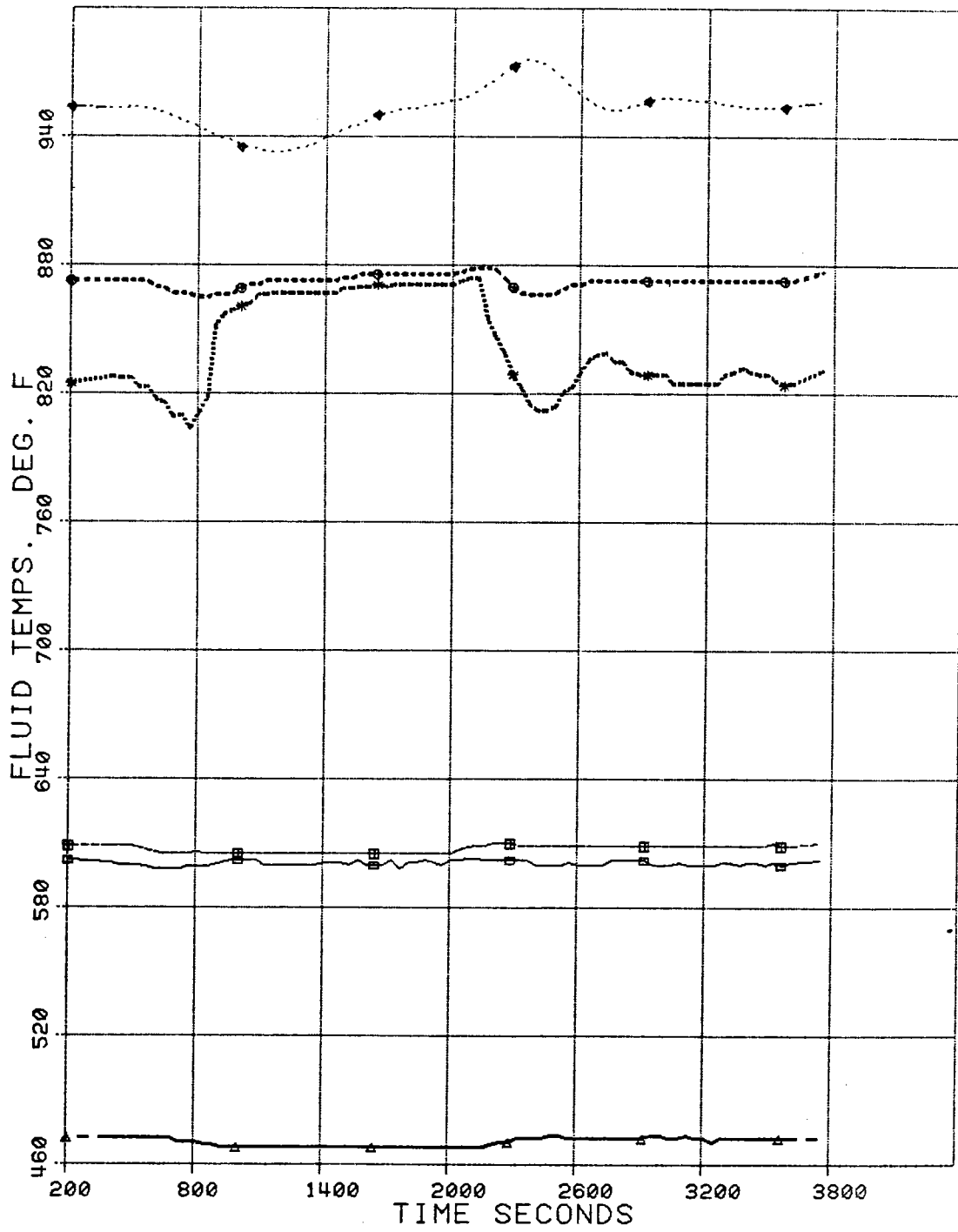
SIXTH FUNCTION #29 ASTERISK

SEARCH MODE 2

PLOT START TIME = 48700.0

EACH 2TH POINT IS PLOTTED

LINE PLOT HAS 83 POINTS PER FUNCTION



SEARCH START

DAY #116 1977 TIME 15: 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

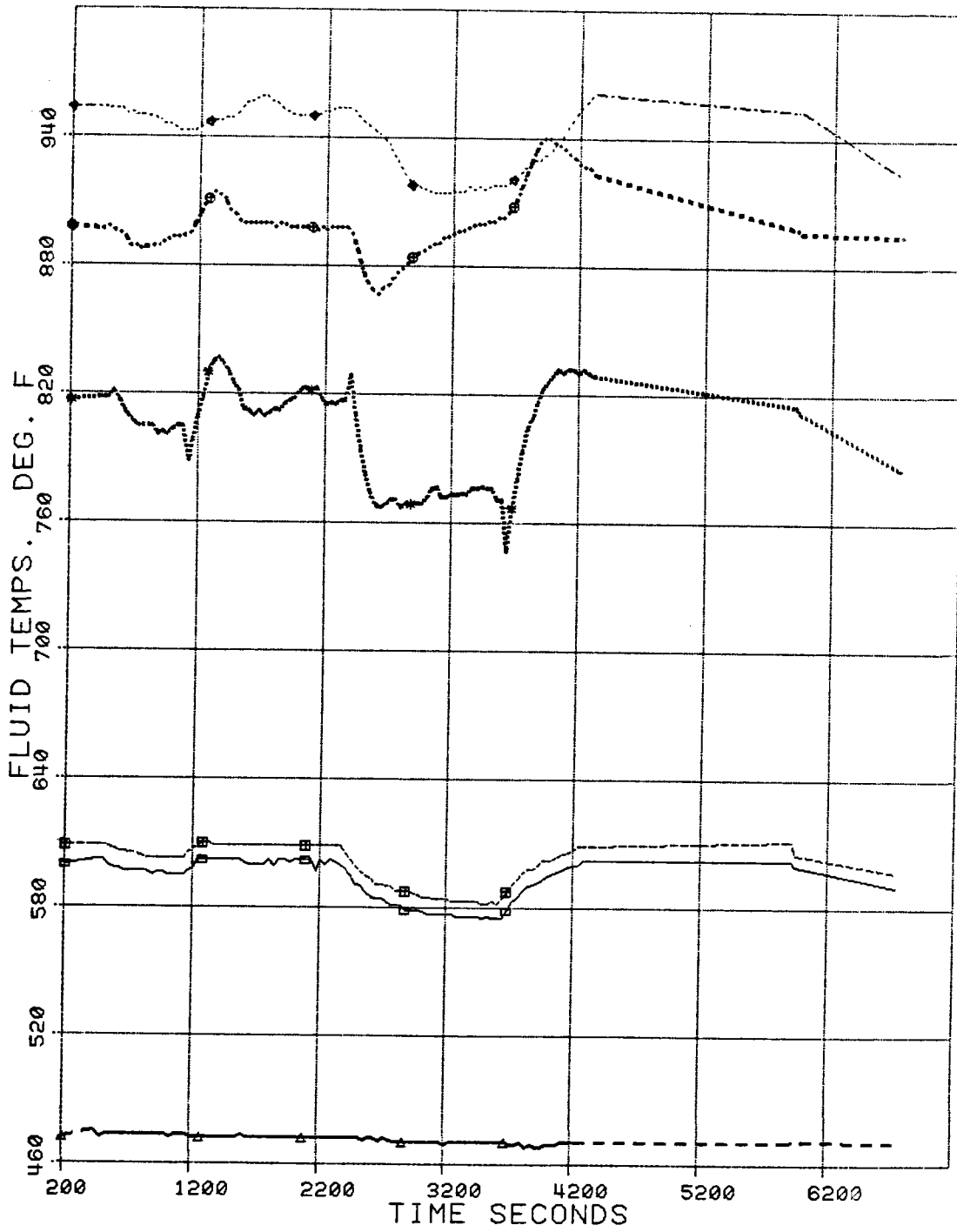
SIXTH FUNCTION #29 ASTERISK

SEARCH MODE 2

PLOT START TIME = 54000.0

EACH 2TH POINT IS PLOTTED

LINE PLOT HAS 100 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 16:30  
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

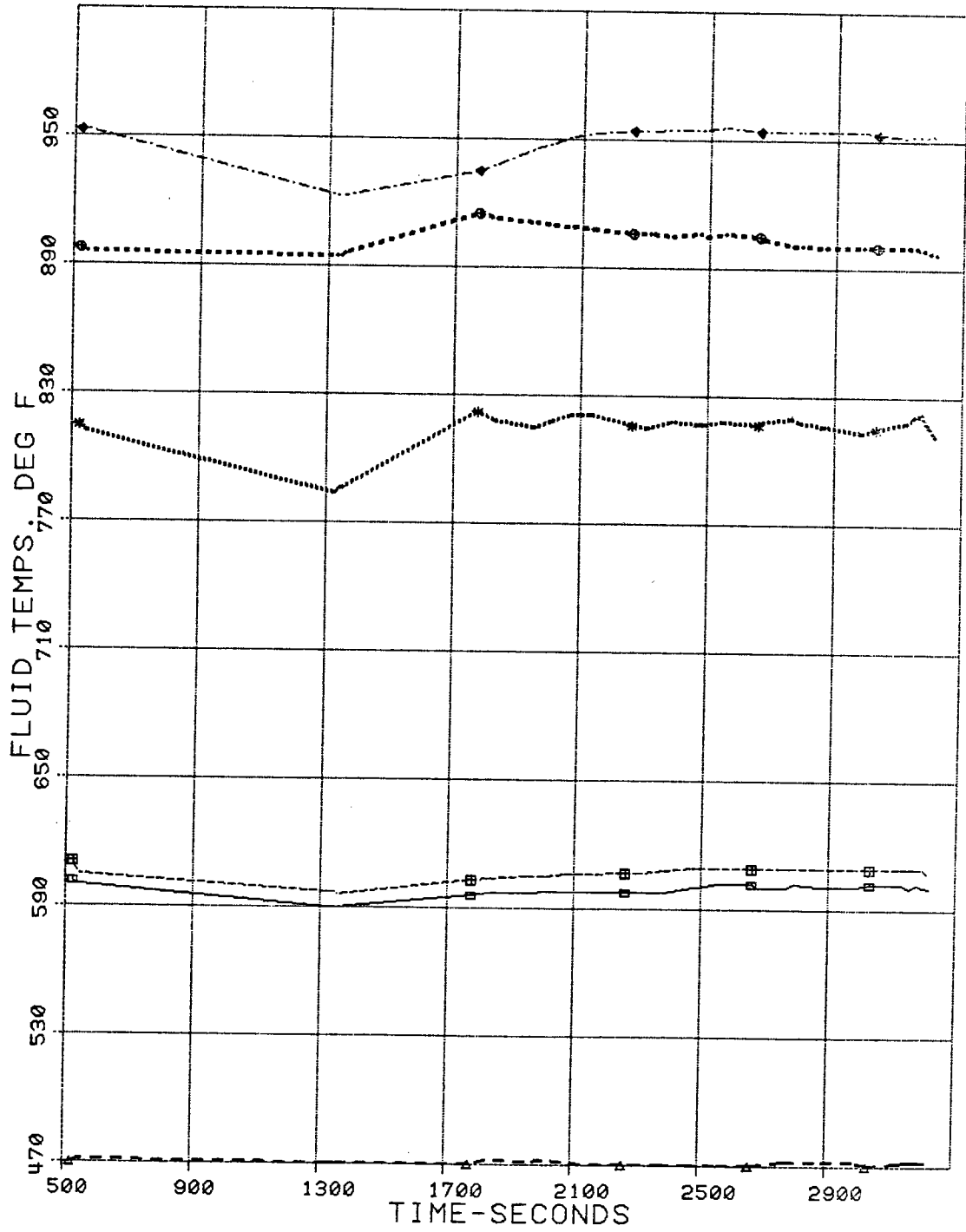
SIXTH FUNCTION #29 ASTERISK

SEARCH MODE 2

PLOT START TIME = 59400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 30 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 17:20  
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

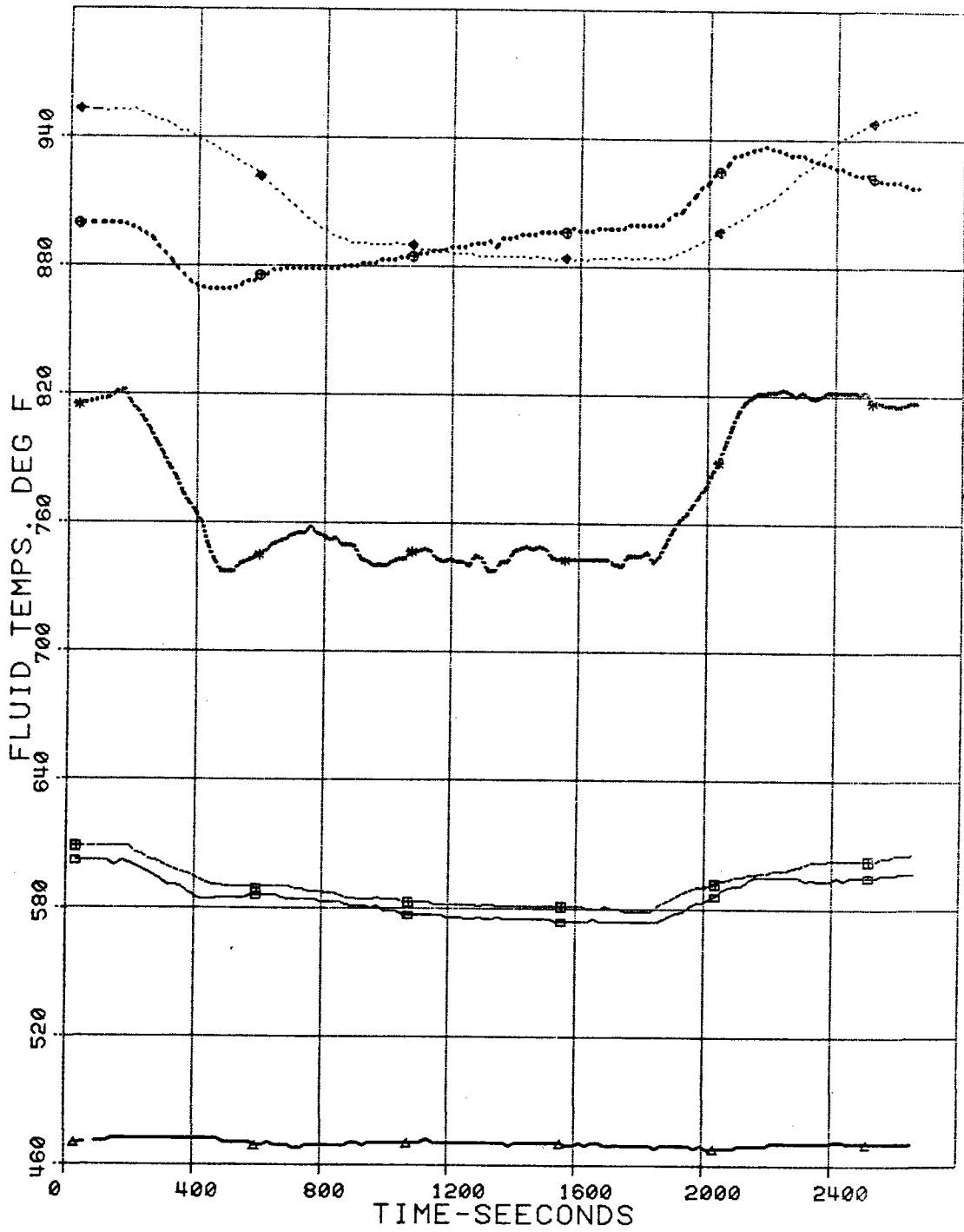
SEARCH MODE 2

PLOT START TIME = 62400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION





SEARCH START  
DAY #116 1977 TIME 18:24  
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

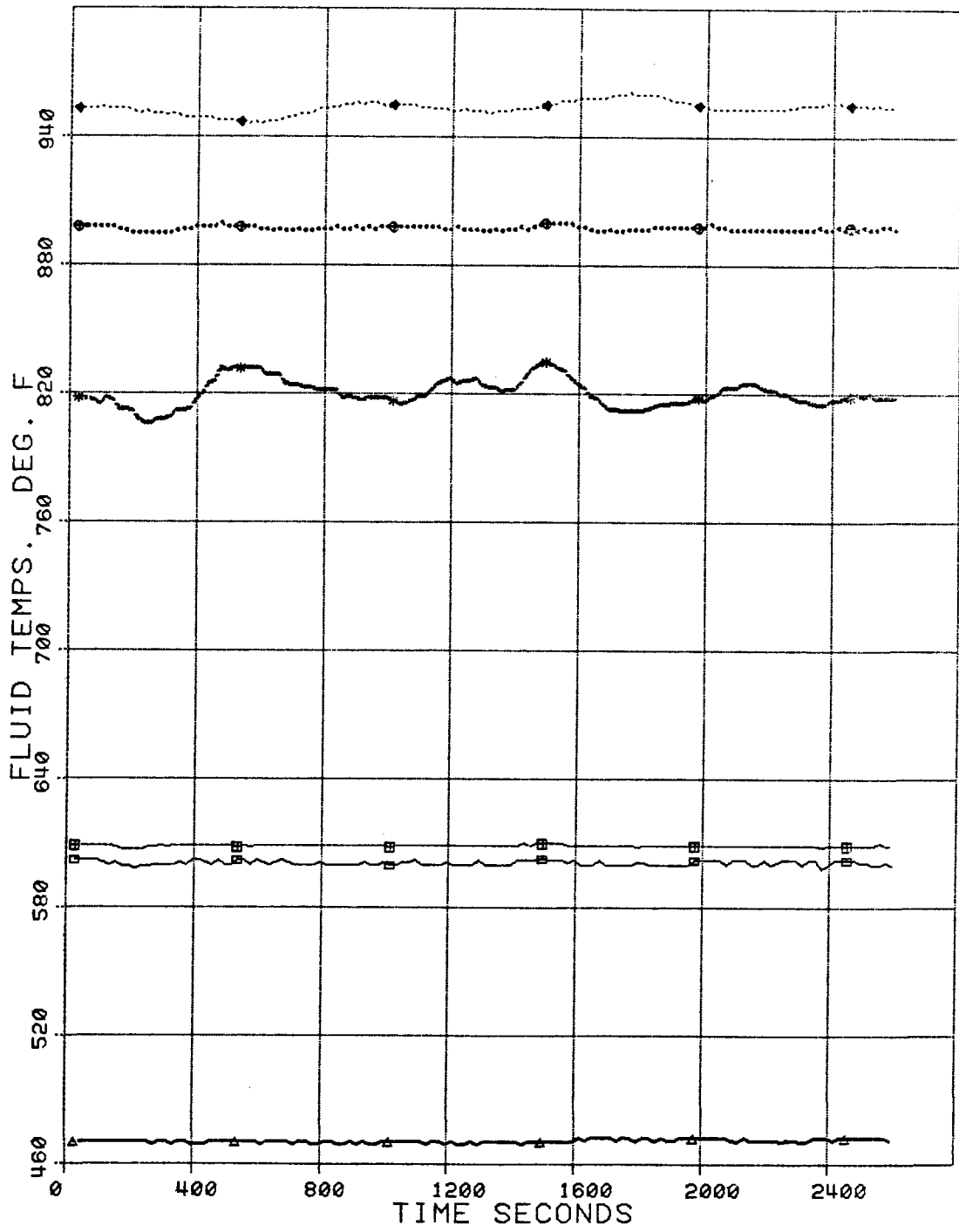
SIXTH FUNCTION #29 ASTERISK

SEARCH MODE 2

PLOT START TIME = 66240.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 19: 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

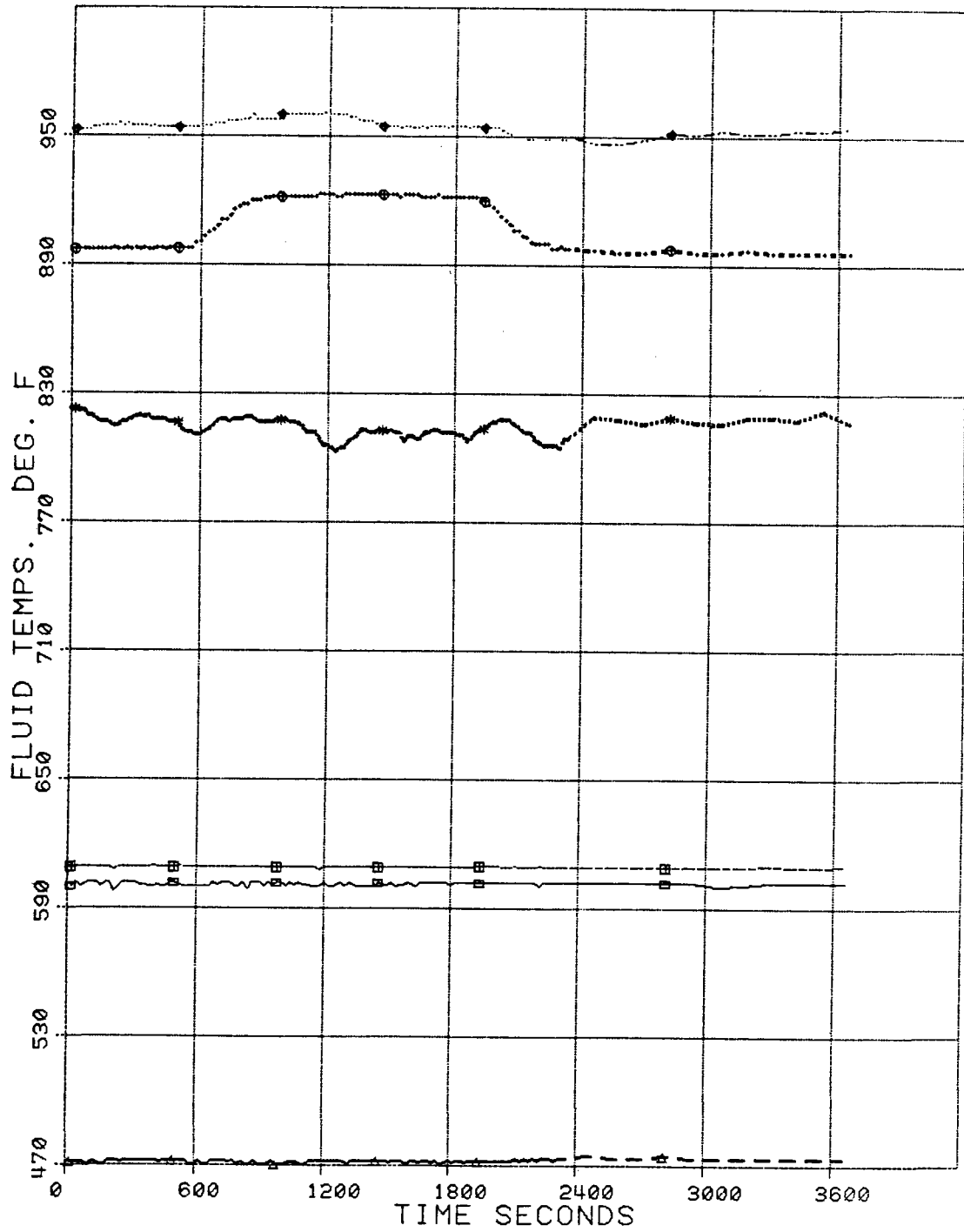
SIXTH FUNCTION #29 ASTERISK

SEARCH MODE 2

PLOT START TIME = 68400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 20: 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

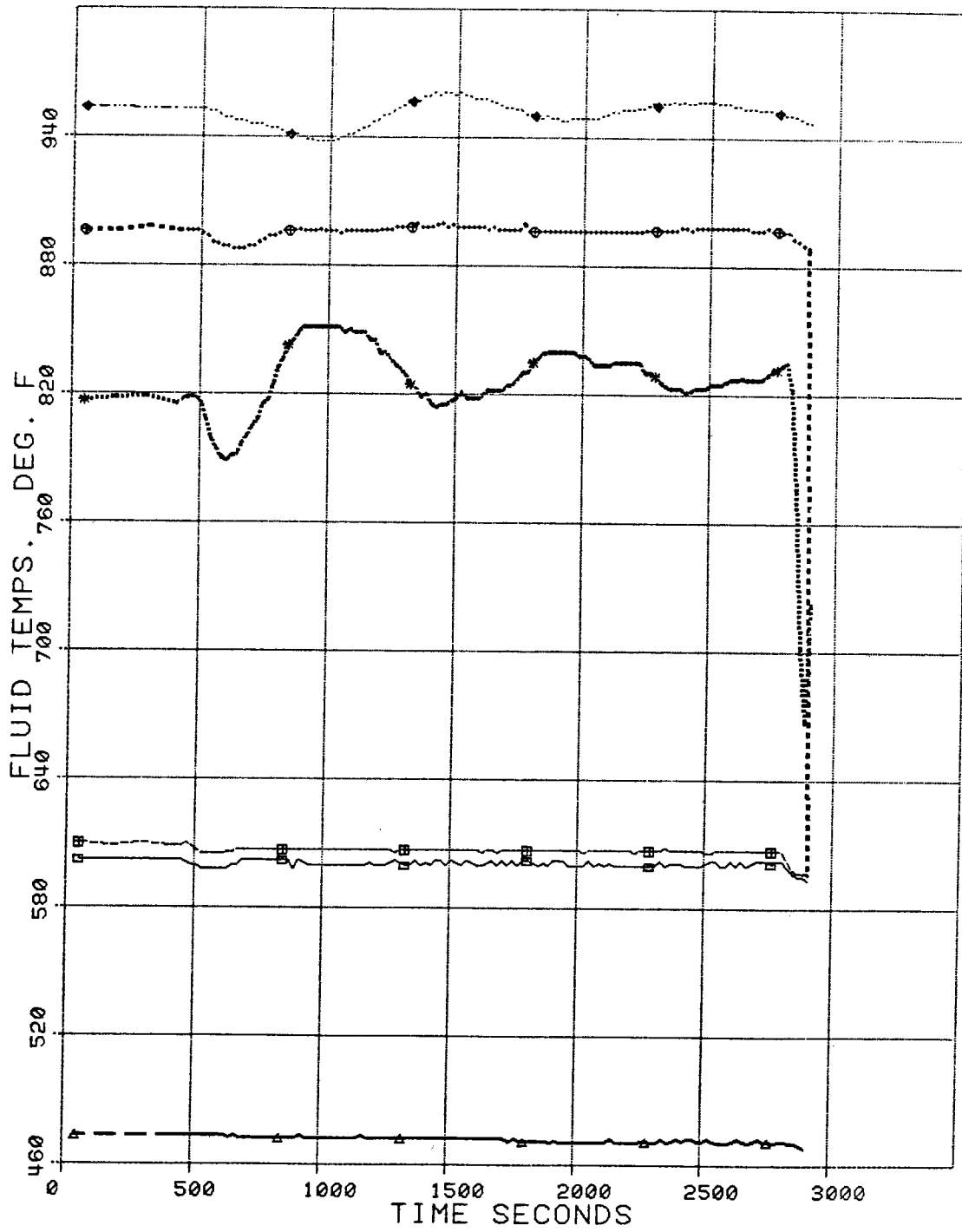
SIXTH FUNCTION #29 ASTERISK

SEARCH MODE 2

PLOT START TIME = 72000.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



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METAL TEMPERATURES, PLOTS



SEARCH START  
DAY #116 1977 TIME 13:33  
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

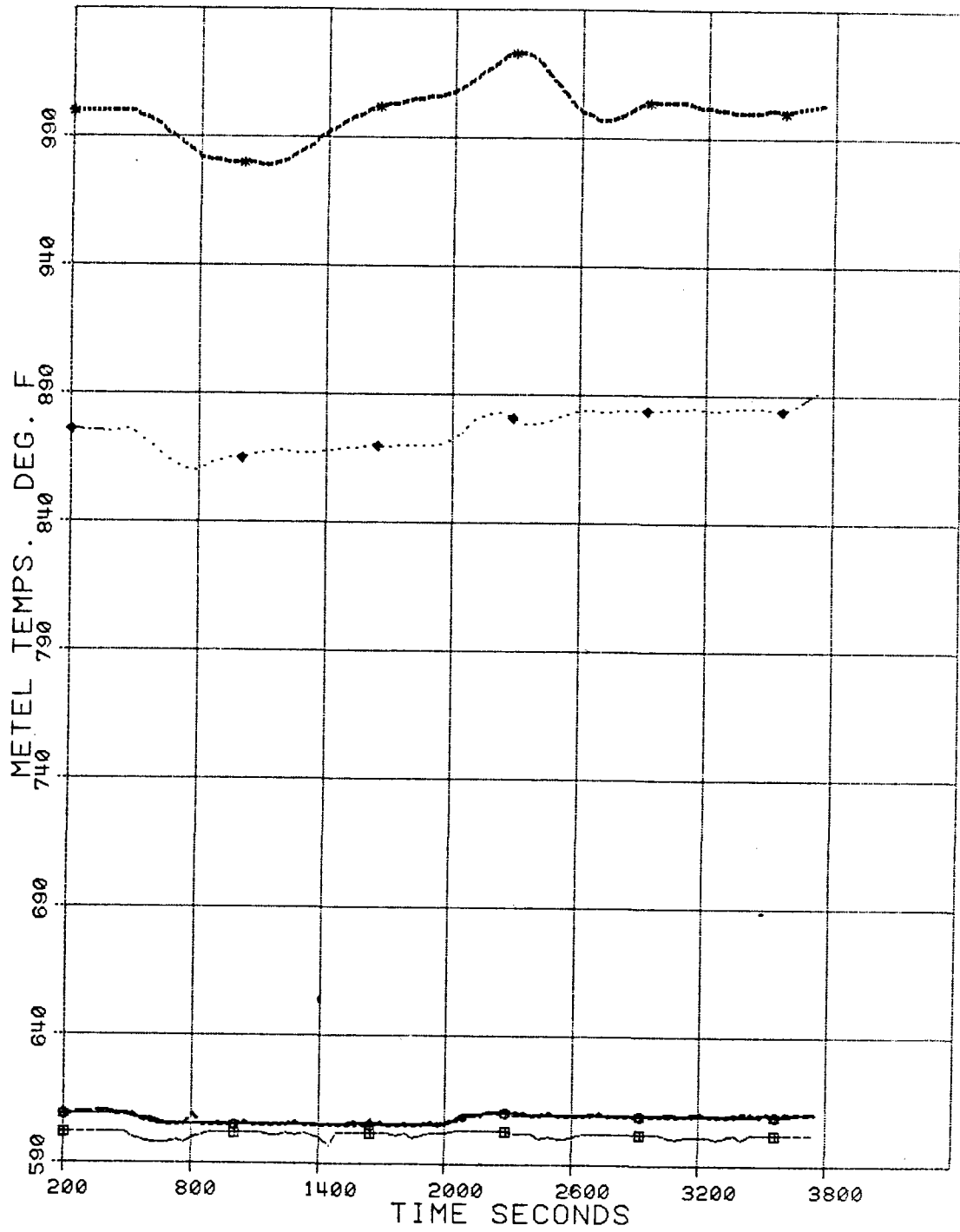
SIXTH FUNCTION #33 ASTERISK

SEARCH MODE 2

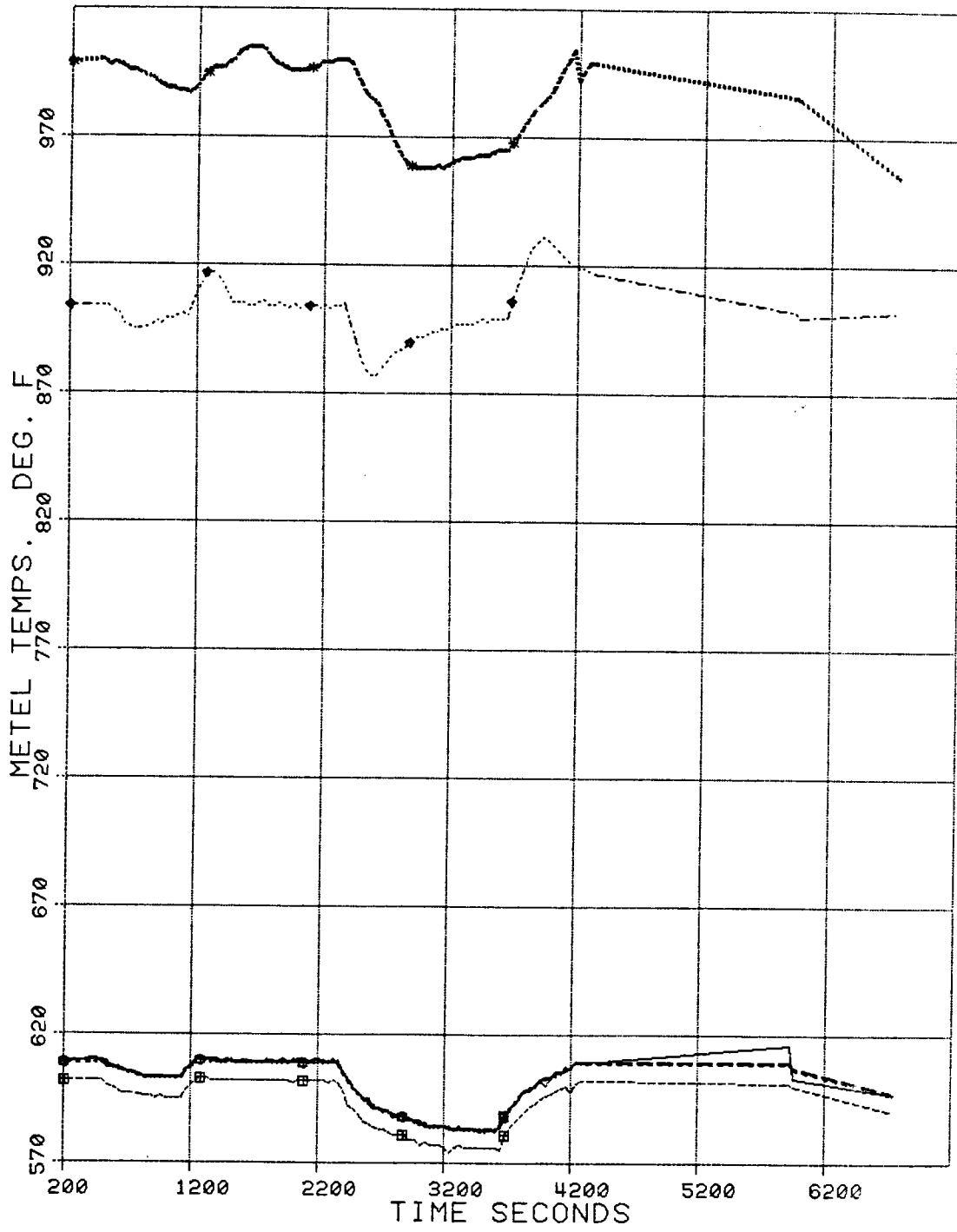
PLOT START TIME = 48700.0

EACH 2TH POINT IS PLOTTED

LINE PLOT HAS 83 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 15: 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 2  
  
PLOT START TIME = 54000.0  
EACH 2TH POINT IS PLOTTED  
  
LINE PLOT HAS 100 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 16:30  
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

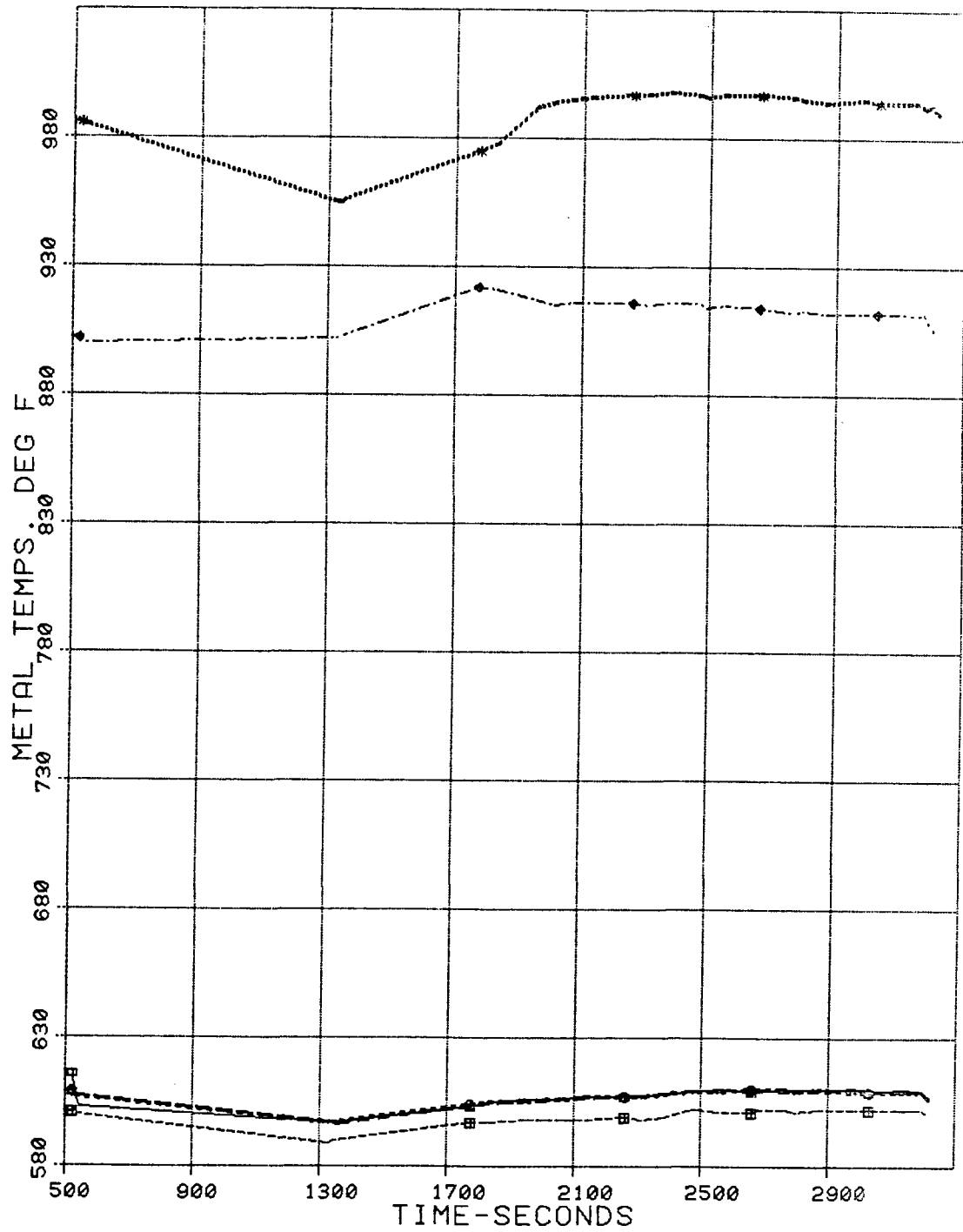
SIXTH FUNCTION #33 ASTERISK

SEARCH MODE 2

PLOT START TIME = 59400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 30 POINTS PER FUNCTION



SEARCH START

DAY #116 1977 TIME 17:20

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

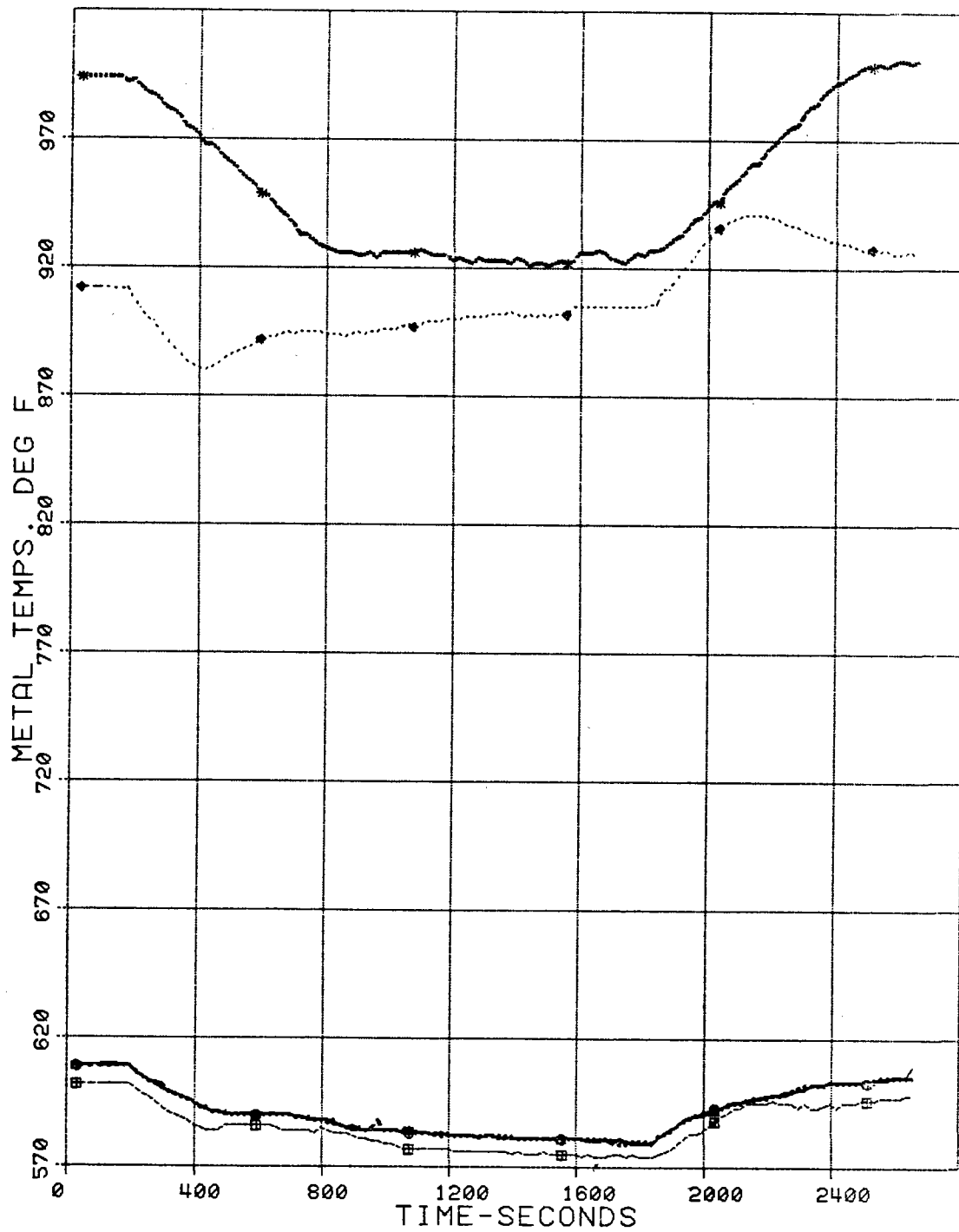
SIXTH FUNCTION #33 ASTERISK

SEARCH MODE 2

PLOT START TIME = 62400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION





SEARCH START  
DAY #116 1977 TIME 18:24  
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

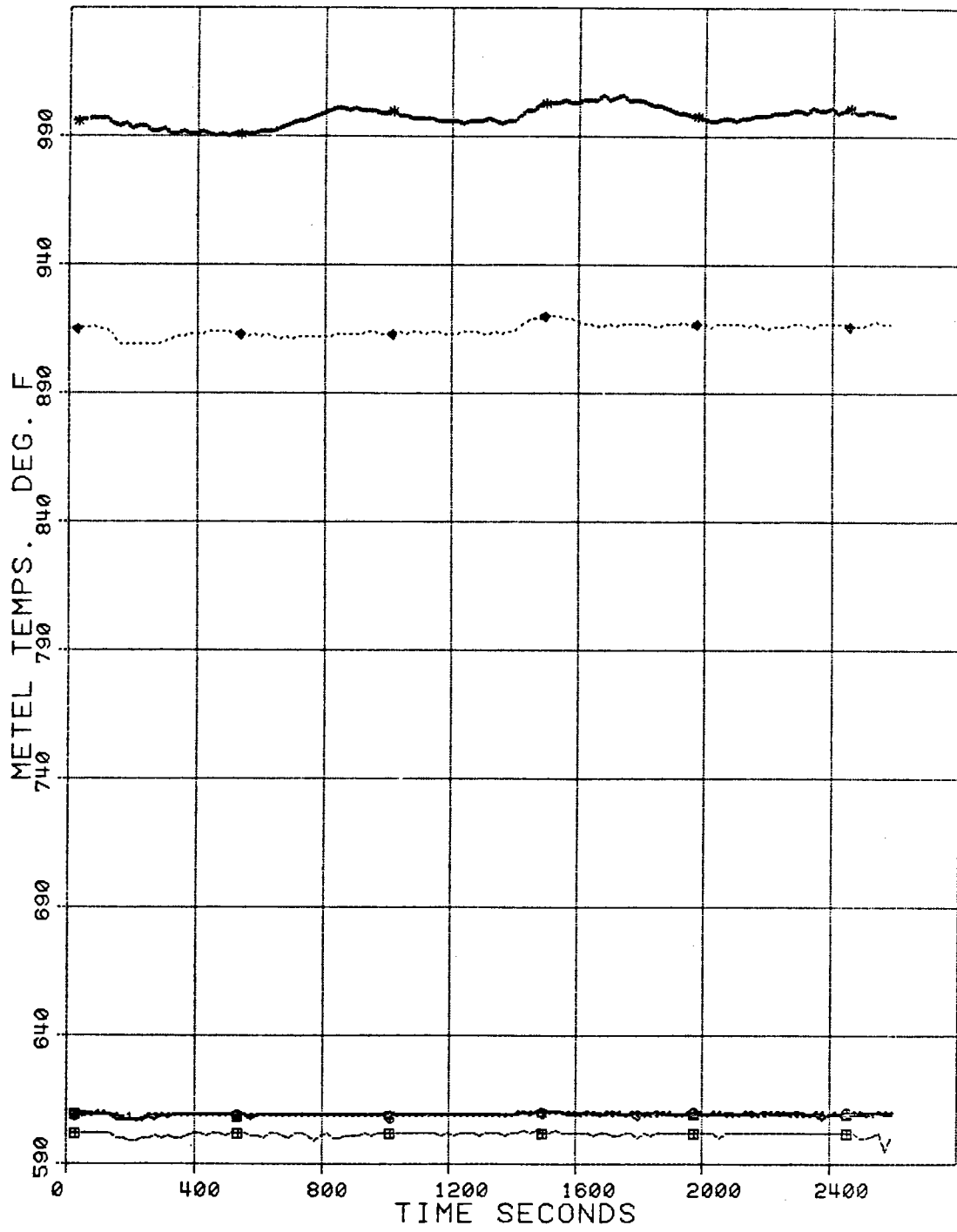
SIXTH FUNCTION #33 ASTERISK

SEARCH MODE 2

PLOT START TIME = 66240.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 19: 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

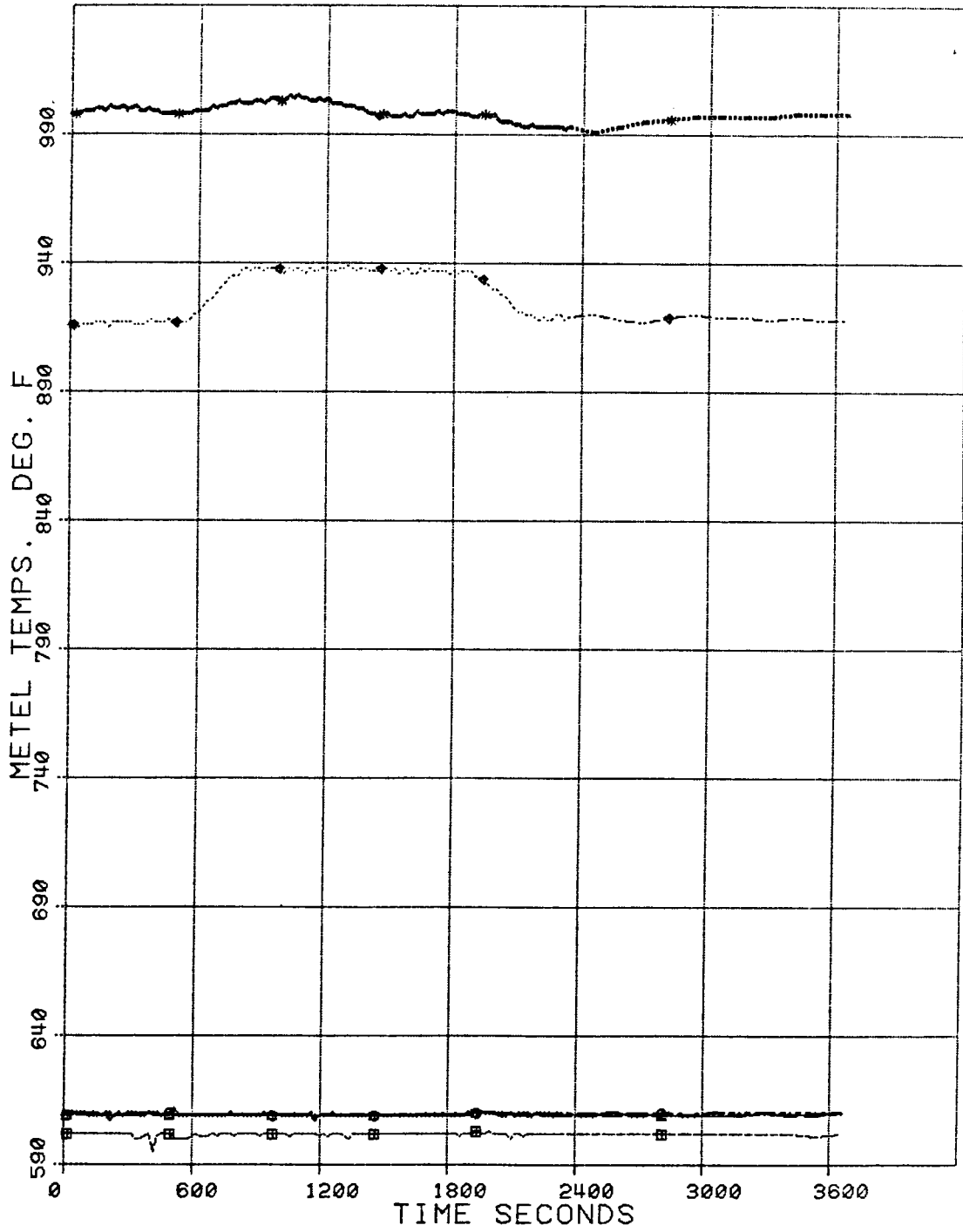
SIXTH FUNCTION #33 ASTERISK

SEARCH MODE 2

PLOT START TIME = 68400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 20: 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

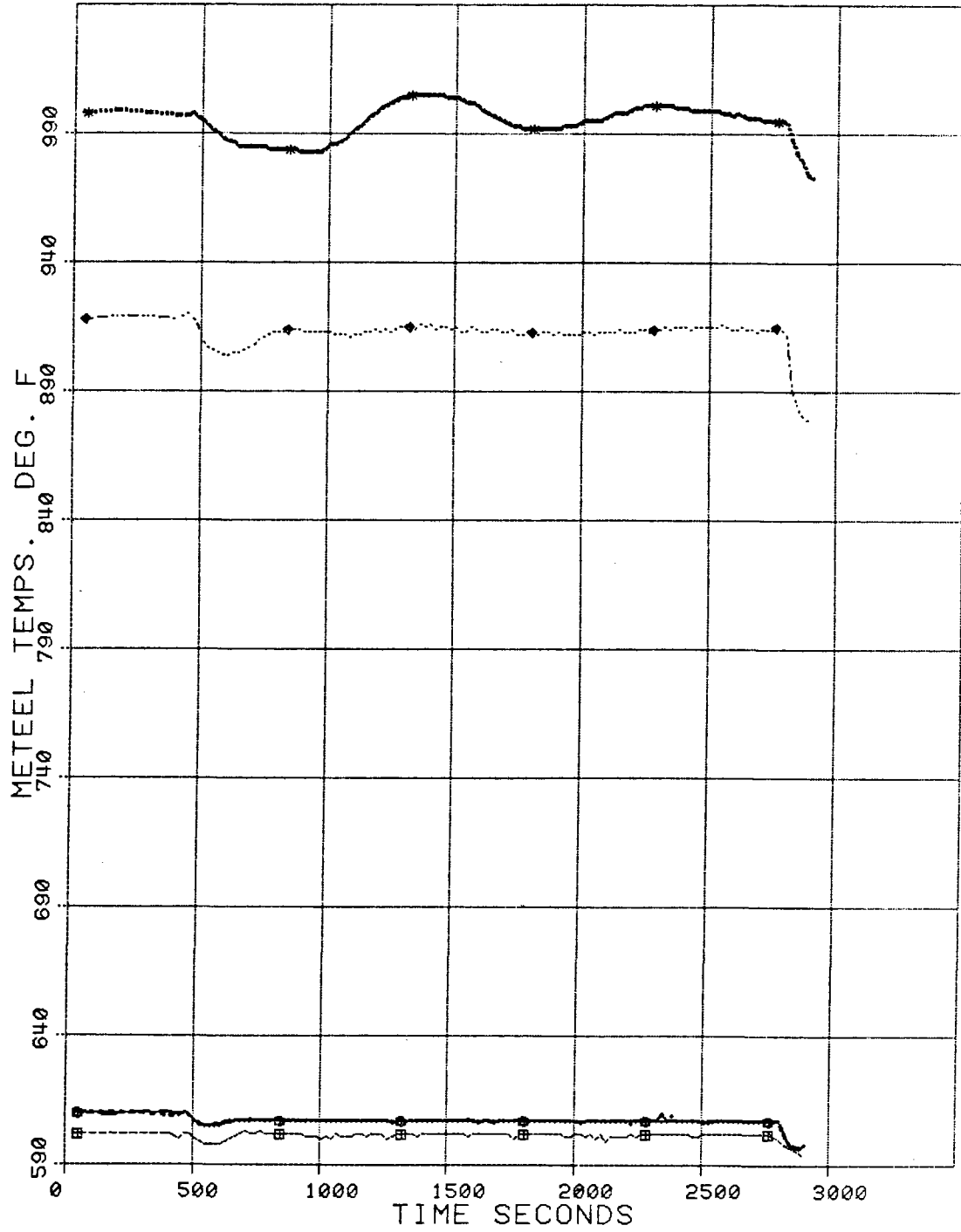
SIXTH FUNCTION #33 ASTERISK

SEARCH MODE 2

PLOT START TIME = 72000.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



PAGE 18  
DRUM LEVEL, PLOTS

SEARCH START  
DAY #116 1977 TIME 13:33  
NUMBER OF RECORDS = 3

ARGUMENT SELECTED : 1

FIRST FUNCTION \*30 OPEN BOX

SECOND FUNCTION \*11 TRIANGLE

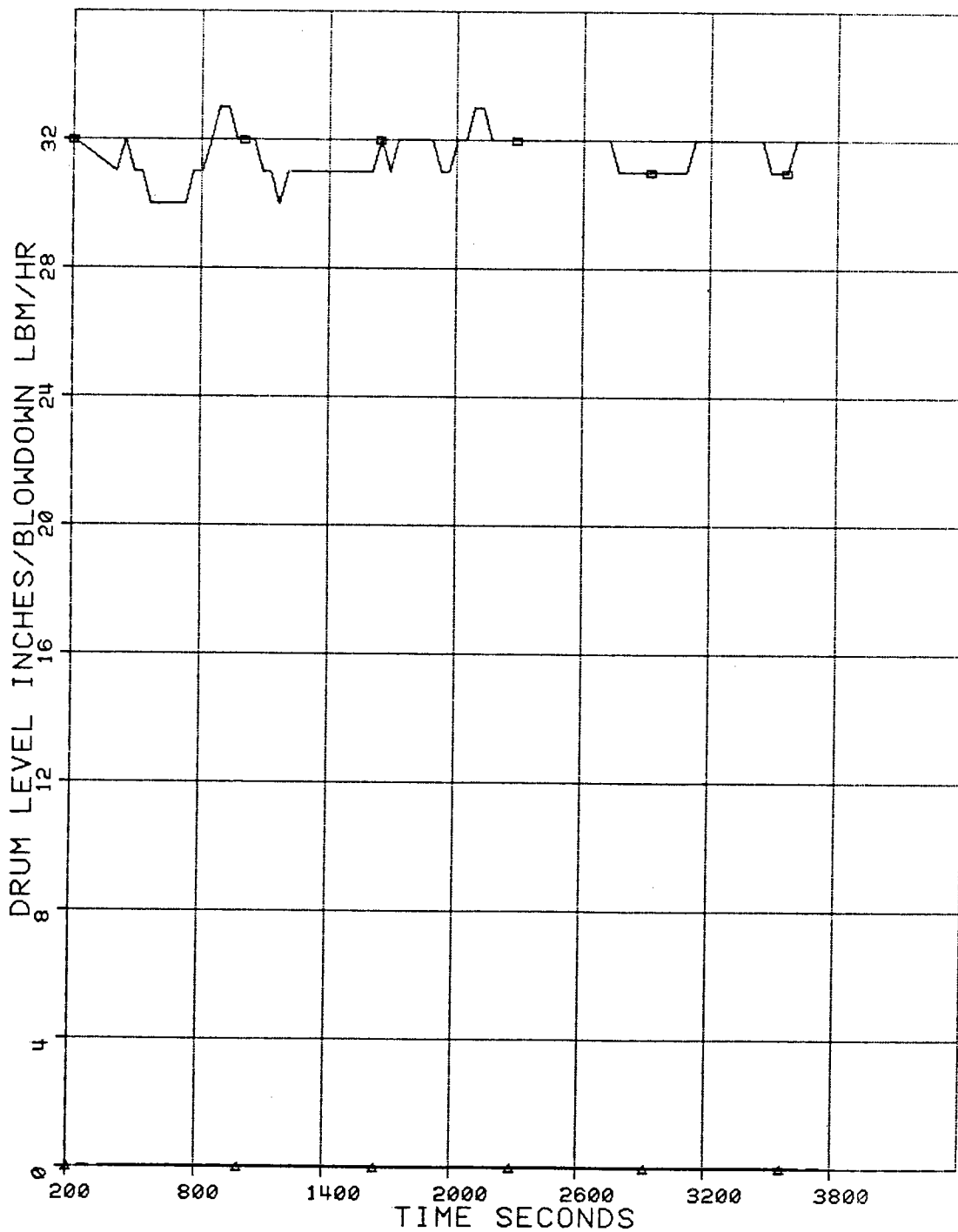
SEARCH MODE 2

PLOT START TIME = 48780.0

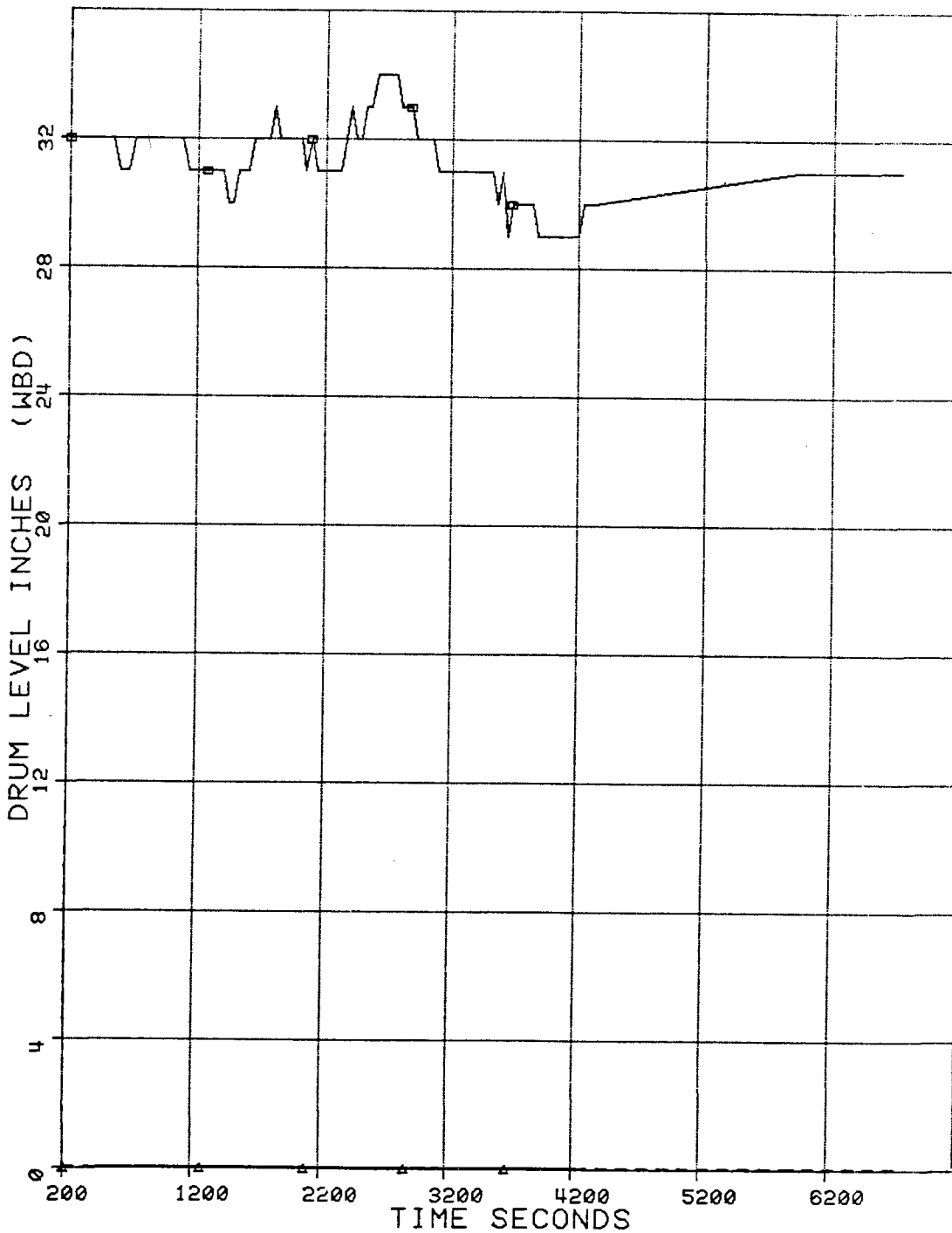
EACH 2TH POINT IS PLOTTED

LINE PLOT HAS 83 POINTS PER FUNCTION





SEARCH START  
DAY #116 1977 TIME 15: 0  
NUMBER OF RECORDS = 3  
  
ARGUMENT SELECTED : 1  
  
FIRST FUNCTION \*30 OPEN BOX  
SECOND FUNCTION \*11 TRIANGLE  
SEARCH MODE 2  
  
PLOT START TIME = 54000.0  
EACH 2TH POINT IS PLOTTED  
  
LINE PLOT HAS 100 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 16:30  
NUMBER OF RECORDS = 2

ARGUMENT SELECTED : 1

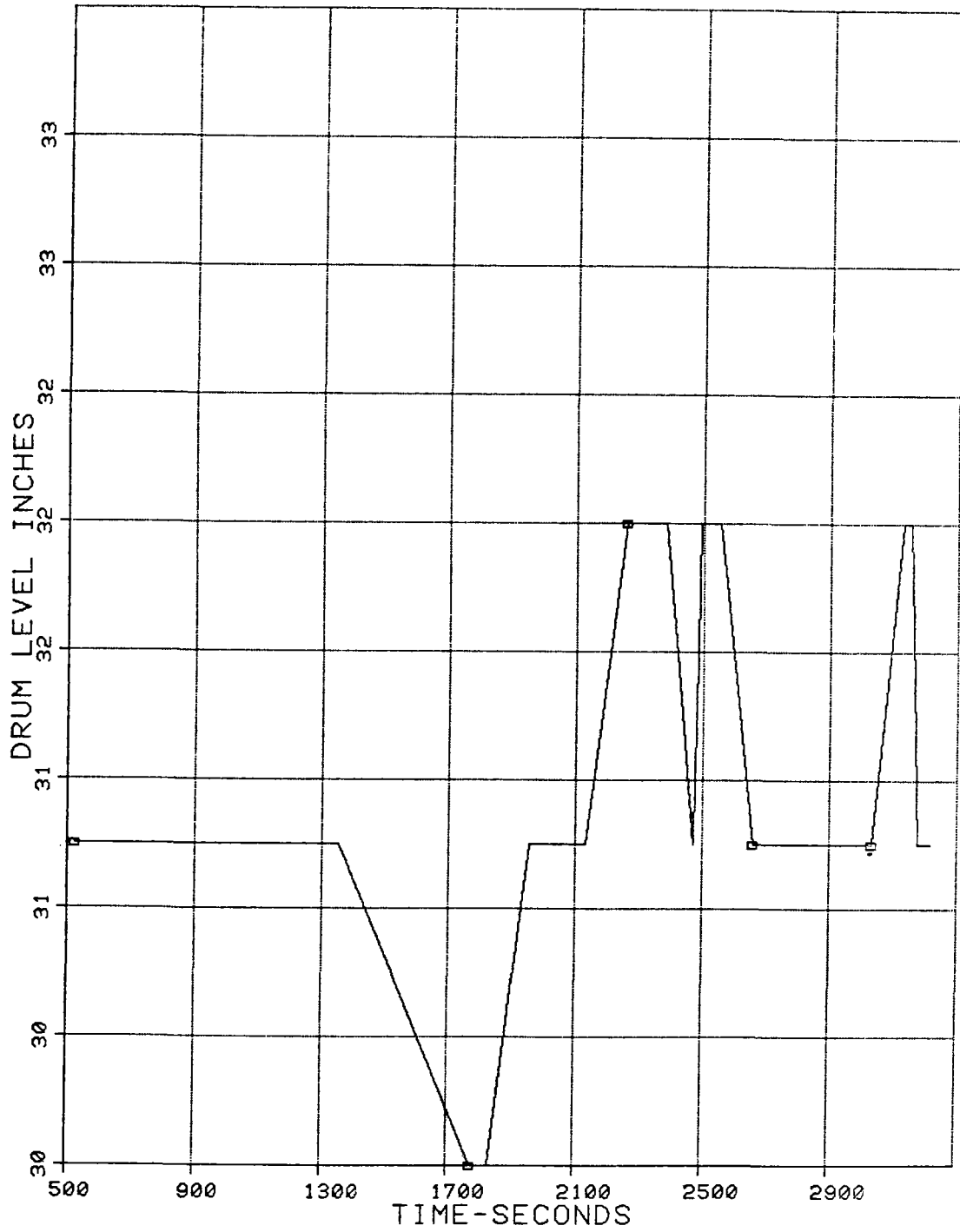
FIRST FUNCTION #30 OPEN BOX

SEARCH MODE 2

PLOT START TIME = 59400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 30 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 17:20  
NUMBER OF RECORDS = 2

ARGUMENT SELECTED : ↓

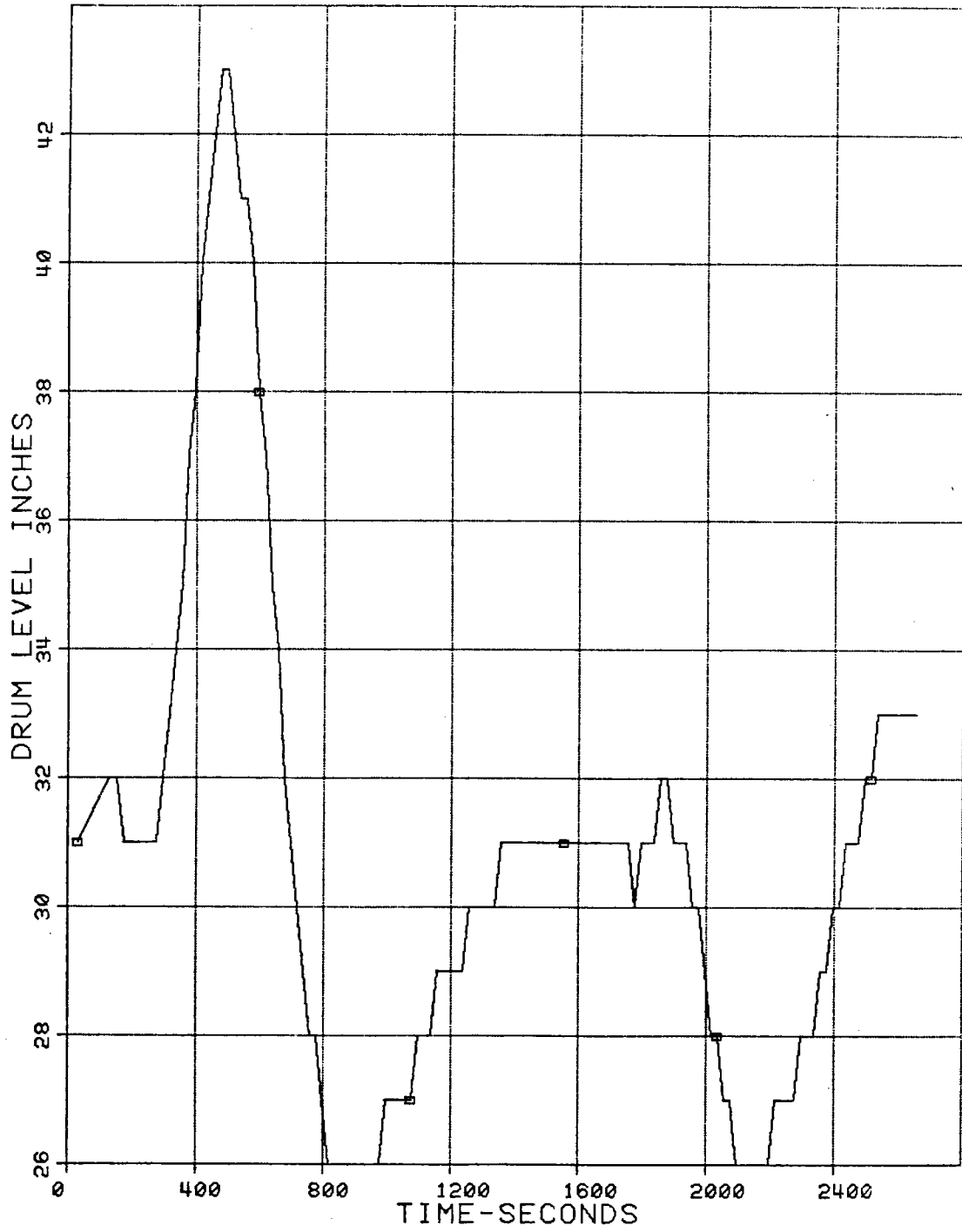
FIRST FUNCTION #30 OPEN BOX

SEARCH MODE 2

PLOT START TIME = 62400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 18:24  
NUMBER OF RECORDS \* 3

ARGUMENT SELECTED : 1

FIRST FUNCTION \*30 OPEN BOX

SECOND FUNCTION \*11 TRIANGLE

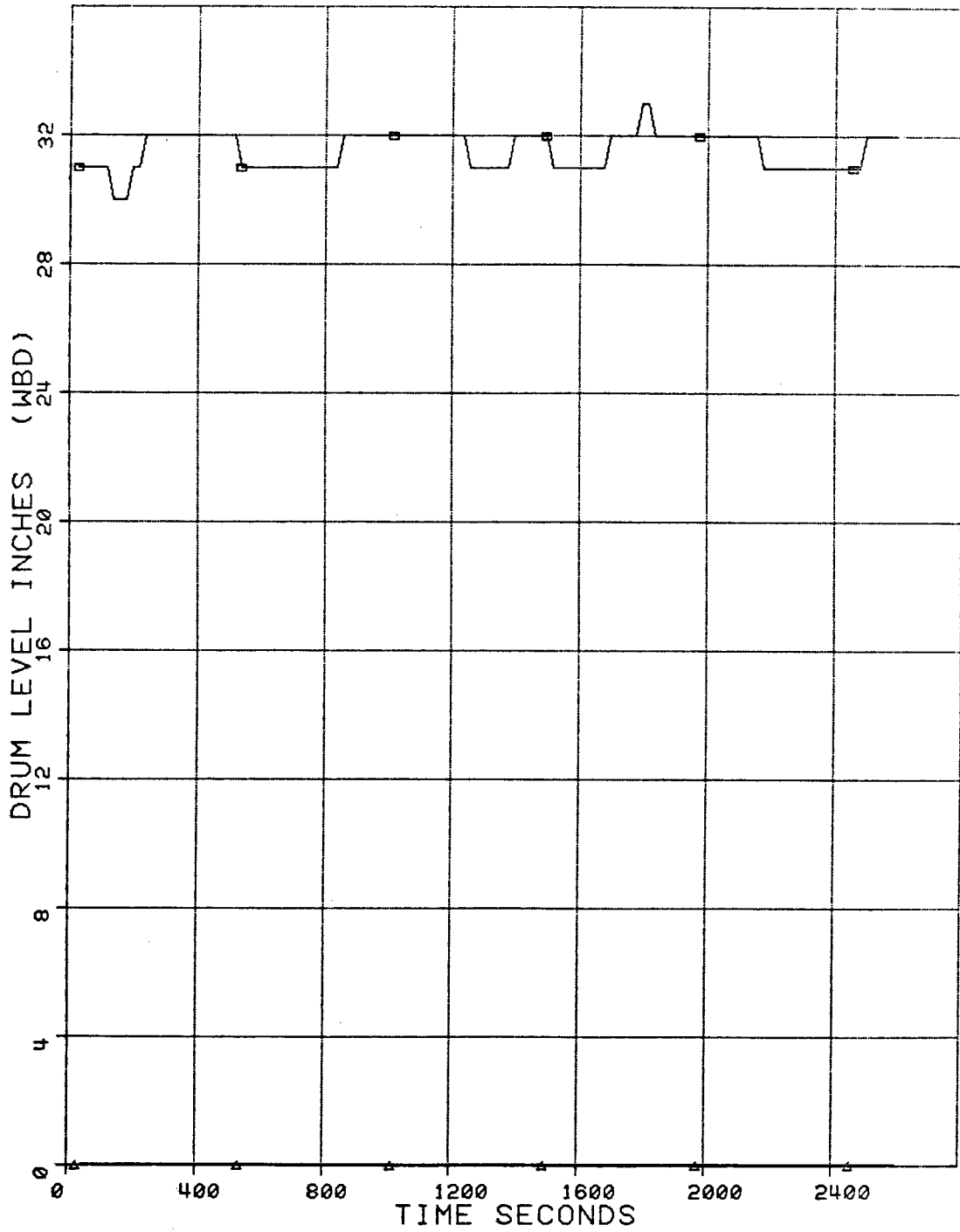
SEARCH MODE 2

PLOT START TIME = 66240.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION





SEARCH START  
DAY #116 1977 TIME 19: 0  
NUMBER OF RECORDS \* 3

ARGUMENT SELECTED : 1

FIRST FUNCTION #30 OPEN BOX

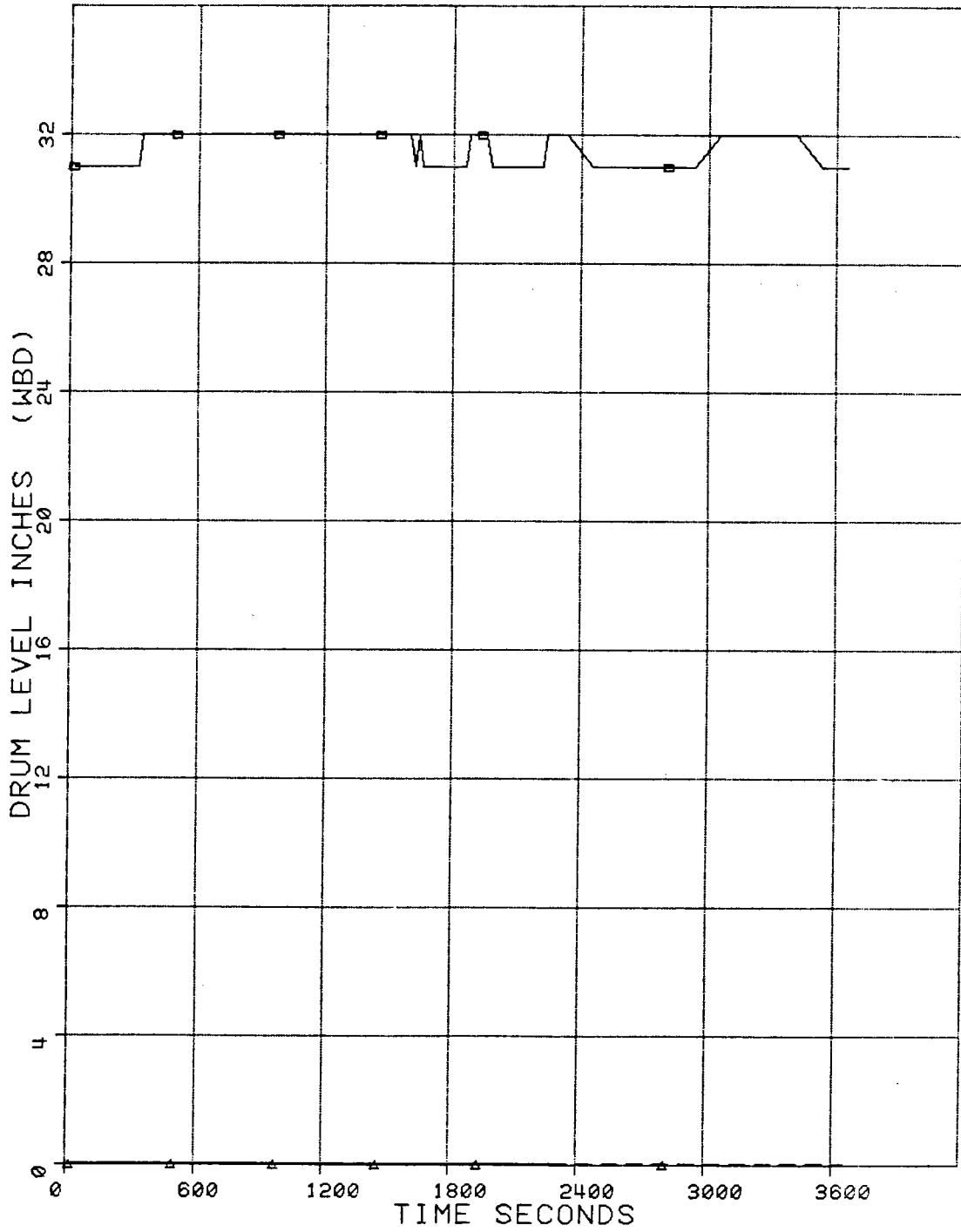
SECOND FUNCTION #11 TRIANGLE

SEARCH MODE 2

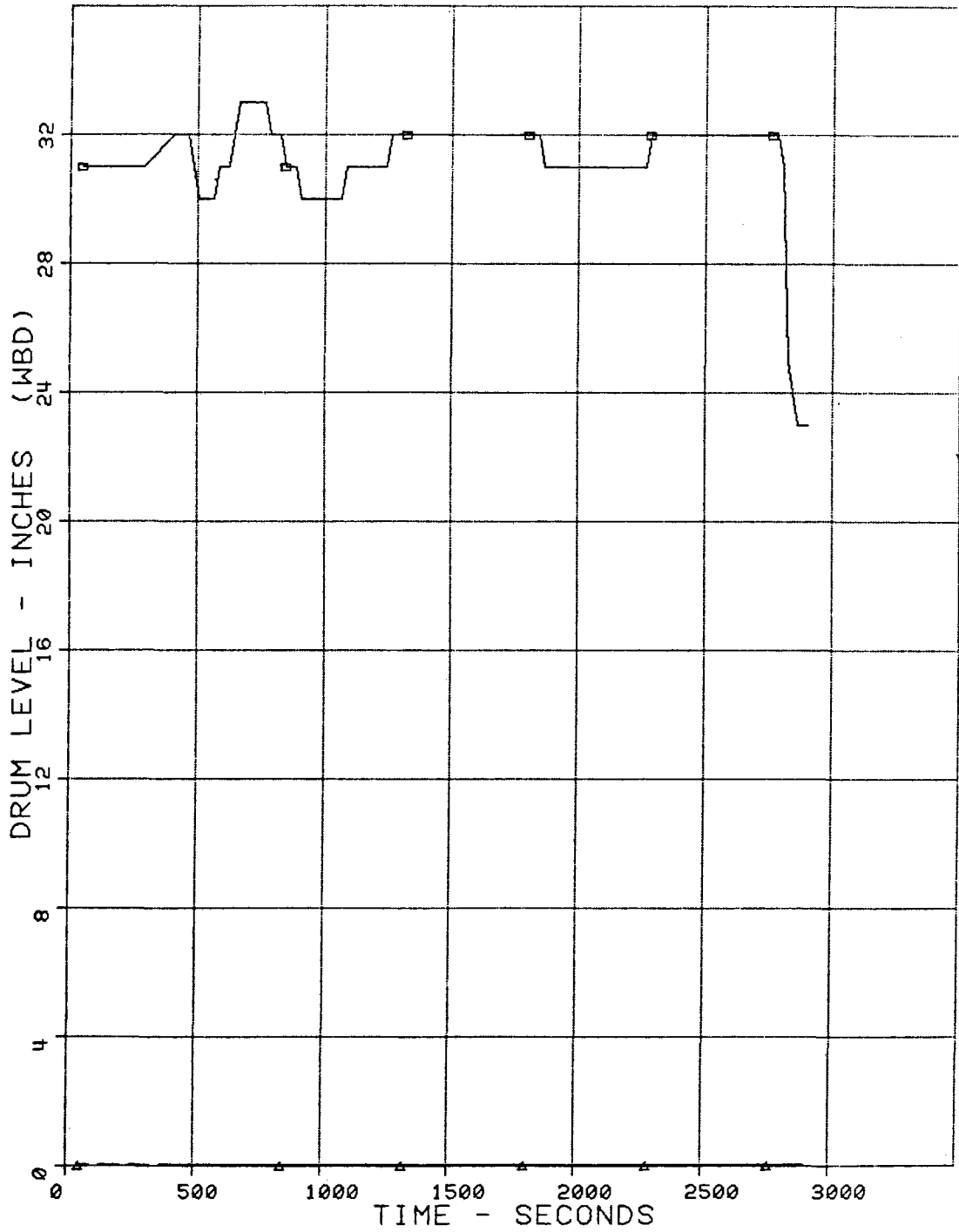
PLOT START TIME = 68400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY \*116 1977 TIME 20: 0  
NUMBER OF RECORDS \* 3  
ARGUMENT SELECTED : 1  
FIRST FUNCTION \*30 OPEN BOX  
SECOND FUNCTION \*11 TRIANGLE  
SEARCH MODE 2  
PLOT START TIME = 72000.0  
EACH 1TH POINT IS PLOTTED  
LINE PLOT HAS 128 POINTS PER FUNCTION



PAGE 19  
RECIRCULATION FLOW, PLOTS

PAGE 20  
POWER LEVELS, PLOTS

SEARCH START  
DAY #116 1977 TIME 13:33  
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

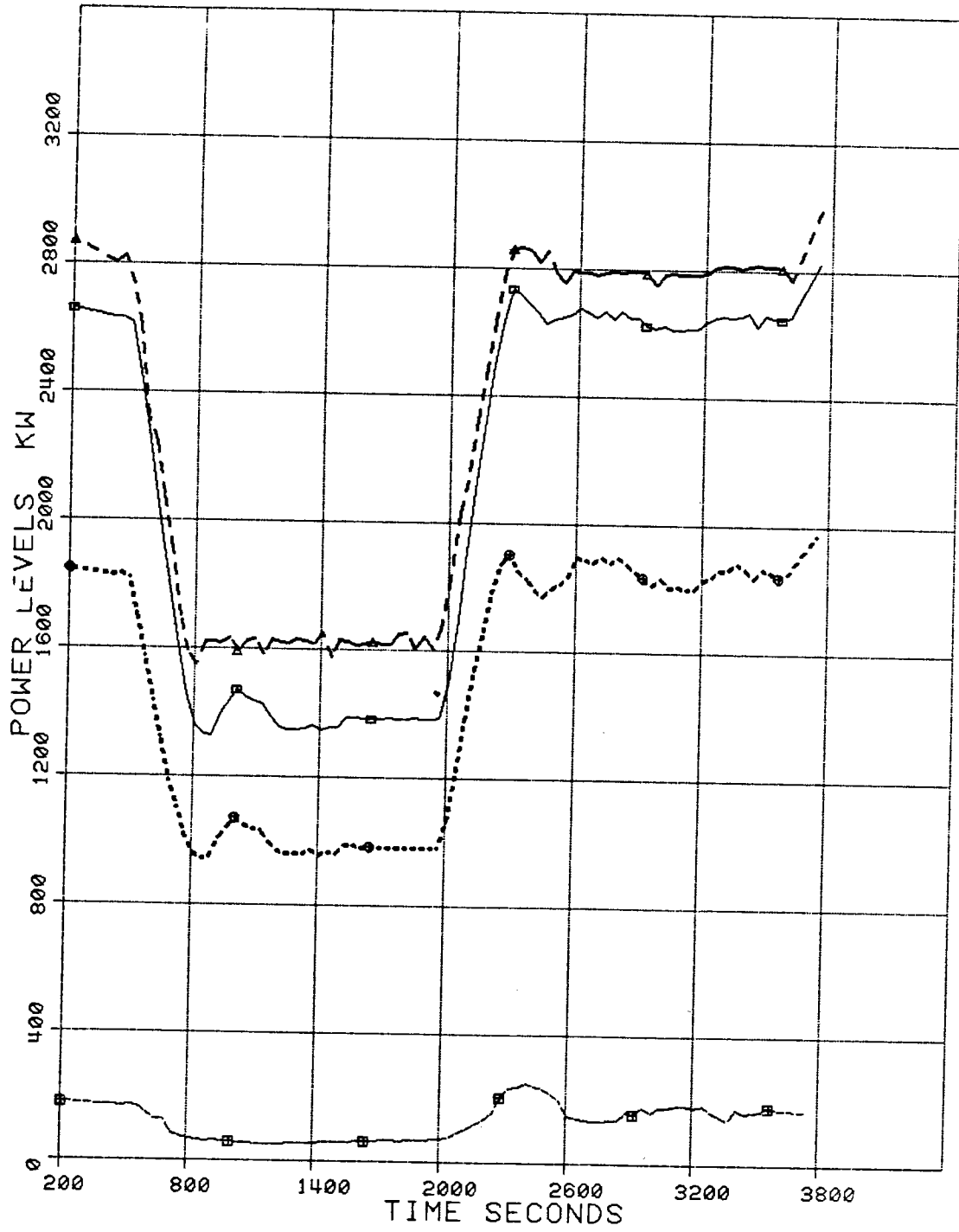
SEARCH MODE 2

PLOT START TIME = 48788.0

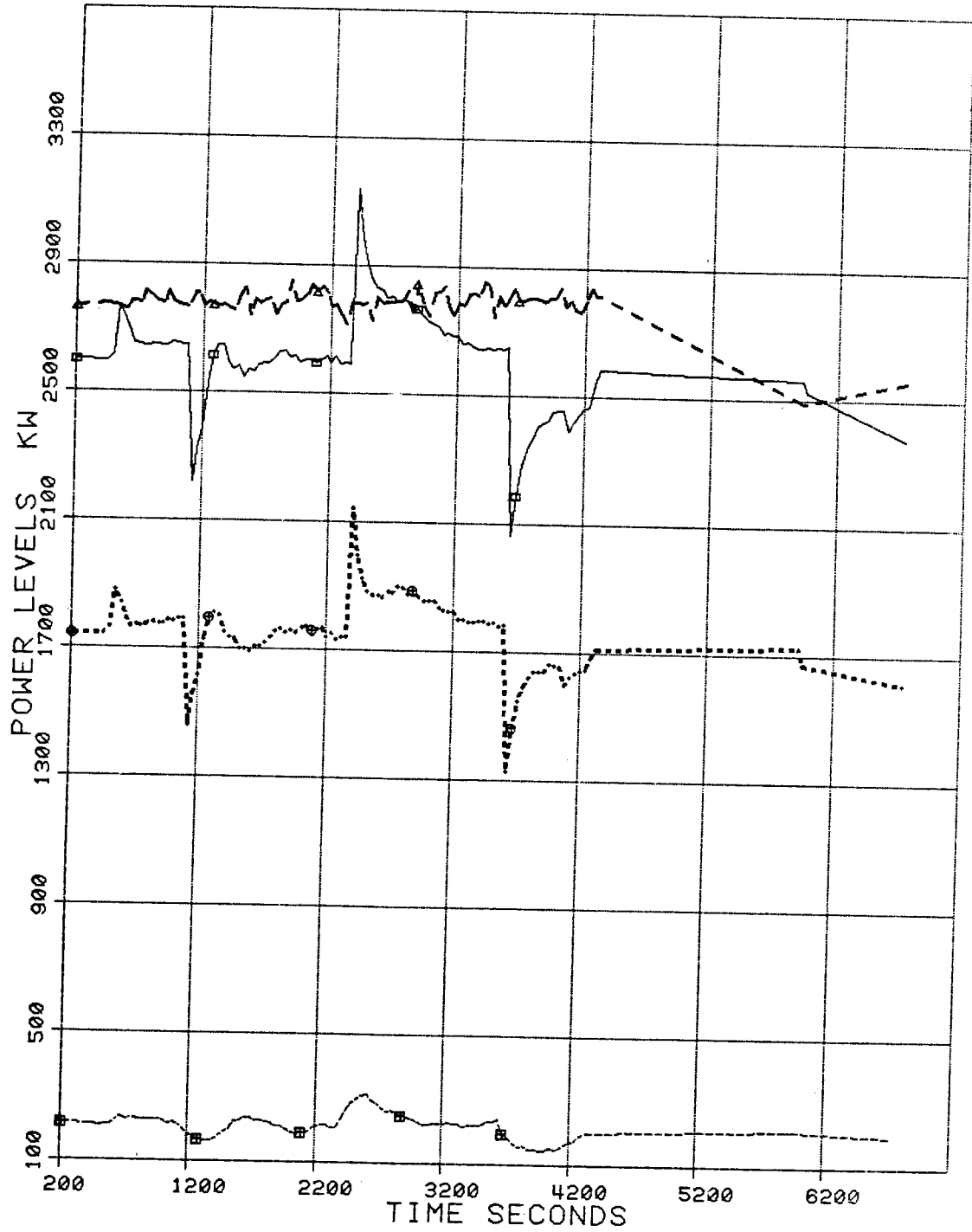
EACH 2TH POINT IS PLOTTED

LINE PLOT HAS 83 POINTS PER FUNCTION





SEARCH START  
DAY #116 1977 TIME 15: 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 2  
  
PLOT START TIME = 54000.0  
EACH 2TH POINT IS PLOTTED  
  
LINE PLOT HAS 100 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 16:30  
NUMBER OF RECORDS = 5

ARGUMENT SELECTED : 1

FIRST FUNCTION \* 6 OPEN BOX

SECOND FUNCTION \* 7 TRIANGLE

THIRD FUNCTION \*15 CROSS-CIRCLE

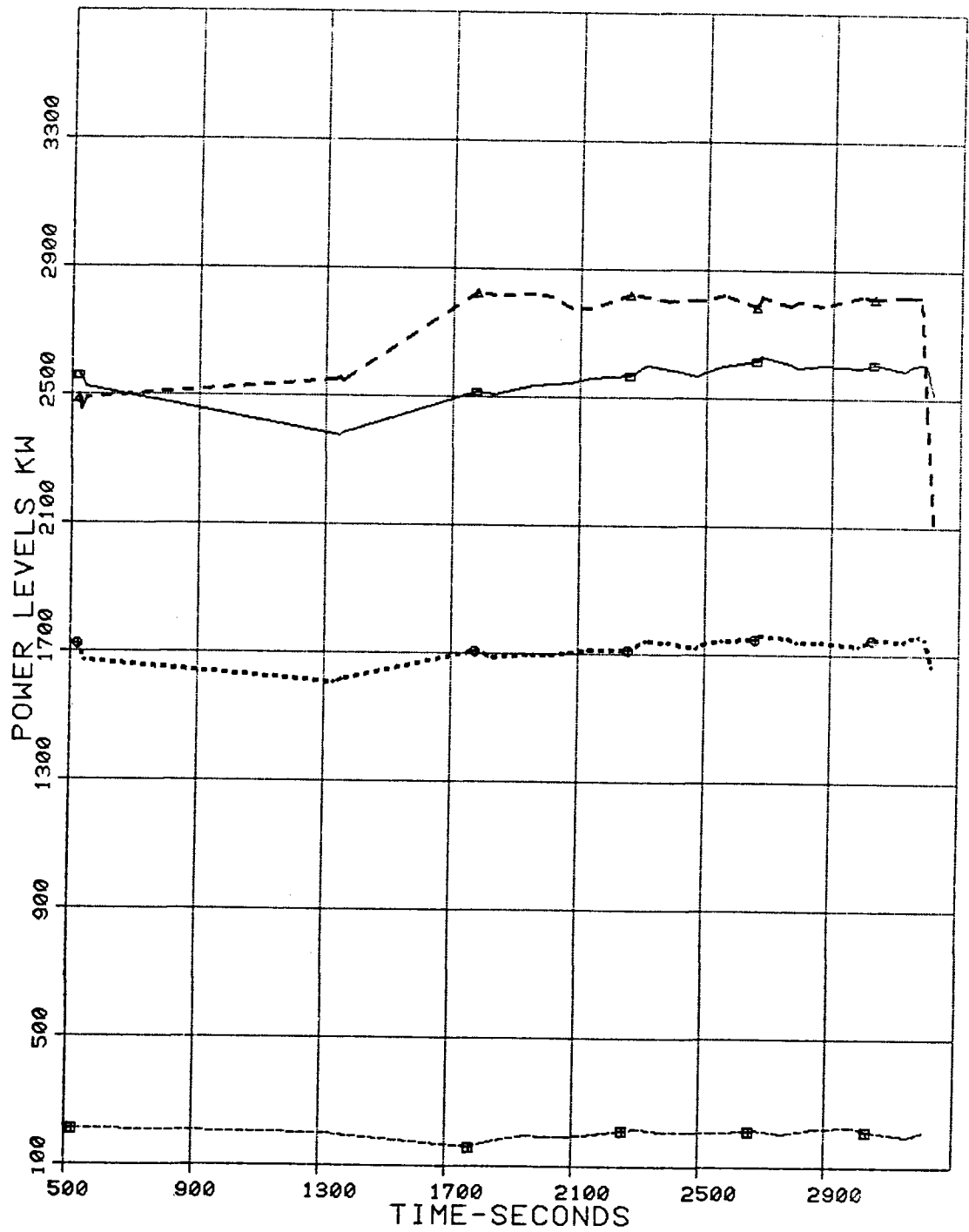
FOURTH FUNCTION \*16 CROSS-BOX

SEARCH MODE 2

PLOT START TIME = 59400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 30 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 17:20  
NUMBER OF RECORDS = 5

ARGUMENT SELECTED : 1

FIRST FUNCTION \* 6 OPEN BOX

SECOND FUNCTION \* 7 TRIANGLE

THIRD FUNCTION \*15 CROSS-CIRCLE

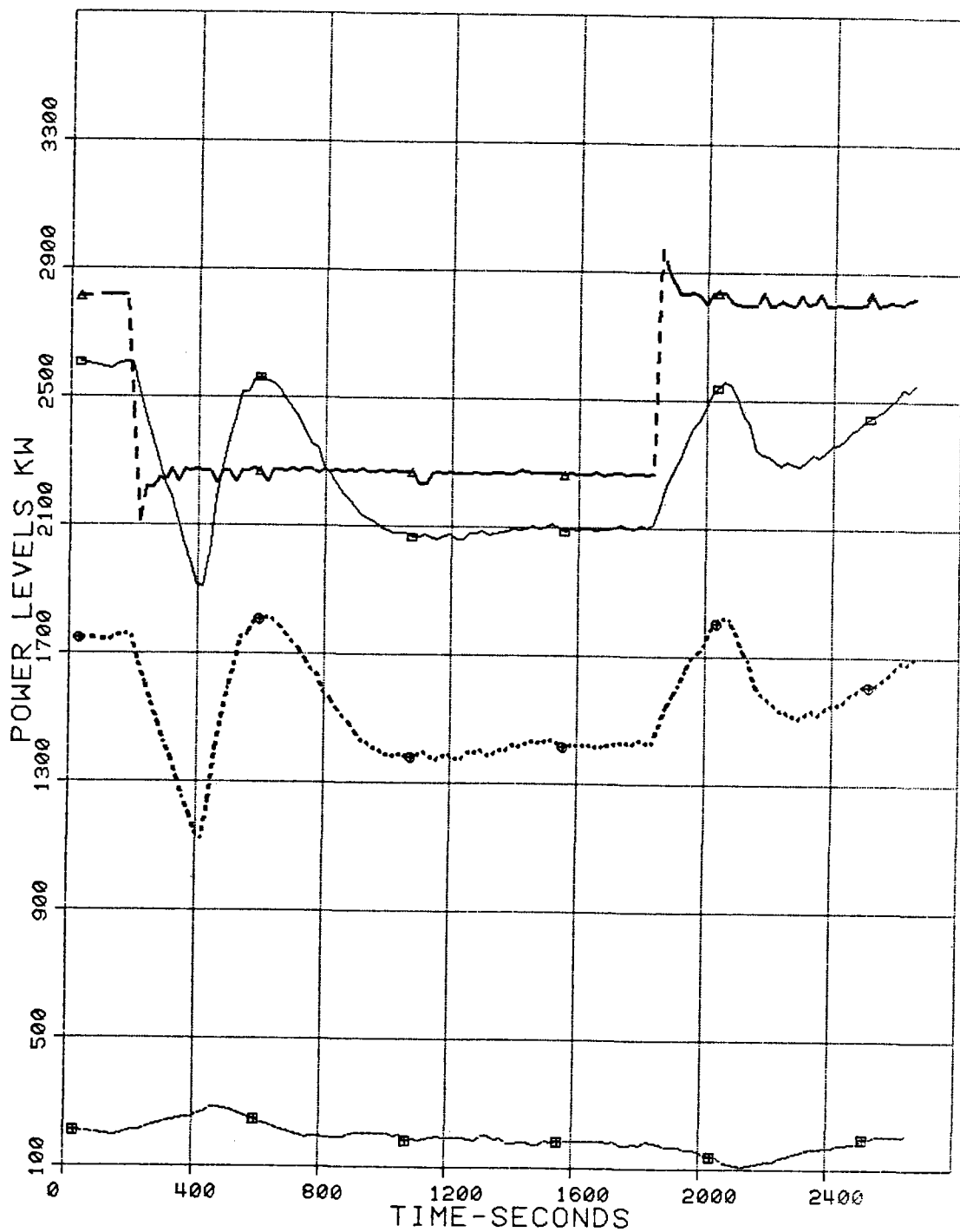
FOURTH FUNCTION \*16 CROSS-BOX

SEARCH MODE 2

PLOT START TIME = 62400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 18:24  
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

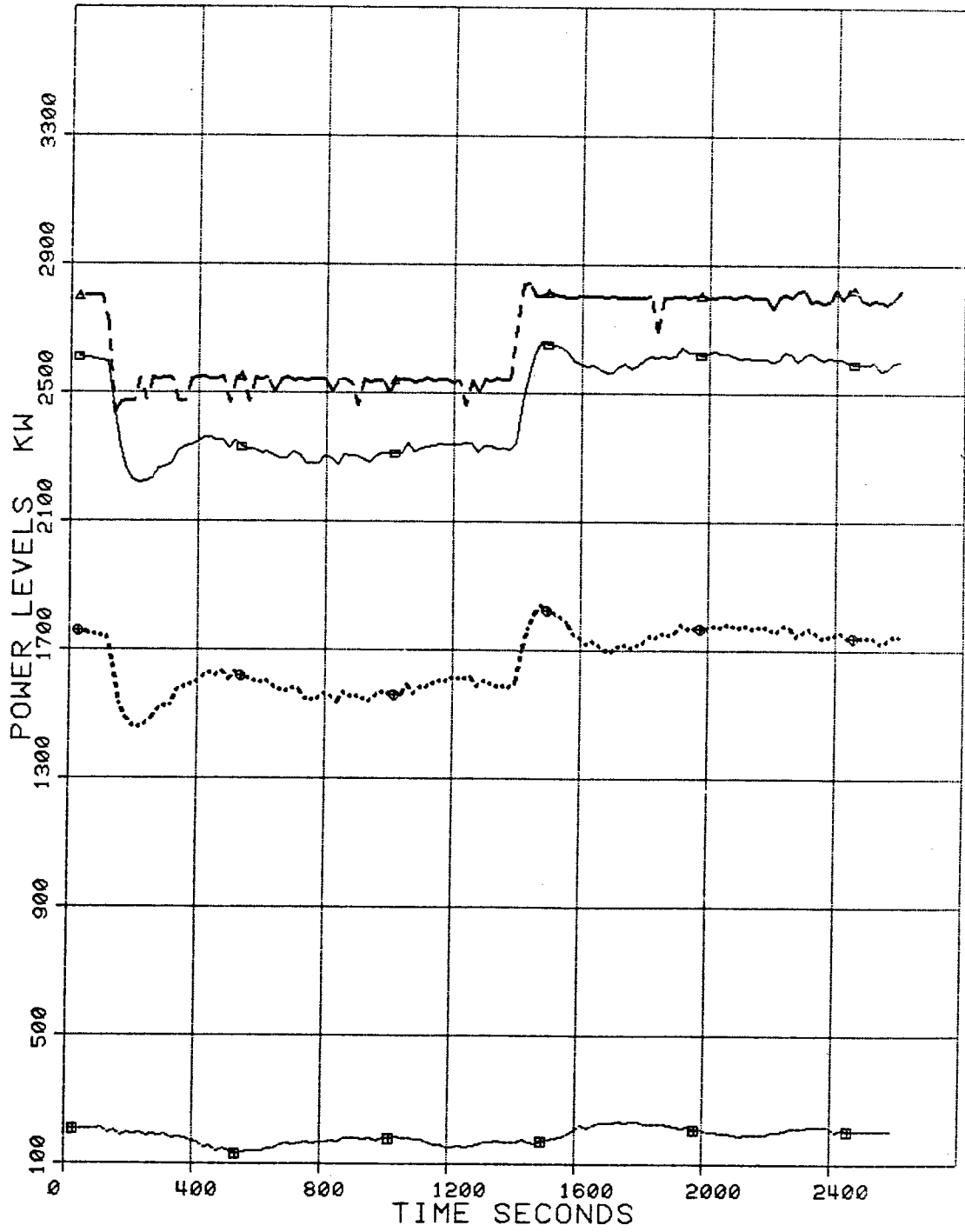
SEARCH MODE 2

PLOT START TIME = 66240.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION





SEARCH START  
DAY #116 1977 TIME 19: 0  
NUMBER OF RECORDS = 5

ARGUMENT SELECTED : 1

FIRST FUNCTION \* 6 OPEN BOX

SECOND FUNCTION \* 7 TRIANGLE

THIRD FUNCTION \*15 CROSS-CIRCLE

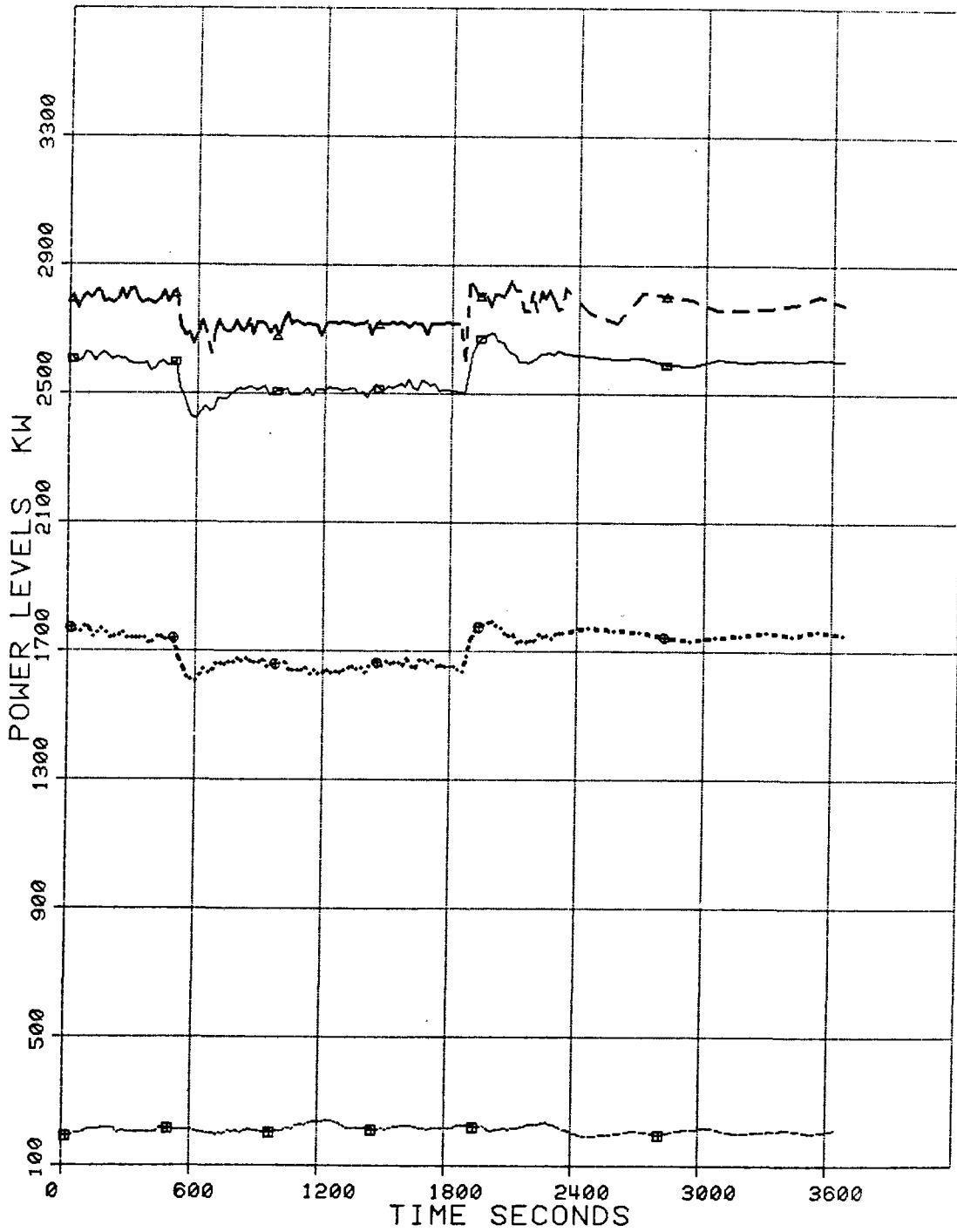
FOURTH FUNCTION \*16 CROSS-BOX

SEARCH MODE 2

PLOT START TIME = 68400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 20: 0  
NUMBER OF RECORDS = 5

ARGUMENT SELECTED : 1

FIRST FUNCTION \* 6 OPEN BOX

SECOND FUNCTION \* 7 TRIANGLE

THIRD FUNCTION \*15 CROSS-CIRCLE

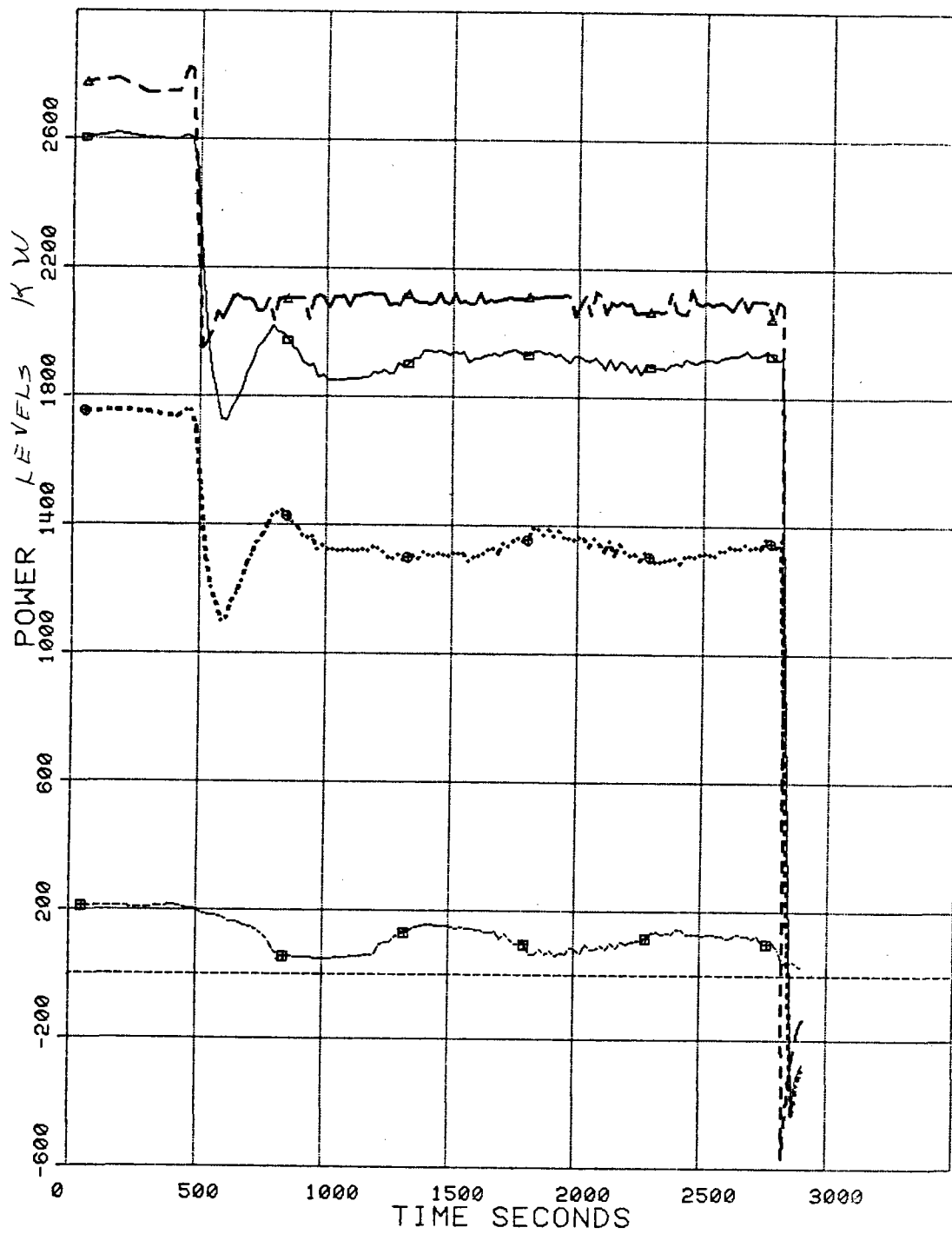
FOURTH FUNCTION \*16 CROSS-BOX

SEARCH MODE 2

PLOT START TIME = 72000.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



PAGE 21  
ENTHALPY

SEARCH START  
DAY #116 1977 TIME 15: 0  
NUMBER OF RECORDS = 5

ARGUMENT SELECTED : 1

FIRST FUNCTION #57 OPEN BOX

SECOND FUNCTION #58 TRIANGLE

THIRD FUNCTION #59 CROSS-CIRCLE

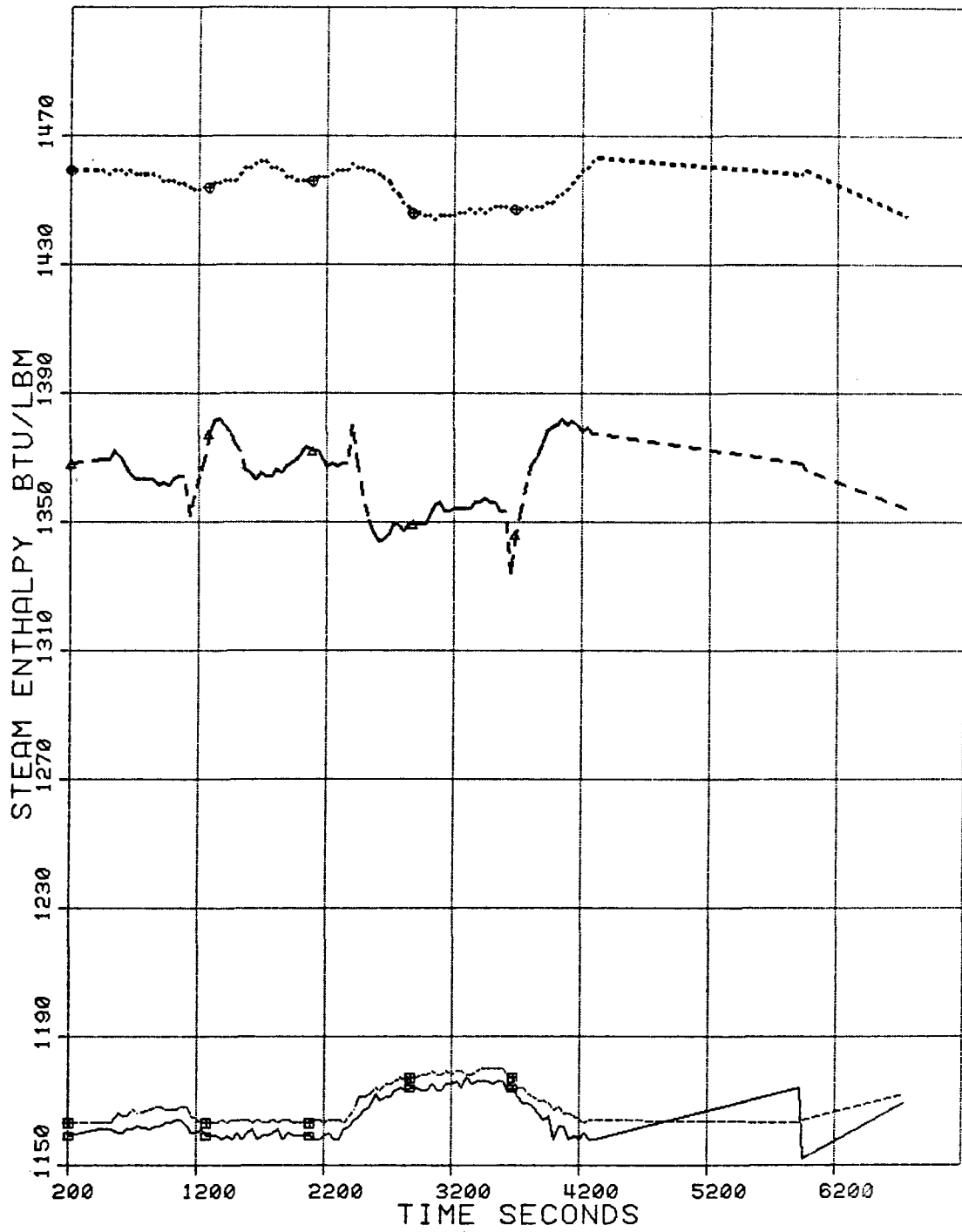
FOURTH FUNCTION #60 CROSS-BOX

SEARCH MODE 2

PLOT START TIME = 54000.0

EACH 2TH POINT IS PLOTTED

LINE PLOT HAS 100 POINTS PER FUNCTION





SEARCH START  
DAY #116 1977 TIME 15: 0  
NUMBER OF RECORDS = 4

ARGUMENT SELECTED : 1

FIRST FUNCTION #60 OPEN BOX

SECOND FUNCTION #61 TRIANGLE

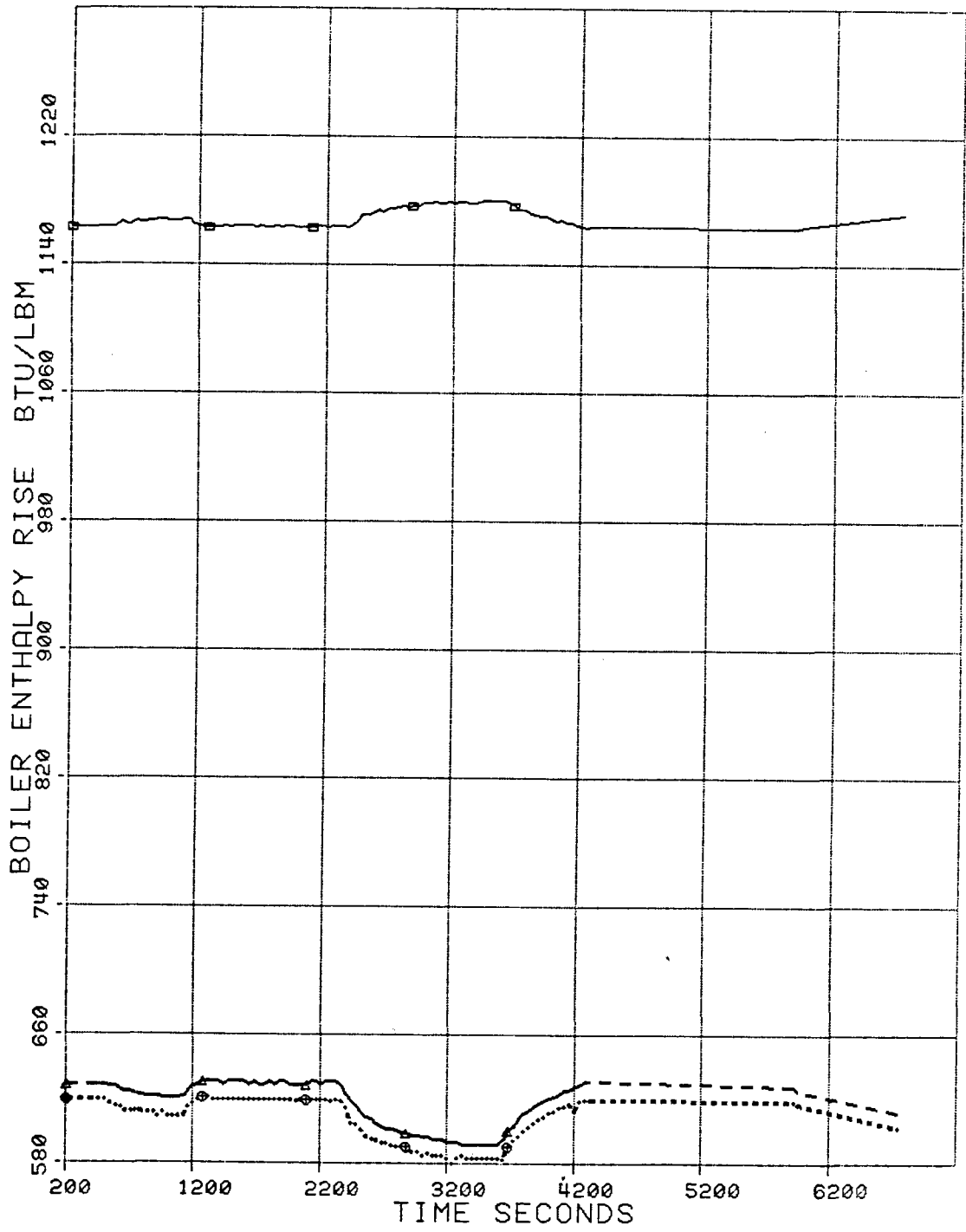
THIRD FUNCTION #62 CROSS-CIRCLE

SEARCH MODE 2

PLOT START TIME = 54000.0

EACH 2TH POINT IS PLOTTED

LINE PLOT HAS 100 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 16:30  
NUMBER OF RECORDS = 4

ARGUMENT SELECTED : 1

FIRST FUNCTION #61 OPEN BOX

SECOND FUNCTION #62 TRIANGLE

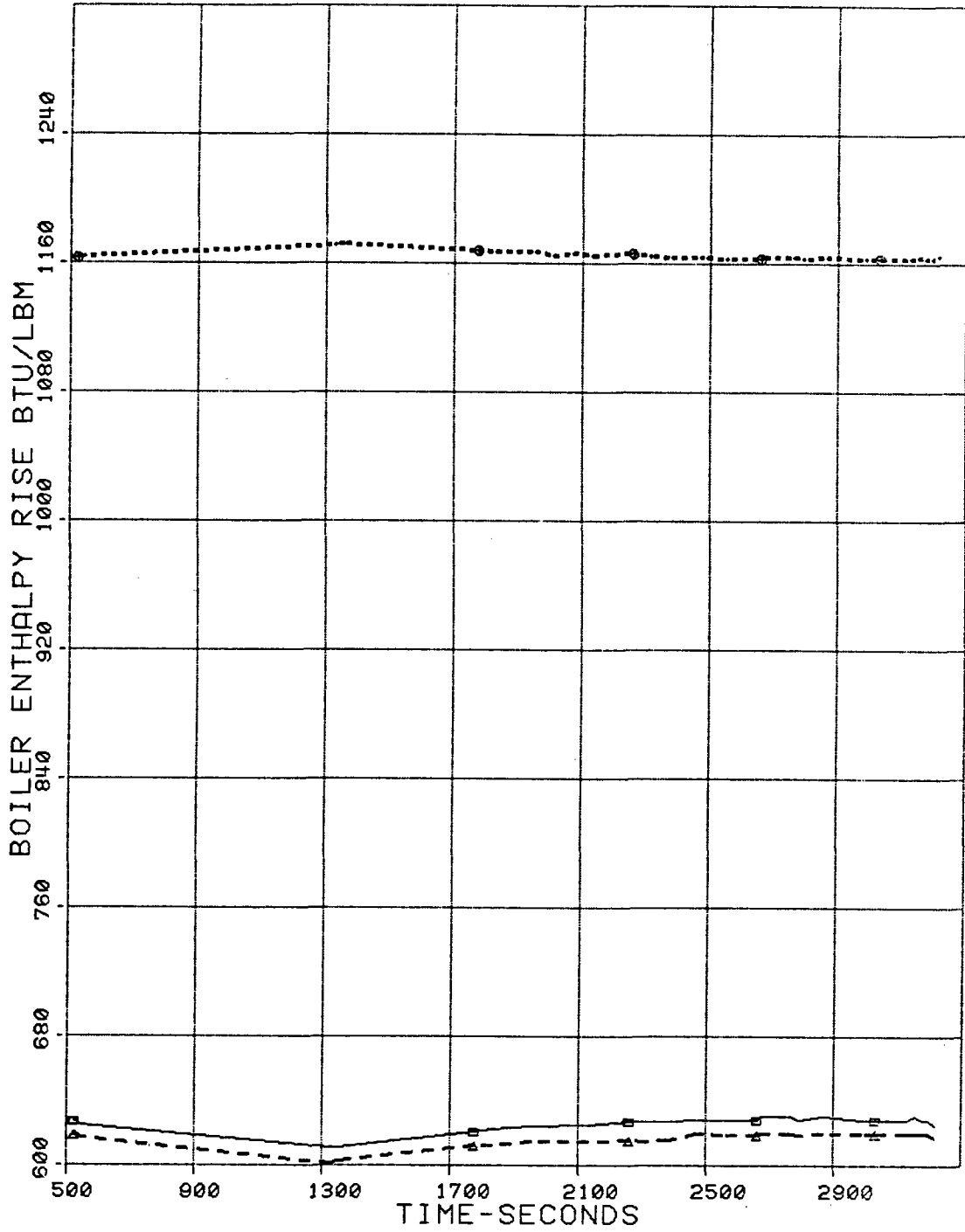
THIRD FUNCTION #60 CROSS-CIRCLE

SEARCH MODE 2

PLOT START TIME = 59400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 30 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 16:30  
NUMBER OF RECORDS = 5

ARGUMENT SELECTED : 1

FIRST FUNCTION #57 OPEN BOX

SECOND FUNCTION #58 TRIANGLE

THIRD FUNCTION #59 CROSS-CIRCLE

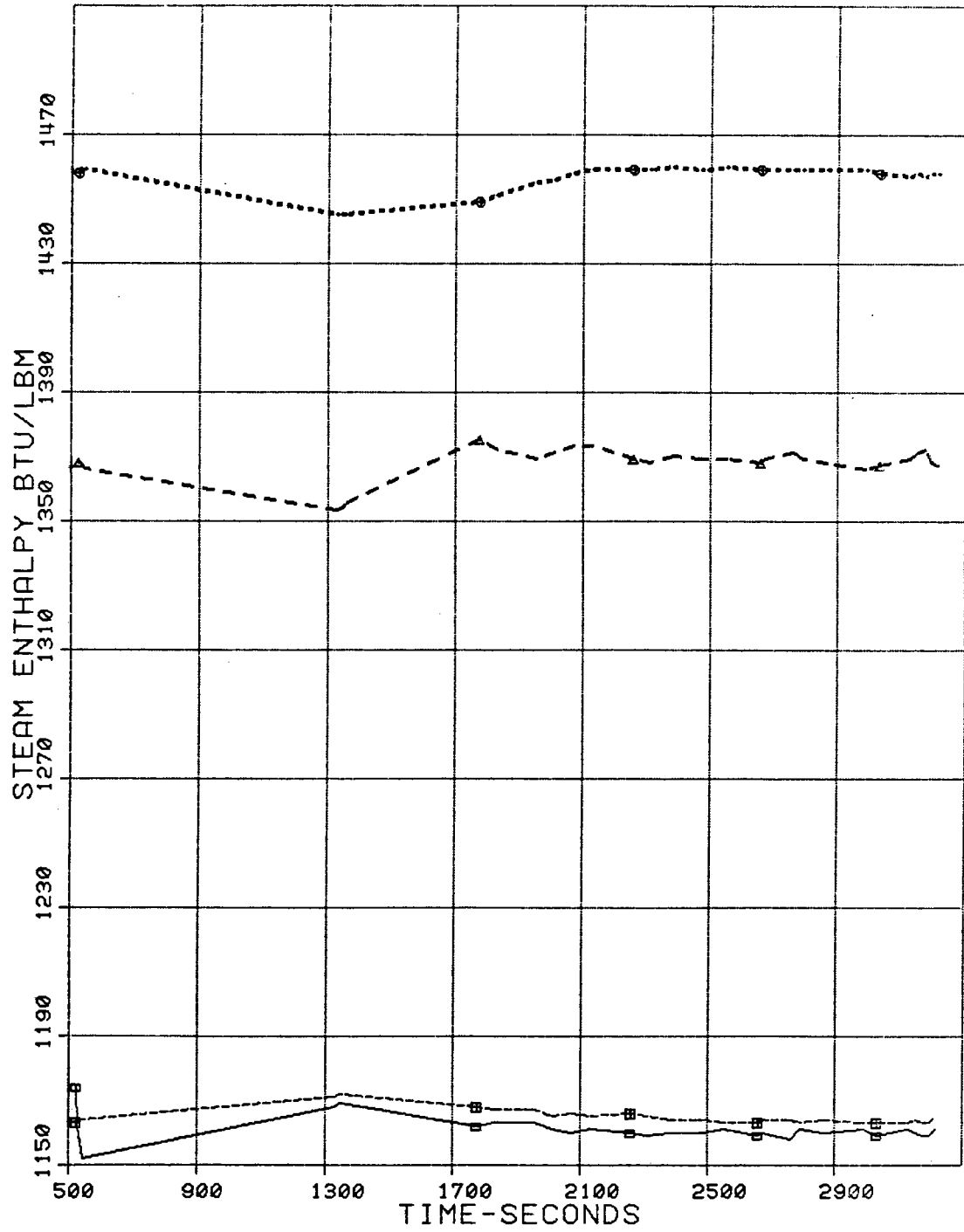
FOURTH FUNCTION #60 CROSS-BOX

SEARCH MODE 2

PLOT START TIME = 59400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 30 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 17:20  
NUMBER OF RECORDS = 5

ARGUMENT SELECTED : 1

FIRST FUNCTION #57 OPEN BOX

SECOND FUNCTION #58 TRIANGLE

THIRD FUNCTION #59 CROSS-CIRCLE

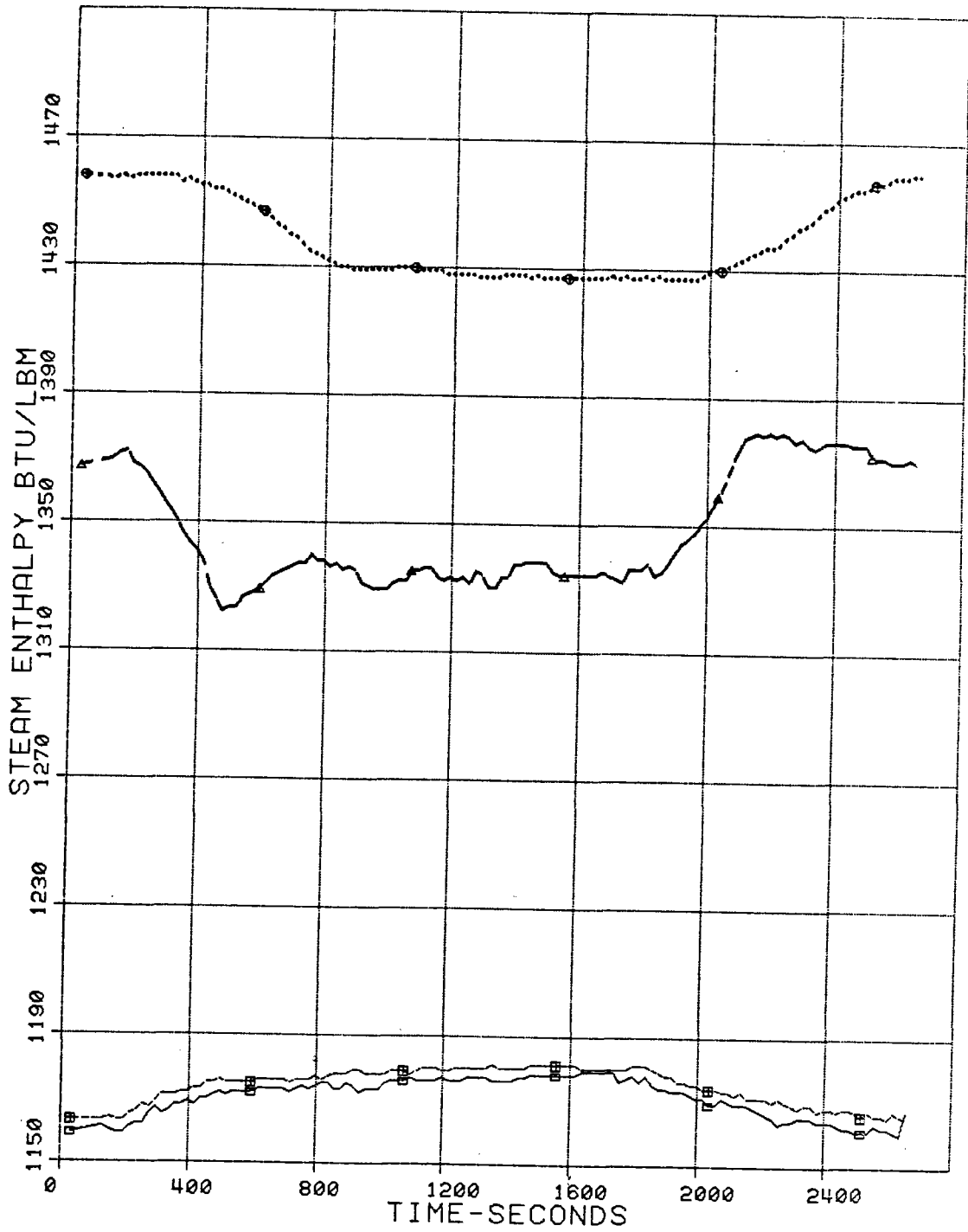
FOURTH FUNCTION #60 CROSS-BOX

SEARCH MODE 2

PLOT START TIME = 62400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION





SEARCH START  
DAY #116 1977 TIME 17:20  
NUMBER OF RECORDS • 4

ARGUMENT SELECTED : 1

FIRST FUNCTION #61 OPEN BOX

SECOND FUNCTION #62 TRIANGLE

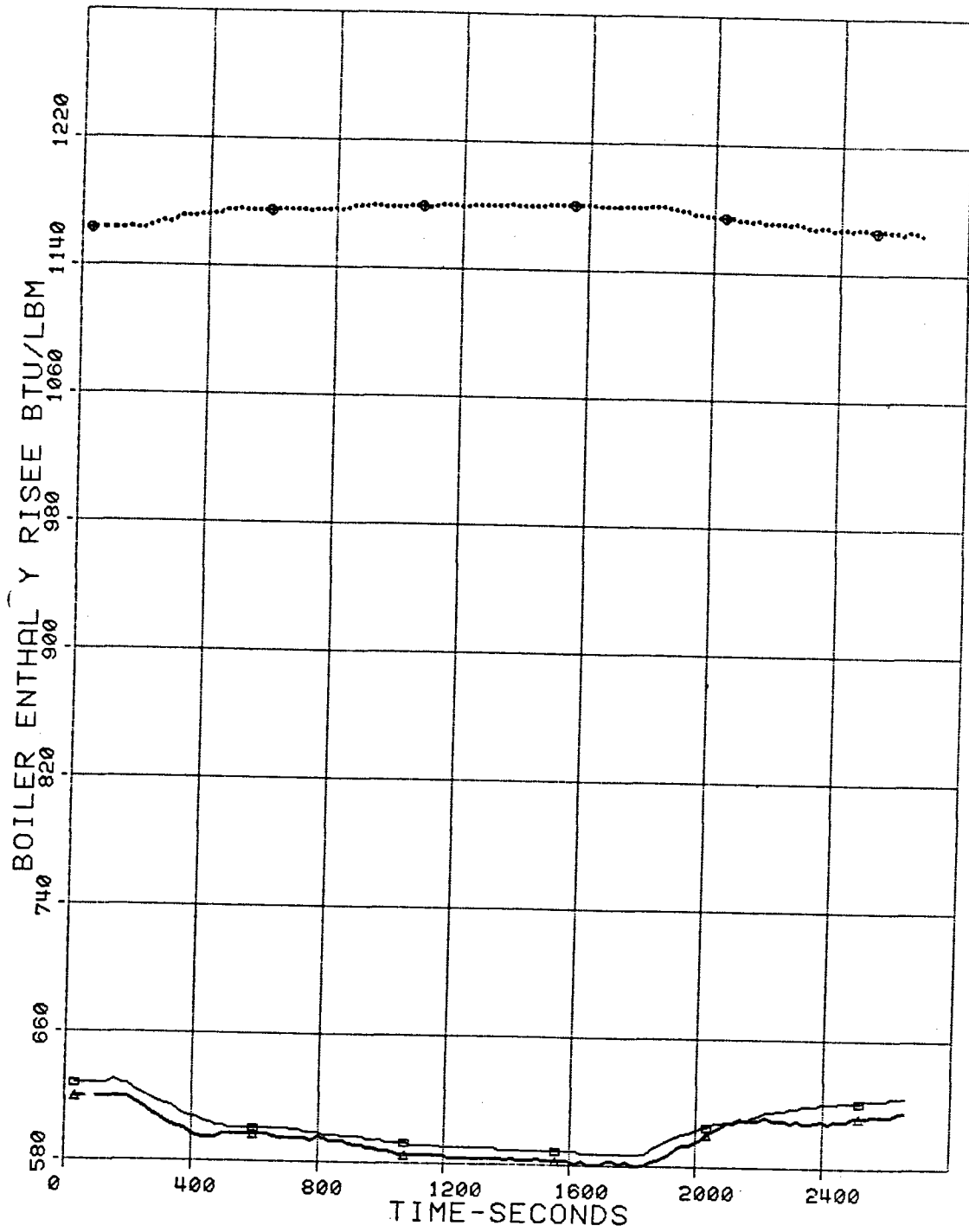
THIRD FUNCTION #60 CROSS-CIRCLE

SEARCH MODE 3

PLOT START TIME = 62400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 18:24  
NUMBER OF RECORDS = 5

ARGUMENT SELECTED : 1

FIRST FUNCTION #57 OPEN BOX

SECOND FUNCTION #58 TRIANGLE

THIRD FUNCTION #59 CROSS-CIRCLE

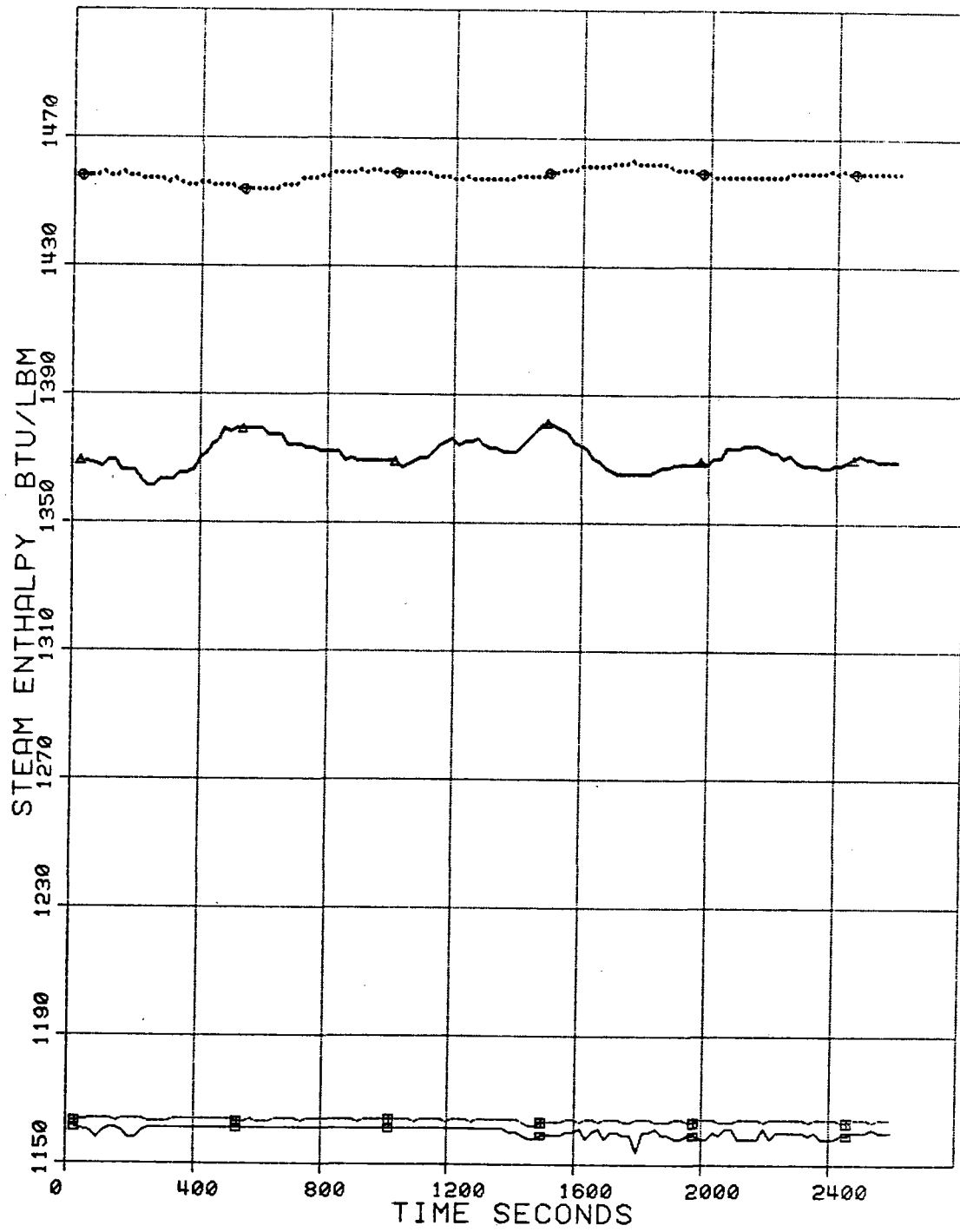
FOURTH FUNCTION #60 CROSS-BOX

SEARCH MODE 2

PLOT START TIME = 66240.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 18:24  
NUMBER OF RECORDS = 4

ARGUMENT SELECTED : 1

FIRST FUNCTION #60 OPEN BOX

SECOND FUNCTION #61 TRIANGLE

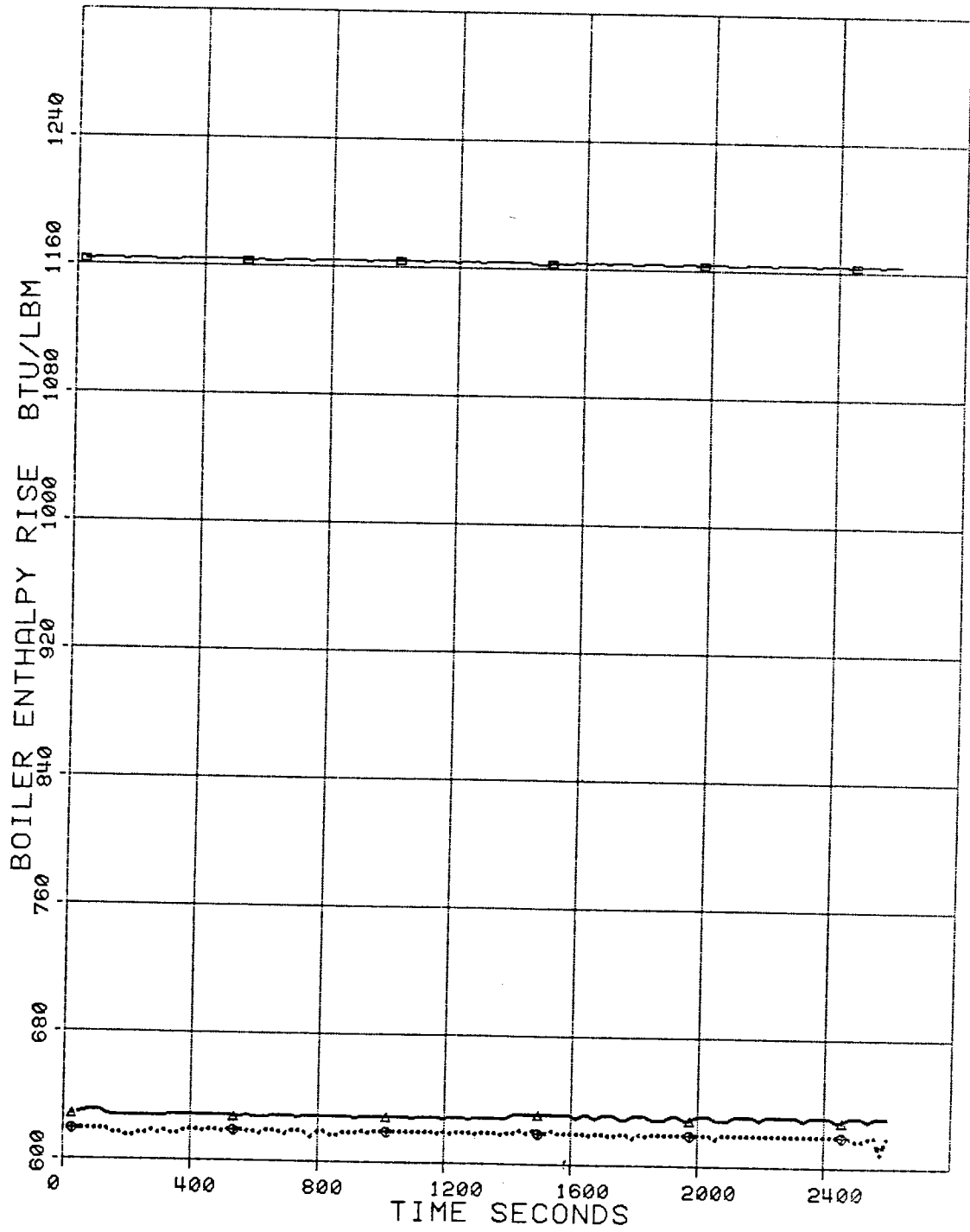
THIRD FUNCTION #62 CROSS-CIRCLE

SEARCH MODE 2

PLOT START TIME = 66240.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 19: 0  
NUMBER OF RECORDS = 5

ARGUMENT SELECTED ; 1

FIRST FUNCTION #57 OPEN BOX

SECOND FUNCTION #58 TRIANGLE

THIRD FUNCTION #59 CROSS-CIRCLE

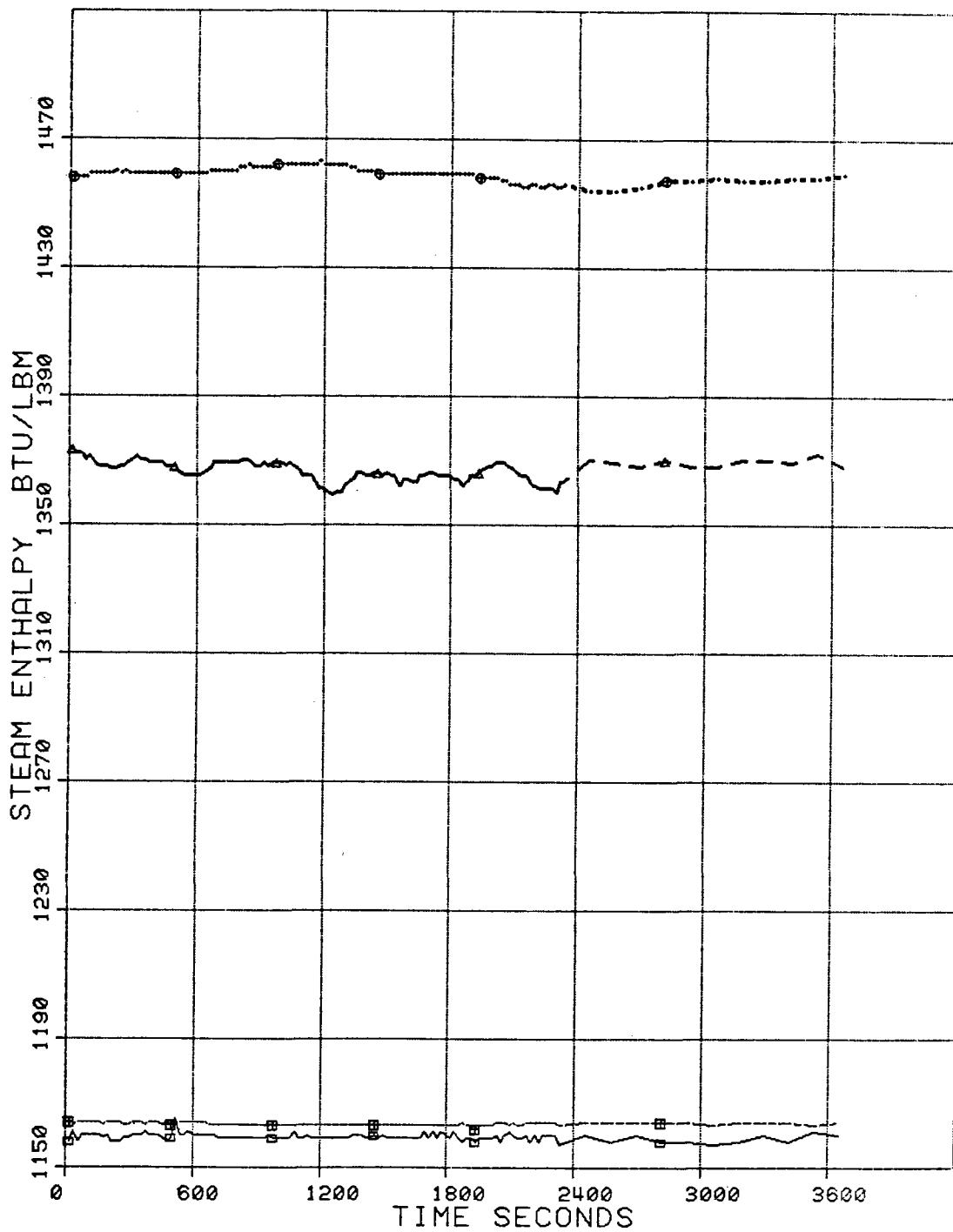
FOURTH FUNCTION #60 CROSS-BOX

SEARCH MODE 2

PLOT START TIME = 68400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION





SEARCH START  
DAY #116 1977 TIME 19: 0  
NUMBER OF RECORDS = 4

ARGUMENT SELECTED : 1

FIRST FUNCTION #60 OPEN BOX

SECOND FUNCTION #61 TRIANGLE

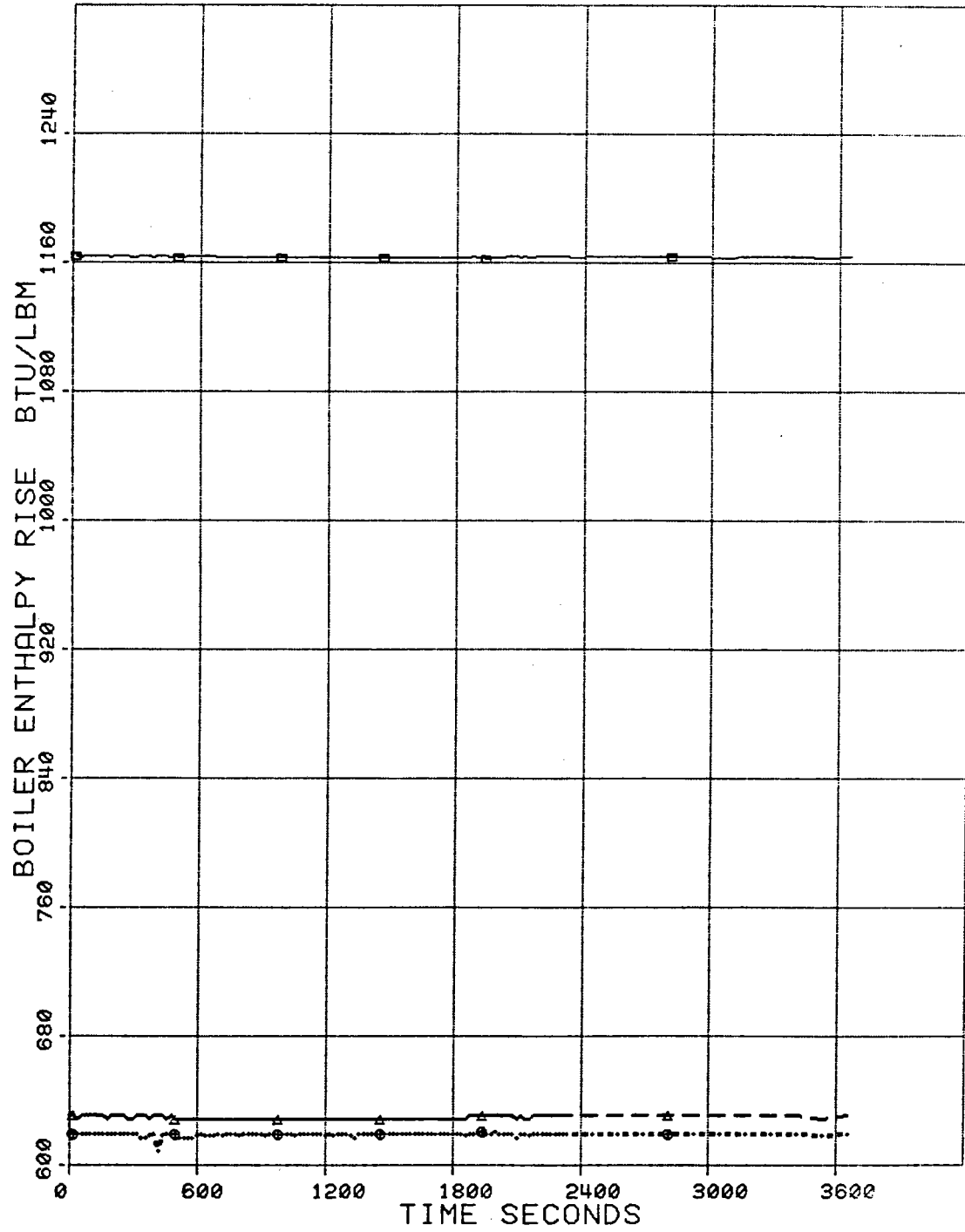
THIRD FUNCTION #62 CROSS-CIRCLE

SEARCH MODE 3

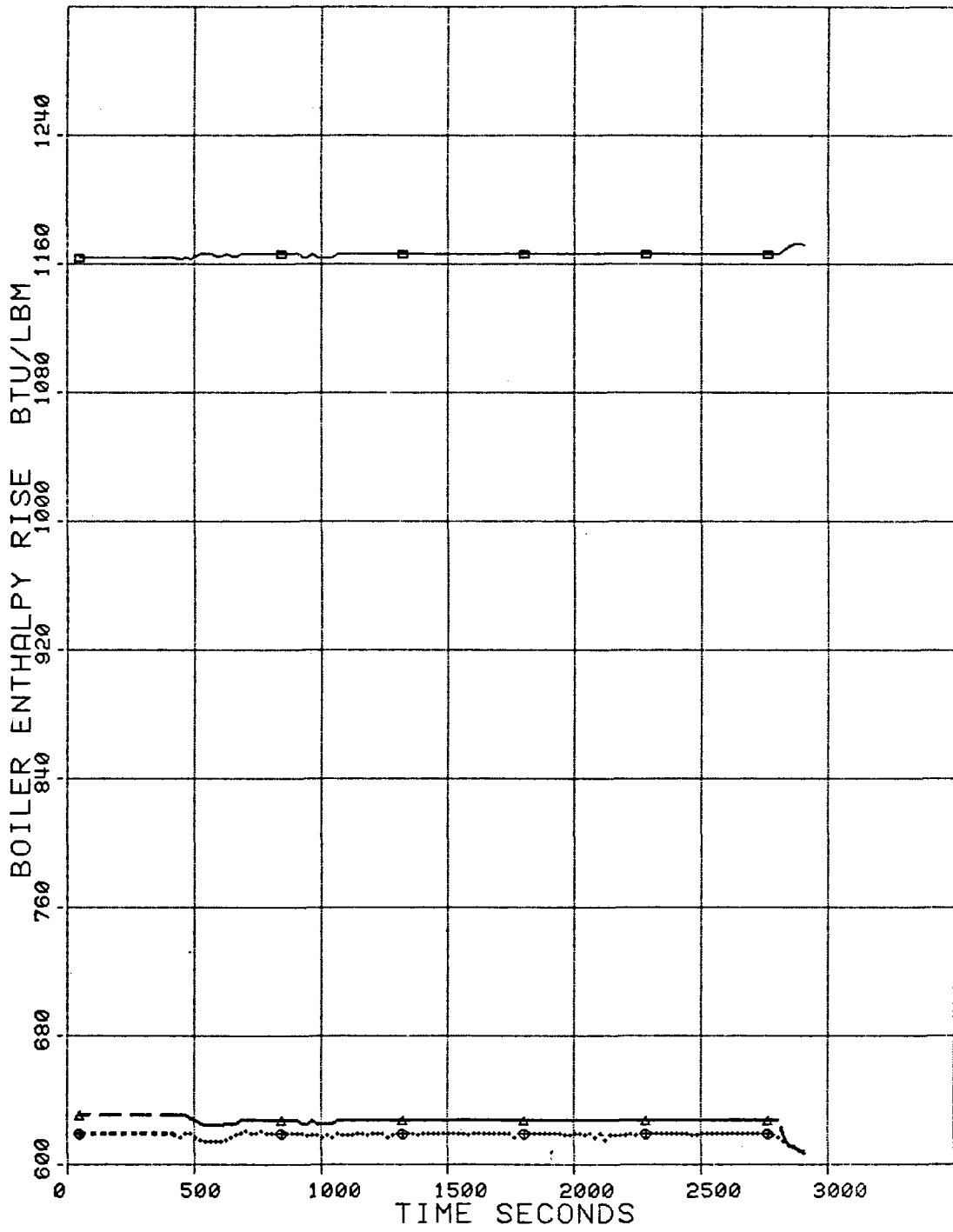
PLOT START TIME = 68400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 20: 0  
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 = 72000.0  
  
EACH 1TH POINT IS PLOTTED  
  
LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 20: 0  
NUMBER OF RECORDS = 5

ARGUMENT SELECTED : 1

FIRST FUNCTION #57 OPEN BOX

SECOND FUNCTION #58 TRIANGLE

THIRD FUNCTION #59 CROSS-CIRCLE

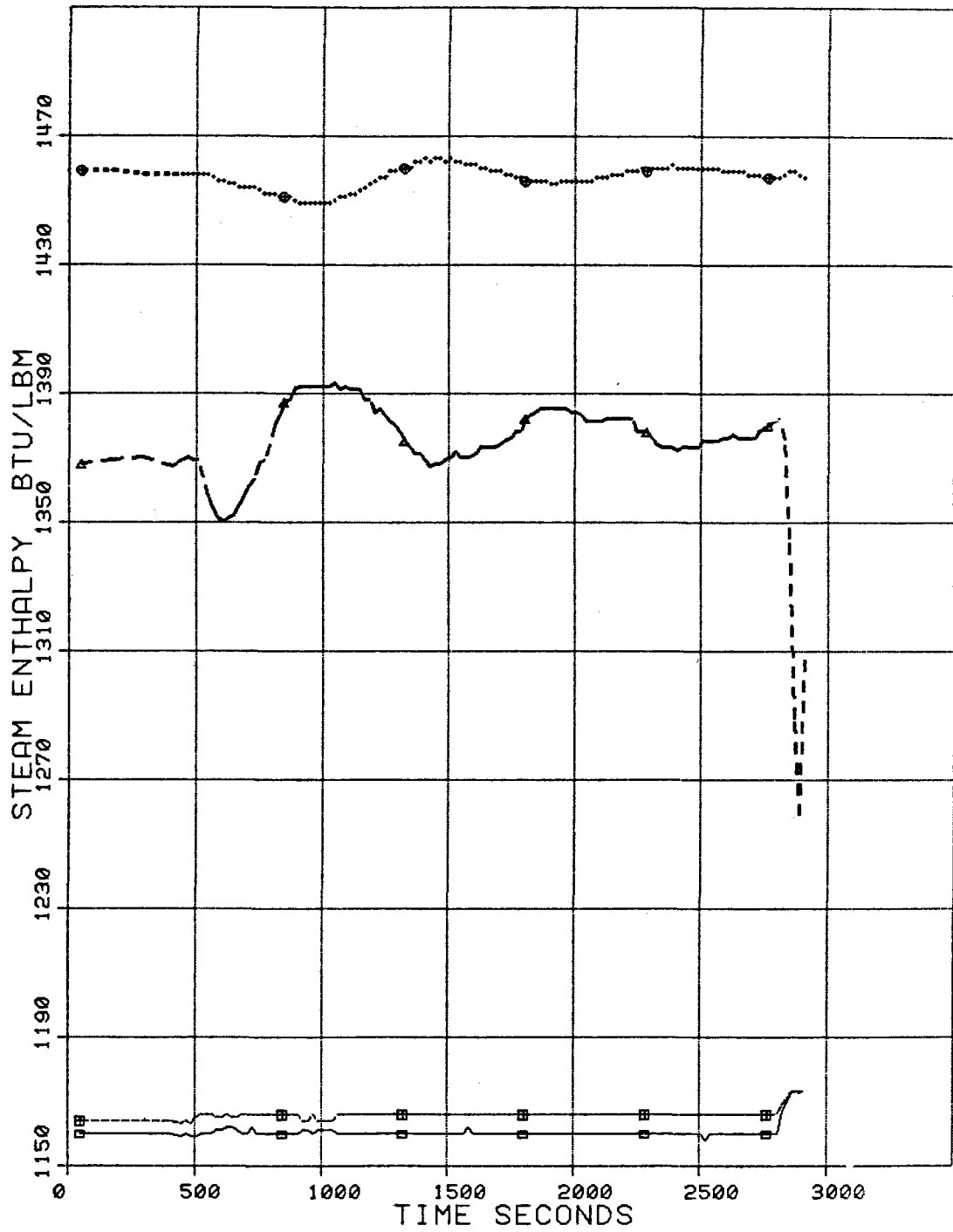
FOURTH FUNCTION #60 CROSS-BOX

SEARCH MODE 2

PLOT START TIME = 72000.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



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RATIOS

SEARCH START

DAY #116 1977 TIME 15: 0

NUMBER OF RECORDS = 3

ARGUMENT SELECTED : 1

FIRST FUNCTION #51 OPEN BOX

SECOND FUNCTION #52 TRIANGLE

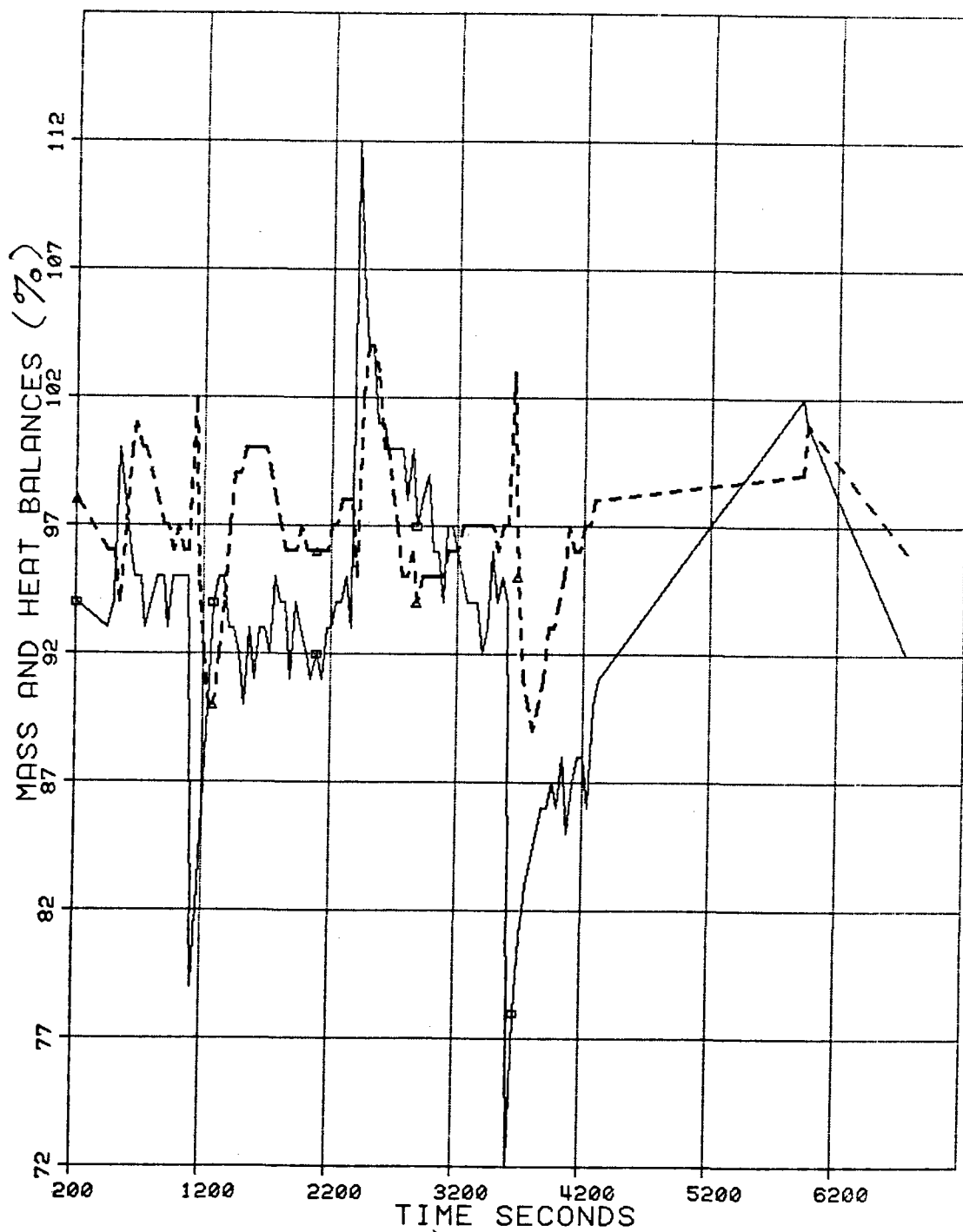
SEARCH MODE 2

PLOT START TIME = 54000.0

EACH 2TH POINT IS PLOTTED

LINE PLOT HAS 100 POINTS PER FUNCTION





SEARCH START  
DAY #116 1977 TIME 16:30  
NUMBER OF RECORDS = 3

ARGUMENT SELECTED : 1

FIRST FUNCTION #51 OPEN BOX

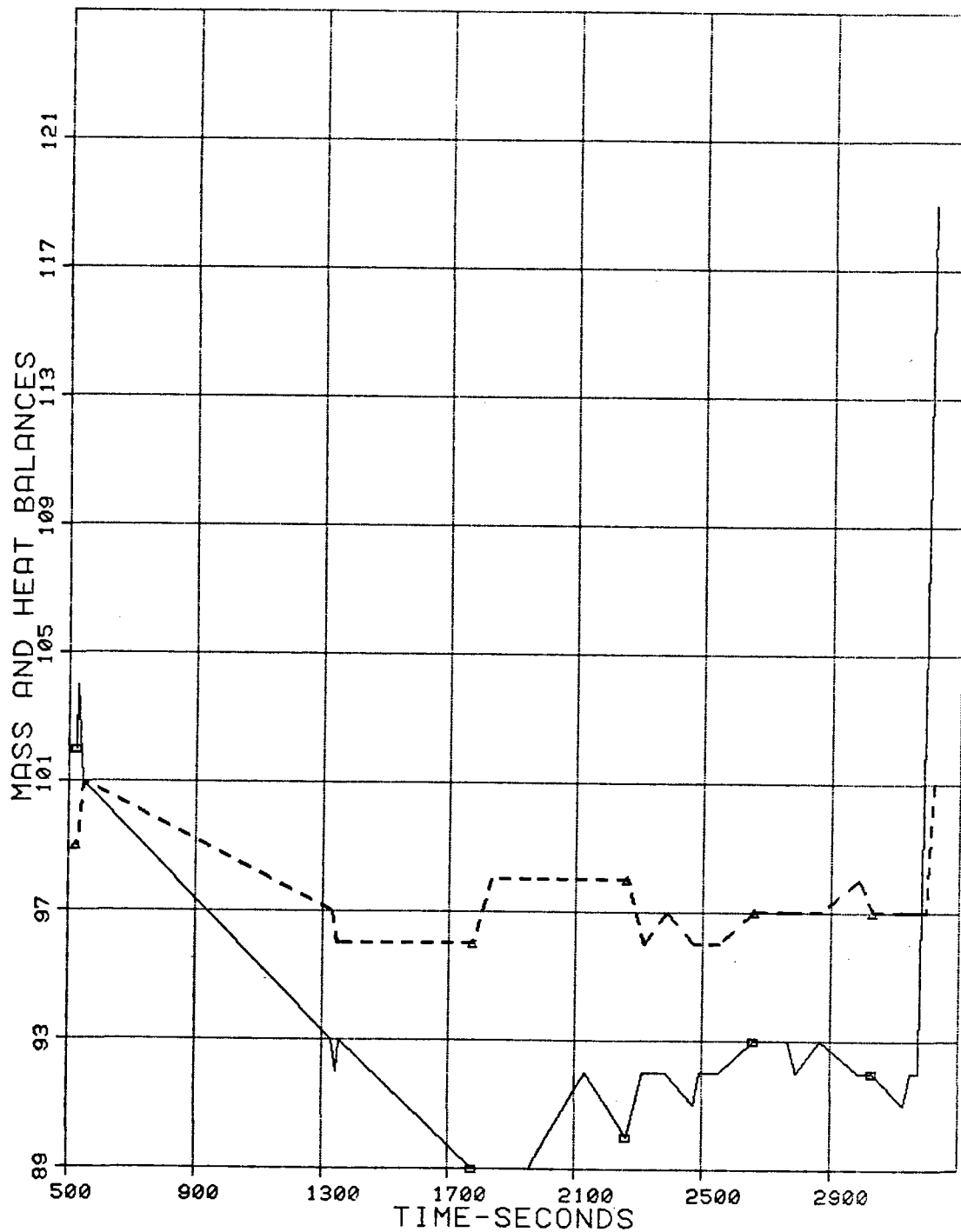
SECOND FUNCTION #52 TRIANGLE

SEARCH MODE 2

PLOT START TIME = 59400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 30 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 17:20  
NUMBER OF RECORDS = 3

ARGUMENT SELECTED : 1

FIRST FUNCTION #51 OPEN BOX

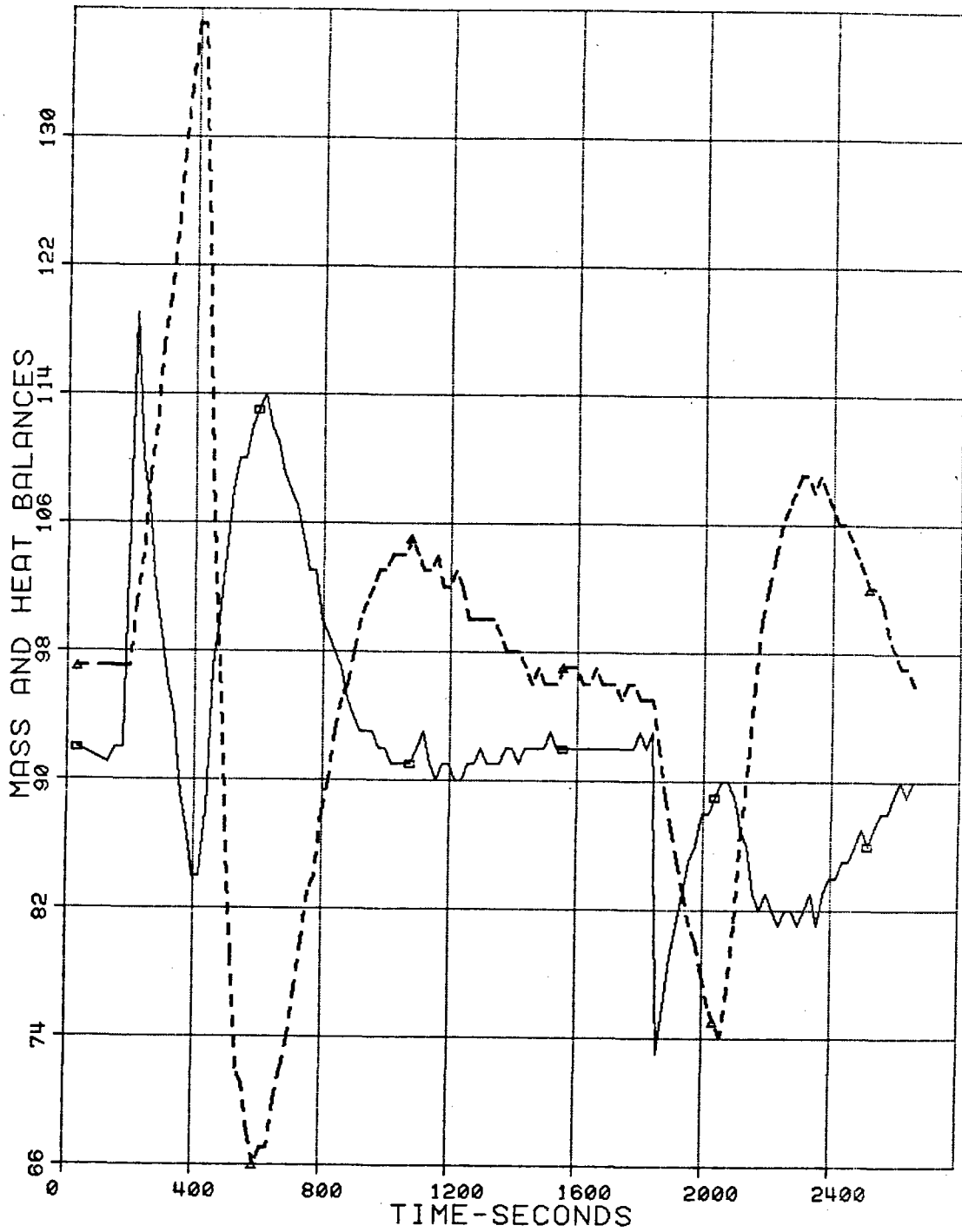
SECOND FUNCTION #52 TRIANGLE

SEARCH MODE 2

PLOT START TIME = 62400.0

EACH 1TH POINT IS PLOTTED  
.

LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START  
DAY #116 1977 TIME 18:24  
NUMBER OF RECORDS = 3

ARGUMENT SELECTED : 1

FIRST FUNCTION #51 OPEN BOX

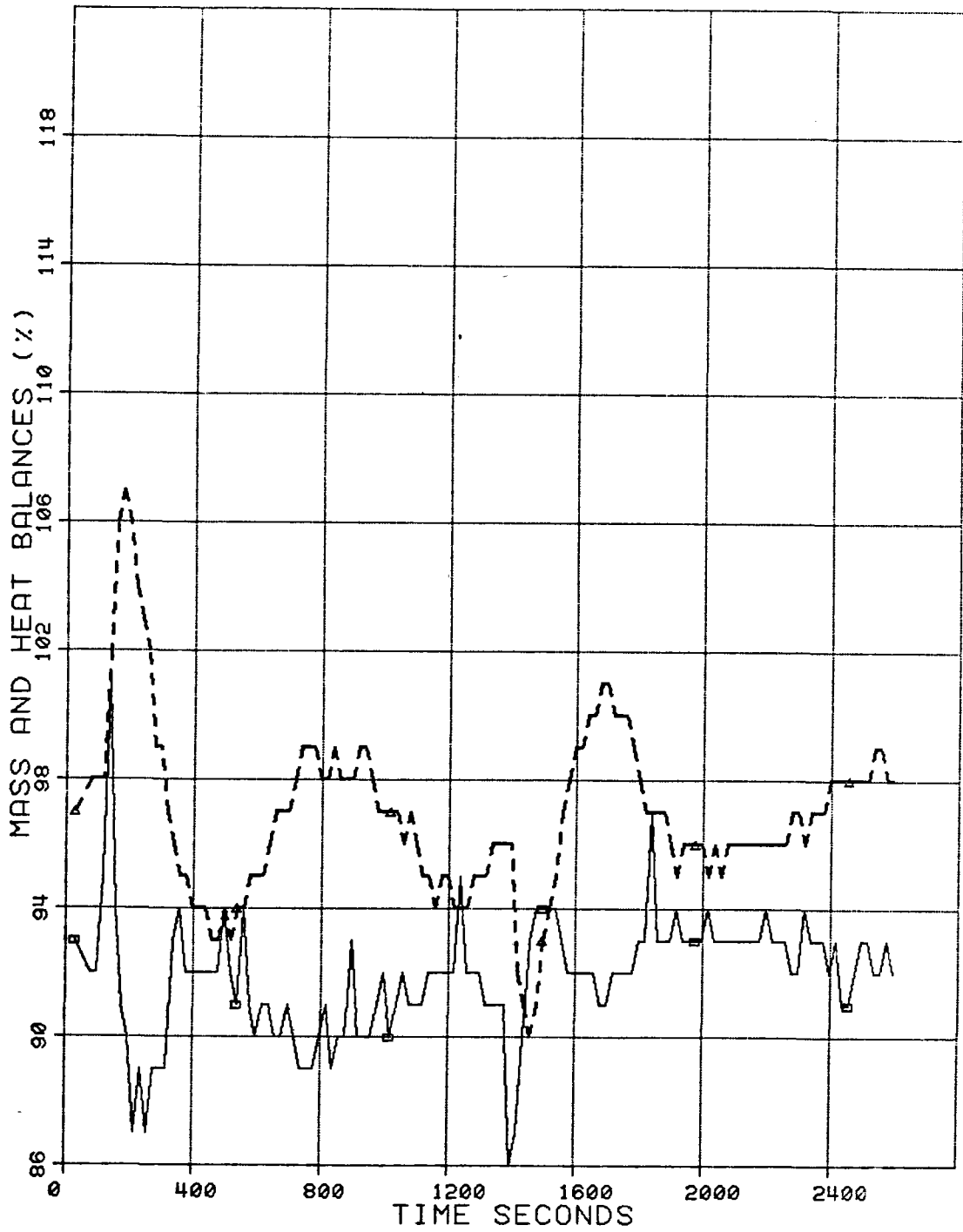
SECOND FUNCTION #52 TRIANGLE

SEARCH MODE 2

PLOT START TIME = 66240.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION



SEARCH START

DAY #116 1977 TIME 19: 0

NUMBER OF RECORDS = 3

ARGUMENT SELECTED : 1

FIRST FUNCTION #51 OPEN BOX

SECOND FUNCTION #52 TRIANGLE

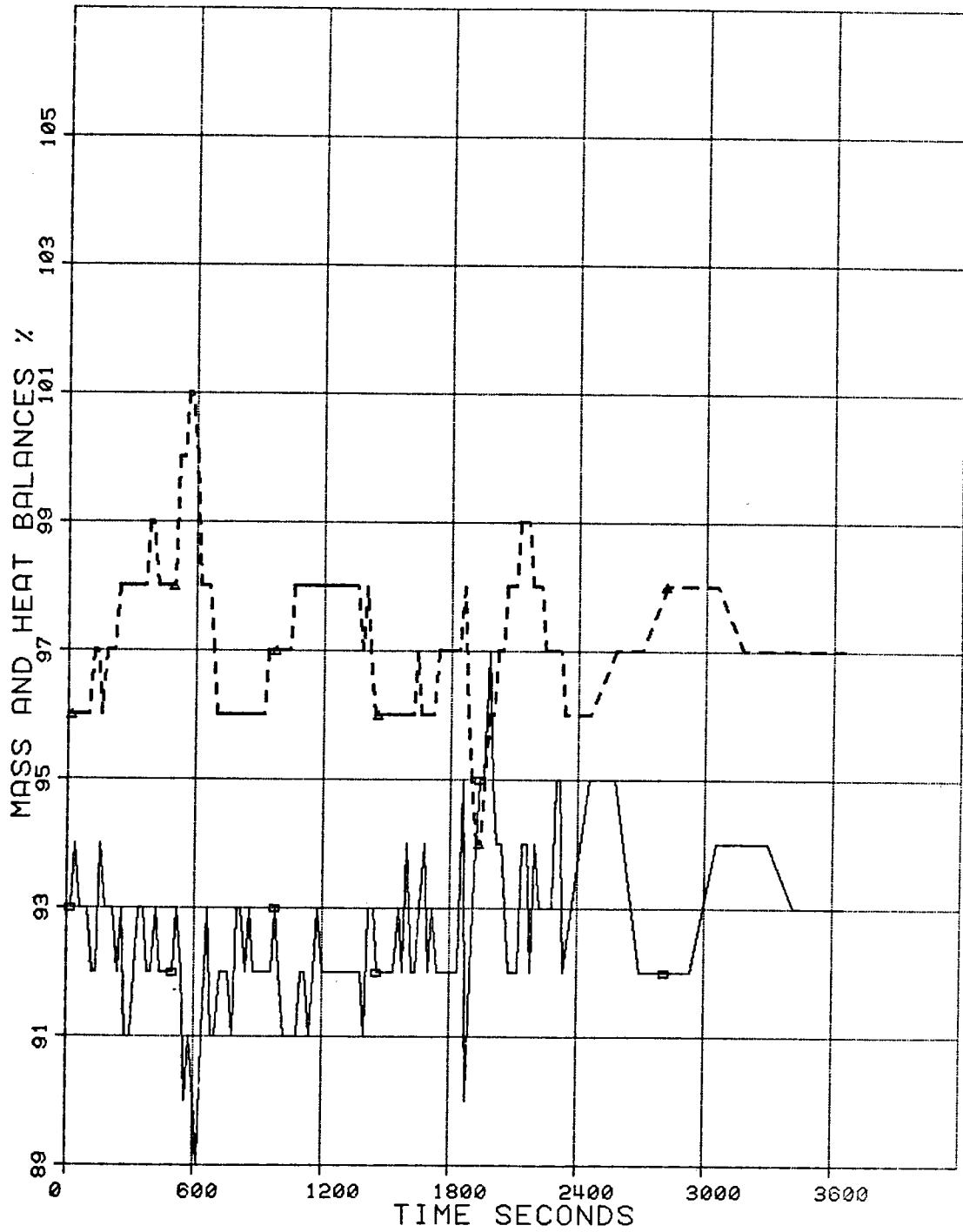
SEARCH MODE 2

PLOT START TIME = 68400.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION





SEARCH START  
DAY #116 1977 TIME 20: 0  
NUMBER OF RECORDS = 3

ARGUMENT SELECTED : 1

FIRST FUNCTION #51 OPEN BOX

SECOND FUNCTION #52 TRIANGLE

SEARCH MODE 2

PLOT START TIME = 72000.0

EACH 1TH POINT IS PLOTTED

LINE PLOT HAS 128 POINTS PER FUNCTION

