[redacted]

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M E M O

March 12, 1965

TO: [redacted]

cc: [redacted]

FROM: [redacted]

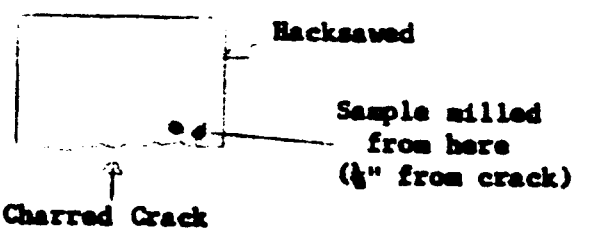
SUBJECT: DTA THERMOGRAMS OF SHIELD DEBRIS

Per our conversation of 3/8/65, I am enclosing the DTA thermograms requested. A comparison of these thermograms with those of a known sample of H-30 shows that there is a notable absence of nylon endo- or exotherms between 200 and 350°C (392 - 752°F). This behavior implies that the sample tested saw such a high heat flux that whatever nylon was present volatilized or boiled away. The apparent departure from the base line in the thermograms is due to thermocouple drift and not to the presence of any materials that can melt. The peak at 400° (752°F) in Figure 3 is due to some uncharred phenolic present in the sample.

Sampling Techniques

These thermograms were run on cored samples milled near a completely charred (all the way through) crack in the shield. Samples were taken from the surface to 1/3 of the way down, 1/3 to 2/3 of the way down, and 2/3 to approximately the bottom surface of the shield. The diagram below shows the approximate location in the piece where samples were milled out.

(Top View)



[redacted], Engineer
Chemical Physics Laboratory
Materials Performance Technology
[redacted]

[redacted]

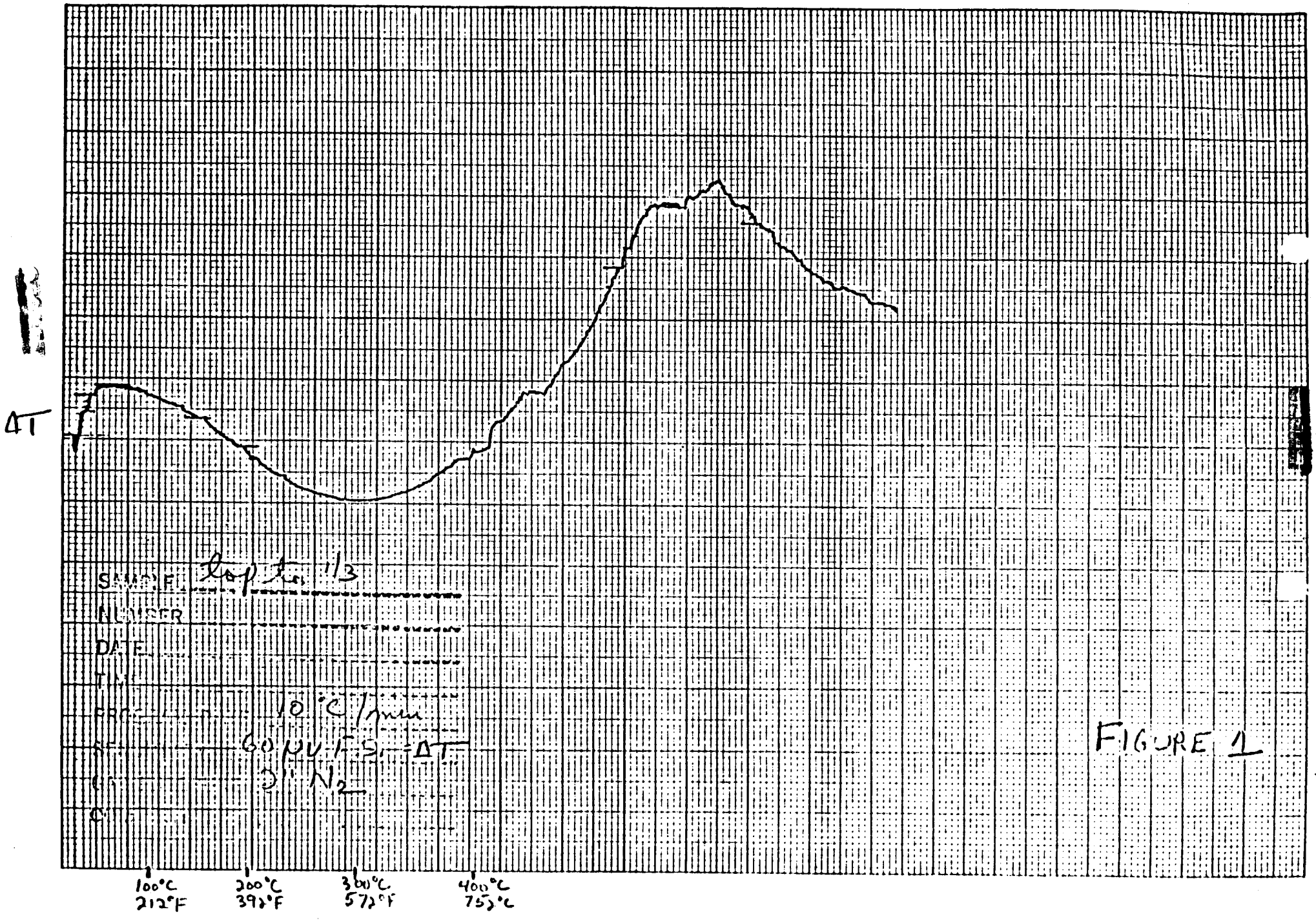

ΔT
SAMPLE
NUMBER
DATE
TIME
10 °C/min
60 μV F.S. ΔT
in N2
100°C
212°F
200°C
392°F
300°C
572°F
400°C
752°F

FIGURE 1

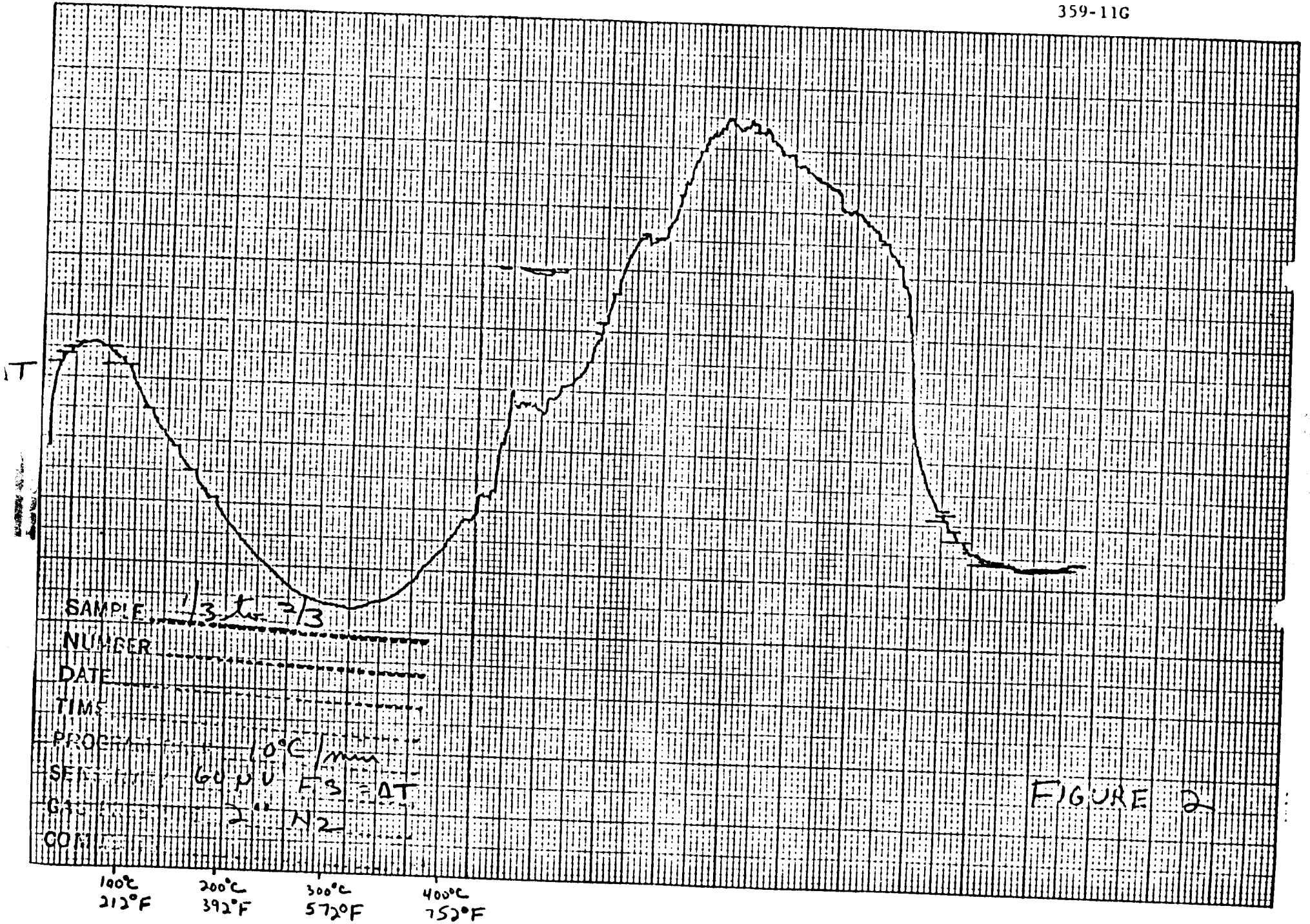

ΔT
SAMPLE 1/3 tu 3/3
NUMBER
DATE
TIME
PROG
SEN 60 µV F3 ΔT
GAS 2 N2
COM
10°C/min
100°C 212°F
200°C 392°F
300°C 572°F
400°C 752°F

FIGURE 2

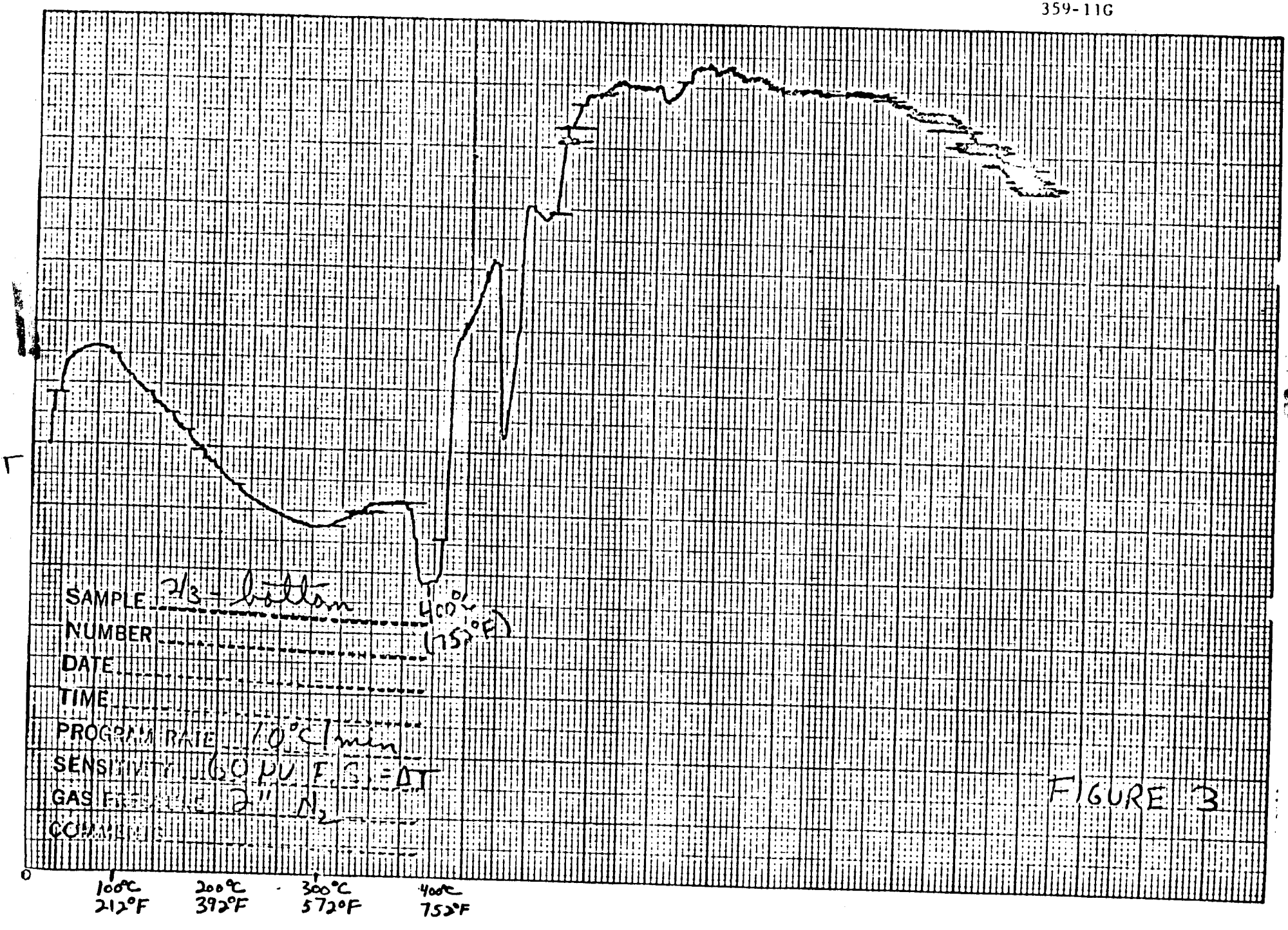

SAMPLE P/3 - Indian
NUMBER
DATE
TIME
PROGRAM RATE 10°C/min
SENSITIVITY 60 μV F.S. = ΔT
GAS FLOW 2" N2
COMMENTS
400°C (752°F)
0
100°C 212°F
200°C 392°F
300°C 572°F
400°C 752°F

FIGURE 3

GENERAL ELECTRIC
MISSILE AND SPACE DIVISION
PHILADELPHIA

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[redacted]

NO. [redacted]

PROGRAM INFORMATION REQUEST / RELEASE

FROM	TO
[redacted] Supervisory Engineer Thermodynamics Technology Component	[redacted]

DATE SENT	DATE INFO. REQUIRED	PROJECT AND REQ. NO.	REFERENCE DR. NO.
12/4/64		R/V DEBRIS	

SUBJECT

DEBRIS INVESTIGATION

INFORMATION REQUESTED / RELEASED

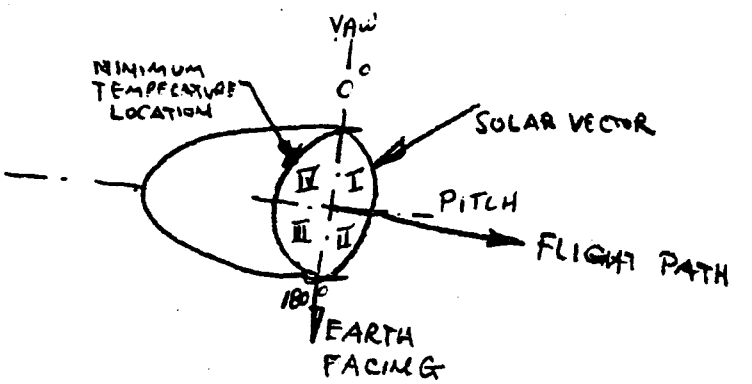
Based on [redacted] data for launch parameters, namely:

80° inclination

23:25 GMT launch hour

27 April launch date

β angle can be evaluated. β sun angles of -50 to -35° were experienced during this flight. These conditions could result in minimum temperatures of -190°F in the location shown in the sketch below.



It is recommended that this area be checked for possible orbital cracks.

[redacted]
Supervisory Engineer
Thermodynamics Technology Component
Thermal Control Systems Design

[redacted]

DISTRIBUTION

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CONT. ON ----------

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