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The Southern Electric System

W. G. Hairston, III
Senior Vice President
Nuclear Operations

HL-1086
000503

June 28, 1990

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

PLANT HATCH - UNITS 1, 2
NRC DOCKETS 50-321, 50-366
OPERATING LICENSES DPR-57, NPF-5
REQUEST FOR ADDITIONAL INFORMATION
MSIV CLOSURE TIME TECHNICAL SPECIFICATIONS AMENDMENT

Gentlemen:

On November 14, 1989, representatives of Georgia Power Company (GPC) and General Electric met with the NRC staff to address concerns regarding the application of the Moody homogeneous equilibrium model (incorporated into the SAFER Thermal Hydraulic Code) for calculating mass and energy releases following a postulated main steam line break (MSLB) outside containment. The revised MSLB integrated mass and energy release calculation was submitted in support of a proposed GPC Technical Specification (TS) amendment to increase the main steam isolation valve (MSIV) stroke time window from 3 to 5 seconds to 2 to 8 seconds.

By letter dated January 4, 1990, the NRC indicated its chief concern with the use of the SAFER Code is whether the new calculated mass and energy releases for the MSLB, with increased MSIV stroke time, are bounded by the current Hatch licensing basis environmental qualification (EQ) curves, once additional calculational uncertainties are considered. The NRC requested GPC to address three issues:

- "1. GPC should compare the best estimate (including friction effects if feasible) integrated mass and energy releases as calculated by SAFER against the current EQ basis curves for the MSLB. This comparison should discuss the uncertainties inherent in the SAFER calculation and address whether the SAFER calculation with uncertainties is bounded by the current EQ mass and energy release curves. In this regard, a margin of 20% is thought to be sufficient to bound SAFER calculation uncertainties.

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June 28, 1990

Page Two

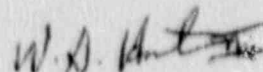
2. GPC should provide a qualitative argument as to whether existing MSLB temperature versus time EQ profiles bound the temperature versus time profile expected to result from the new mass and energy release estimates calculated using SAFER with an 8 second MSIV closure time.
3. GPC should review any existing EQ failure modes and effects analyses for equipment whose environment is governed by the MSLB to ensure that these analyses remain valid for the new SAFER calculated releases."

Item 1 is addressed in GE report EAS-28-0589, which is included as Enclosure 2. The GE report addresses NRC concerns of calculational uncertainties in SAFER by analyzing the MSLB accident with a 20% larger break area. Items 2 and 3 are addressed in Enclosure 1.

The Enclosure 2 report has been marked "Proprietary" to protect the commercial interest of GE. In accordance with 10 CFR 2.790, an affidavit requesting that certain information be withheld from the public domain is included herein.

Please contact this office if you have questions.

Sincerely,



W. G. Hairston, II

GKM/eb

Enclosures:

1. Impact of 8-Second MSIV Closure Time on Environmental Qualification.
2. "Edwin I. Hatch Nuclear Plant, Basis for Use of Homogeneous Equilibrium Model for Environmental Qualification and Radiological Release Evaluation," EAS-28-0589, June 1990.

c: (See next page.)

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c: Georgia Power Company

Mr. H. C. Nix, General Manager - Nuclear Plant

Mr. J. D. Heidt, Manager Engineering and Licensing - Hatch

GO-NORMS

U.S. Nuclear Regulatory Commission, Washington, D.C.

Mr. L. P. Crocker, Licensing Project Manager - Hatch

U.S. Nuclear Regulatory Commission, Region II

Mr. S. D. Ebnetter, Regional Administrator

Senior Resident Inspector - Hatch

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ENCLOSURE 1

PLANT HATCH - UNITS 1, 2
NRC DOCKETS 50-321, 50-366
OPERATING LICENSES DPR-57, NPF-5
REQUEST FOR ADDITIONAL INFORMATION
MSIV CLOSURE TIME TECHNICAL SPECIFICATION AMENDMENT

IMPACT OF 8-SECOND CLOSURE TIME ON ENVIRONMENTAL QUALIFICATION

This enclosure contains Georgia Power Company's (GPC's) response to two of the three NRC concerns transmitted by letter dated January 4, 1990. Included is a qualitative argument as to why the existing temperature versus time EQ profiles bound the temperature versus time profile expected for the new mass and energy release estimates using SAFER with an 8-second MSIV closure time. Note that the mass and energy release data calculated using the SAFER Code are consistent with the Enclosure 2 report (EAS-28-0589) and assume a 20% larger MSLB area to bound calculation uncertainties.

NRC Issue No. 2

GPC should provide a qualitative argument as to whether existing MSLB temperature versus time EQ profiles bound the temperature versus time profile expected to result from the new mass and energy release estimates calculated using SAFER with an 8-second MSIV closure time.

GPC Response

Figure 1 presents the integrated break energy versus time as calculated using the SAFER Code. The same figure is also shown in the GE report (Enclosure 2) and assumes a 20% larger break area to conservatively account for calculational uncertainties. Note that the integrated break flow calculated using SAFER is bounded by the existing EQ basis break flow, even with the longer stroke time and a 20% larger break area assumed in the SAFER calculation.

The MSIV room temperature is essentially the same as the steam discharge temperature because of the very small room size relative to the flow. Thus, the room temperature is essentially the same as the steam discharge temperature.

The time history shown in Figure 1 has been marked at several points of interest. The first point of interest is at 3 seconds when the mass flowing into the room becomes two phase after flashing. From this time on, the room temperature can be no higher than the saturation temperature of the water which is flashing at room pressure. Since the room pressure is only slightly above one atmosphere, the limit of the room temperature is approximately 215°F.

ENCLOSURE 1 (Continued)

REQUEST FOR ADDITIONAL INFORMATION MSIV CLOSURE TIME TECHNICAL SPECIFICATION AMENDMENT

IMPACT OF 8-SECOND CLOSURE TIME ON ENVIRONMENTAL QUALIFICATION

The time-temperature profiles for the Units 1 and 2 MSIV rooms are shown in Figures 2A and 2B, respectively. These figures clearly show that the room temperature drops rapidly at 3 seconds from around 290 to 300°F to about 215°F.

Of further interest is the slight drop in room temperature which occurs from time 0+ to 3 seconds, indicating the temperature in the MSIV room has peaked before the saturation transition occurs. Since the new GE energy release curve and the old EQ basis are essentially identical in the early stages of the accident, the peak temperature should not be affected by the new accident analysis.

The second point of interest is the 5.5-second point which represents the point at which the MSIV is fully closed in the old (existing) analysis. It should be noted that at 5.5 seconds, the new GE energy curve is still well below the old curve. Thus, the temperature at 5.5 seconds must be below the temperature shown at that time in the old EQ basis curves (Figures 2A and 2B). An inspection of the new GE curve shows that the slope of the energy curve from 3 to 5 seconds is less than that of the old energy curve. Since, under the old curves, the temperature is declining in the MSIV rooms, it follows that the temperature must be decreasing with the new analysis. Therefore, under the new curve, the temperature at 5.5 seconds will be no higher than under the old curve.

Finally, the region from 5.5 seconds to 8.5 seconds must be examined. The slope of the new GE energy curve in this region is even flatter than the 3- to 5.5-second region. Thus, if the temperature decreases in the 3- to 5.5-second time, it must continue to decrease or flatten out in the 5.5- to 8.5-second region. Since temperature cannot increase in this region, the peak temperature will not be affected. If the temperature curve were to remain flat in this region, EQ would not be affected, because qualification testing focuses on the peak temperature, typically holding the peak far longer than the 8.5-second duration of this transient.

Therefore, it is concluded that the temperature which exists in the MSIV room after an MSLB will not exceed the current peak temperature used in EQ. Further, the net effect on the MSIV room temperature profile will be only a slight reduction in the rate of decrease of the room temperature between 5.5 and 8.5 seconds. Even this slight effect will be at least partially off set by the higher rate of decrease in room temperature expected between 3 and 5.5 seconds.

ENCLOSURE 1 (Continued)

REQUEST FOR ADDITIONAL INFORMATION MSIV CLOSURE TIME TECHNICAL SPECIFICATION AMENDMENT

IMPACT OF 8-SECOND CLOSURE TIME ON ENVIRONMENTAL QUALIFICATION

To adequately assess the potential impact, it was also necessary to examine the two rooms into which the MSIV room will vent during the MSLB (i.e., torus room and Reactor Building elevation 130-ft. The torus room of each unit is not substantially affected by the blowdown phase of the MSLB. As Figures 3A and 3B show, the torus temperature is a much longer-term phenomenon and is primarily driven by the temperature of the water in the torus. This is reasonable as the torus represents the reactor heat sink immediately after the accident.

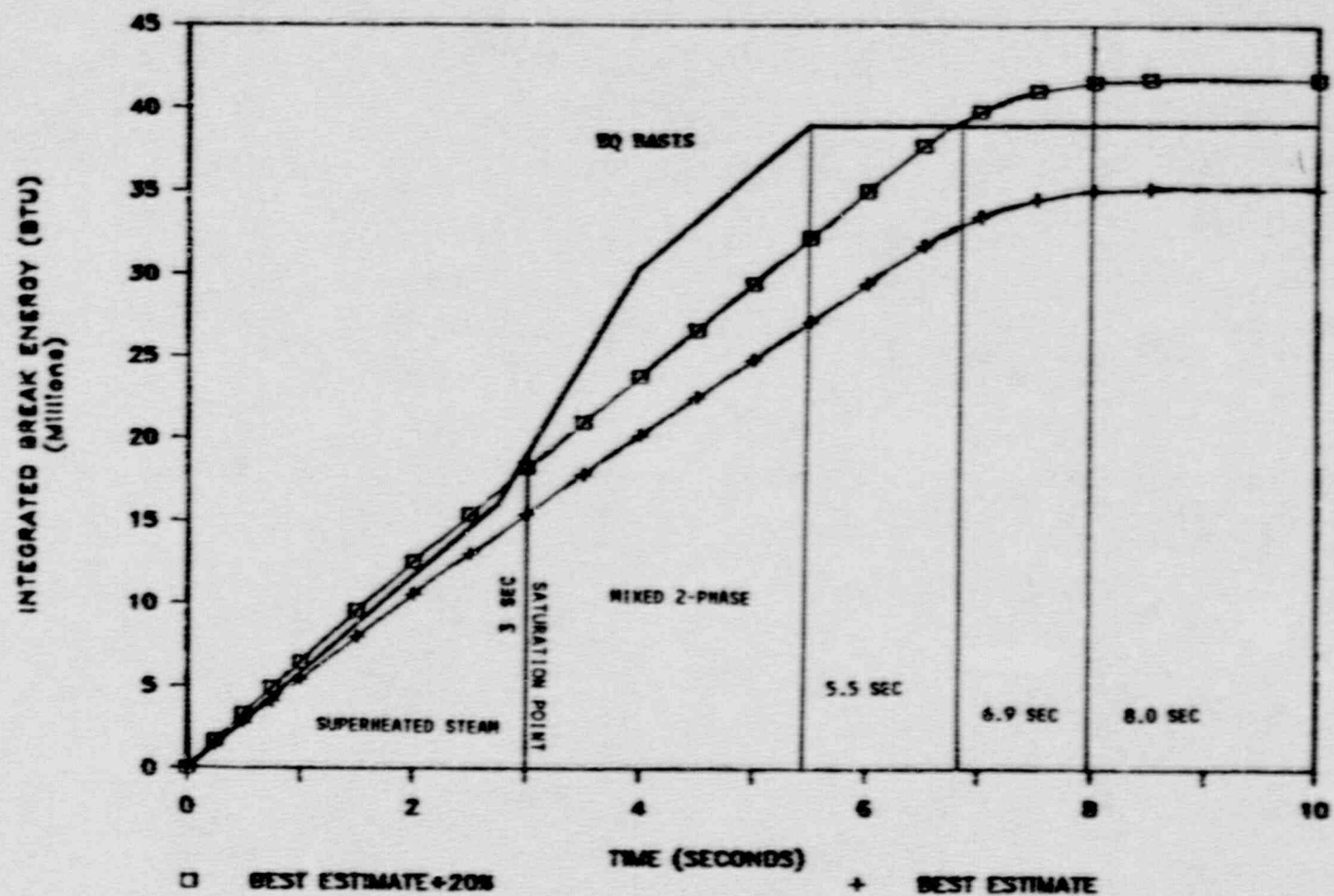
Equipment located on the 130-foot elevation of the Reactor Building is qualified to the composite curves shown in Figures 4A and 4B. The composite curve is affected by the MSLB only for the first 6 seconds. After that time, the qualification envelope is driven by other accidents which can affect the Reactor Building. At the 6-second point, the MSLB temperature curve has already begun to decline on the 130-foot elevation. Thus, for reasons similar to those noted for the MSIV room, the composite curve for the 130-foot elevation will not be materially affected by the slight increase in total energy released. The temperature peak of the Reactor Building composite curve will not be impacted by the slight change in the MSIV closure time, because the peak is driven by accidents other than the MSLB.

NRC Issue No. 3

GPC should review any existing EQ failure modes and effects analyses for equipment whose environment is governed by the MSLB to ensure that these analyses remain valid for the new SAFER calculated releases.

GPC Response

GPC reviewed the EQ files for equipment whose environment is governed by the MSLB outside containment. Exception to the existing temperature-time profiles to qualify any such piece of equipment has not been taken; therefore, the EQ analyses for the equipment remain valid for the new SAFER calculated releases.



**FIGURE 1 COMPARISON OF MSLB INTEGRATED BREAK ENERGY
(20% OVERSIZED BREAK)**

FIGURE 2A UNIT 1 - COMPARTMENT LONG-TERM TEMPERATURE ANALYSIS

E.I. MATCH NUCLEAR PLANT- UNIT 1 .00 MG. 65
SITE. COMPONENT LONG-TERM TEMPERATURE ANALY

TABLE I
THERMAL ANALYSIS OF POLYMERIZATION OF VINYL MONOMERS IN THE PRESENCE OF CATIONIC INITIATORS AND TEMPERATURE AFFECTING FACTORS

PAGE NO. 1

CONF. NO. : 910-14-1811 REV. 1

ORIGINALS:

DECEMBER

4/4/68

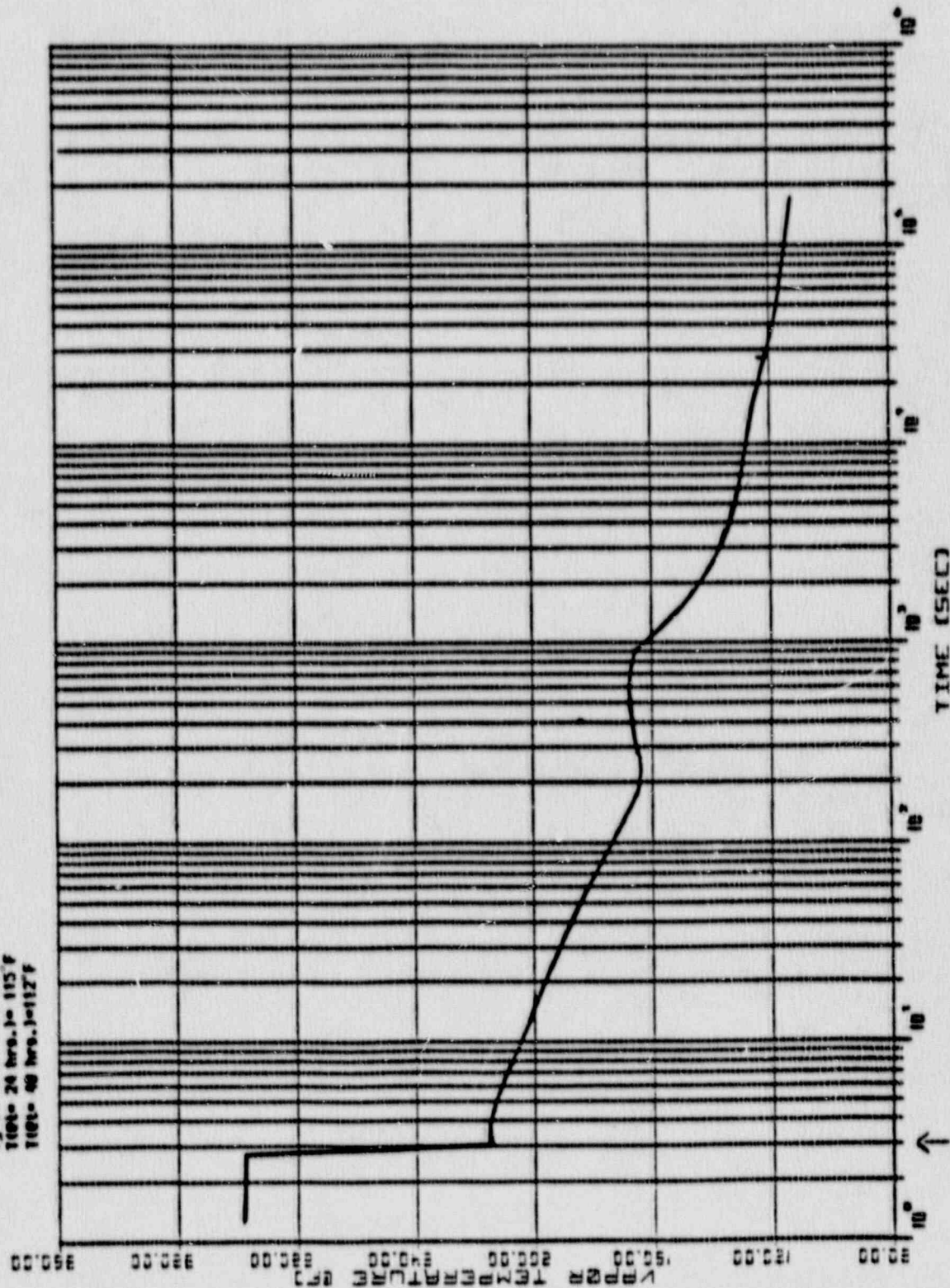
08/26/80

DATE: 3/5/80

TEMPERATURE PROFILE FOR PIPE CHANGE

16 140° 7 0 10 45 min.

1194-24 Pro-1-115 F

1000 24 hrs. 1-1034
1001 24 hrs. 1-1175

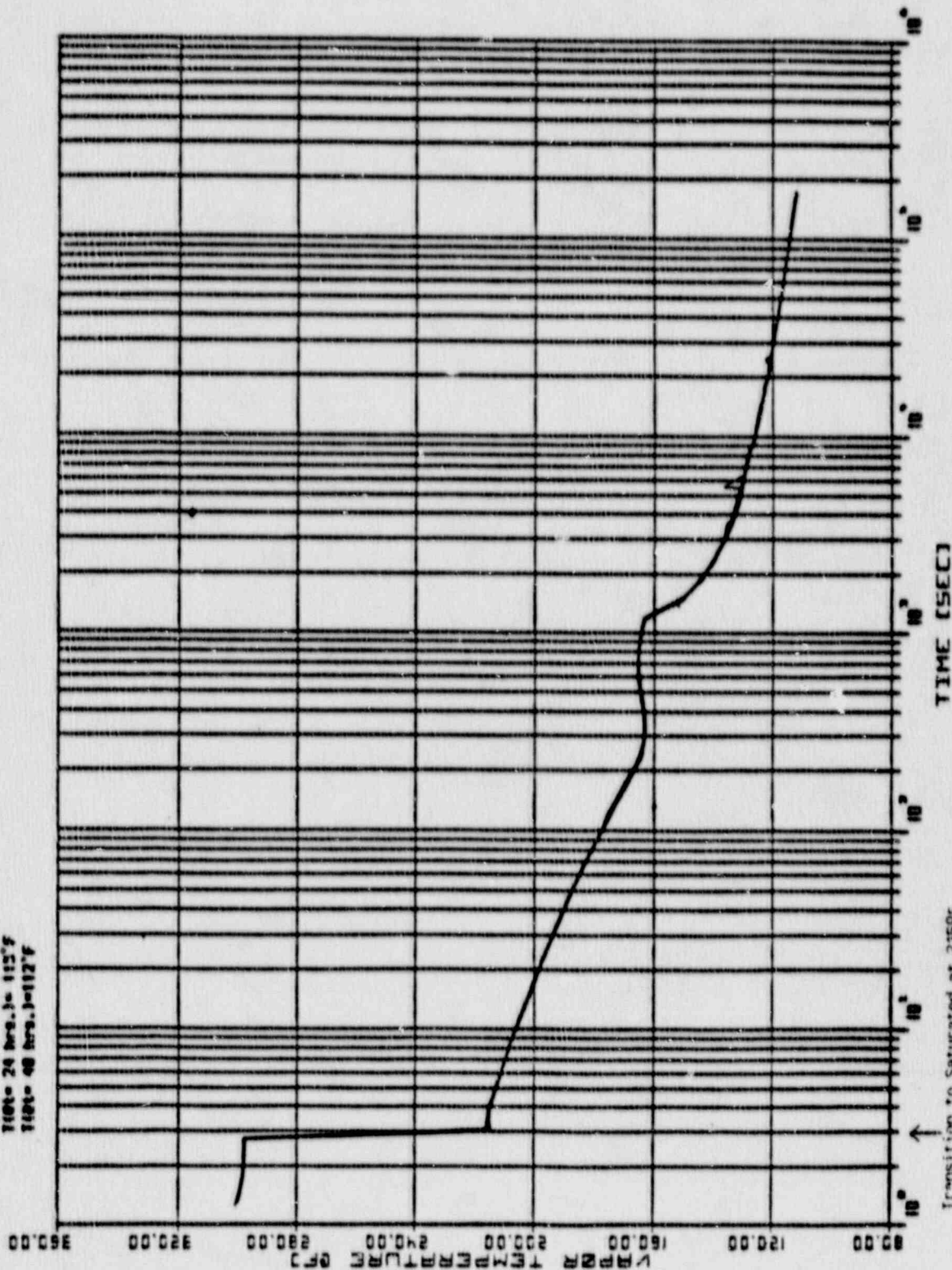
00 934 72 2467X 5302705 6400

FIGURE 2B UNIT 2 - COMPARTMENT LONG-TERM TEMPERATURE ANALYSIS

E.I. WATCO NUCLEAR PLANT - UNIT 2 - JRG NO. 4311-4
TITLE: COMPARTMENT LONG-TERM TEMPERATURE ANALYSIS
CALC. NO.: 310-15-4311, REV. 1 PAGE NO.: A14/71
ORIGINATOR: *[Signature]* DATE: 2/22/80
CHECKER: *[Signature]* DATE: 3/24/80

TEMPERATURE PROFILE FOR PIPE CHASE

T₅ 146°F @ 6 to 45 min.
T₆₀ 24 hrs. 115°F
T₄₀₀ 40 hrs. 112°F



Transition to Saturated at 2150t
after flashing

NO. 4311-4 E.I. WATCO NUCLEAR PLANT - UNIT 2

FIGURE 3A UNIT 1 - TEMPERATURE PROFILE IN TORUS ROOM

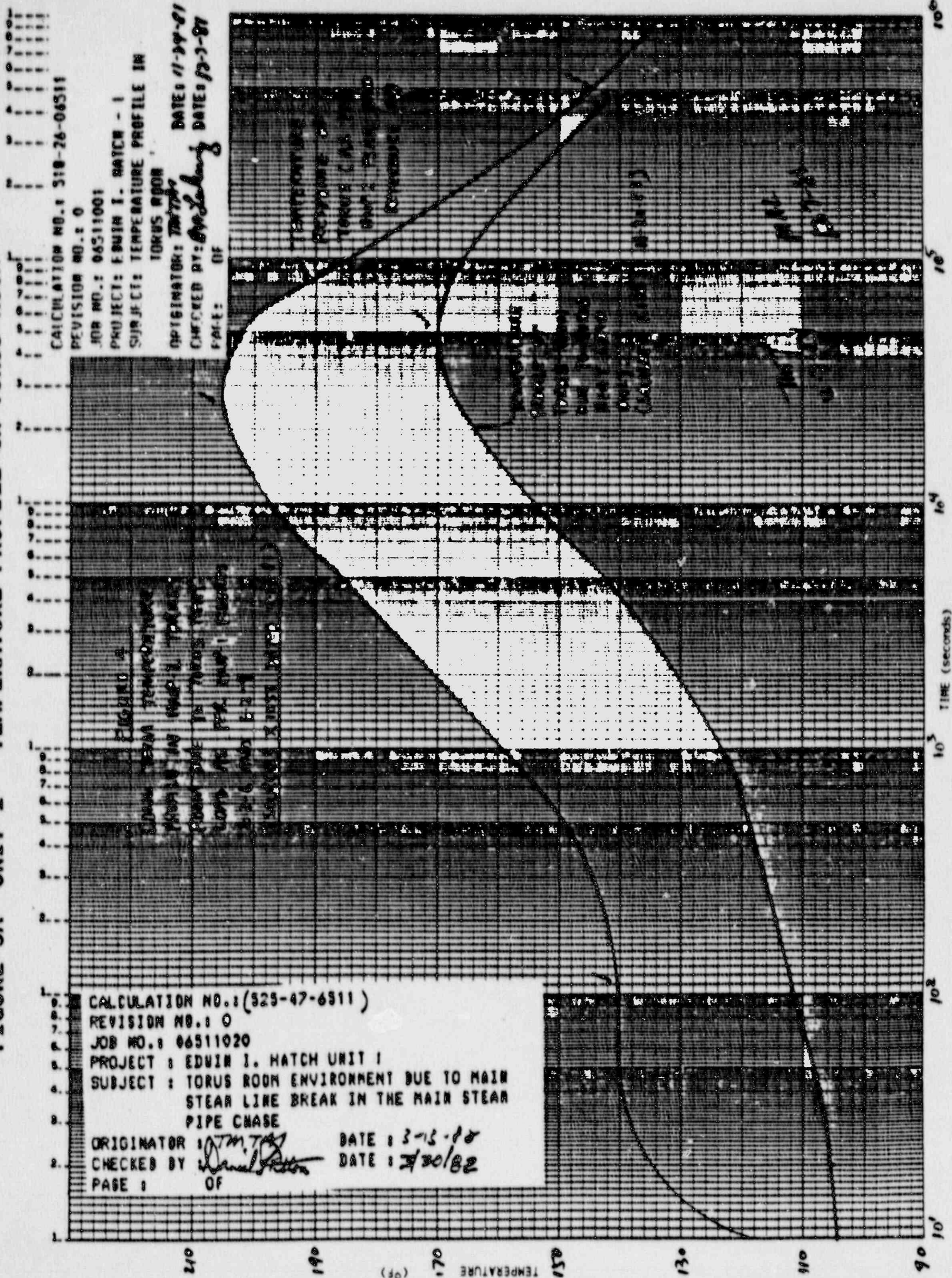
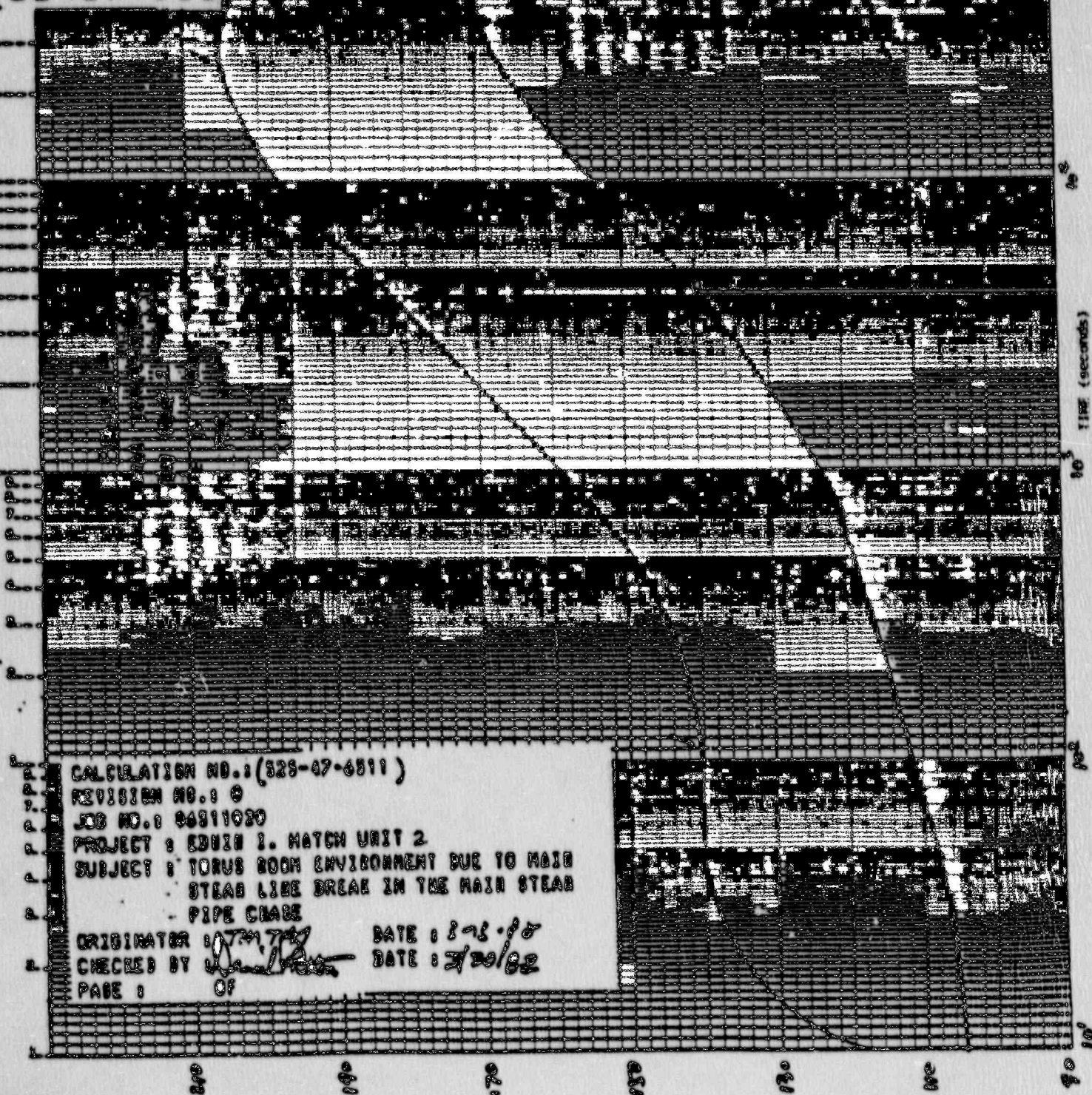


FIGURE 3B UNIT 2 - TEMPERATURE PROFILE IN TORUS ROOM

CALCULATION NO.: 310-24-00511
 REVISION NO.: 0
 JOB NO.: 00311020
 PROJECT: EDWIN I. MATCH - 2
 SUBJECT: TEMPERATURE PROFILE IN
 TORUS ROOM
 ORIGINATOR: J. M. 7/82
 CHECKED BY: J. M. 7/82
 DATE: 7-20-82
 DATE: 7-20-82



CALCULATION NO.: (329-07-0511)
 REVISION NO.: 0
 JOB NO.: 00311020
 PROJECT: EDWIN I. MATCH UNIT 2
 SUBJECT: TORUS ROOM ENVIRONMENT DUE TO MAIN
 STEAM LINE BREAK IN THE MAIN STEAM
 PIPE CHASE
 ORIGINATOR: J. M. 7/82
 CHECKED BY: J. M. 7/82
 DATE: 7-20-82
 DATE: 7-20-82
 PAGE 1 OF

FIGURE 4A UNIT 1 - FLOOR ELEVATION 130 FT - ENVELOPING TEMPERATURE PROFILE -
MSLB AND HPCI LINE BREAKS

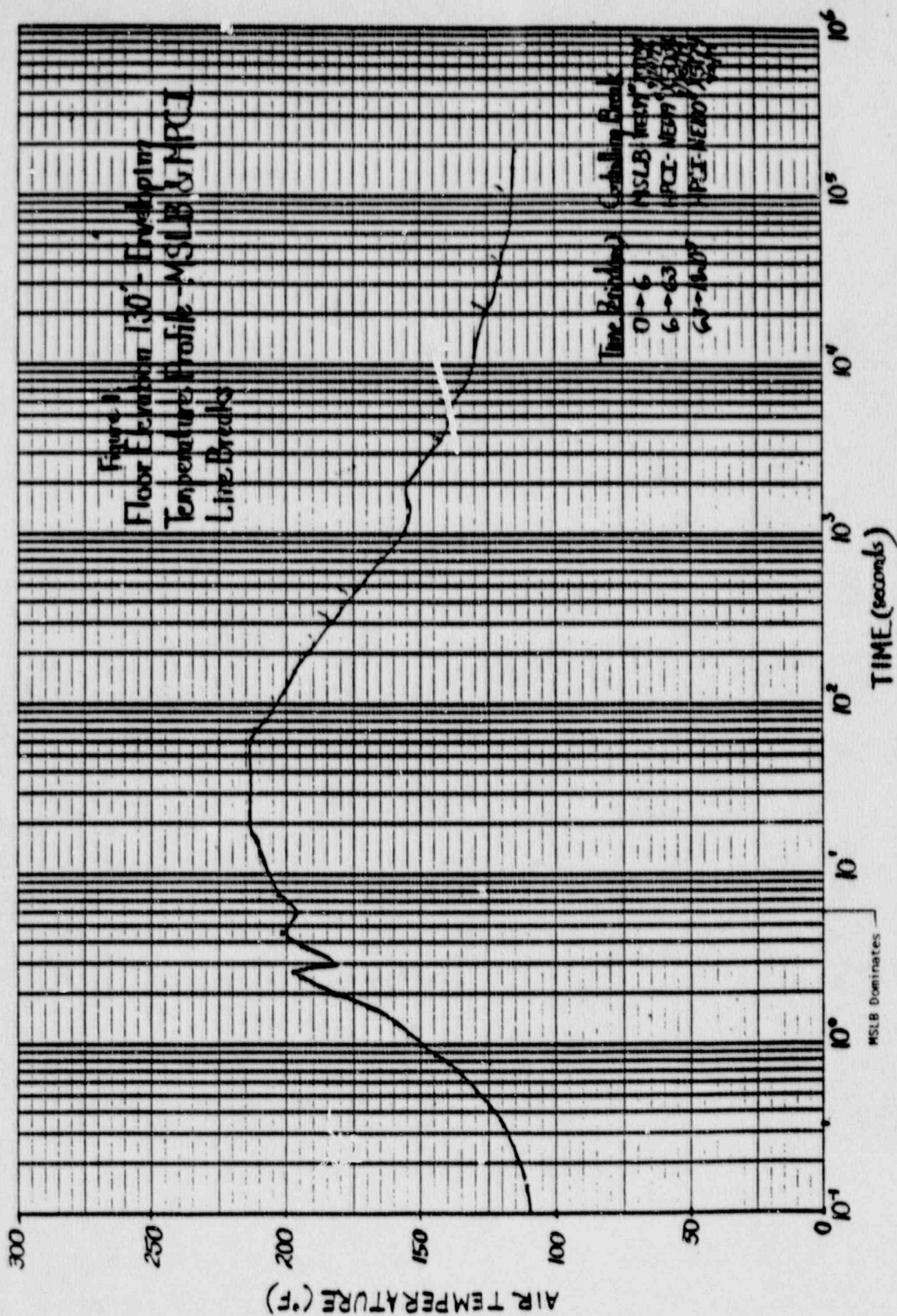
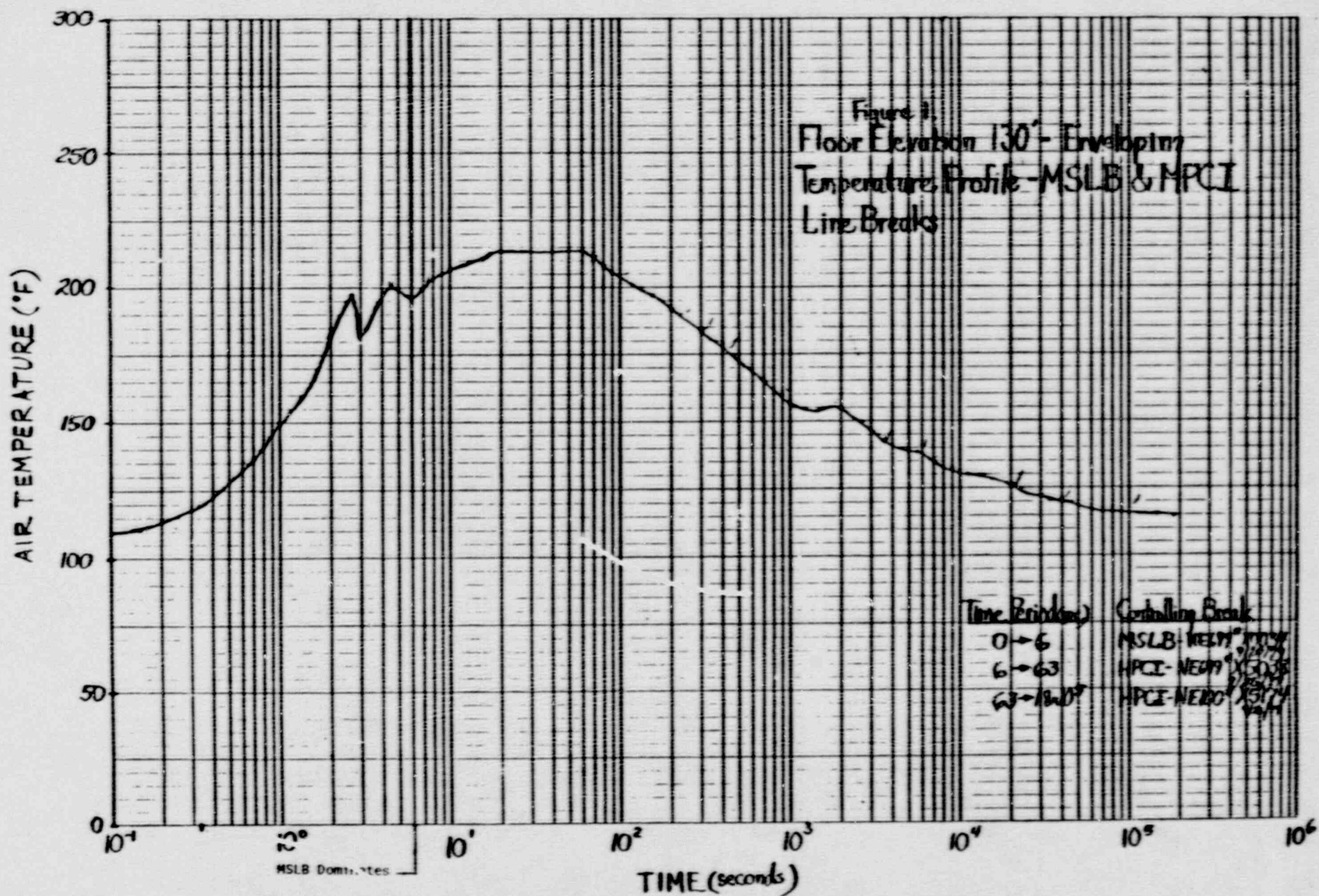


FIGURE 4B UNIT 2 - FLOOR ELEVATION 130 FT - ENVELOPING TEMPERATURE PROFILE - MSLB AND HPCI LINE BREAKS



GENERAL ELECTRIC COMPANY

AFFIDAVIT

I, David J. Robare, being duly sworn, depose and state as follows:

1. I am Manager, Plant Licensing Services, General Electric Company, and have been delegated the function of reviewing the information described in paragraph 2 which is sought to be withheld and have been authorized to apply for its withholding.
2. The information sought to be withheld is contained in the report entitled "Edwin I. Hatch Nuclear Plant Basis for Use of Homogeneous Equilibrium Model for Environmental Qualification and Radiological Release Evaluation" EAS-28-0589, June 1990.
3. In designating material as proprietary, General Electric utilizes one definition of proprietary information and trade secrets set forth in the American Law Institute's Restatement of Torts, Section 757. This definition provides:

"A trade secret may consist of any formula, pattern, device or compilation of information which is used in one's business and which gives him an opportunity to obtain an advantage over competitors who do not know or use it...A substantial element of secrecy must exist, so that, except by the use of improper means, there would be difficulty in acquiring information...Some factors to be considered in determining whether given information is one's trade secret are (1) the extent to which the information is known outside of his business; (2) the extent to which it is known by employees and others involved in his business; (3) the extent of measures taken by him to guard the secrecy of the information; (4) the value of the information to him and to his competitors; (5) the amount of effort or money expended by him developing the information; (6) the ease or difficulty with which the information could be properly acquired or duplicated by others."

4. Some examples of categories of information which fit into the definition of Proprietary Information are:
 - a. Information that discloses a process, method or apparatus where prevention of its use by General Electric's competitors without license from General Electric constitutes a competitive economic advantage over other companies;
 - b. Information consisting of supporting data and analyses, including test data, relative to a process, method or apparatus, the application of which provide a competitive economic advantage, e.g., by optimization or improved marketability;
 - c. Information which if used by a competitor, would reduce his expenditures of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality or licensing of a similar product;

GENERAL ELECTRIC COMPANY

- d. Information which reveals cost or price information, production capacities, budget levels or commercial strategies of General Electric, its customers or suppliers;
 - e. Information which reveals aspects of past, present or future General Electric customer-funded development plans and programs of potential commercial value to General Electric;
 - f. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection;
 - g. Information which General Electric must treat as proprietary according to agreements with other parties.
5. Initial approval of proprietary treatment of a document is typically made by the Subsection Manager of the originating component, the person who is most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge. Access to such documents within the Company is limited on a "need to know" basis and such documents are clearly identified as proprietary.
6. The procedure for approval of external release of such a document typically requires review by the Subsection Manager, Project Manager, Principal Scientist or other equivalent authority, by the Subsection Manager of the cognizant Marketing function (or delegate) and by the Legal Operation for technical content, competitively effect and determination of the accuracy of the proprietary designation in accordance with the standards enumerated above. Disclosures outside General Electric are generally limited to regulatory bodies, customers and potential customers and their agents, suppliers and licensees then only with appropriate protection by applicable regulatory provisions or proprietary agreements.
7. The document mentioned in paragraph 2 above has been evaluated in accordance with the above criteria and procedures and has been found to contain information which is proprietary and which is customarily held in confidence by General Electric.
8. The information to the best of my knowledge and belief has consistently been held in confidence by the General Electric Company, no public disclosure has been made, and it is not available in public sources. All disclosures to third parties have been made pursuant to regulatory provisions of proprietary agreements which provide for maintenance of the information in confidence.
9. Public disclosure of the information sought to be withheld is likely to cause substantial harm to the competitive position of the General Electric Company and deprive or reduce the availability of profit making opportunities because it would provide other parties, including competitors, with valuable information.

GENERAL ELECTRIC COMPANY

STATE OF CALIFORNIA }
COUNTY OF SANTA CLARA }

ss:

David J. Robare, being duly sworn, deposes and says:

That he has read the foregoing affidavit and the matters stated therein are truly and correct to the best of his knowledge, information, and belief.

Executed at San Jose, California, this 26TH day of JUNE 1990.

David J. Robare

David J. Robare
General Electric Company

Subscribed and sworn before me this 26th day of June 19 90.

Mary L. Kendall

Notary Public, State of California

