

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION: N3R:8109290625. DOC. DATE: 81/09/23 NOTARIZED: NO. DOCKET #
 FACIL: 50-315 Donald C. Cook Nuclear Power Plant, Unit 1, Indiana & 05000315
 50-316 Donald C. Cook Nuclear Power Plant, Unit 2, Indiana & 05000316
 AUTH. NAME: AUTHOR AFFILIATION
 MALONEY, G.P. Indiana & Michigan Electric Co.
 RECIP. NAME: RECIPIENT AFFILIATION
 DENTON, H.R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Forwards partial response to NRC 810526 safety evaluation
 on environ qualification of safety-related electrical
 equipment. Some procedural requirements bypassed, in order to
 meet NRC request to provide response as soon as possible.

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	OGC	21	1	1	<u>REG FILE</u>	01	1	1
	WILLIAMS, M.H.05		1	1				
EXTERNAL:	ACRS	23	16	16	LPDR	03	1	1
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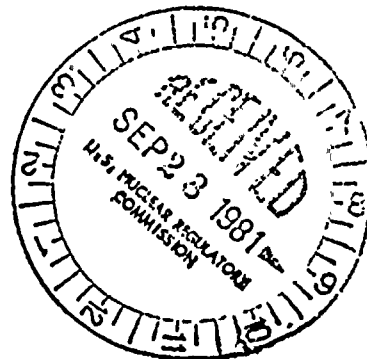
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September 23, 1981
AEP:NRC:00578

Donald C. Cook Nuclear Plant Unit Nos. 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
Response to SER on Environmental Qualification
of Safety-related Electrical Equipment



Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Denton:

This letter and its attachments constitute a partial response to the SER on Environmental Qualification of Safety-Related Electrical Equipment transmitted in a letter dated May 26, 1981 from Steven A. Varga to John E. Dolan. We are continuing our review of the information contained in the attachments to this letter and will amend and revise, their content, in a followup letter, if necessary.

It should be noted that due to the complex nature of the issues addressed, combined with the fact that the scope of the submittal was changed and broadened as a result of the July 7-10 meetings with the NRC in Washington, we had requested a 45-day extension of the due date on August 26, 1981 (AEP:NRC:00578A). That request for an extension was denied and in a subsequent discussion, we were required by the Staff to submit our response by about September 15, 1981. In order to meet the request to the NRC to provide this response as soon as possible we have, for this submittal only, bypassed some of our procedural requirements normally followed for NRC submittals.

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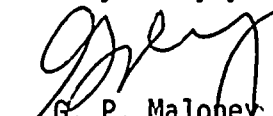
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AttachmentTopic

- | | |
|---|--|
| 1 | Display Instrumentation |
| 2 | Spray Chemical Characteristics |
| 3 | Flood-up Tubes |
| 4 | Update Equipment Summary Sheets,
Unit 1 |
| 5 | Update Equipment Summary Sheets,
Unit 2 |
| 6 | QA Procedures |

Aging information has not been included in the summary sheets. We are currently pursuing the development of an aging program as per the recently provided guidance of the NRC as contained in our SER and discussed during the Washington meeting.

Very truly yours,


G. P. Maloney
Vice President

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Attachments

cc: John E. Dolan - Columbus
R. C. Callen
G. Charnoff
D. V. Shaller - Bridgman
R. W. Jurgensen
Joe Williams, Jr.
J. G. Keppler - NRC Region III
Region III Resident Inspector - Bridgman

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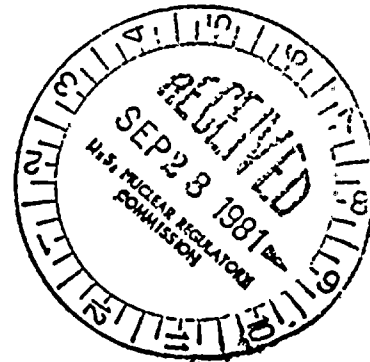
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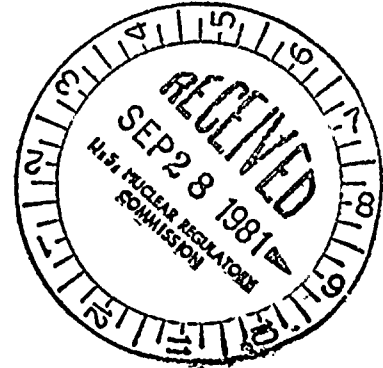
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1. The first part of the report is a general
description of the project and its objectives.


2. The second part of the report is a detailed
description of the methodology used in the study.
3. The third part of the report is a description
of the results of the study.
4. The fourth part of the report is a discussion
of the results and their implications.
5. The fifth part of the report is a conclusion
and a list of references.

AttachmentTopic

1	Display Instrumentation
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Attachment No. 1 to AEP:NRC:00578
Donald C. Cook Nuclear Plant Unit Nos. 1 and 2
Response to NRC SER on IE Bulletin 79-01B
Display Instrumentation

Section 3.1 of the SER required that "... a complete list of all display instrumentation mentioned in the LOCA and HELB emergency procedures..." be included in this submittal. The attached lists provide the requested information.

In a number of instances, the procedure(s) call for verification of functions automatically performed through the Reactor Protection System/Engineered Safety Features Actuation System (RPS/ESFAS) logic without making reference to specific display instrumentation. It should be pointed out that the procedure(s) which call for verification of these automatic functions also call for manual actions to effect completion of the functions if there is any doubt that they are not performed automatically... This instrumentation is summarized in Table 1. In performing these verifications, operators are instructed to consult multiple plant parameters.

The remaining display instrumentation referenced in the LOCA and (or) MSLB procedures is contained in Table 2 with three exceptions, as noted below:

- (1) The MSLB procedure makes reference to trends in indicated wide-range steam generator water level. The wide-range level channels perform no safeguards or reactor trip function and serve as backup indication to the narrow range level channels. As noted in our response to FSAR question 7.29, the narrow-range level channels perform the same function as the wide-range devices which are excluded from the Table.
- (2) Reference is made in the LOCA procedure to monitoring the Auxiliary Building Radiation Monitors to detect potential ECCS leakage during the recirculation mode. The monitors could be subjected to an adverse environment following a HELB outside containment but serve no safety related function for such an event.
- (3) The LOCA procedure calls for verification that power is available to the pressurizer PORV block valves. Instrumentation is provided in 600V safety buses from which the block valves are powered. In addition, valve position indication lights effectively provide an indication of power availability.

TABLE 1

Function	Display Instrumentation	Purpose of Display	Safety Related	Potentially Exposed to Adverse Environment	Potential for providing Misleading Information
Reactor Trip	Reactor Trip Breaker Position Indication Lights	Verification of Reactor Trip Initiated By the RPS/ESFAS	No	No	
	Rod Bottom Lights		No	Yes	No
	Control Rod Drive Motor Circuit Set Breaker Position Lights				See Note (1)
			No	No	
Turbine Trip	Turbine Stop Valves' Closure Alarm	Verification of Turbine Trip Initiated By the RPS/ESFAS	No	No	No
	Loss of Load Indicator		No	No	See Note (2)
	Turbine Trip System Pressure Indicator		No	Yes	
Feedwater Isolation	Position Indication Lights on FRV-210, 220, 230, and 240 and FMO-201, 202, 203, and 204	Verification of Feedwater Isolation Initiated By the RPS/ESFAS	No	Yes	No See Note (3)

TABLE 1, (cont'd.)

Function	Display Instrumentation	Purpose of Display	Safety Related	Potentially Exposed to Adverse Environment	Potential for Providing Misleading Information
Containment Isolation (Phase 'A' and/or Phase 'B')	Position Indication Lights on Each Power Operated Containment Isolation Valve	Verification of Containment Isolation Initiated By the RPS/ESFAS	No	Yes (for valves/ Cabling in LOCA/HELB Areas)	No See Note (4)

Notes for Table 1

- (1) Reactor Trip signals are generated by qualified safety-related devices used in the Reactor Protection System/Engineered Safety Features Actuation System (RPS/ESFAS) for all design basis accidents involving high energy line ruptures. The display instrumentation available to verify Reactor Trip is not safety related and failure of such instrumentation would not provide misleading information to the extent that the operators would take actions adverse to safety. For example, in the event that the Reactor Trip Breaker position lights did not indicate a trip subsequent to a trip initiated by the RPS/ESFAS, the emergency operating procedures (EOPs) would require that the operator manually trip the reactor.
- (2) A turbine trip is automatically achieved through the balance-of-plant (BOP) channels. In the event that any or all of the display instrumentation were to provide false information subsequent to a turbine trip, the operator would manually initiate a trip, as required by the EOPs. Such actions are obviously not adverse to safety. The high-energy line break (HELB) which could conceivably have an adverse effect on the display instrumentation channels noted in Table 1 is a Main Steam Line Break (MSLB) in the Turbine Building.
- (3) Feedwater isolation is achieved automatically through the RPS/ESFAS subsequent to the receipt of a safety injection (SI) signal.

Although an adverse environment outside containment could conceivably affect the channels used to indicate feedwater isolation, the automatic isolation would not be impaired.
- (4) Containment isolation is achieved automatically through the RPS/ESFAS. Position indication lights are provided for all power operated containment isolation valves (CIVs). These lights are provided as aids to the operators and are not safety-related.

In addition, it is not possible for a single HELB to simultaneously subject all CIVs to an adverse environment.

TABLE 2

Function	Display Instrumentation	Purpose of Display	Safety Related	Potentially Exposed to Adverse Environment	Potential for providing Misleading Information
Containment Conditions	Containment Pressure Monitor	- Diagnostic - PAM - RPS/ESFAS - Use in Actuation of RHR Sprays	Yes	Yes (see Note 1)	No (see Note 1)
	Containment Radiation Monitor	- Diagnostic - PAM	TMI Item	No (note 11)	No
	Containment Humidity Monitor	- Diagnostic	No	Yes	No
	Containment Temperature	- Diagnostic	No	Yes	No
Auxiliary Feedwater System Status	Motor Driven Pumps-Breaker Position Indication Lights	Verify Power Available to Pump	No	No	No
	Motor Driven Pumps-Motor Ammeters	Verify Pump Operation	No	No	No



TABLE 2 (cont'd.)

Function	Display Instrumentation	Purpose of Display	Safety Related	Potentially Exposed to Adverse Environment	Potential for providing Misleading Information
Auxiliary Feedwater System Status (cont'd.)	Auxiliary Feedwater Flow Indication	<ul style="list-style-type: none"> - Verify System Performance - Used for isolation of faulted loop during MSLB 	Yes	Yes	No (see Note 2)
	Steam Generator Narrow Range Level Indication	<ul style="list-style-type: none"> - RPS/ESFAS - PAM - Verify AFS Performance 	Yes	Yes	No (see Note 2)
	Condensate Storage Tank Level Indication and "Lo-Lo" Level Alarm	<ul style="list-style-type: none"> - Operator information for use in Transfer of AFS Suction to ESW 	No	No	No (see Note 2)
Secondary System Status	Main Steam Pressure Indication	<ul style="list-style-type: none"> - RPS/ESFAS - PAM - Diagnostic 	Yes	Yes	No (see Note 3)

TABLE 2 (cont'd.)

Function	Display Instrumentation	Purpose of Display	Safety Related	Potentially Exposed to Adverse Environment	Potential for providing Misleading Information
Secondary System Status (cont'd.)	Main Steam Isolation Valve Position Indication Lights	Verify Steamline Isolation Initiated by RPS/ESFAS	No	Yes	No (see Note 3)
	Main Steam PORV Position Indication Lights	Verify Valve Position for Plant Cooldown	No	Yes	No (see Note 3)
	MSIV Dump and Bleed-Off Valves' Position Indication Lights	Verify Steamline Isolation Initiated by RPS/ESFAS	No	Yes	No (see Note 3)
	Main Steam Flow Indication	- RPS/ESFAS - Diagnostic - Verify Steamline Isolation	Yes	Yes	No (see Note 3)
Emergency Core Cooling Systems' Status	Centrifugal Charging Pumps - Breaker Position Indication Lights	Verify Power Available to Pump	No	Yes	No (see Note 4)

TABLE 2 (cont'd.)

Function	Display Instrumentation	Purpose of Display	Safety Related	Potentially Exposed to Adverse Environment	Potential for providing Misleading Information
Emergency Core Cooling Systems' Status (cont'd.)	Centrifugal Charging Pumps - Motor Ammeters	Verify Pump Operations	No	Yes	No (see Note 4)
	Safety Injection Pumps-Breaker Position Indication Lights	Verify Power Available to Pump	No	No	No (see Note 4)
	Safety Injection Pumps - Motor Ammeters	Verify Pump Operation	No	No	No (see Note 4)
	Residual Heat Removal Pumps - Breaker Position Indication Lights	Verify Power Available to Pump	No	No	No (see Note 4)
	Residual Heat Removal Pumps - Motor Ammeters	Verify Pump Operation	No	No	No (see Note 4)

TABLE 2 (cont'd.)

Function	Display Instrumentation	Purpose of Display	Safety Related	Potentially Exposed to Adverse Environment	Potential for providing Misleading Information
Emergency Core Cooling Systems' Status (cont'd.)	Boron Injection Flow Indicators	Verify Charging Pump Operation	Yes	Yes	Yes (see Note 4)
	Letdown Line Flow Indication	Verify Letdown Isolation	No	No	No (see Note 5)
	Safety Injection Flow Indicators	Verify Safety Injection Pump Operation	Yes	No	Yes (see Note 4)
	Residual Heat Removal Flow Indication	Verify RHR Pump Operation	Yes	No	Yes (see Note 4)
	RHR Spray Flow Indicators	Verify RHR Spray Flow	Yes	No	Yes (see Note 6)
	Position Indicator Lights on Valves IMO-340, 350, 360 361, and 362, and ICM 305 and 306	Verify ECCS Realignment to Sump Recirculation	No	No	No (see Note 6)

TABLE 2 (cont'd.)

Function	Display Instrumentation	Purpose of Display	Safety Related	Potentially Exposed to Adverse Environment	Potential for providing Misleading Information
Emergency Core Cooling Systems' Status (cont'd.)	RWST Level Indication and "Lo" and "Lo-Lo" Level Alarms	Used for Alignment of ECCS to Sump Recirculation	Yes	No	No (see Note 7)
	Containment Water Level Indication	- Used for Alignment of ECCS to Sump Recirculation Mode - PAM	Yes	Yes	No (see Note 7)
Containment Spray System Status	Containment Spray Pumps - Breaker Position Indication Lights	Verify Power Available	No	No	No (see Note 8)
	Containment Spray Pumps - Motor Ammeters	Verify Pump Operation	No	No	No (see Note 8)
	Containment Spray Pumps - Discharge Pressure Indication	Verify System Operation	Yes	No	No (see Note 8)

TABLE 2 (cont'd.)

Function	Display Instrumentation	Purpose of Display	Safety Related	Potentially Exposed to Adverse Environment	Potential for providing Misleading Information
Service Water Systems Status	Component Cooling Water Pumps - Breaker Position Indication Lights	Verify Power Available to Pump	No	No	No
	Component Cooling Water Pumps - Motor Ammeters	Verify Pump Operation	No	No	No
	Essential Service Water Pumps - Breaker Position Indication Lights	Verify Power Available to Pump	No	No	No
	Essential Service Water Pumps - Motor Ammeters	Verify Pump Operation	No	No	No
Reactor Coolant System Status	Pressurizer Pressure Indication	RPS/ESFAS Diagnostic PAM	Yes	Yes	Yes (see note 12)
	Pressurizer Level Indication	Diagnostic PAM	Yes	Yes	No (see note 13)
	RCS Wide Range Pressure Indication	PAM Input to Subcooling Meter	Yes	Yes	Yes (see note 12)

TABLE 2 (cont'd.)

Function	Display Instrumentation	Purpose of Display	Safety Related	Potentially Exposed to Adverse Environment	Potential for providing Misleading Information
Reactor Coolant System Status	RCS Wide Range Temperature Indication (Hot & Cold Leg RTDs)	PAM Input to Subcooling Meter	Yes	Yes	Yes (see note 12)
	RCS Narrow Range Temperature Indication	RPS/ESFAS Diagnostic	Yes	Yes	No
	Pressurizer PORV Position Indication Lights (Limit Switches & Acoustic Monitor on Header)	Verify Valve Position and RCS Isolation	TMI Item	Yes	No
	Pressurizer PORV Block Valve Position Indication Lights	Verify Valve Position and RCS Isolation	TMI Item	Yes	No
	Reactor Coolant Pumps - Breaker Position Indication Lights	Verify Power Available to Pump	No	Yes	No (See Note 9)
Emergency Power	Reactor Coolant Pumps - Motor Ammeters	Verify Pump Operation	No	Yes	No (See Note 9)
	Emergency Diesel Generators - Output Watt Meter	Verify Proper EDG Operation	Yes	No	No (See Note 10)
	Emergency Diesel Generators - Load Meter	Verify Proper EDG Operation	Yes	No	No (See Note 10)

The indication channels on the centrifugal charging pumps are potentially subjected to the environment associated with a letdown line break (see Appendix 'O' to the Cook Plant FSAR for further details). All other ECCS pumps are not in HELB areas. Safety grade indication of ECCS flow is provided by flow meters on the boron injection paths, the safety injection paths, and the residual heat removal paths. The boron injection flow meters are located inside containment and safety injection flow meters and the residual heat removal flow indicators are located in the auxiliary building.

- (5) Letdown isolation is achieved automatically through the RPS/ESFAS. Verification of isolation is provided by the letdown flow indicator.
- (6) ECCS realignment to the sump recirculation mode involves manual repositioning of the indicated valves. Although position indication lights are provided for these valves the safety grade indication of proper valve alignment is provided by the flow indicators mentioned in Note (4) above. In addition, flow meters are provided to provide verification of proper systems operation in the event RHR sprays are initiated.
- (7) Refueling Water Storage Tank (RWST) level indication and level alarms are used in conjunction with containment water level indication to facilitate ECCS switchover from the injection to the sump recirculation mode. The containment water level indication and RWST level indication can not both be subjected to an adverse environment from a single HELB. In fact, the RWST level indication instrumentation is not located in a HELB area.
- (8) Indication of pump breaker position and motor amperage is provided in the control room for each containment spray pump. These indications are useful as operator aids subsequent to automatic starting of the pumps on the appropriate safeguards signal. These indications also serve to provide the operator with information concerning pump status during the long-term recirculation mode. Positive indication of proper spray system operation is provided by pressure indicators on the discharge of each pump.

- (9) Indication is provided for reactor coolant pump's breaker position and motor amperage. As the pumps themselves are not considered to be safety related per se, indication of pump status is not classified as safety-related either. These indications do provide verification of pump trip subsequent to manual actions based on decreasing primary system pressure.
- (10) Indication of output wattage and load are provided for each emergency diesel generator (EDG). Further verification of proper EDG operation is effectively provided by the motor ammeters provided for the safety-related pumps loaded on the diesel.
- (11) The existing containment radiation monitoring system (RMS) does not utilize devices exposed to an adverse environment. The RMS is being modified pursuant to the requirements of NUREG-0578. The modified system will utilize devices exposed to an adverse environment.
- (12) The hypothetical errors associated with exposure of those channels has been factored into the subcooling margin specified in the applicable procedure(s).
- (13) The LOCA procedure explicitly requires that pressurizer level indication be used in conjunction with other available indications. Pressurizer level is not used by itself to initiate any actions following a LOCA or MSLB inside containment.

ATTACHMENT NO. 2 TO AEP:NRC:00578
DONALD C. COOK NUCLEAR PLANT UNIT NOS. 1 AND 2
RESPONSE TO NRC SER ON IE BULLETIN 79-01B
SUMP pH

As noted in Section 3/4 6.2.2 of the Cook Plant Technical Specification bases, limits are imposed on the volume and concentration of sodium hydroxide (NaOH) in the spray additive tank. This ensures a pH value between 8.5 and 11.0 for the solution recirculated within containment following a design basis LOCA. Parametric studies performed varying NaOH addition rate, ECCS flow rate, ice inventory, ice melt, and auxiliary feedwater flow (applicable only to the MSLB) have verified that these limits will be maintained following a HELB inside containment. A summary of this study is provided in Table 1. As noted in the Technical Specification bases, this pH band minimizes the evolution of iodine and the effects of chloride and caustic stress corrosion on mechanical systems and components. The pH used for environmental qualification testing of safety-related components inside containment falls within this pH range except for the components noted below.

The limitorque motor operators for the following valves were subjected to an environment with a pH of 7.67 during qualification testing:

Unit No. 1

IMO-51, 52, 53, 54
IMO-128
ICM-129, 111
QCM-250
ICM-305, 306

Unit No. 2

IMO-51, 52, 53, 54
IMO-128
ICM-129, 111
QCM-250
ICM-305, 306

Valves IMO-51, 52, 53 and 54 are in the boron injection lines to each respective RCS loop. These valves are normally open during power operation and receive a signal to open following a Safety Injection. Cook safety analysis does not assume that any safety-related function is performed by these valves. Although the motor operators for these valves would reasonably be expected to remain operational when subjected to an environment with a pH between 8.5 and 11.0, their failure to do so in such an environment does not adversely impact any safety analysis conclusions.

IMO-128 and ICM-129 are the two in-series valves in the normal RHR letdown line and ICM-111 is in the normal RHR cooldown return line. These valves are not part of the ECCS and serve no safety function other than to maintain RCS isolation when pressure is above the RHR design pressure. These valves are normally closed during operation. Although the motor operators for these valves would reasonably be expected to remain operational when subjected to an environment with a pH between 8.5 and 11.0, their failure to do so in such an environment does not adversely impact any safety analysis conclusions.

Valve QCM-250 is the inboard containment isolation valve on the reactor coolant pump seal water return line. (Redundant isolation of the seal water return line is provided by valve QCM-350 in-series with QCM-250 and located outside containment.) Both of these valves are automatically closed as part of the Phase A Containment Isolation initiated by the RPS/ESFAS and neither is required to change position following a design basis accident. Although the motor operator for valve QCM-250 would reasonably be expected to remain operational when subjected to an adverse environment with a pH between 8.5 and 11.0, failure to do so does not adversely impact any safety analysis conclusions.

Valves ICM-305 and 306 are the sump recirculation line isolation valves. These valves are located outside containment and are not subjected to a post accident environment.

The cable between the terminal block and the solenoid on valve VCR-21 in Unit No. 1 (a containment isolation valve in the ice condenser glycol refrigeration system) was subjected to a pH between 8.0 and 8.5 during environmental qualification testing. Although the cable would reasonably be expected to remain operational when subjected to an adverse environment with a pH between 8.5 and 11.0, failure of the cable would result in de-energizing the solenoid and closure of VCR-21. In any case, VCR-21 would be automatically closed on a Phase A Containment Isolation signal and the hypothetical cable failure discussed above would be meaningless and would not adversely impact any safety analysis conclusions.

Note: The pH range of 9.0 to 11.0 specified on the applicable qualification summary sheets should be 8.5 to 11.0 to correspond with Technical Specification bases B 3/4 6.2.2 (Unit 2 reference).

Table 1

Long-Term sump pH for various
HELBs inside containment

<u>HELB</u>	<u>Major Assumptions</u>	<u>Long Term Sump pH</u>
Large LOCA	<ul style="list-style-type: none"> - 50% ice melt - RCS initially at 500 ppm boron - BIT, RWST, SA tank, and Accumulators injected 	9.0
Large LOCA	<ul style="list-style-type: none"> - 100% ice melt - RCS initially at 500 ppm boron - BIT, RWST, SA tank, and Accumulators injected 	8.8
Large LOCA	<ul style="list-style-type: none"> - 100% ice melt - RCS initially at 0 ppm boron - BIT, RWST, SA tank and Accumulators injected 	9.4
Large LOCA	<ul style="list-style-type: none"> - 100% ice melt - RCS initially at 1400 ppm boron - BIT, RWST, SA tank and Accumulators injected 	9.2
Small LOCA	<ul style="list-style-type: none"> - Time dependent ice melt - RCS initially at 0 ppm boron - BIT, RWST, and SA tank injected 	9.6
Small LOCA	<ul style="list-style-type: none"> - Time dependent ice melt - RCS initially at 1400 ppm boron - BIT, RWST and SA tank injected 	9.4

MSLB

- 75% ice melted
instantaneously and 25%
over 60 min
- spray flow rate 3,200 gpm and
NaOH addition rate 20 gpm

9.48 (at 200 Min)

MSLB

- 75% ice melted
instantaneously and 25%
over 60 min
- spray flow rate 6,400 gpm
and NaOH addition rate 100 gpm

9.48 (at 60 min)

Acronyms

HELB - high energy line break
RCS - reactor coolant system
BIT - boron injection tank
RWST - refueling water storage tank
SA - spray additive (NaOH tank)

ATTACHMENT NO. 3 TO AEP:NRC:00578
DONALD C. COOK NUCLEAR PLANT UNIT NOS. 1 AND 2
RESPONSE TO NRC SER ON IE BULLETIN 79-01B
FLOOD-UP TUBES

We have determined that the reference made to the flood-up tubes in the Cook SER can be ascribed to the fact that the NRC reviewer did not have enough information on the function of a flood-up tube. In order to enable the NRC to make a more appropriate evaluation, we are providing a generic description of the flood-up tubes and their functions.

The function of the electrical penetration flood-up tubing is to provide additional protection to the Kapton insulated conductors of selected instrumentation, control and power circuits. This protection is afforded by providing a barrier around the conductors which prevents mechanical damage and immersion of the conductors in buffered boric acid solution following a postulated LOCA.

The flood-up tubing installed in Cook Units 1 and 2 was qualified by analysis performed by EDS Nuclear, Inc. Results of the work were documented in a report dated January 25, 1980, Report No. 02-0120-1022, Rev. 1. It was concluded in the report that the mounting attachments of the flood-up tubes were found to be adequate to support the tubing under both the OBE and DBE conditions.

The electrical flood-up tubing is made of corrugated type 321 stainless steel supplied by Flexonics Division of UOP, Inc. and is identified as Type 400 M, 1" nominal inside diameter and medium wall thickness. The recommended working pressures for the tubing are:

43 psi @ 70°F, 41.7 psi @ 150°F, 40.4 psi @ 200°F.

The maximum pressure differential the flood-up tube would experience during containment flooding, subsequent to a design basis event is estimated to be about 8 psi. This pressure is a result of the static pressure head from the highest flood-up elevation (elev. 614 feet) to the lowest penetration (elev. 596 feet). On the basis of our evaluation of the performance of flood-up tubes, we believe that they will maintain their structural integrity and serve their intended function subsequent to a LOCA or a Steam Line Break Accident.

rol # 810 9290625

Attachment No. 5 to AEP:NRC:00578
Donald C. Cook Nuclear Plant Unit No. 2
Response to NRC SER on IE Bulletin 79-01B
Environmental Equipment Qualification
Summary Sheets



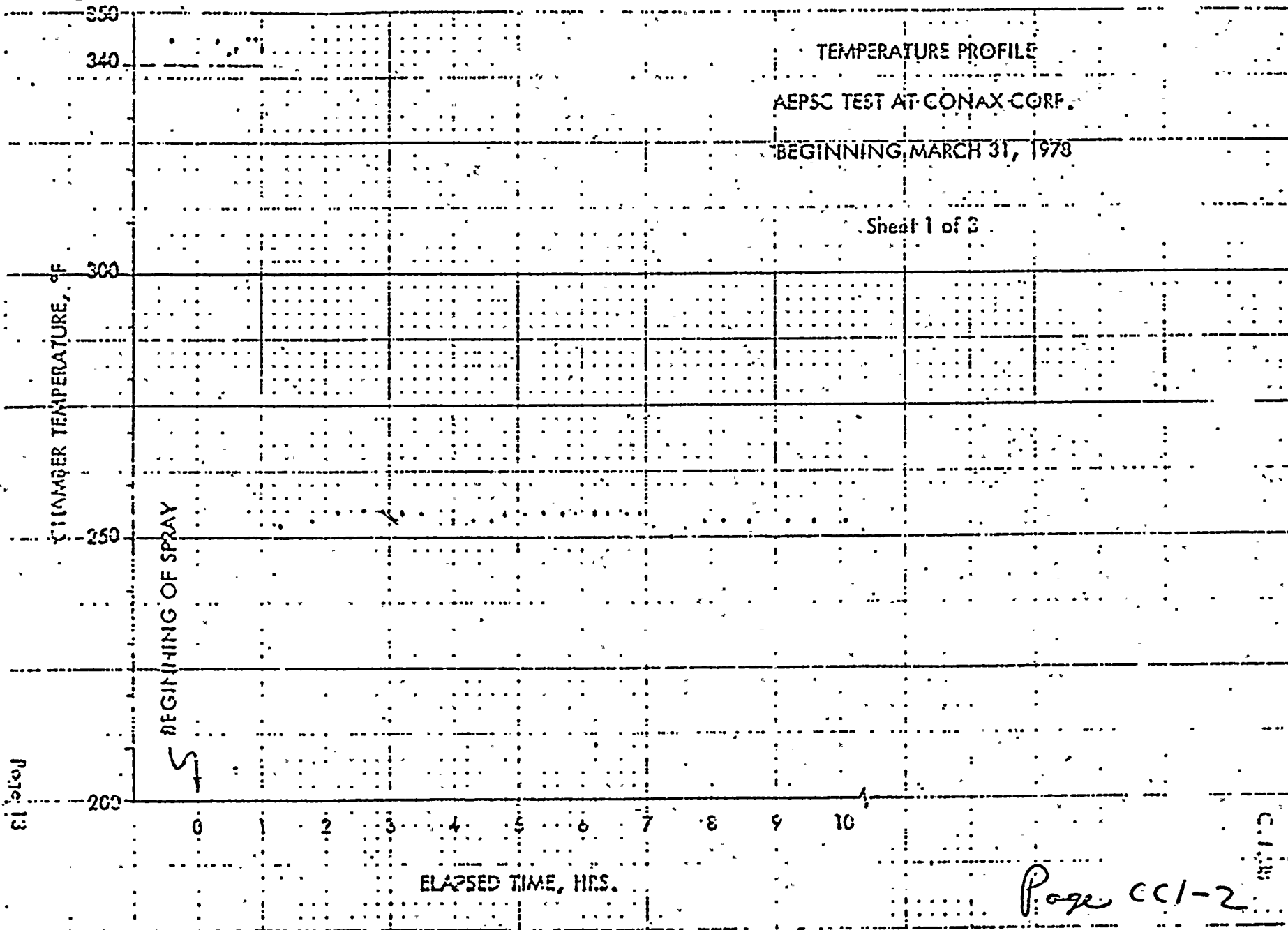
EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	1 DAY.	116 hrs	Table 7.5-2 F3AR	8	Seq.	NONE
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	F ₀₂₂ 328.2 PEAK	345	F3AR AIP Q	8	Seq.	NONE
COMPONENT: <i>CONTROL CABLE</i>	Pressure (PSIA)	F ₀₆ 1 F142	121.7	NEW 6504	8	Seq.	NONE
MANUFACTURER: <i>CONTINENTAL WIRE AND CABLE Co.</i>	Relative Humidity (%)	100	100		8	Seq.	NONE
MODEL NUMBER: <i>Item # 3119</i>	Chemical Spray	2000 PPMB 1.14% WT BORIC ACID PH 9-11	2500 PPMB 1.43% WT BORIC ACID PH 9-10	F.S. 314.5 314.6	8	Seq.	NONE
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	28	150	WCAP 7410-6 VOL 1	8	Seq.	NONE
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>							
LOCATION: <i>IN AND OUT OF CONTAINMENT</i>							
FLOOD LEVEL ELEV: <i>612'</i> ABOVE FLOOD LEVEL: <i>No</i>	Submergence	SUBMERGED	FLOODUP Tubes		61	COMBINATION	NONE

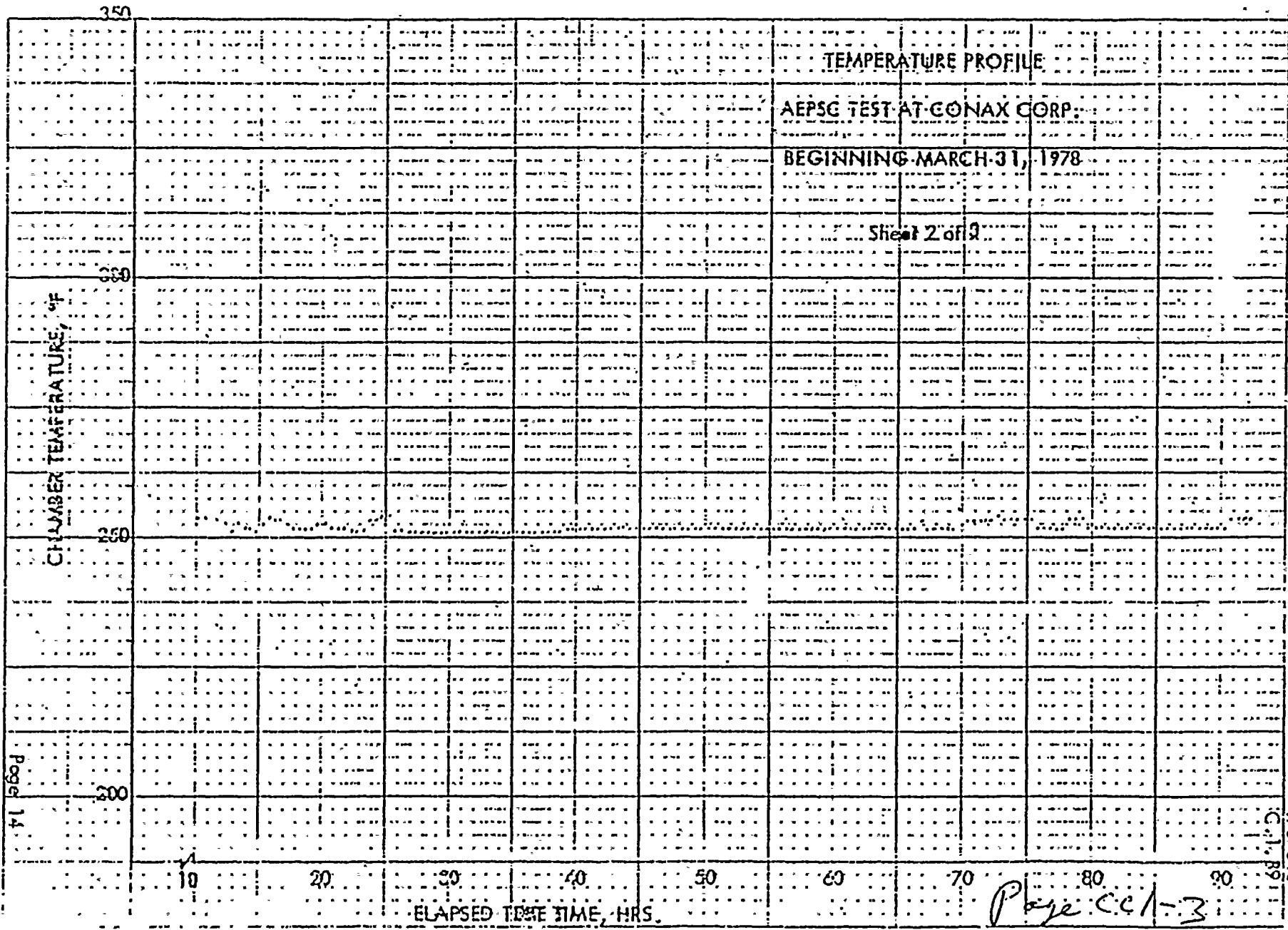
*Documentation References:

B. CONAX CORP. Test Report IPS-348

61. FLOODUP TUBE QUALIFICATION PACKET

Notes:





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C-1-3

TEMPERATURE PROFILE

AEPSC TEST AT CONAX CORP.

BEGINNING MARCH 31, 1978

Sheet 3 of 3.

CHAMBER TEMPERATURE, °F

250

200

90

100

110

120

130

140

150

160

170

ELAPSED TEST TIME, HRS

Page CCI-4

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C.I. 10

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	1 DAY	116 hrs	Table 7.5-2 FSAR	8	Seq.	NONE
PLANT ID NO: VARIOUS	Temperature (°F)	Fig 2.9-1-2 328.2 PEAK	345	FSAR APP Q	8	Seq.	NONE
COMPONENT: CONTROL CABLE	Pressure (PSIA)	Fig 1 Fig 2	121.7	AEW 6504	8	Seq.	NONE
MANUFACTURER: CONTINENTAL WIRE + CABLE CO.	Relative Humidity (%)	100	100		8	Seq.	NONE
MODEL NUMBER: Item 3120	Chemical Spray	2000PPMB 1.4% WT B2R2C ACID PH 9-11	2500PPMB 1.43% WT B2R2C ACID PH 9-10	T.S. 3/4.5 3/4.6	8	Seq.	NONE
FUNCTION: VARIOUS	Radiation (10 ⁶ rads)	28	150	WCAP 7410-1 10L1	8	Seq.	NONE
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: VARIOUS							
LOCATION: IN AND OUT OF CONTAINMENT							
FLOOD LEVEL ELEV: 612' - ABOVE FLOOD LEVEL: NO	Submergence	SUBMERGED	FLOODUP TUBES		61	COMBINATION	NONE

*Documentation References:

8. CONAX CORP Test Report IPS-348
61. FLOODUP TUBE QUALIFICATION PACKET

I.D. NO.
OF EQUIP.
(Page 2)

20 V6
27 V6
29 V6
31 V6
33 I32
38 I32
52-53 V6
112 V7
232-234
S11
LS1

TEMPERATURE PROFILE
AEPSC TEST AT CONAX CORP.
BEGINNING MARCH 31, 1978

Sheet 1 of 3

CYLINDER TEMPERATURE, °F

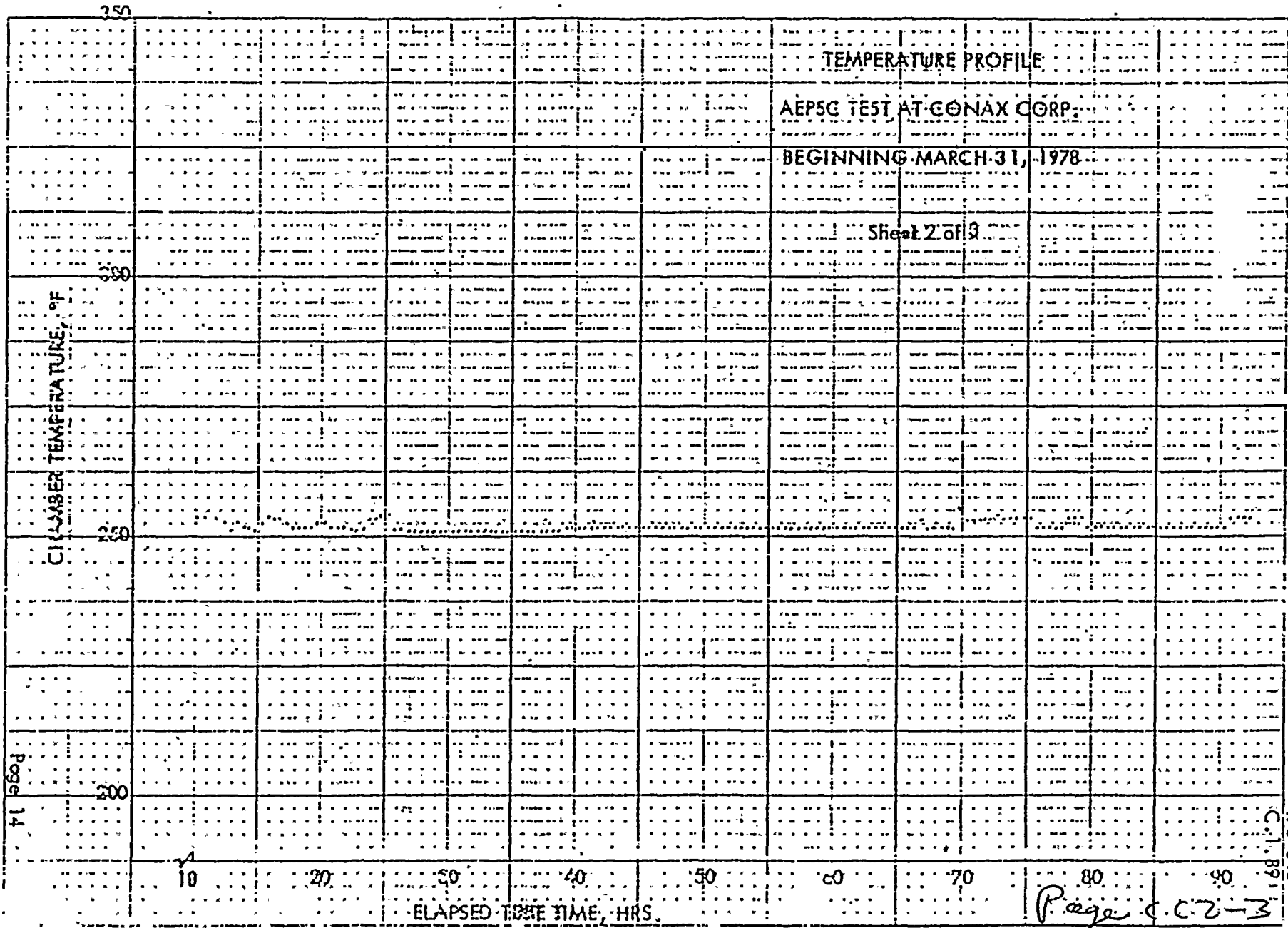
BEGINNING OF SPRAY

5

ELAPSED TIME, HRS.

Page CC2-2

IPS-318
C-1-38



TEMPERATURE PROFILE

AEPSC TEST AT CONAX CORP.

BEGINNING MARCH 31, 1978

Sheet 3 of 3

CHAMBER TEMPERATURE, °F

350

300

250

200

90

100

110

120

130

140

150

160

170

ELAPSED TEST TIME, HRS

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>1 DAY</i>	<i>116 hrs</i>	<i>Table 7.5.2 FSAR</i>	<i>8</i>	<i>Seq</i>	<i>NONE</i>
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	<i>Fig. 22.9-1, -2 328.2 PEAK</i>	<i>345</i>	<i>FSAR APP Q</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
COMPONENT: <i>CONTROL CABLE</i>	Pressure (PSIA)	<i>Fig. 1 Fig. 2</i>	<i>121.7</i>	<i>ASD 6104</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
MANUFACTURER: <i>GENERAL ELECTRIC</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>8</i>	<i>Seq.</i>	<i>NONE</i>
MODEL NUMBER: <i>ITEM # 3120</i>	Chemical Spray	<i>2000PPMB 1.14% WT BORIC ACID PH 9-11</i>	<i>2500PPMB 1.43% WT BORIC ACID PH 9-10</i>	<i>T.S. 314.5 314.5.6</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>28</i>	<i>150</i>	<i>WCAP 7410-L Vol 1</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>							
LOCATION: <i>IN AND OUT of CONTAINMENT</i>							
FLOOD LEVEL ELEV: <i>612'</i> ABOVE FLOOD LEVEL. <i>NO</i>	Submergence	<i>SUBMERGED</i>	<i>FLOODUP TUBES</i>		<i>61</i>	<i>COMBINATION</i>	<i>NONE</i>

2. D. NO. OF EQUIP. (PPL)

*25 V6
21 V6
27 V6
31 V6
33 I32
38 I32
52-53 V6
112 V7
234-134
SII
LSI*

*Documentation References:

- 8. COVAX Corp Test Report IPS-348*
61. FLOODUP TUBE QUALIFICATION PACKET

Notes:

CHAMBER TEMPERATURE, °F

TEMPERATURE PROFILE
AEPSC TEST AT CONAX CORP.
BEGINNING MARCH 31, 1978

Sheet 1 of 3

BEGINNING OF SPRAY

ELAPSED TIME, HRS.

Page CC3-2

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C-1.18

35

TEMPERATURE PROFILE

AEPSC TEST AT CONAX CORP.

BEGINNING MARCH 31, 1978

Sheet 2 of 3

CHAMBER TEMPERATURE, °F

35

55

200

10 20 30 40 50 60 70 80 90

ELAPSED TEST TIME, HRS.

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Page 14

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CAL 67

TEMPERATURE PROFILE

AEPSC TEST AT CONAX CORP.

BEGINNING MARCH 31, 1978

Sheet 3 of 3.

CHAMBER TEMPERATURE, °F

350

300

250

200

90

100

110

120

130

140

150

160

170

ELAPSED TEST TIME, HRS

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C-11-10

Page CC3-4

DONALD C. COOK NUCLEAR PLANT UNIT NO. 2

DOCKET NO. 50-316

LICENSE NO. DP

I.D. NO.
OF EQUIP.
(PAGE)

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	1 DAY	14 DAYS	Table 7.5-2 FSAR	5	Simul.	NONE
PLANT ID NO: VARIOUS	Temperature (°F)	Fig 022.9-1, -2 328.2 PEAK	340	FSAR APP Q	5	Simul.	NONE
COMPONENT: CONTROL CABLE	Pressure (PSIA)	Fig 1 Fig 2	119.7	NEW 6504	5	Simul.	NONE
MANUFACTURER: ANACONDA	Relative Humidity (%)	100	100		5	Simul.	NONE
MODEL NUMBER: Item # 3120	Chemical Spray	2000PPMB 1.14% WT BORIC ACID PH 9-11	3000PPMB 1.72% WT BORIC ACID PH 9-5	T.S. 3/4.5 3/4.6	5	Simul.	NONE
FUNCTION: VARIOUS	Radiation (10 ⁶ rads)	28	200	WCAP 1410-L VOL1	5	Simul.	NONE
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: VARIOUS							
LOCATION: IN AND OUT OF CONTAINMENT							
FLOOD LEVEL ELEV: 612' ABOVE FLOOD LEVEL: NO	Submergence	SUBMERGED	FLOODUP Tubes		61	COMBINATION	NONE

*Documentation References:

5. FIRM TEST REPORT F-C3341

61. FLOODUP TUBE QUALIFICATION PACKET

Notes:

5. Qualified by Franklin Institute Research Laboratory
(FIRL) Test Report #F-C3341, Jan. 1973.

Type of Test: Simultaneous, gamma radiation
steam
chemical spray

Test Profile:

.51 Mrads/hr, 200 Mrads
340°F, 105 psig for 3 hrs
320°F, 75 psig for 3 hrs
250°F, 15 psig for 4 days
210°F, 5 psig for 9 days

Chemical Spray: Solution of boric acid
and Na OH, PH = 9.5

I.B. no.
OF E.P.R.
(1032)
52-53V8
233-254
S11
LS1

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	1 DAY	116 HRS	FSAR 7006 7.5-2	8	Seq.	NONE
PLANT ID NO: VARIOUS	Temperature (°F)	FIG 021.9-1, -2 328.2 PEAK	345	FSAR APP Q	8	Seq.	NONE
COMPONENT: CONTROL CABLE	Pressure (PSIA)	FIG 1 FIG. 2	121.7	AEW 6504	8	Seq.	NONE
MANUFACTURER: CONTINENTAL WIRE + CABLE Co. MODEL NUMBER: Item # 3121	Relative Humidity (%)	100	100	..	8	Seq.	NONE
FUNCTION: VARIOUS	Chemical Spray	2000PPMB 1.14% WT BORIC ACID PH 9-11	2500PPMB 1.43% WT BORIC ACID PH 9-10	TIS 314.5 314.56	8	Seq.	NONE
ACCURACY: SPEC: NA DEMON: NA	Radiation (10 ⁶ rads)	28	150	WCAP 7410-L Vol 1	8	Seq.	NONE
SERVICE: VARIOUS	Aging (years)						
LOCATION: IN AND Out OF CONTAINMENT							
FLOOD LEVEL ELEV: 612' ABOVE FLOOD LEVEL: NO	Submergence	SUBMERGED	FLOODUP Tubes		61	COMBINATION	NONE

*Documentation References:

8. CONAX Corp. Test Report IPS-348
61. FLOODUP TUBE QUALIFICATION PACKET

Notes:

Page 13

CYLINDER TEMPERATURE, °F
350
340
300
250
200

BEGINNING OF SPRAY
5

6 1 2 3 4 5 6 7 8 9 10

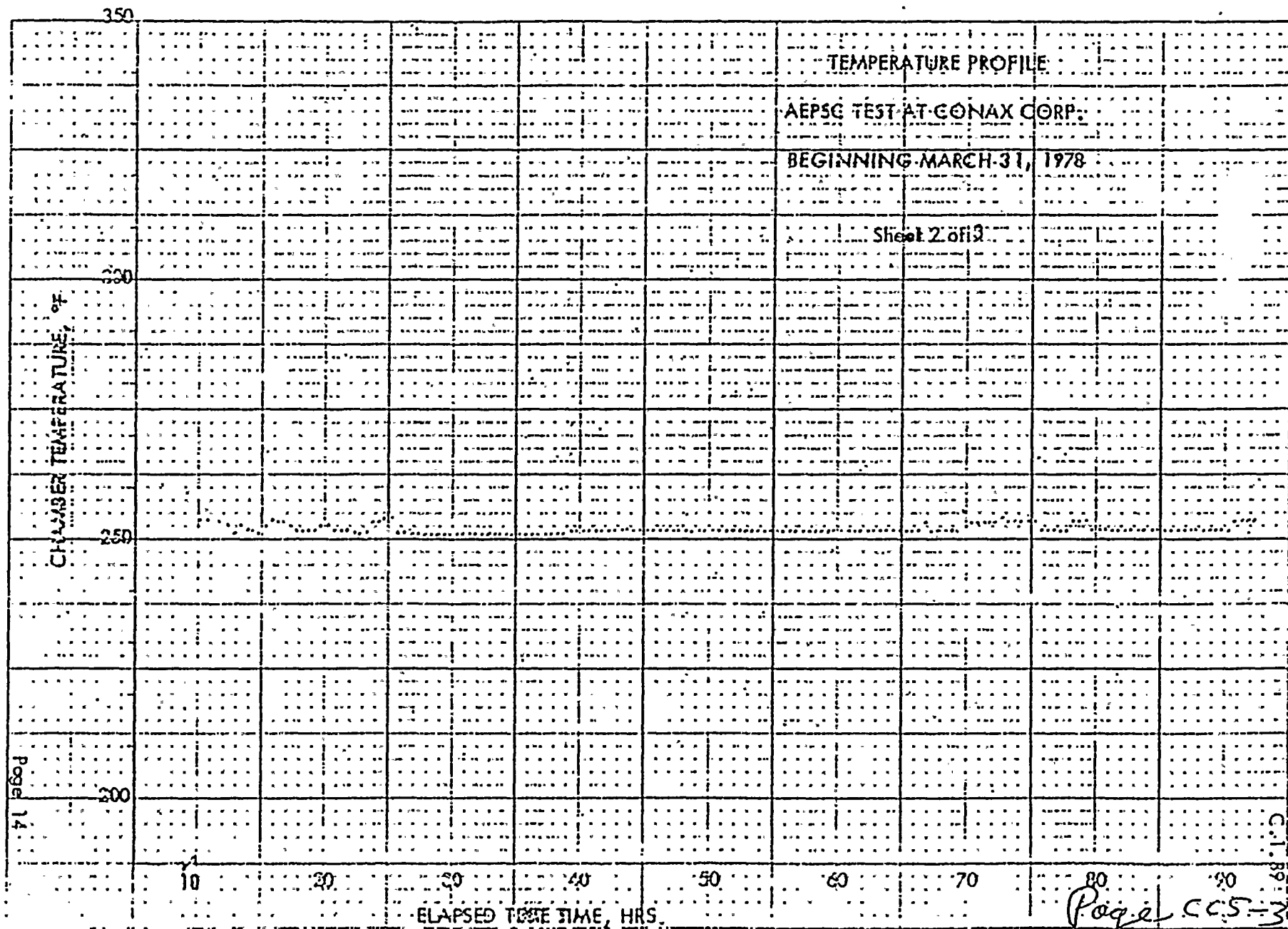
ELAPSED TIME, HRS.

TEMPERATURE PROFILE
AEPSC TEST AT CONAX CORP.
BEGINNING MARCH 31, 1978

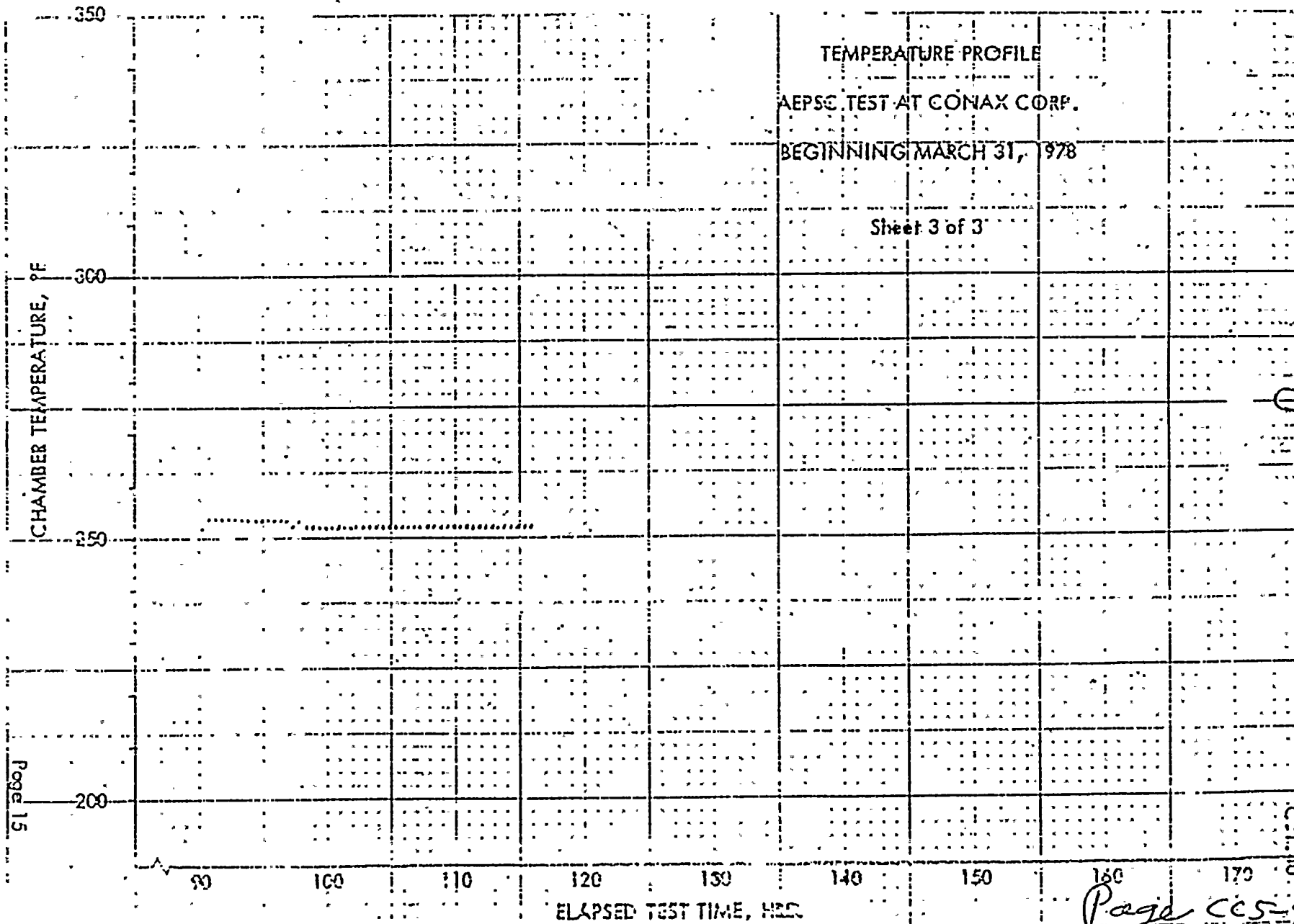
Sheet 1 of 3

Page CCS-2

C.I.M
IPS-310



IPS-348
C.I. 89





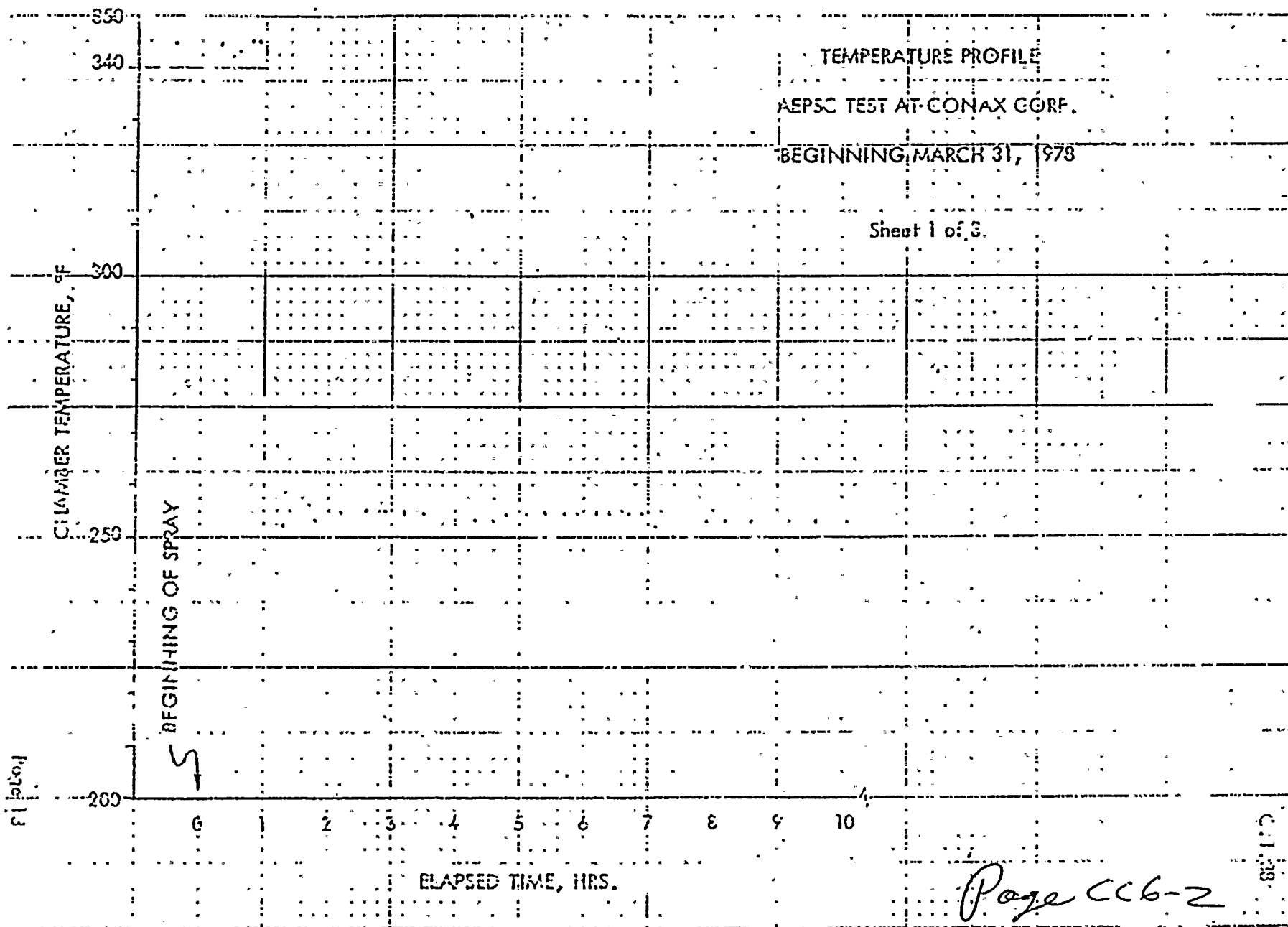
EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	1 DAY	116 HRS.	FSAR 1606 7.5-2	8	Seq.	NONE
PLANT ID NO: VARIOUS	Temperature (°F)	Fig 022-S-1-2 328.2 PEAK	345	FSAR APP Q	8	Seq.	NONE
COMPONENT: CONTROL CABLE	Pressure (PSIA)	Fig. 1	121.7	AEW 6504	8	Seq.	NONE
MANUFACTURER: GENERAL ELECTRIC	Relative Humidity (%)	Fig. 2	100		8	Seq.	NONE
MODEL NUMBER: ITEM #3121	Chemical Spray	2000PPMB 1.14% WT BORIC ACID PH 9-11	2500PPMB 1.43% WT BORIC ACID PH 9-10	T.S. 3/4.5 3/4.5.6	8	Seq.	NONE
FUNCTION: VARIOUS	Radiation (10 ⁶ rads)	28	150	WCAP 2410-L 5054	8	Seq.	NONE
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: VARIOUS							
LOCATION: IN AND OUT of CONTAINMENT							
FLOOD LEVEL ELEV: 612' ABOVE FLOOD LEVEL: NO	Submergence	SUBMERGED	FLOODUP TUBES		61	COMBINATION	NONE

E. D. NO.
OF Equip.
(Page)52-5346
233-234
S11
LS1

*Documentation References:

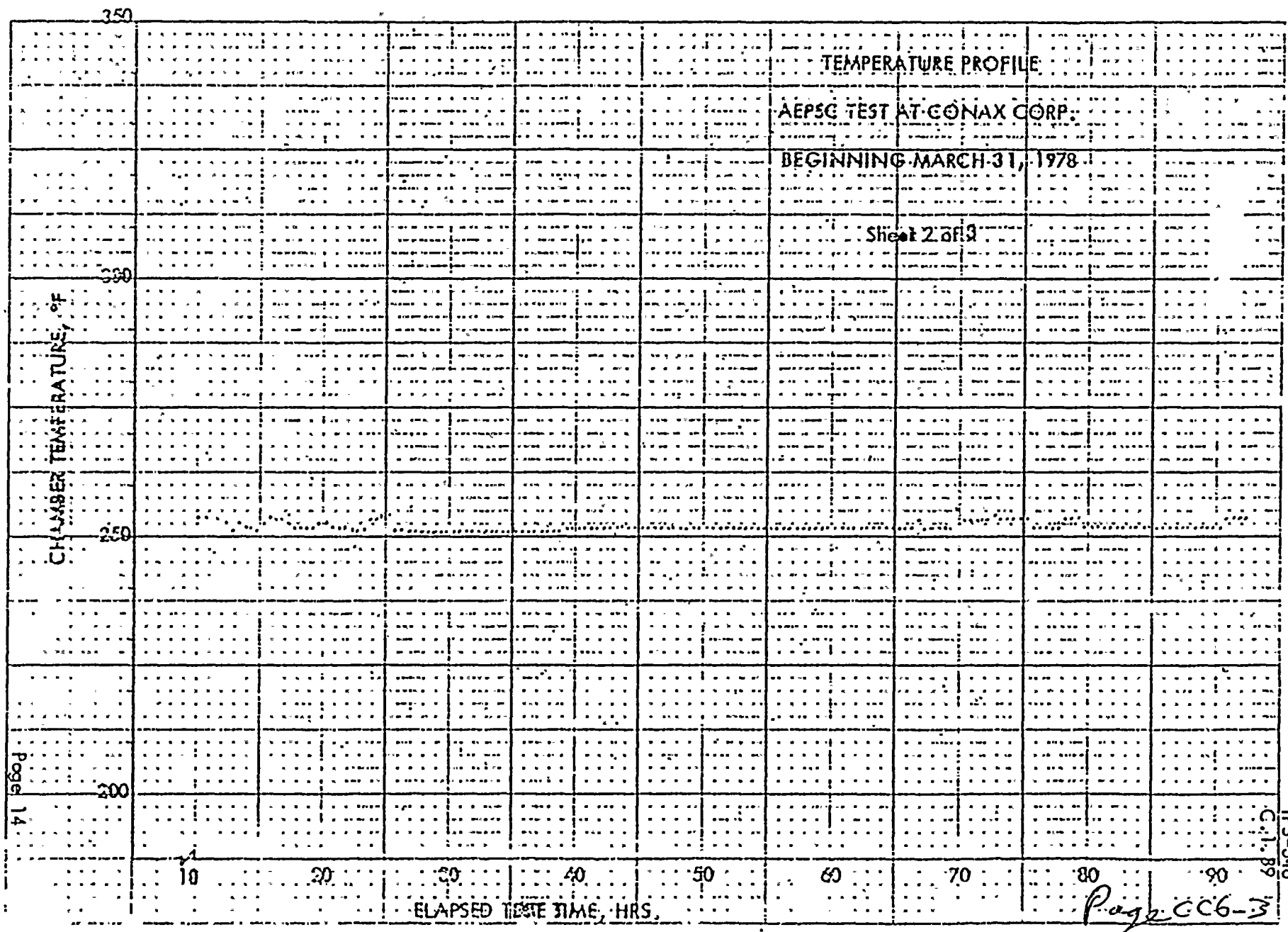
Notes:

8. CONAX Corp Test Report IPS-348.
61. FLOODUP TUBE QUALIFICATION PACKET



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C-1-38



TEMPERATURE PROFILE

AEPSC TEST AT CONAX CORP.

BEGINNING MARCH 31, 1978

Sheet 3 of 3

CHAMBER TEMPERATURE, °F

350

300

250

200

90

100

110

120

130

140

150

160

170

ELAPSED TEST TIME, MIN.



EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>1 DAY</i>	<i>116 HRS</i>	<i>FSAR Table 7.5-2</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	<i>F16 0229-1-2 328.2 peak</i>	<i>345</i>	<i>FSAR APP Q</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
COMPONENT: <i>CONTROL CABLE</i>	Pressure (PSIA)	<i>F16 1 FIG. 2</i>	<i>121.7</i>	<i>AEW 6J2Y</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
MANUFACTURER: <i>CONTINENTAL WIRE + CABLE CO</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>8</i>	<i>Seq.</i>	<i>NONE</i>
MODEL NUMBER: <i>Item # 3122</i>	Chemical Spray	<i>2000 PPM B 1.14% WT BORIC ACID PH 9-11</i>	<i>2500 PPM B 1.43% WT BORIC ACID PH 9-10</i>	<i>T.S 3/45 3/4.56</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>28</i>	<i>150</i>	<i>WCAP 7410-L VOL I</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>							
LOCATION: <i>IN AND OUT OF CONTAINMENT</i>							
FLOOD LEVEL ELEV: <i>612'</i> ABOVE FLOOD LEVEL: <i>NO</i>	Submergence	<i>SUBMERGED</i>	<i>FLOODUP Tubes</i>		<i>61</i>	<i>COMBINATION</i>	<i>NONE.</i>

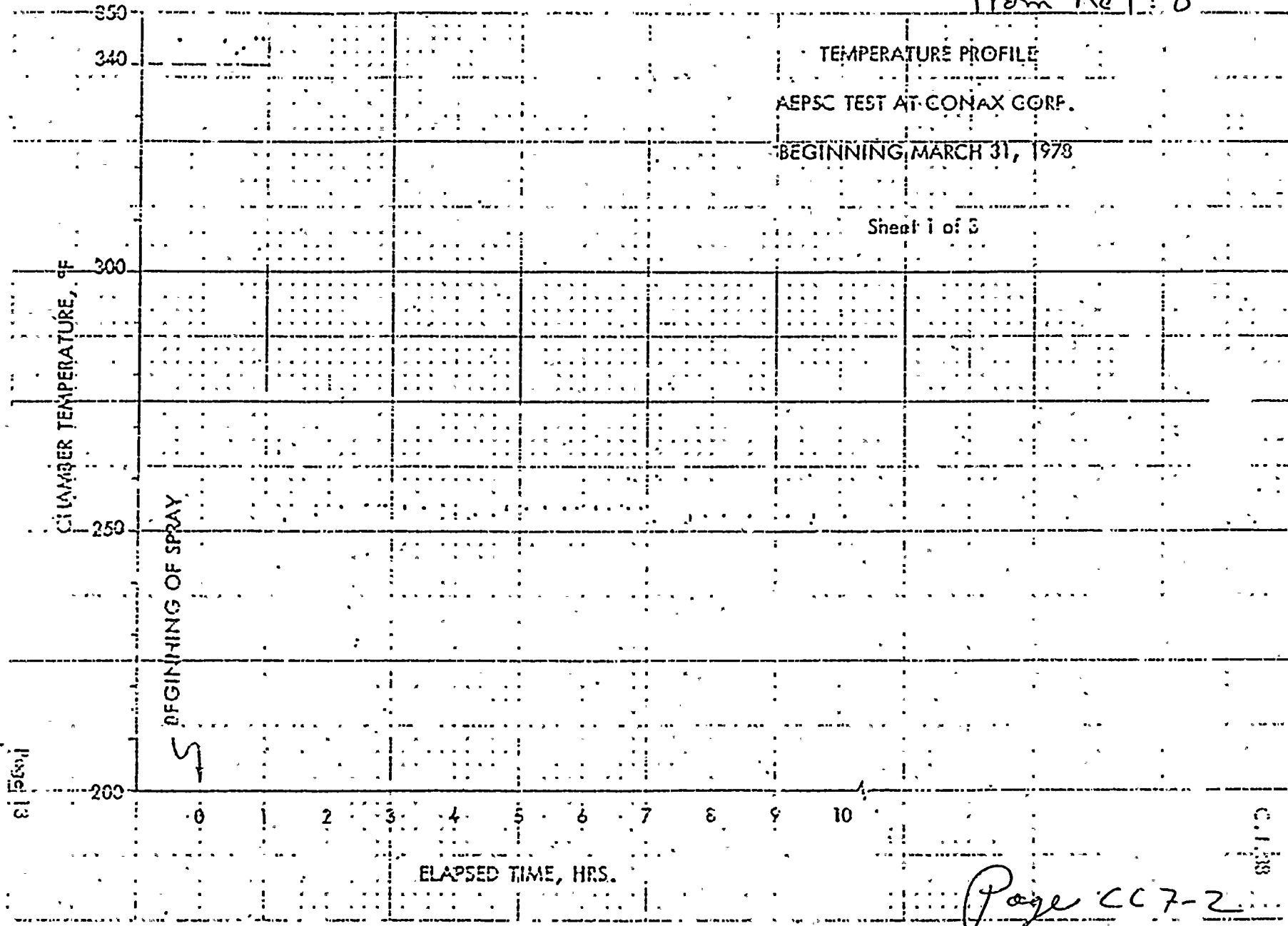
*Documentation References:

8. CONAX CORP. Test Report IPS-348
61. FLOODUP TUBE QUALIFICATION PACKET

Notes:

*I-B NO.
OF EQUIP
(Page)
557
657
17-20S3
25-29V6
31-32V6
30 V6
36-37V6
37-42V6
46-47V6
52-53V6
60-73V6
82-85V6
90-97V6
108-115V6
118-119V4
205-212V6
213-226V6
227-234
V9, S11, L51*

from Ref: 8



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TEMPERATURE PROFILE

AEP5G TEST AT CONAX CORP.

BEGINNING MARCH 31, 1978

Sheet 2 of 3

CHAMBER TEMPERATURE, °F

Page 14

ELAPSED TEST TIME, HRS.

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C-1.89



TEMPERATURE PROFILE

AEPSC TEST AT CONAX CORP.

BEGINNING MARCH 31, 1978

Sheet 3 of 3

CHAMBER TEMPERATURE, °F

350

300

250

200

80

100

110

120

130

140

150

160

170

ELAPSED TEST TIME, HRS



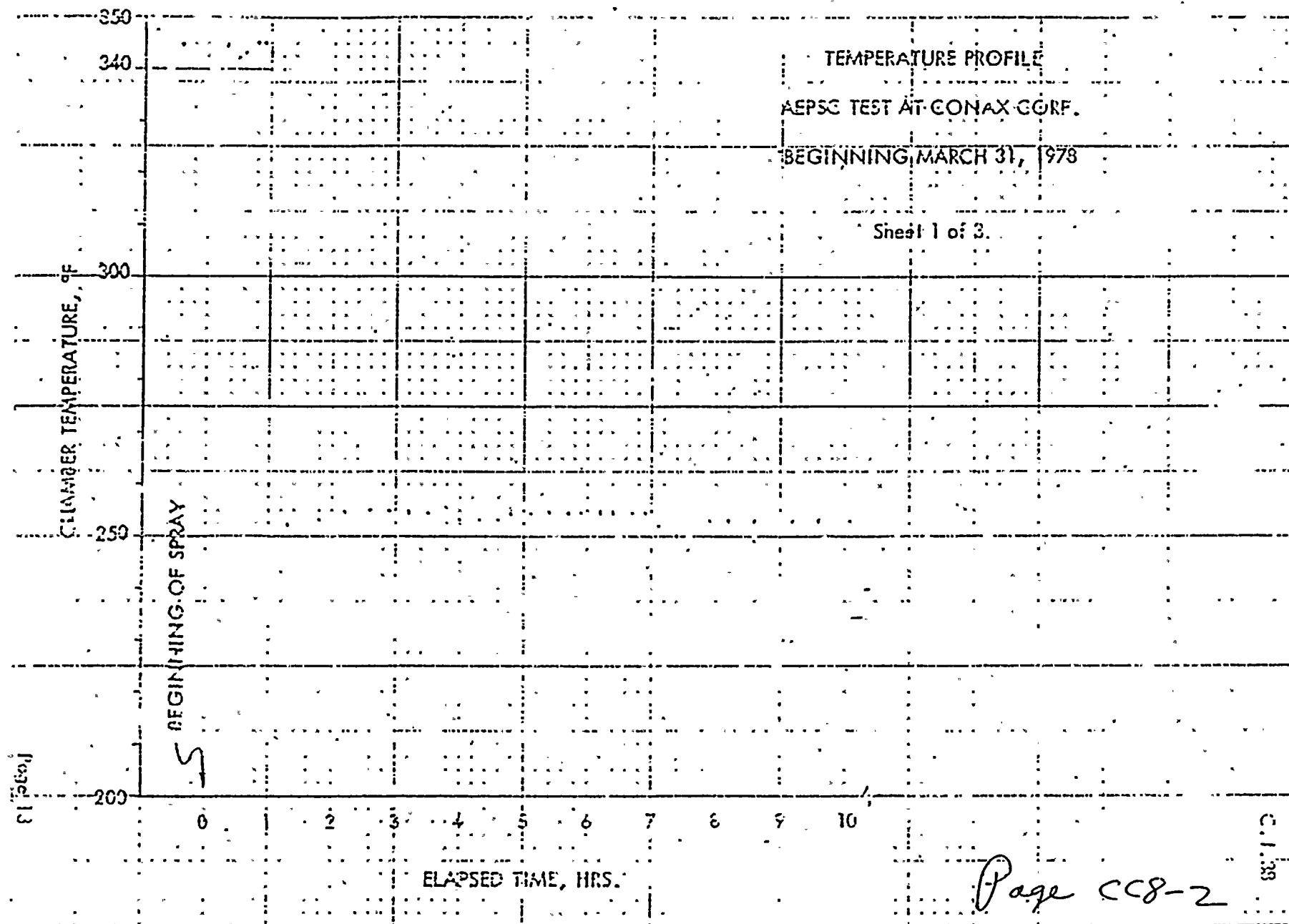
EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>1 DAY</i>	<i>116 HRS</i>	<i>FSAR Table 7.5-2</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	<i>Fig 022.9-1-2</i> <i>328.2</i> <i>peak</i>	<i>345</i>	<i>FSAR App Q</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
COMPONENT: <i>CONTROL CABLE</i>	Pressure (PSIA)	<i>Fig 1</i> <i>Fig. 2</i>	<i>121.7</i>	<i>ASQ 6504</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
MANUFACTURER: <i>GENERAL ELECTRIC</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>8</i>	<i>Seq.</i>	<i>NONE</i>
MODEL NUMBER: <i>Item # 3122</i>	Chemical Spray	<i>2000PPMB</i> <i>1.14% WT BORIC ACID</i> <i>PH 9-11</i>	<i>2500PPMB</i> <i>1.43% WT BORIC ACID</i> <i>PH 9-10</i>	<i>T.S.</i> <i>314.5</i> <i>314.6</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>28</i>	<i>150</i>	<i>WCAP 7410-L Vol 1</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>							
LOCATION: <i>IN AND OUT of CONTAINMENT</i>							
FLOOD LEVEL ELEV: <i>612'</i> ABOVE FLOOD LEVEL: <i>NO</i>	Submergence	<i>SUBMERGED</i>	<i>FLOODUP Tubes</i>		<i>61</i>	<i>COMBINATION</i>	<i>NONE</i>

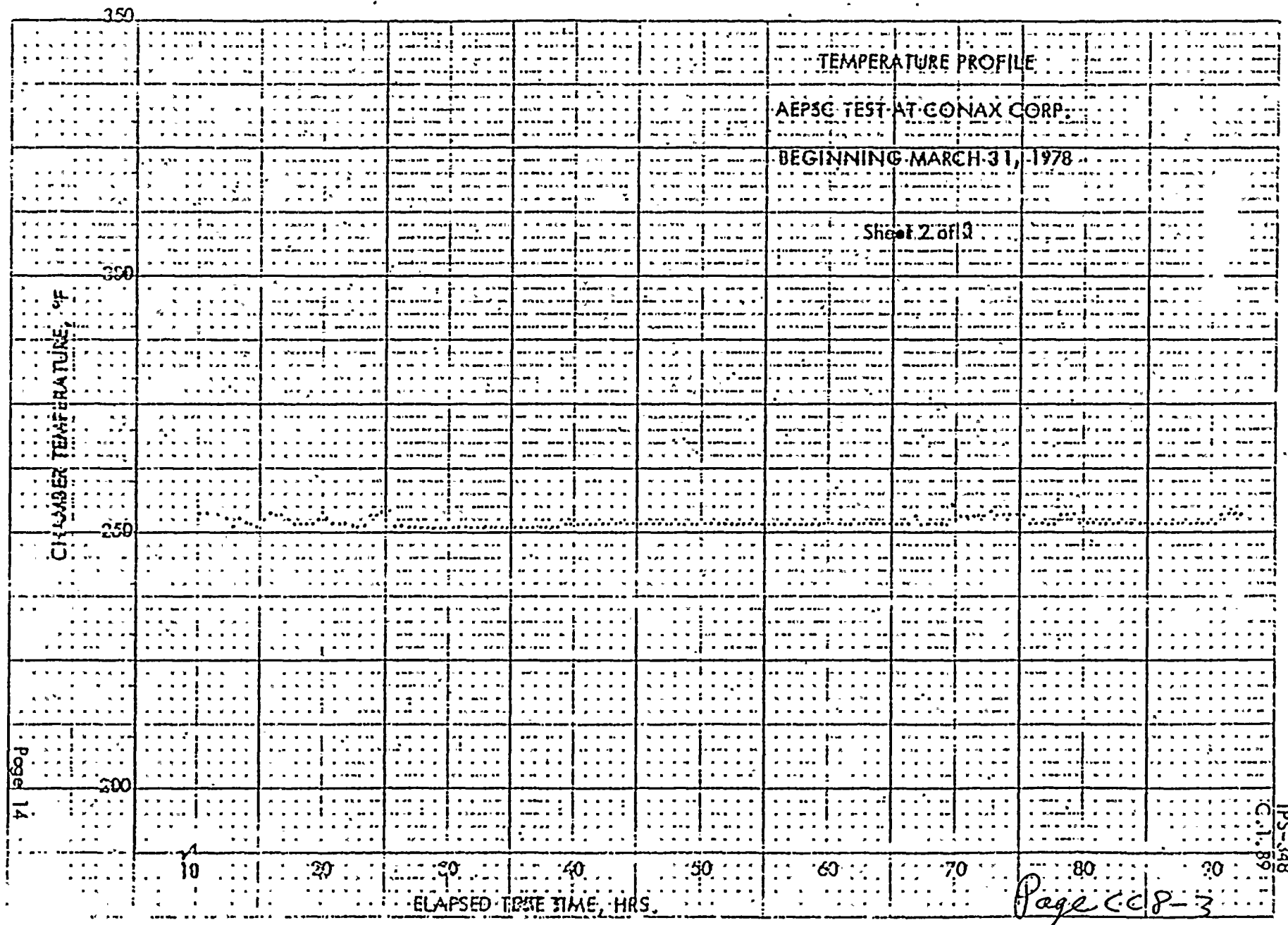
*Documentation References:

B. CONAX Corp. Test Report IPS-348
61. FLOODUP TUBE QUALIFICATION PACKET

Notes:







IPS-348
C.I. 89

TEMPERATURE PROFILE

AEPSC TEST AT CONAX CORP.

BEGINNING MARCH 31, 1978

Sheet 3 of 3

CHAMBER TEMPERATURE, °F

350

300

250

200

90

100

110

120

130

140

150

160

170

ELAPSED TEST TIME, HRS

J. D. NO.
OF EQUIP.
(Page)

2.1 - 2.4 V8
2.1 - 2.3 V8
6.7 V6
7.07 V6
2.1 - 2.1 V10

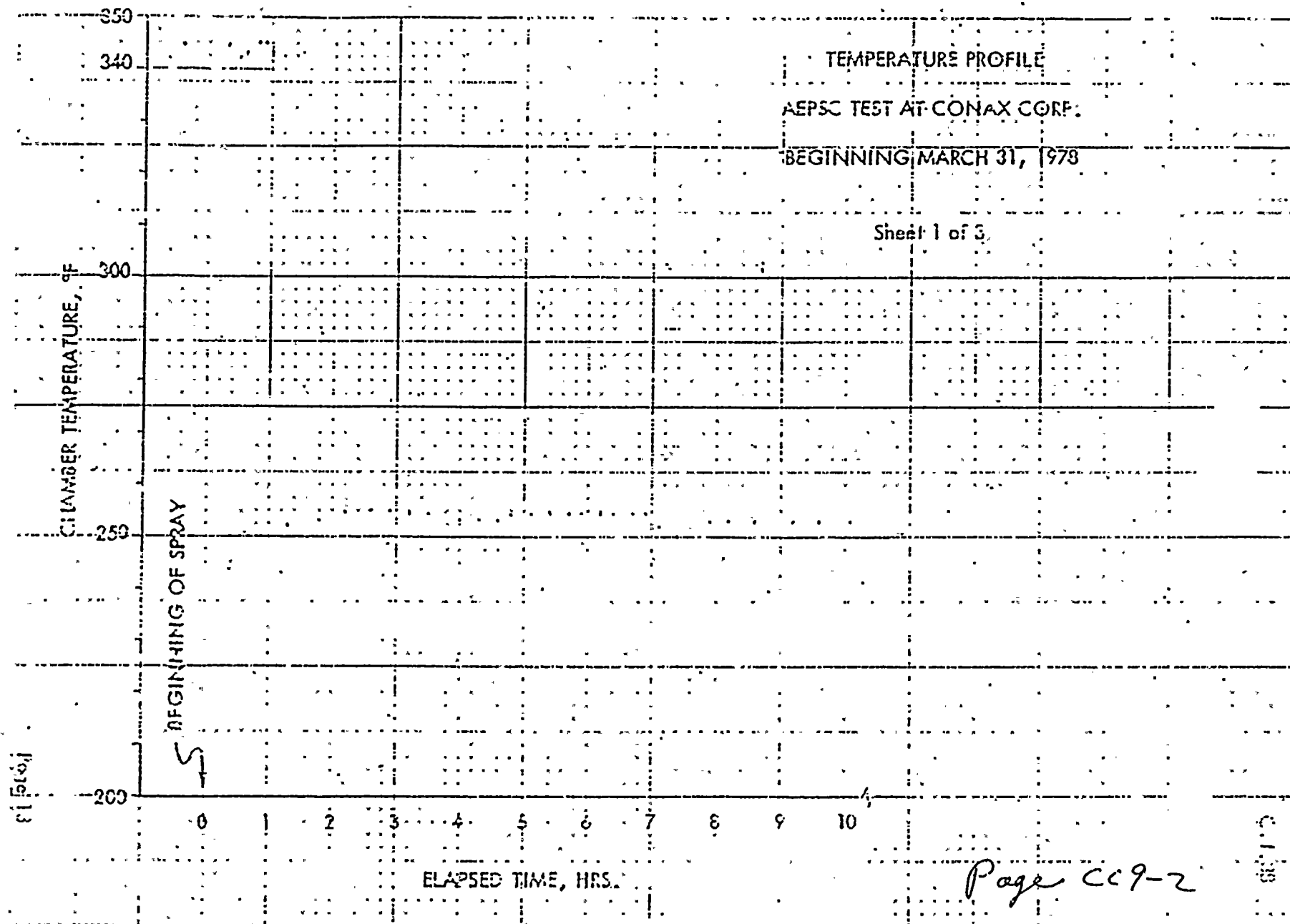
EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VAR1005</i>	Operating Time	<i>1 DAY</i>	<i>116 HRS.</i>	<i>NOTE A</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
PLANT ID NO: <i>VAR1005</i>	Temperature (°F)	<i>Fig 02.9-1, 2</i> <i>328.2</i> <i>PEAK</i>	<i>345</i>	<i>FSAR APP Q</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
COMPONENT: <i>CONTROL CABLE</i>	Pressure (PSIA)	<i>Fig 1</i> <i>Fig. 2</i>	<i>121.7</i>	<i>AEP 6J04</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
MANUFACTURER: <i>CONTINENTAL WIRE + CABLE CO.</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>8</i>	<i>Seq.</i>	<i>NONE</i>
MODEL NUMBER: <i>Item # 3123</i>	Chemical Spray	<i>2000 PPMB</i> <i>1.14% WT</i> <i>BORIC ACID</i> <i>PH 9-11</i>	<i>2500 PPMB</i> <i>1.43% WT</i> <i>BORIC ACID</i> <i>PH 9-10</i>	<i>T.S</i> <i>314.5</i> <i>314.56</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>16.6</i>	<i>150</i>	<i>WCAP</i> <i>7410-L</i> <i>UOL1</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>	Submergence	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
LOCATION: <i>Outside of Containment</i>							
FLOOD LEVEL ELEV: <i>NA</i> ABOVE FLOOD LEVEL: <i>NA</i>							

*Documentation References:

8, CONAX Corp, Test Report IPS-348

*Notes:

*A) letter J. Tillinghast (AEP) TO K. Knier (NRC).
Dated 4/14/75 and 9-29-75*



Page CC9-2

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C-108

TEMPERATURE PROFILE

AEP5G TEST AT CONAX CORP.

BEGINNING MARCH 31, 1978

Sheet 2 of 3

CHAMBER TEMPERATURE, °F

Page 14

ELAPSED TEST TIME, HRS.

IPS-348
C-1.69

Page CC9-3

TEMPERATURE PROFILE

AEPSC TEST AT CONAX CORP.

BEGINNING MARCH 31, 1978

Sheet 3 of 3.

CHAMBER TEMPERATURE, °F

350

300

250

200

90

100

110

120

130

140

150

160

170

ELAPSED TEST TIME, MIN.

Page 15

IPS-348
C-7-10

Page CC9-4

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM:	Operating Time						
PLANT ID NO:	Temperature (°F)						
COMPONENT:	Pressure (PSIA)						
MANUFACTURER:	Relative Humidity (%)						
MODEL NUMBER:	Chemical Spray						
FUNCTION:	Radiation (10 ⁶ rads)						
ACCURACY: SPEC: DEMON:	Aging (years)						
SERVICE:							
LOCATION:							
FLOOD LEVEL ELEV: ABOVE FLOOD LEVEL:	Submergence						

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ITEM 3064 IS NOT APPLICABLE
TO D.C. COOK UNIT #2.

*Documentation References:

Notes:

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM:	Operating Time						
PLANT ID NO:	Temperature (°F)						
COMPONENT:	Pressure (PSIA)	THIS PAGE LEFT BLANK AS ITEM # 3064 IS NOT APPLICABLE TO D.C. COOK UNIT # 2					
MANUFACTURER:	Relative Humidity (%)						
MODEL NUMBER:	Chemical Spray						
FUNCTION:	Radiation (10 ⁶ rads)						
ACCURACY: SPEC: DEMON:	Aging (years)						
SERVICE:							
LOCATION:							
FLOOD LEVEL ELEV: ABOVE FLOOD LEVEL:	Submergence						

*Documentation References:

Notes:

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>4 MONTHS</i>	<i>>4 MTHS</i>	<i>Table 7.5-2 ESAR</i>	<i>63 10</i>	COMBINATION	NONE
PLANT ID NO: <i>VAR1005</i>	Temperature (°F)	<i>Fig 022.9-1-2 328.2 PEAK</i>	<i>340</i>	<i>FSAR APP G.</i>	<i>10</i>	Seq.	NONE
COMPONENT: <i>INSTRUMENT CABLE</i>	Pressure (PSIA)	<i>Fig 1 FIG. 2</i>	<i>119.7</i>	<i>AEW 6504</i>	<i>10</i>	Seq.	NONE
MANUFACTURER: <i>Samuel Moore and Co</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>10</i>	Seq.	NONE
MODEL NUMBER: <i>ITEM #3075</i>	Chemical Spray	<i>2000PPMB 1-14% WT BORIC ACID PH 9-11</i>	<i>3000PPMB 1-12% WT BORIC ACID PH 9-11</i>	<i>T.S. 3/4.5 3/4.5.6</i>	<i>11</i>	Seq.	NONE
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>95</i>	<i>200</i>	<i>WCAP 7410-L VOL I</i>	<i>10</i>	Seq.	NONE
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>							
LOCATION: <i>IN AND OUT of Containment</i>							
FLOOD LEVEL ELEV: <i>6/2'</i> ABOVE FLOOD LEVEL: <i>NO</i>	Submergence	<i>SUBMERGED</i>	<i>FLOODUP Tubes</i>		<i>61</i>	COMBINATION	NONE

*Documentation References:

- 10. FIRM TEST REPORT F-C3683
- 11. Isomedix CORP. Test Report of May 1976
- 61. FLOODUP TUBE QUALIFICATION PACKET
- 63. REQUIRED TIME QUALIFICATION ANALYSIS

Notes:

* Except for CABLES on NPS-153, MFC + 110, 111, 120, 121, 130, 131, 140, 141 (See Cable Mtg. 1)

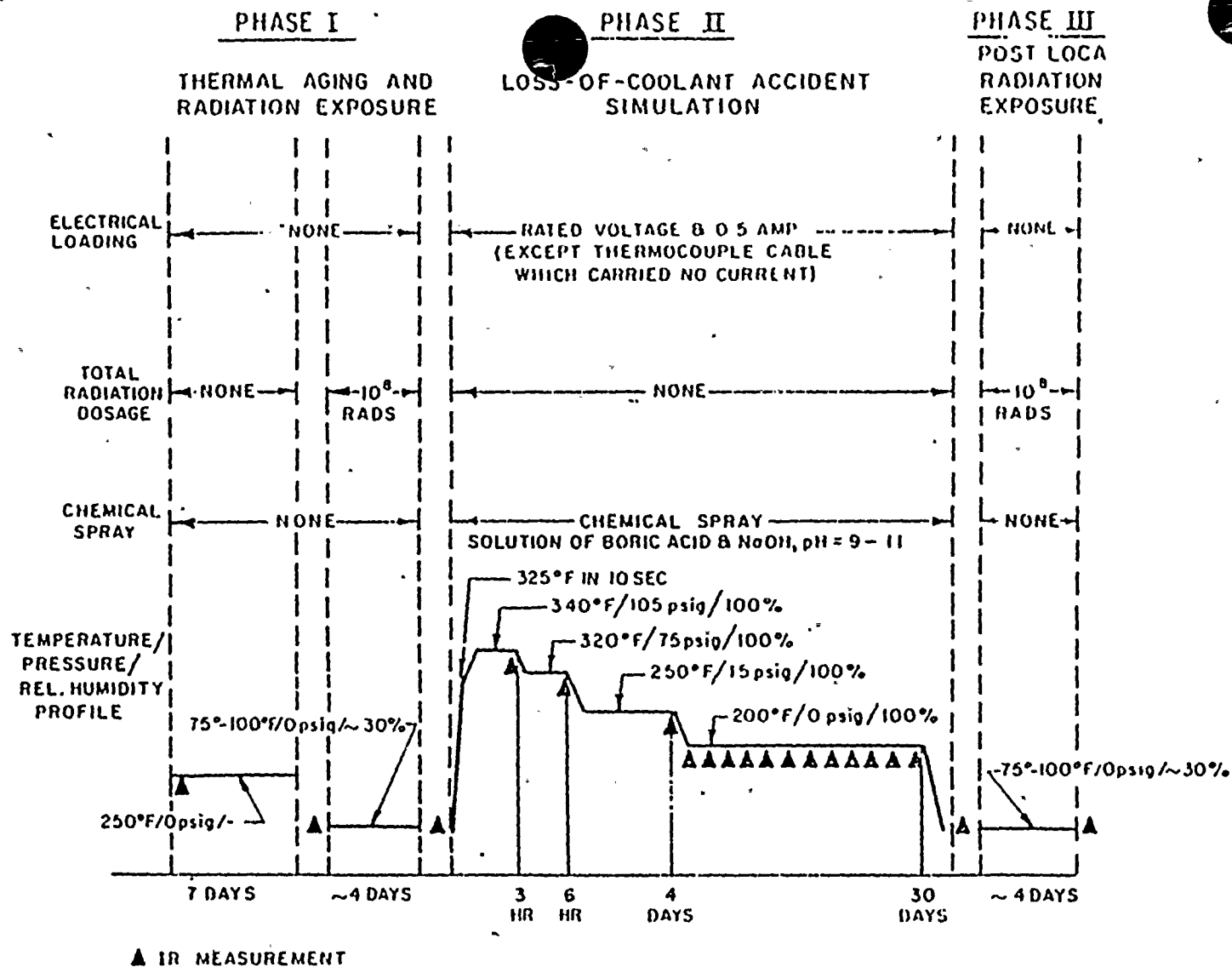


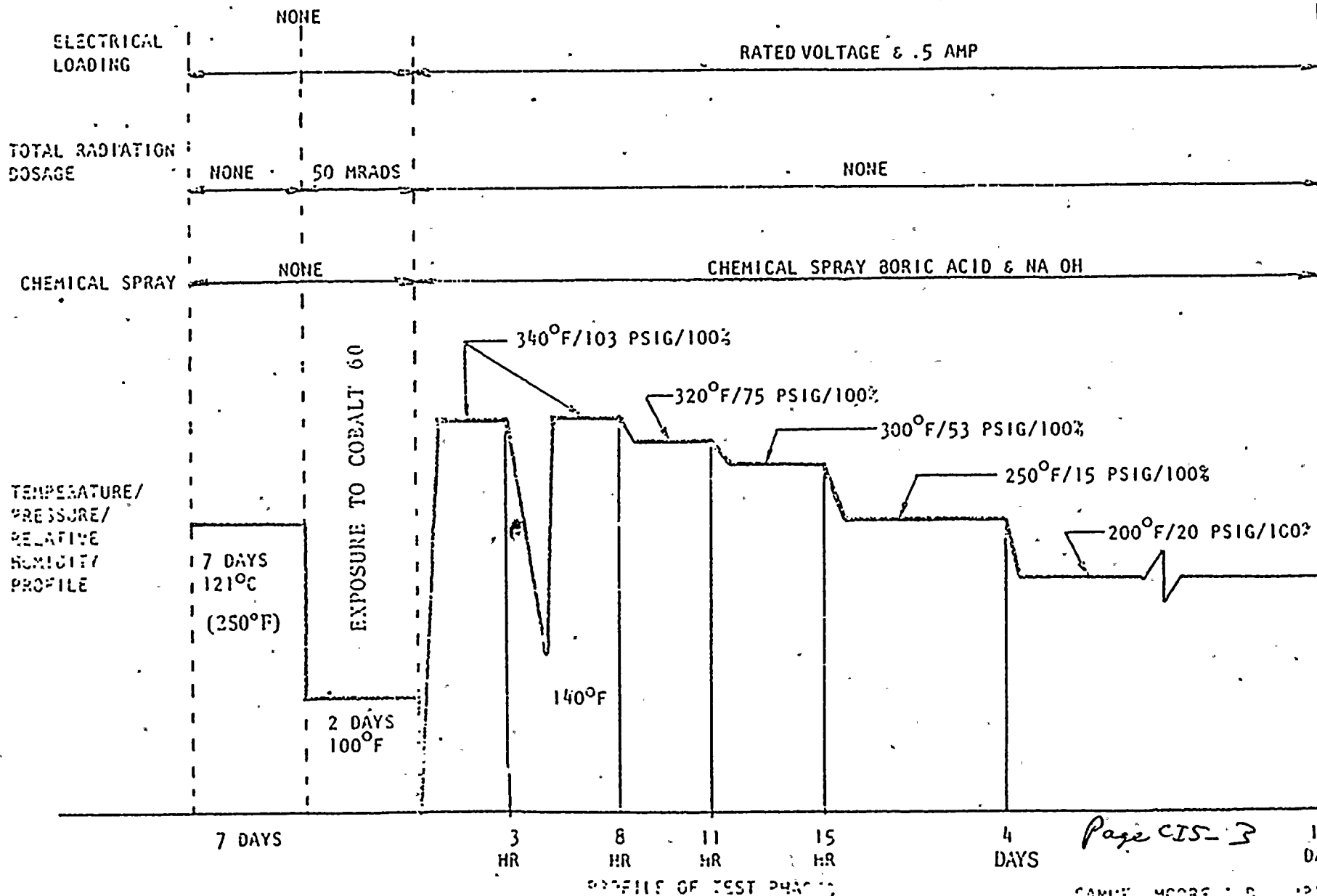
Figure 2. Profile of Test Phases

Page CI 5-2

F-C3683

THERMAL AGING AND
RADIATION EXPOSURE

LOSS-OF-COOLANT ACCIDENT SIMULATION



EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	4 MONTHS	>4.4 MTHS		63 33	COMBINATION	NONE
PLANT ID NO: VARIOUS	Temperature (°F)	FIG 0.27	340	FSAR APP 0	33	SEQ.	NONE
COMPONENT: INSTRUMENT CABLE	Pressure (PSIA)	FIG 0.27	114.7	FSAR APP 0	33	SEQ.	NONE
MANUFACTURER: CONTINENTAL	Relative Humidity (%)	NA	100	NA	33	SEQ.	NONE
MODEL NUMBER: Item #3075	Chemical Spray	NA	NA	NA	NA	NA	NA
FUNCTION: VARIOUS	Radiation (10 ⁶ rads)	4.1	10	59	33	SEQ.	NONE
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: VARIOUS							
LOCATION: Out of Containment							
FLOOD LEVEL ELEV: NA ABOVE FLOOD LEVEL: NA	Submergence	NA	NA	NA	NA	NA	NA

*Documentation References:

33. FIRC TEST REPORT F-C 9935, EXCERPT FROM.
63. REQUIRED TIME QUALIFICATION ANALYSIS

Notes:

59) AEPSC NS4L Calculation DC-D 6420-2.

ITD NO.
OR EQUIP.
(FIR)
14-1115
55-5710
102-10229
105-1089
175-1784
201 S9
204 S9
227-228
CIS, 6, 7



from
Ref.

33. FIRM TEST REPORT F-C 2935, EXCERPT FROM

Type of test: Sequential

gamma Radiation

Steam/

.45 MRAD/hr ; 10 MRAD

340°F, 100 psig, 2 hrs

160°F, , 20 hrs

Item # 3075, 3077 CONTINENTAL WIRE & CABLE Co.

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>4 MONTHS</i>	<i>>4.4 MTHS</i>	<i>FSAR 7.5.2</i>	<i>63</i>	COMBINATION	NONE
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	<i>Fig 022.9-1,2</i> <i>328.2</i> <i>PEAK</i>	<i>345</i>	<i>FSAR APP Q</i>	<i>8</i>	Seq.	NONE
COMPONENT: <i>INSTRUMENT CABLE</i>	Pressure (PSIA)	<i>Fig 1</i> <i>Fig. 2</i>	<i>121.7</i>	<i>AEW 6504</i>	<i>8</i>	Seq.	NONE
MANUFACTURER: <i>Boston Insulated Wire Co</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>8</i>	Seq.	NONE
MODEL NUMBER: <i>Item # 2015</i>	Chemical Spray	<i>2000PPMB</i> <i>1.14% WT BORIC ACID</i> <i>PH 9-11</i>	<i>2500PPMB</i> <i>1.43% WT BORIC ACID</i> <i>PH 9-10</i>	<i>T.S.</i> <i>714.5</i> <i>314.5.6</i>	<i>8</i>	Seq.	NONE
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>95</i>	<i>150</i>	<i>WCAP 7410-1</i> <i>Vol 1</i>	<i>8</i>	Seq.	NONE
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>	Submergence	<i>SUBMERGED</i>	<i>FLOODUP Tubes</i>		<i>61</i>	COMBINATION	NONE
LOCATION: <i>IN AND OUT OF CONTAINMENT</i>							
FLOOD LEVEL ELEV: <i>612'</i> ABOVE FLOOD LEVEL: <i>No</i>							

*Documentation References:

8. CONAX Corp Test Report IPS-348
 61. FLOODUP TUBE QUALIFICATION PACKET
 63. REQUIRED TIME QUALIFICATION ANALYSIS

Notes:

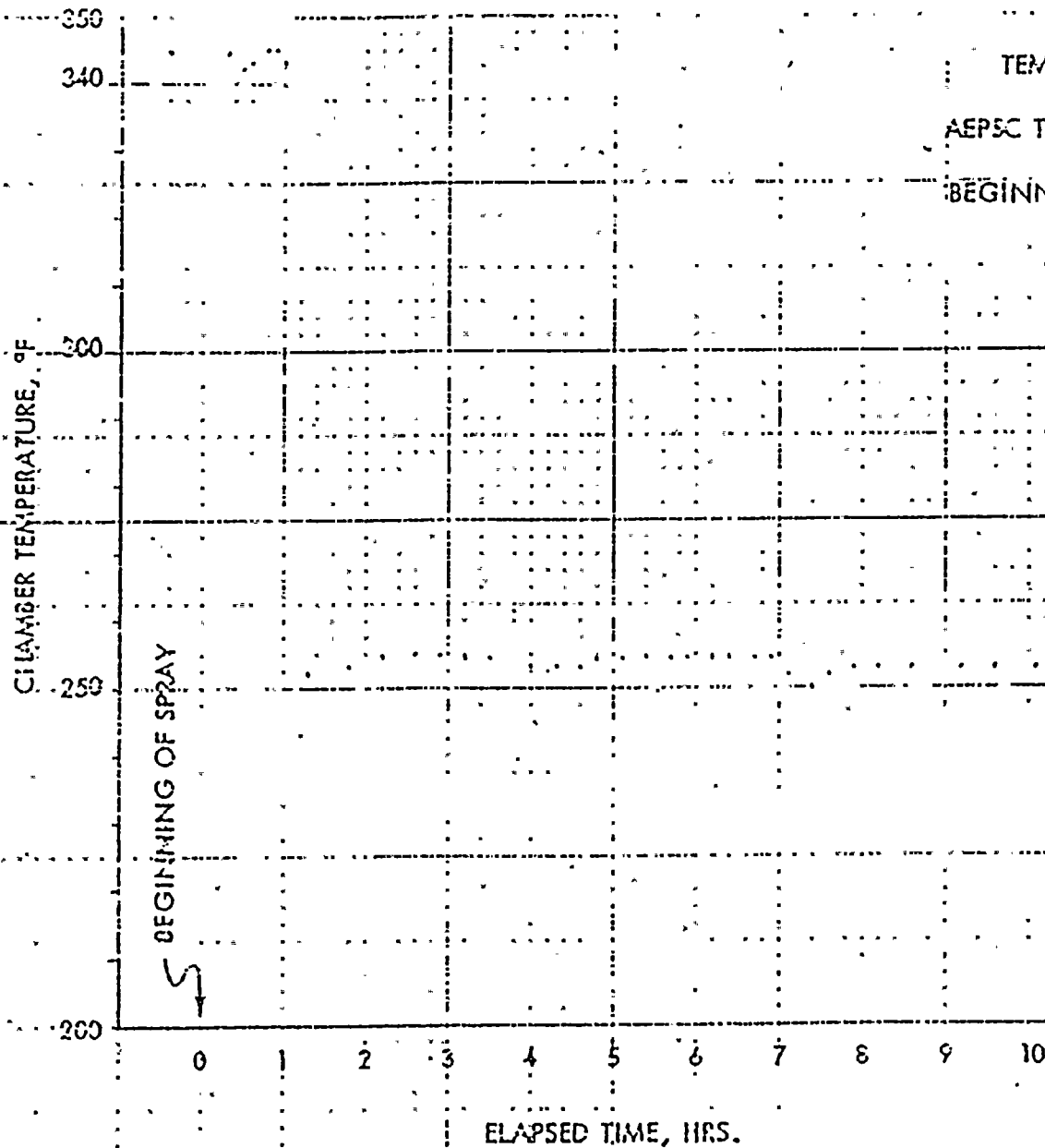
* EXCEPT for CABLES on NPS 153, MFC 110, 111, 120, 121, 130, 131, 140, 141. (See Entry Note 1.)

TEMPERATURE PROFILE

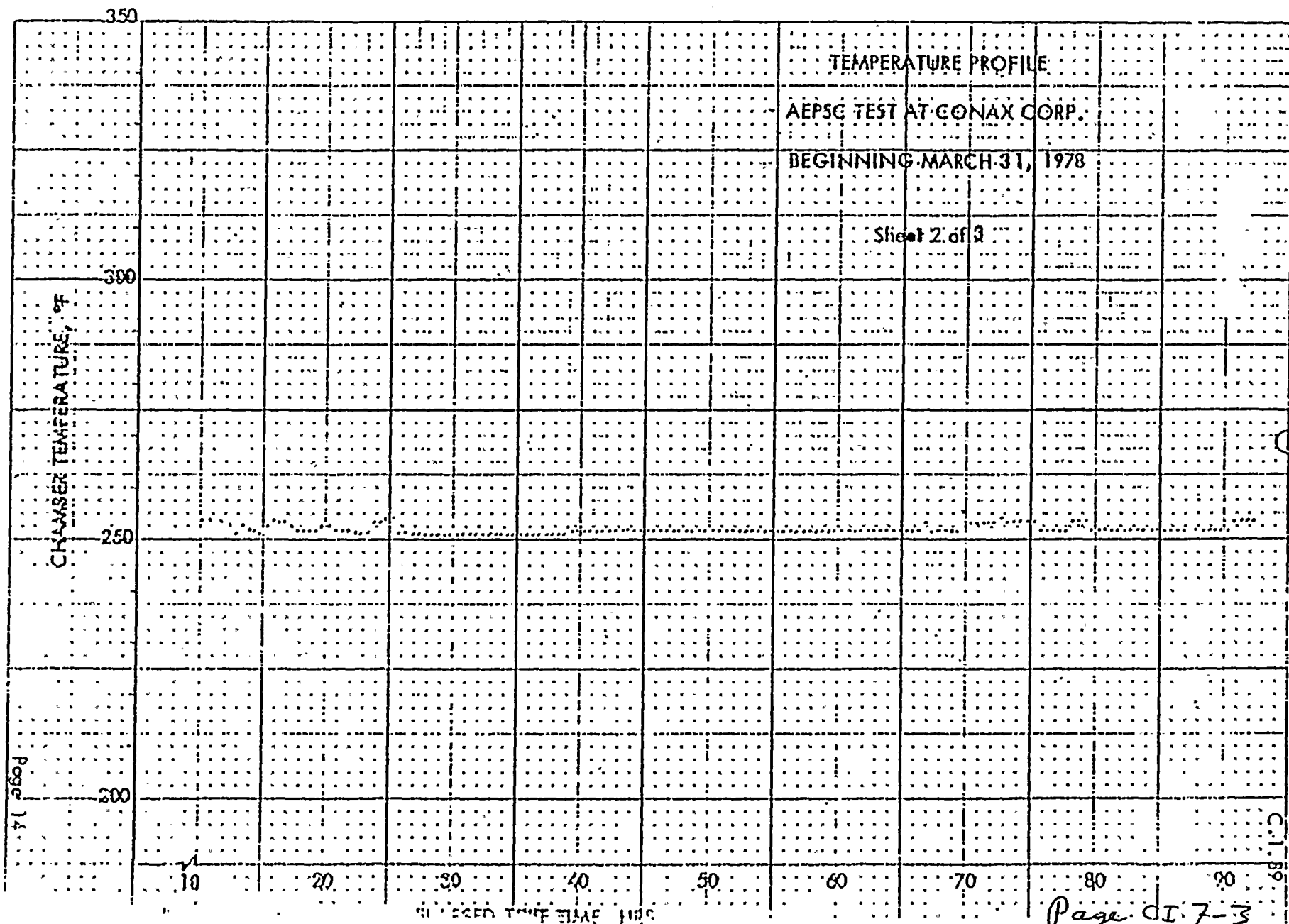
AEPSC TEST AT CONAX CORP.

BEGINNING MARCH 31, 1978

Sheet 1 of 3









TEMPERATURE PROFILE

AEPSC TEST AT CONAX CORP.

BEGINNING MARCH 31, 1976

Sheet 3 of 3

CHAMBER TEMPERATURE, °F

320

280

200

90

100

110

120

130

140

150

160

170

ELAPSED TEST TIME, HRS

115-141
C.I. 40

Page CI 7-4

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>4 MONTHS</i>	<i>>4.4 MTHS</i>	<i>FSAR Table 7.5-2</i>	<i>63 12</i>	<i>COMBINATION</i>	<i>NONE</i>
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	<i>Fig 022.94, 2</i> <i>328.2</i> <i>PEAK</i>	<i>346</i>	<i>FSAR APP Q</i>	<i>12</i>	<i>Seq.</i>	<i>NONE</i>
COMPONENT: <i>INSTRUMENT CABLE</i>	Pressure (PSIA)	<i>Fig 1</i> <i>Fig 2</i>	<i>127.7</i>	<i>AED 6504</i>	<i>12</i>	<i>Seq.</i>	<i>NONE</i>
MANUFACTURER: <i>CERRO WIRE + CABLE CO.</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>12</i>	<i>Seq.</i>	<i>NONE</i>
MODEL NUMBER: <i>Item # 3077</i>	Chemical Spray	<i>2000 PPMB 1.14% WT BORIC ACID PH 9-11</i>	<i>3000 PPMB 1.72% WT BORIC ACID PH 9-11</i>	<i>T.S. 3/4.5 3/4.5.6</i>	<i>12</i>	<i>Seq.</i>	<i>NONE</i>
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>95</i>	<i>200</i>	<i>WCAP 2410-L 1021</i>	<i>12</i>	<i>Seq.</i>	<i>NONE</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>							
LOCATION: <i>IN AND OUT OF CONTAINMENT</i>							
FLOOD LEVEL ELEV: <i>612'</i> ABOVE FLOOD LEVEL: <i>NO</i>	Submergence	<i>SUBMERGED</i>	<i>FLOODUP* TUBES</i>		<i>61</i>	<i>COMBINATION</i>	<i>NONE</i>

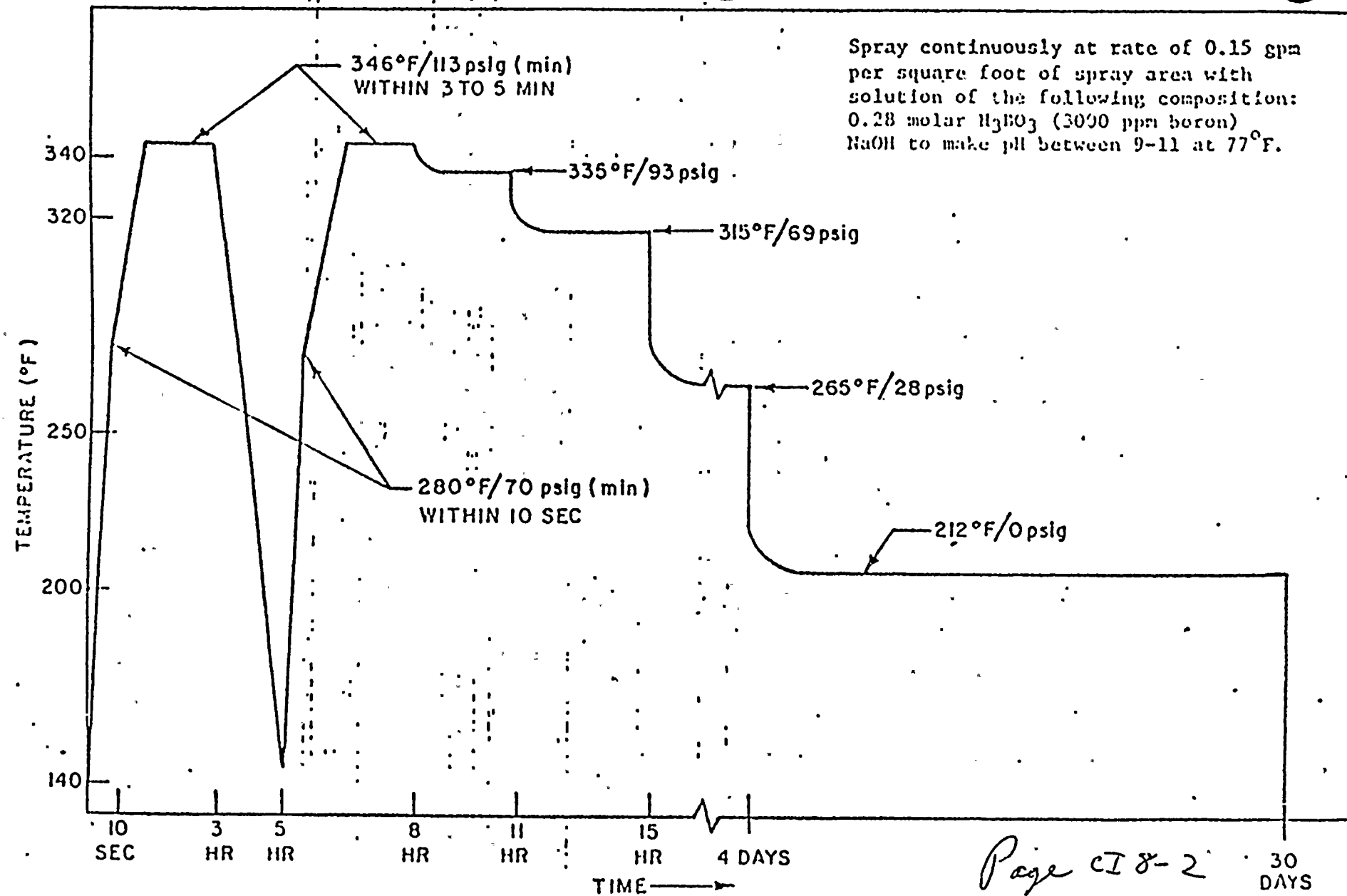
*Documentation References:

12. Cerro Wire AND CABLE Test Report of May, 1976
 61. FLOODUP TUBE QUALIFICATION PACKET
 63. REQUIRED TIME QUALIFICATION ANALYSIS

Notes:

* EXCEPT FOR CABLES ON NTP'S, SEE Cable Note 1c.

LOCA Profile



Spray continuously at rate of 0.15 gpm per square foot of spray area with solution of the following composition:
0.28 molar H_2BO_3 (3000 ppm boron)
NaOH to make pH between 9-11 at 77°F.

LOCA PROFILE

Page CI 8-2

7.

J. B. DO-
OF E (P)
(P)
13
17-2.10
76-81
105
130-154
173-174
179-180
189-191
193-200
202-203

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	4 MONTHS	>4.4 MTHS	ESAR Table 7.5-2	63 10	COMBINATION	NONE
PLANT ID NO: VARIOUS	Temperature (°F)	Fig 022.9-1,2 328.2 PEAK	340	ESAR APP Q	10	Seq.	NONE
COMPONENT: INSTRUMENT CABLE	Pressure (PSIA)	Fig 1 Fig. 2	119.7	AEW 6504	10	Seq.	NONE
MANUFACTURER: Samuel Moore and Co.	Relative Humidity (%)	100	100		10	Seq.	NONE
MODEL NUMBER: ITEM #3077	Chemical Spray	2000 PPMB 1.14% WT BORIC ACID PH 9-11	3000 PPMB 1.72% WT BORIC ACID PH 9-11	T.S. 314.5 314.5.6	11	Seq.	NONE
FUNCTION: VARIOUS	Radiation (10 ⁶ rads)	95	200	WCAH 74.0-L Vol 1	10	Seq.	NONE
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: VARIOUS	Submergence	SUBMERGED	FLOODUP Tubes *		61	COMBINATION	NONE
LOCATION: IN AND OUT OF CONTAINMENT							
FLOOD LEVEL ELEV: 612.1 ABOVE FLOOD LEVEL: No							

*Documentation References:

10. FIRM Test Report F-C 3683
11. Isomedix Corp. Test Report of May 1976
61. FLOODUP TUBE QUALIFICATION PACKET
63. REQUIRED TIME QUALIFICATION ANALYSIS

Notes:

* Excerpt for CABLES on NTP's. See: Cable Note/c.

PHASE I

THERMAL AGING AND
RADIATION EXPOSURE

PHASE II

LOSS OF-COOLANT ACCIDENT
SIMULATION

PHASE III

POST LOCA
RADIATION
EXPOSURE

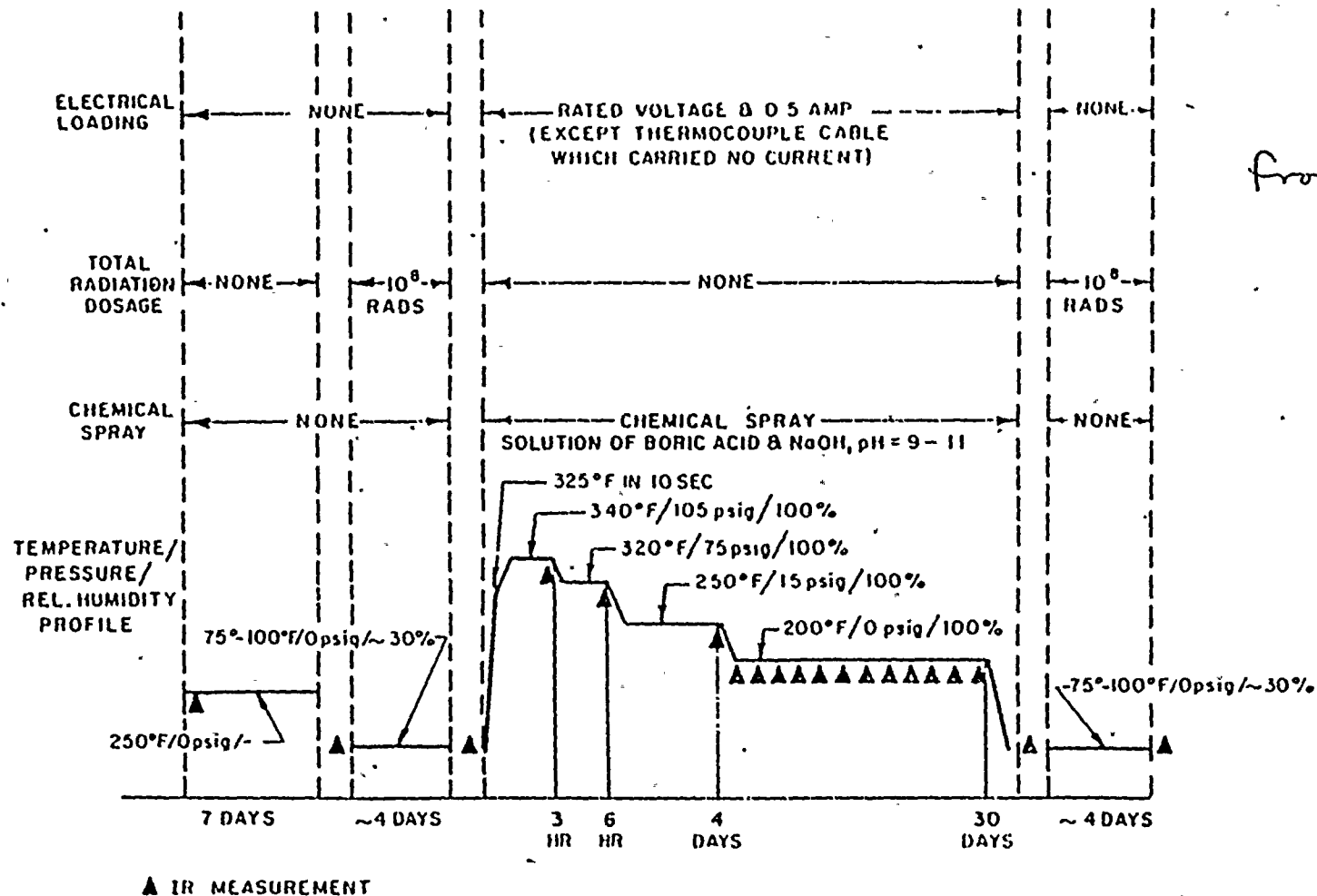
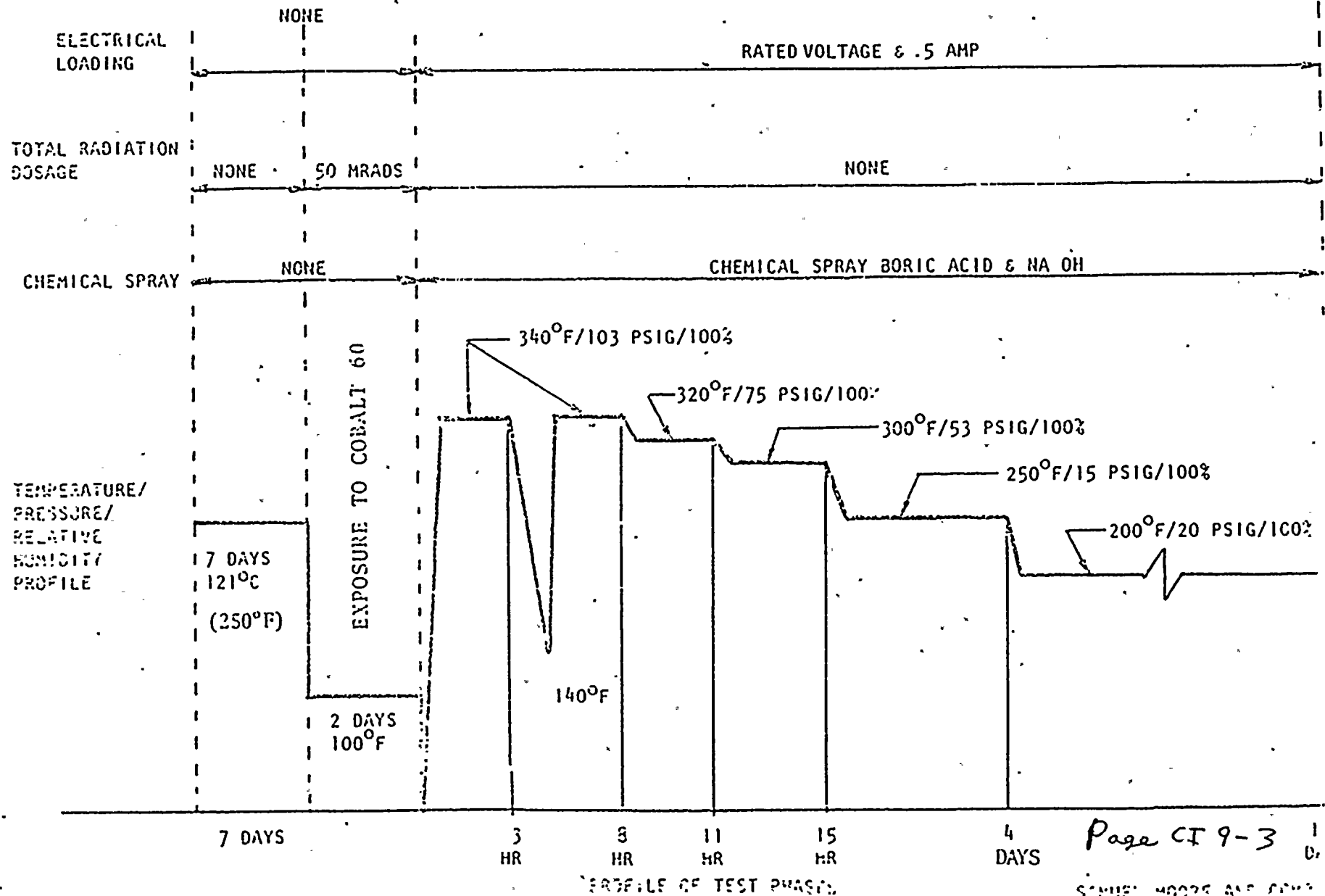


Figure 2. Profile of Test Phases

F-C3683

THERMAL AGING AND
RADIATION EXPOSURE

LOSS-OF-COOLANT ACCIDENT SIMULATION



EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC	QUAL.		
SYSTEM: VARIOUS	Operating Time	4 MONTHS	> 4 MONTHS	FSAR, T. 7.5-2	63 33	COMBINATION	NONE
PLANT ID NO: VARIOUS	Temperature (°F)	FIG 0-27	340	FSAR APP Q	33	SEQ.	NONE
COMPONENT: Instrument CABLE	Pressure (PSIA)	FIG 0-27	114.7	FSAR APP Q	33	SEQ.	NONE
MANUFACTURER: Continental	Relative Humidity (%)	NA	100	NA	33	SEQ.	NONE
MODEL NUMBER: Item # 3077	Chemical Spray	NA	NA	NA	NA	NA	NA
FUNCTION: VARIOUS	Radiation (10 ⁶ rads)	4.1	10	59	33	SEQ.	NONE
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: VARIOUS	Submergence	NA	NA	NA	NA	NA	NA
LOCATION: Out of Containment							
FLOOD LEVEL ELEV: NA							
ABOVE FLOOD LEVEL: NA							

OF E. & N. NO.
(PAGE)

13
17-20
76-81
105
173-174
179-180
189-191
193-200
202-203

*Documentation References:

33. FIRE TEST REPORT F-C 2935, EXCEPT FROM.

63. REQUIRED TIME QUALIFICATION ANALYSIS

Notes:

Cable, Cable temperature 194°F
59) AEPSC NS+L calculation DC-N-6420-2



from
Ref.

33. FIRL TEST REPORT F-C 2935, EXCERPT FROM

Type of test: Sequential

gamma Radiation

Steam/

.45 MRAD/hr ; 10 MRAD

340°F, 100 psig, 2 hrs

160°F, , 20 hrs

Item # 3075, 3077 CONTINENTAL WIRE + CABLE Co.

21. No.
of Equip.
(Page)13
17-20
74-81
105
130-154
173-174
179-180
187-191
193-200
202-203

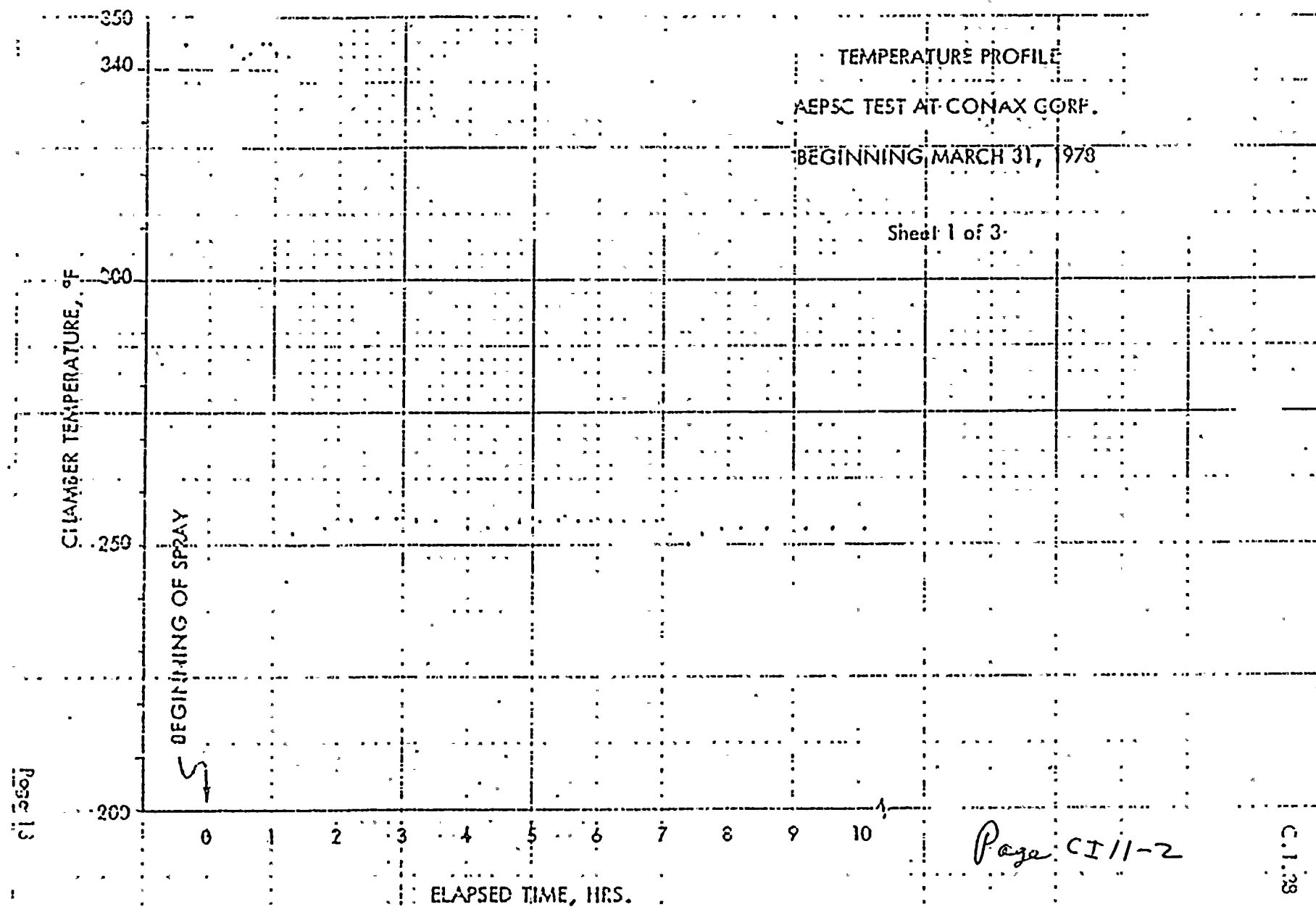
EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>4 MONTHS</i>	<i>>4.4 MTHS</i>	<i>FEAR 1 Table 7.5-2</i>	<i>63</i> <i>8</i>	COMBINATION	NONE
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	<i>FIG 022.9-1.2</i> <i>328.2</i> <i>PEAK</i>	<i>345</i>	<i>FEAR APP Q</i>	<i>8</i>	Seq.	NONE
COMPONENT: <i>INSURUMENT CABLE</i>	Pressure (PSIA)	<i>FIG 1</i> <i>FIG. 2</i>	<i>121.7</i>	<i>AED 604</i>	<i>8</i>	Seq.	NONE
MANUFACTURER: <i>BOSTON INSULATED WIRE CO.</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>8</i>	Seq.	NONE
MODEL NUMBER: <i>Item #3077</i>	Chemical Spray	<i>2000PPMB</i> <i>1.14% WT BORIC ACID</i> <i>PH 9-11</i>	<i>2500PPMB</i> <i>1.43% WT BORIC ACID</i> <i>PH 9-10</i>	<i>T.S.</i> <i>314.5</i> <i>3115.6</i>	<i>8</i>	Seq.	NONE
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>95</i>	<i>150</i>	<i>WCAP 7410-2 Vol 1</i>	<i>8</i>	Seq.	NONE
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>	Submergence	<i>SUBMERGED</i>	<i>FLOODUP Tubes *</i>		<i>61</i>	COMBINATION	NONE
LOCATION: <i>IN AND OUT of CONTAINMENT</i>							
FLOOD LEVEL ELEV: <i>612'</i> ABOVE FLOOD LEVEL: <i>NO</i>							

*Documentation References:

8. CONAX Corp. Test Report TPS-818
61. FLOODUP TUBE QUALIFICATION PACKET
63. REQUIRED TIME QUALIFICATION ANALYSIS

Notes:

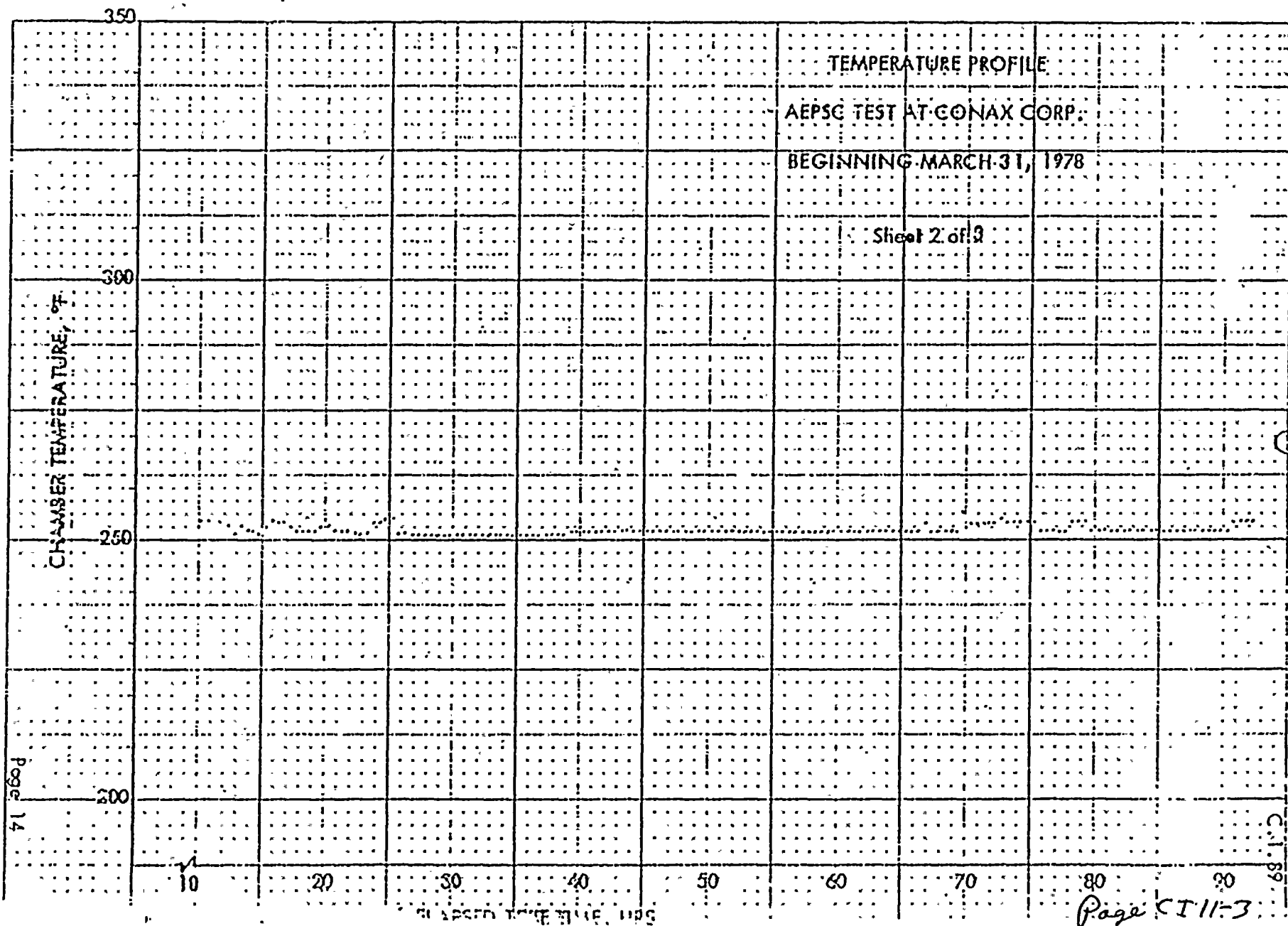
* EXCEPT for CABLES on NTP's: See Cable Note 1c.



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TEMPERATURE PROFILE

AEPSC TEST AT CONAX CORP.

BEGINNING MARCH 31, 1978

Sheet 3 of 3

CHAMBER TEMPERATURE, °F

350

300

250

200

90

100

110

120

130

140

150

160

170

ELAPSED TEST TIME, HRS

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J.D. NO.
OF EQUIP.
(PAGE)
35 V6.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>1 DAY</i>	<i>30 DAYS</i>	<i>FSAR Table 7.5.2</i>	<i>9</i>	<i>Simul</i>	<i>NONE</i>
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	<i>Fig 0-27</i>	<i>357</i>	<i>FSAR App 0</i>	<i>9</i>	<i>Simul.</i>	<i>NONE</i>
COMPONENT: <i>INSTRUMENT CABLE</i>	Pressure (PSIA)	<i>Fig 0-27</i>	<i>84.7</i>	<i>FSAR App 0</i>	<i>9</i>	<i>Simul.</i>	<i>NONE</i>
MANUFACTURER: <i>Raychem Corp.</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>9</i>	<i>Simul.</i>	<i>NONE</i>
MODEL NUMBER: <i>Item # 311</i>	Chemical Spray	<i>2000 PPMB 1.14% WT. BORIC ACID PH 9-11</i>	<i>3000 PPMB 1.72% WT BORIC ACID PH 9.5-11</i>	<i>T.S. 3/4.5 3/4.5</i>	<i>9</i>	<i>Simul.</i>	<i>NONE</i>
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>28</i>	<i>200</i>	<i>WCAP 7410-L Vol 1</i>	<i>9</i>	<i>Simul.</i>	<i>NONE</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)				<i>11</i>		
SERVICE: <i>VARIOUS</i>	Submergence	<i>SUBMERGED</i>	<i>FLOOD-UP TUBES</i>		<i>9</i>	<i>COMBINATION</i>	<i>NONE</i>
LOCATION: <i>IN AND OUT OF CONTAINMENT</i>							
FLOOD LEVEL ELEV: <i>612'</i> ABOVE FLOOD LEVEL: <i>No</i>							

*Documentation References:

9. Firl Test Report F-C4033-1
61 FLOOD UP TUBE QUALIFICATION PACKET

Notes:

From Ref. 9. Qualified by FIRL Test Report F-C4033-1 of Jan. 1975

Type of Test: Simultaneous, gamma radiation
steam
chemical spray

Test Profile:

.2 - .3 Mrads/hr, 200 Mrads
351°F, 70 psig for 10 hrs
275°F, 31 psig for 4.5 days
212°F, 10 psig for 26 days

Chemical Spray: 3000 ppm boron as boric acid, .064 molar
sodium thiosulfate and adjusted with
Na OH to a PH of 10.5 at room temp.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	1 year	See Notes	FSAR Table 7.5.2	9	Simul.	NA
PLANT ID NO: VARIOUS	Temperature (°F)	Fig 022.9-1.2 328.2 PEAK	357	FSAR APP Q	9	Simul.	NA
COMPONENT: Instrument CABLE	Pressure (PSIA)	Fig 1 Fig. 2	84.7	APP Q 650Y	9	Simul.	NA
MANUFACTURER: Raychem Corp.	Relative Humidity (%)	100	100		9	Simul.	NA
MODEL NUMBER: Item # 3112	Chemical Spray	2000 PPMB 1.14% WT BORIC ACID PH 9-11	2000 PPMB 1.72% WT BORIC ACID PH 9.5-11	T.S. 3/4.5 2/4.5.6	9	Simul.	NA
FUNCTION: VARIOUS	Radiation (10 ⁶ rads)	Fig 4 150	200	FSAR Table 7.5.2.1 50.41	9	Simul.	NA
ACCURACY: SPEC: NA DEMON: NA	Aging (years)	40	302°F/70 days Yes		9	Simul.	NA
SERVICE: VARIOUS	Submergence		Yes		9	Simul.	NA
LOCATION: In and Out of Containment							
FLOOD LEVEL ELEV: 612'							
ABOVE FLOOD LEVEL: 100'							

*Documentation References:

9. FIRM Test Report F-C4033-1

Notes:

1) containment temp 2.78 hrs after accident at 185°F (Fig 7, App N, FSAR). cable temp rising 194°F.



From Ref. 9. Qualified by FIRL Test Report F-C4033-1 of Jan. 1975 9

Type of Test: Simultaneous, gamma radiation
steam
chemical spray

Test Profile:

.2 - .3 Mrads/hr, 200 Mrads
351°F, 70 psig for 10 hrs
275°F, 31 psig for 4.5 days
212°F, 10 psig for 26 days

Chemical Spray: 3000 ppm boron as boric acid, .064 molar
sodium thiosulfate and adjusted with
Na OH to a PH of 10.5 at room temp.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	1 DAY	See Notes	Note 1	Note 1 & 2	Eng'g Review	NONE
PLANT ID NO: VARIOUS	Temperature (°F)	Fig 0-27	See Note 2	FSAR APP 0	Note 2	Eng'g Review	NONE
COMPONENT: Instrument CABLE	Pressure (PSIA)	Fig 0-27	See Note 2	FSAR APP 0	Note 2	Eng'g Review	NONE
MANUFACTURER: Continental	Relative Humidity (%)	NA	NA	NA	NA	NA	NA
MODEL NUMBER: Item # 3069	Chemical Spray	NA	NA	NA	NA	NA	NA
FUNCTION: VARIOUS	Radiation (10 ⁶ rads)	4.1	10	59	Note 1	Eng'g Review	NONE
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: VARIOUS	Submergence	NA	NA	NA	NA	NA	NA
LOCATION: Outside containment							
FLOOD LEVEL ELEV: ABOVE FLOOD LEVEL: NA							

*Documentation References:

Notes:

Note 1) As per TABLE C-1 App. C to NRC IE Bulletin 7901B,
CABLE insulation material (XLPE is good for 10 MRADS)

2) CABLE Temp rating: equals 90°C (194°F); 230°F for 10 secs and 11.5 psig for .1 sec
does not represent a challenge to the cable mechanical or electrical quality.

59) AEPSC NS+L CALCULATION DC-10-6420-2

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c) Letter from J. Tillinghast (AEP) to K. Kniel (NRC) dated 4-14-75 + 9-29-75.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>1 YEAR</i>		<i>1</i>			<i>NONE</i>
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	<i>Fig 0-27</i>	<i>See Note 2</i>	<i>FSAR APP 0</i>	<i>Note 2</i>	<i>Engineering Review</i>	<i>NONE</i>
COMPONENT: <i>Power Cables</i>	Pressure (PSIA)	<i>Fig 0-27</i>	<i>See Note 2</i>	<i>FSAR APP 0</i>	<i>Note 2</i>	<i>Engineering Review</i>	<i>NONE</i>
MANUFACTURER: <i>Essex</i>	Relative Humidity (%)	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
MODEL NUMBER: <i>Item #324</i>	Chemical Spray	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>4.1</i>	<i>10</i>	<i>59</i>	<i>See Note 1</i>	<i>Engineering Review</i>	<i>NONE</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>	Submergence	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
LOCATION: <i>Outside Containment</i>							
FLOOD LEVEL ELEV: <i>NA</i> ABOVE FLOOD LEVEL: <i>NA</i>							

*Documentation References:

Notes:

Note 1: *As per TABLE C-1 App C₁ to NRC IE Bulletin 7901B,*

CABLE insulation material (EPR-Nesprene) is good for 10 Mrads) AND ≥ 10 yrs AGING

2) Cable temp rating: equals 90°C (194°F). 230°F for 10 sec and 11.5 psig for .1 sec does not represent a challenge to the cable mechanical or electrical quality.

59) AEPSC NS&L CALCULATION DC-N 6420-2

Page *CP-1-1*

4) Letters from J. Tillinghast (AEP) to K. Knick (NRC) dated 4-14-75 & 9-29-75.

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892 V6
893 V6
894 V6
895 V6
896 V6
897 V6
898 V6
899 V6
900 V6
901 V6
902 V6
903 V6
904 V6
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918 V6
919 V6
920 V6
921 V6
922 V6
923 V6
924 V6
925 V6
926 V6
927 V6
928 V6
929 V6
930 V6
931 V6<

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>1 year</i>	<i>>1.1 YRS</i>	<i>NOTE A BELOW</i>	<i>63 40</i>	<i>COMBINATION</i>	<i>NONE</i>
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	<i>Fig 0-27</i>	<i>250</i>	<i>FSAR APP.</i>	<i>40</i>	<i>Sep.</i>	<i>NONE</i>
COMPONENT: <i>Power CABLE</i>	Pressure (PSIA)	<i>Fig 0-27</i>	<i>14.7</i>	<i>FSAR APP.</i>	<i>40</i>	<i>Sep.</i>	<i>NONE</i>
MANUFACTURER: <i>Cyprus</i>	Relative Humidity (%)	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
MODEL NUMBER: <i>Item #324</i>	Chemical Spray	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>16.6</i>	<i>200</i>	<i>59</i>	<i>38</i>	<i>Sep.</i>	<i>NONE</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>	Submergence	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
LOCATION: <i>Out of Containment</i>							
FLOOD LEVEL ELEV: <i>NA</i> ABOVE FLOOD LEVEL: <i>NA</i>							

*Documentation References:

38. Cyprus Statement of 6-16-76
 40. Cyprus Report No. 3525
 63. REQUIRED TIME QUALIFICATION ANALYSIS

Notes:

A) Letter J Tillinghast (AEP) to K Knier (NRC) dated 4/14/75 & 9/25/75

59) AEPSC NS&L Calculation DC-N 6420-2

from
Ref.
#0.

Cypres Report No. 35.25

Item #324,325

Air Oven Test: 168hrs at 250°F



T. D. AD-
OF EQUIP.
(P. 2)
21 V8

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	1 DAY	> 1 DAY	NOTE A Below	63 40	Sep.	NONE
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	Fig 0-27	250	FSAR APP. O	40	Sep.	NONE
COMPONENT: <i>Power Cable</i>	Pressure (PSIA)	Fig 0-27	14.7	FSAR APP. O	40	Sep	NONE
MANUFACTURER: <i>CYPRUS</i>	Relative Humidity (%)	NA	NA	NA	NA	NA	NA
MODEL NUMBER: <i>Item #325</i>	Chemical Spray	NA	NA	NA	NA	NA	NA
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	16.6	200	59	42	Sep.	NONE
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>	Submergence	NA	NA	NA	NA	NA	NA
LOCATION: <i>Out of Containment</i>							
FLOOD LEVEL ELEV: <i>NA</i>							
ABOVE FLOOD LEVEL: <i>NA</i>							

*Documentation References:

- 40. Cyprus Report No. 3525
- 42. Cyprus Statement of 6-21-76
- 63. REQUIRED TIME QUALIFICATION PACKET

Notes:

- 1) 230°F for 10 sec and 11.5 spig for 1 sec do not challenge the cable mech. or elect. quality. cable temp rating = 192°F.
- 59) AEPSC NS&L CALCULATION DC-N-6420-2.
- A) Letter from J. Tillinghast to K. Knief (NRC) dated 4-14-75 & 9-28-75

from
Ref.
40.

Cyprus Report No. 3525

Item #324,325

Air Oven Test: 168hrs at 250°F

Page CP3-2



EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i> PLANT ID NO: <i>VARIOUS</i> COMPONENT: <i>Power Cable</i> MANUFACTURER: <i>CYPRUS</i> MODEL NUMBER: <i>Item 347</i> FUNCTION: <i>VARIOUS</i> ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i> SERVICE: <i>VARIOUS</i> LOCATION: <i>IN CONTAINMENT</i> FLOOD LEVEL ELEV: <i>612'</i> ABOVE FLOOD LEVEL:	Operating Time	<i>1 YEAR</i>	<i>> 1.1 YR</i>	<i>FSAR Table 7.5-2</i>	<i>63 35</i>	<i>COMBINATION</i>	<i>NONE</i>
	Temperature (°F)	<i>FIG 13.13-1</i>	<i>303</i>	<i>FSAR APP N</i>	<i>35</i>	<i>SEQ.</i>	<i>NONE</i>
	Pressure (PSIA)	<i>FIG 1 FIG 2</i>	<i>80.7</i>	<i>AEW 6504</i>	<i>35</i>	<i>SEQ.</i>	<i>NONE</i>
	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>35</i>	<i>SEQ.</i>	<i>NONE</i>
	Chemical Spray	<i>2000PPMB 1.14% WT BOPIC ACID PH 9-11</i>	<i>2000PPMB 1.14% WT BOPIC ACID PH 9.0</i>	<i>T.S 3/4.5 3/4.5.6</i>	<i>35</i>	<i>SEQ.</i>	<i>NONE</i>
	Radiation (10 ⁶ rads)	<i>150</i>	<i>300</i>	<i>WCAP 2410-L VOL 1</i>	<i>35</i>	<i>SEQ.</i>	<i>NONE</i>
	Aging (years)						
	Submergence	<i>SUBMERGED</i>	<i>FLOOD UP TUBES</i>		<i>61</i>	<i>COMBINATION</i>	<i>NONE</i>

*Documentation References:

Notes:

35. FIRC TEST REPORT FC 3016
 61. FLOOD UP TUBE QUALIFICATION PACKET
 63. REQUIRED TIME QUALIFICATION ANALYSIS

 I.D. NO.
 OF EQUIP
 (Page)

 120-123
 FI, HI,

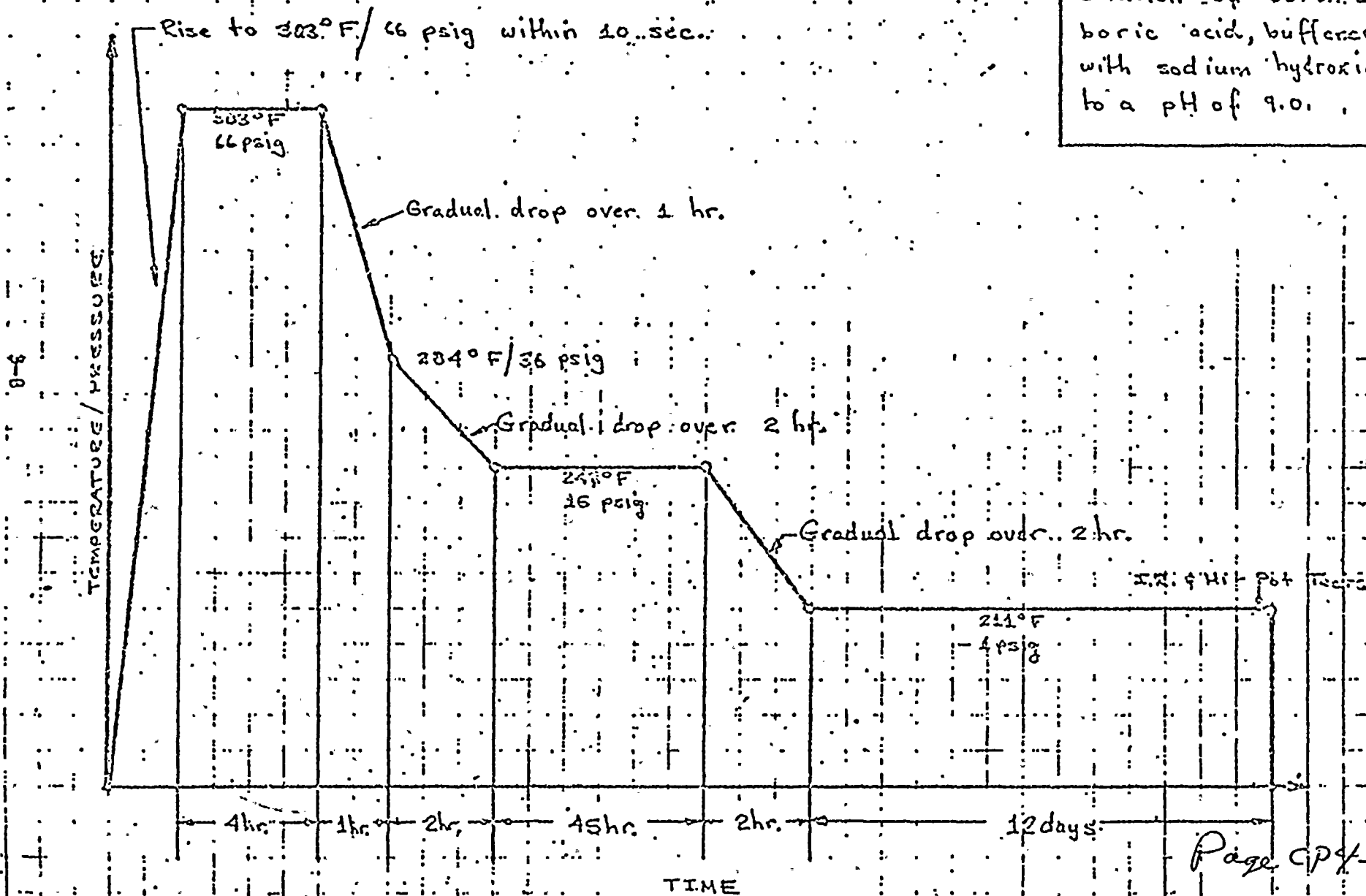
From Re 5.

FIRL TEST REPORT F-C 3016

Sequential Test

RADIATION: 300 MRAD

Chemical spray maintained during entire test: 2000 ppm solution of boric acid, buffered with sodium hydroxide to a pH of 9.0.



I.D. NO.
OF EQUIP.
(P. 792)120-123
FI, HI

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time.	<i>1 year</i>	<i>>1.1 YRS</i>	<i>7.5-2</i> <i>TABLE</i> <i>ESAR</i>	<i>63</i> <i>5</i>	COMBINATION	NONE
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	<i>FIG 022.9-1,2</i> <i>328.2</i> <i>PEAK</i>	<i>340</i>	<i>ESAR</i> <i>APP</i> <i>Q.</i>	<i>5</i>	Simul.	NONE
COMPONENT: <i>Power CABLE</i>	Pressure (PSIA)	<i>FIG 1</i> <i>FIG. 2</i>	<i>119.7</i>	<i>AEW</i> <i>6504</i>	<i>5</i>	Simul.	NONE
MANUFACTURER: <i>ANACONDA</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>5</i>	Simul.	NONE
WIRE + CABLE CO	Chemical Spray	<i>2000 PPMB</i> <i>1.14% WT.</i> <i>BORIC ACID</i> <i>PH 9-11</i>	<i>3000 PPMB</i> <i>1.72% WT</i> <i>BORIC ACID</i> <i>PH 9.5</i>	<i>T.S.</i> <i>3/4.5</i> <i>3/4.5.6</i>	<i>5</i>	Simul.	NONE
MODEL NUMBER: <i>Item # 347</i>	Radiation (10 ⁶ rads)	<i>150</i>	<i>200</i>	<i>WCAP</i> <i>7410-L</i> <i>VDL1</i>	<i>5</i>	Simul.	NONE
FUNCTION: <i>VARIOUS</i>	Aging (years)						
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>							
SERVICE: <i>VARIOUS</i>							
LOCATION: <i>IN AND OUT</i> <i>OF CONTAINMENT</i>							
FLOOD LEVEL ELEV: <i>612'</i> ABOVE FLOOD LEVEL: <i>YES NO</i>	Submergence	<i>SUBMERGED</i>	<i>FLOODUP</i> <i>TUBES</i>	<i>61</i>		COMBINATION	NONE

*Documentation References:

5. FIRM TEST REPORT F.C 3341
 61. FLOODUP TUBE QUALIFICATION PACKET
 63. REQUIRED TIME QUALIFICATION ANALYSIS

Notes:

from Ref 5. Qualified by Franklin Institute Research Laboratory
(FIRL) Test Report #F-C3341, Jan. 1973.

Type of Test: Simultaneous, gamma radiation
steam
chemical spray

Test Profile:

.51 Mrads/hr, 200 Mrads
340°F, 105 psig for 3 hrs
320°F, 75 psig for 3 hrs
250°F, 15 psig for 4 days
210°F, 5 psig for 9 days

Chemical Spray: Solution of boric acid
and Na OH, PH = 9.5

Page CPS-2

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	3 MONTHS	> 3.3 MTHS	ESAB 2 T-200 75-2	63 6	COMBINATION	NONE
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	FIG 022.9-1-2 328.2 PEAK	346	FSAR APP Q	6	Simul.	NONE
COMPONENT: Power Cable	Pressure (PSIA)	FIG 1 FIG. 2	127.7	AED 6504	6	Simul.	NONE
MANUFACTURER: OKONITE	Relative Humidity (%)	100	100		6	Simul.	NONE
MODEL NUMBER: ITEM # 399	Chemical Spray	2000PPMB 1.14% WT BORIC ACID PH 9-11	2000PPMB 1.14% WT BORIC ACID PH 9-11	T.S 314.5 314.56	6	Simul.	NONE
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	85	200	WCAP 7410-L NOL1	6	Simul.	NONE
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: <i>VARIOUS</i>							
LOCATION: IN AND OUT OF CONTAINMENT							
FLOOD LEVEL ELEV: 612' ABOVE FLOOD LEVEL: NO	Submergence	SUBMERGED	Floodup TUBES		61	COMBINATION	NONE

*Documentation References:

- 6. FIRC Test Report F-C 3694
- 61. FLOODUP TUBE QUALIFICATION PACKET
- 63. REQUIRED TIME QUALIFICATION ANALYSIS

Notes:

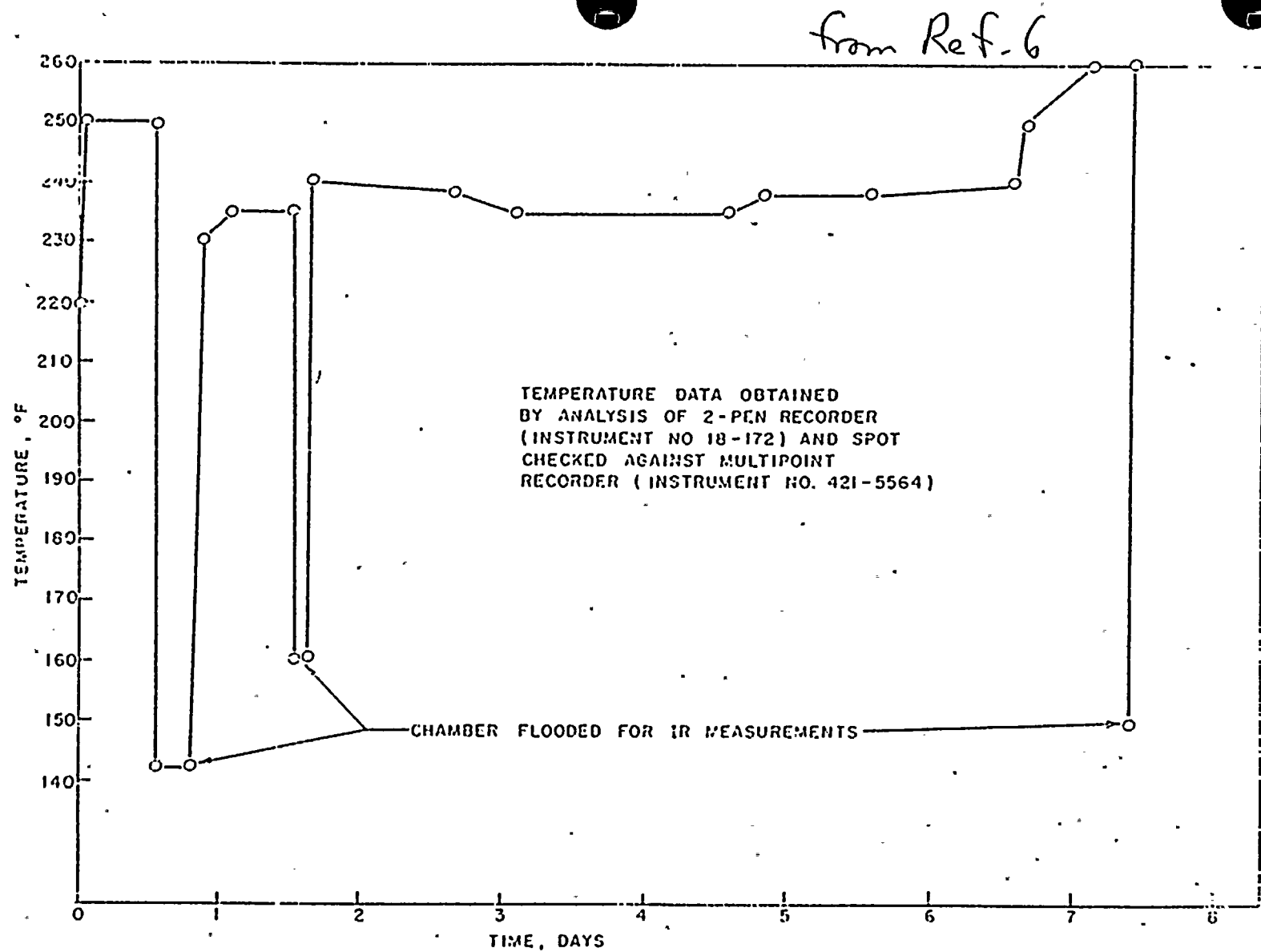


Figure 6. Actual Temperature Profile for Simultaneous Thermal Aging with Radiation .

from Ref. 6

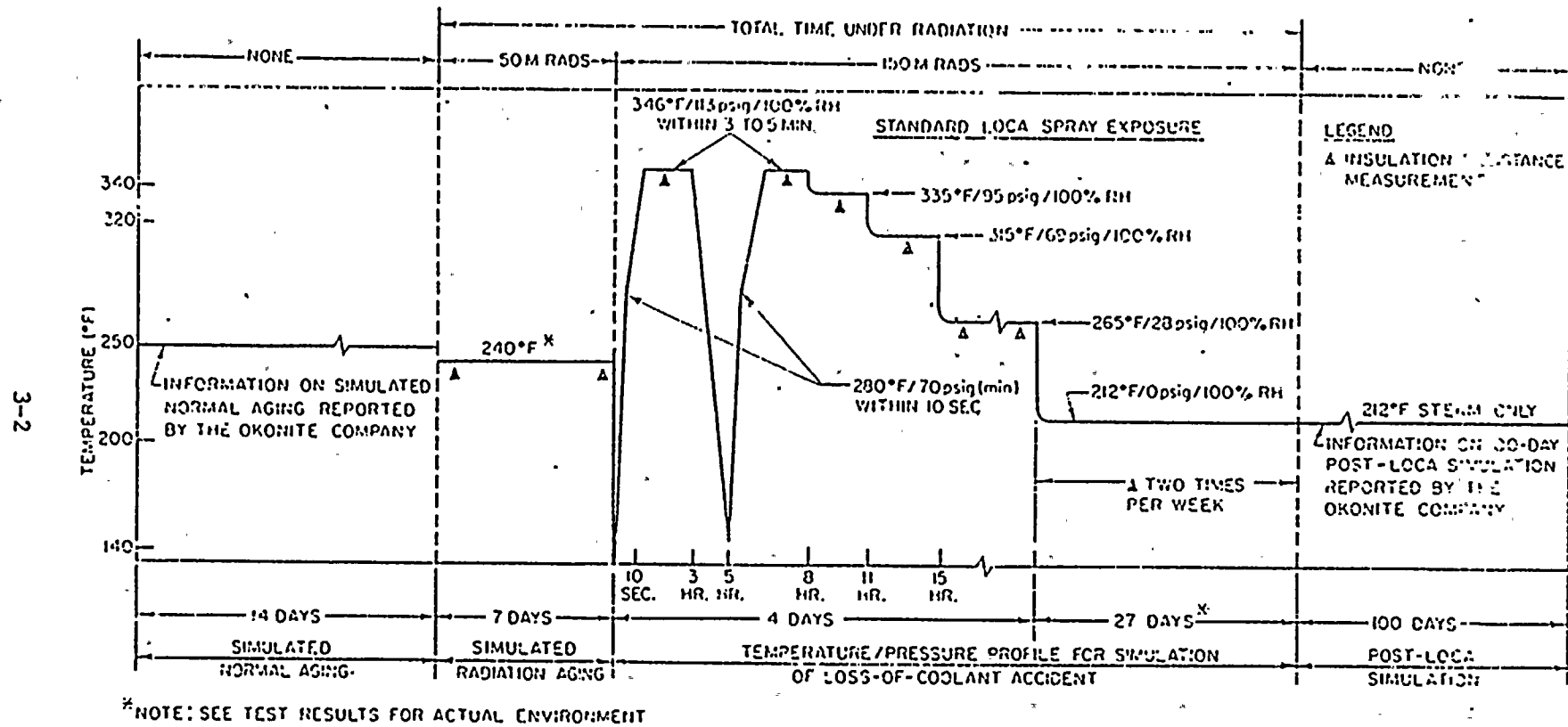


Figure 1. Cable Qualification Test Profile for Life, LOCA and Post-LOCA Simulation

Page CP6-3

F-C3694



I.D. NO.
OF EQUIP.
(MFG)70-15MI
~~100-15MI~~

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	1 year	>1.1 YRS		63 41	COMBINATION	NONE
PLANT ID NO: VARIOUS	Temperature (°F)	Fig 0-27	250	FSAR APP 0	41	Sequential	NONE
COMPONENT: Power & CABLE	Pressure (PSIA)	Fig 0-27	14.7	FSAR APP 0	41	Sequential	NONE
MANUFACTURER: CYPRUS	Relative Humidity (%)	NA	NA	NA	NA	NA	NA
MODEL NUMBER: Item #3102	Chemical Spray	NA	NA	NA	NA	NA	NA
FUNCTION: VARIOUS	Radiation (10 ⁶ rads)	1606	200	see note 13	39	Sequential	NONE
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: VARIOUS	Submergence	NA	NA	NA	NA	NA	NA
LOCATION: outside Containment							
FLOOD LEVEL ELEV: NA							
ABOVE FLOOD LEVEL: NA							

*Documentation References:

39. Statement from Cyprus 8-14-76

41. Cyprus Report No. 3658.

63. REQUIRED TIME QUALIFICATION ANALYSIS

Notes:

1) AEPSC NSPL Calculation DC-N-6420-2. (REF 59)

W.B. 100.
at 600 ft
(P. 100)

74-75
100-101

From Ref. 41. Cypus Report No. 3658

Item # 3102

Air Oven Test: 168 hrs at 250°F

Page CP7-2

Z.D. NO.
OF E.S.P.
(PISC)~~74-75~~
100-101

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	1 year	>1.1 YRS		63 37	COMBINATION	NONE
PLANT ID NO: VARIOUS	Temperature (°F)	F16 0-27	346	FSAR APP Q	37	SEQ.	NONE
COMPONENT: Power CABLE	Pressure (PSIA)	F16 0-27	127.7	FSAR APP Q	37	SEQ.	NONE
MANUFACTURER: OKONITE	Relative Humidity (%)	NA	100		37	SEQ.	NONE
MODEL NUMBER: Item* 3102	Chemical Spray	NA	3000PPMB 1.72% HT BASIC ACID PH 7.5		37	SEQ.	NONE
FUNCTION: VARIOUS	Radiation (10 ⁶ rads)	16.6	200	59	37	SEQ.	NONE
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: VARIOUS							
LOCATION: Out of Containment							
FLOOD LEVEL ELEV: ABOVE FLOOD LEVEL: NA	Submergence	NA	NA	NA	NA	NA	NA

*Documentation References:

37. OKONITE. QUAL. of OKOGUARD Ethylene-Propylene Rubber
Insulation for Nuclear Plant Service.
63. REQUIRED TIME QUALIFICATION ANALYSIS

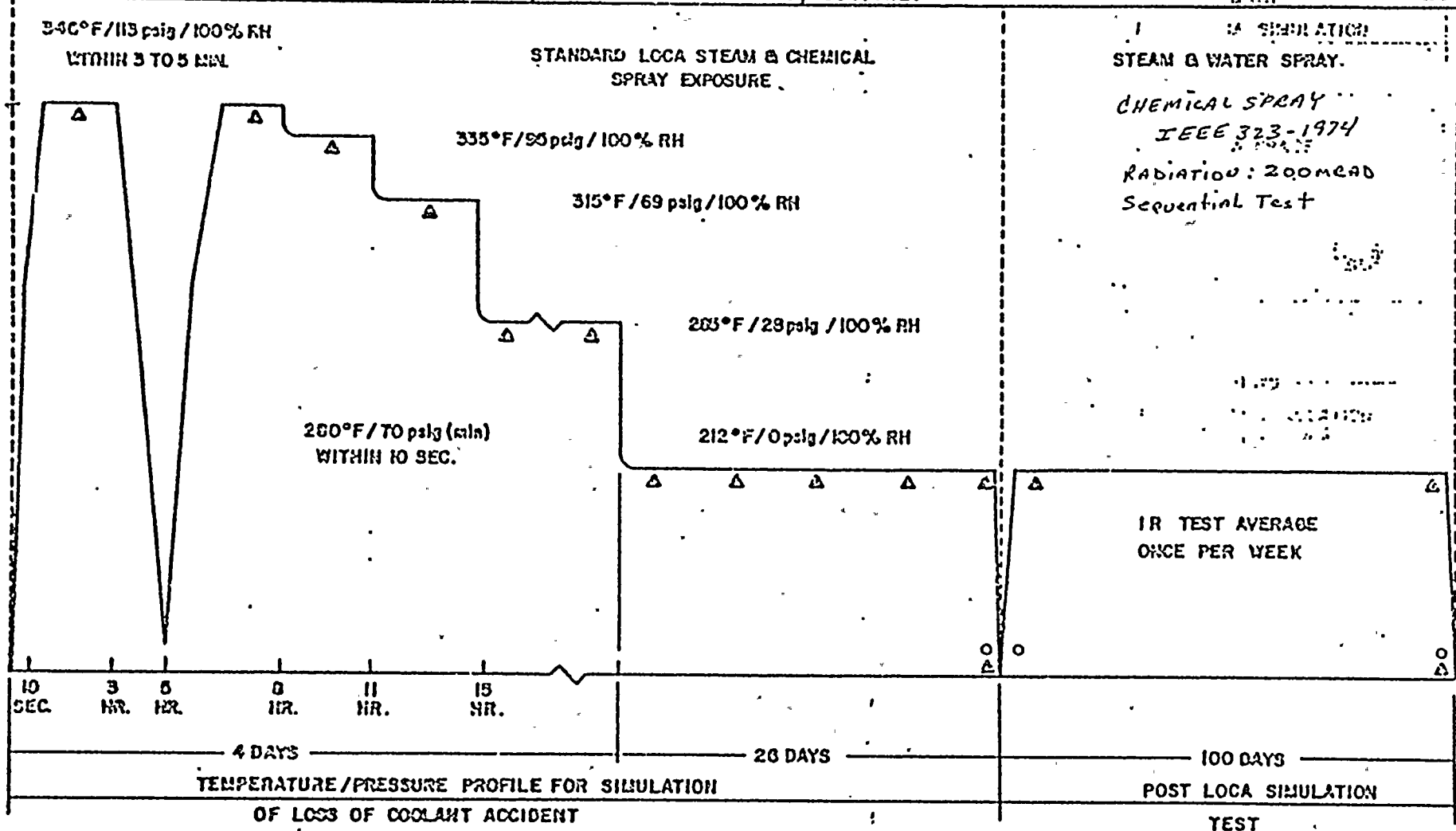
Notes:

59) AEPSC NS&L calculation DC-N-6420-2

FIGURE II CABLE QUALIFICATION TEST PROFILE FOR LIFE &
LOCA CONDITIONS

from Ref. 37

LEGEND: Δ INSULATION RESISTANCE MEASUREMENT ; O AC WITHSTAND TEST, 80V/MIL.



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E.L. NO.
OF BOARD
(1952)
100-6351
83 V2
90 V2
94-95V2
97A V1
718-1074
203-206V1
217 V5
229-231
V9

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	1 DAY	14 DAYS	FSAR Table 7.5.2	5	Simul.	NONE
PLANT ID NO: VARIOUS	Temperature (°F)	F1602.9-1,2 328.2 PEAK	340	FSAR APP Q	5	Simul.	NONE
COMPONENT: Power Cable	Pressure (PSIA)	F15.1 FIG. 2	119.7	AED 6504	5	Simul.	NONE
MANUFACTURER: ANACONDA	Relative Humidity (%)	100	100		5	Simul.	NONE
MODEL NUMBER: ITEM # 3116	Chemical Spray	2000 PPMB 1.14% WT BORIC ACID PH 9-11	3000 PPMB 1.72% WT BORIC ACID PH 9.5	T.S. 3/45 3/4.5.6	5	Simul.	NONE
FUNCTION: VARIOUS	Radiation (10 ⁶ rads)	28	200	WCAP 7410-L Vol 1	5	Simul.	NONE
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: VARIOUS	Submergence	SUBMERGED	FLOODUP TUBE		5	Simul	NONE
LOCATION: IN AND OUT OF CONTAINMENT							
FLOOD LEVEL ELEV: 612' ABOVE FLOOD LEVEL: NO							

*Documentation References:

S. FIRC TEST REPORT F-C 3341.

Notes

From Ref. 5. Qualified by Franklin Institute Research Laboratory
(FIRL) Test Report #F-C3341, Jan. 1973.

Type of Test: Simultaneous, gamma radiation
steam
chemical spray

Test Profile:

.51 Mrads/hr, 200 Mrads
340°F, 105 psig for 3 hrs
320°F, 75 psig for 3 hrs
250°F, 15 psig for 4 days
210°F, 5 psig for 9 days

Chemical Spray: Solution of boric acid
and Na OH, PH = 9.5

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>1 DAY</i>	<i>30 DAYS</i>	<i>FSAR 7.5.2</i>	<i>2.5</i>	<i>Simul.</i>	<i>NONE</i>
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	<i>FIG 22.9-1-2</i> <i>328.2</i> <i>PEAK</i>	<i>346</i>	<i>FSAR APP Q</i>	<i>2.5</i>	<i>Simul.</i>	<i>NONE</i>
COMPONENT: <i>POWER CABLE</i>	Pressure (PSIA)	<i>FIG 1</i> <i>FIG. 2</i>	<i>127.7</i>	<i>AEW 6504</i>	<i>2.5</i>	<i>Simul.</i>	<i>NONE</i>
MANUFACTURER: <i>ESSEX INTERNATIONAL</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>2.5</i>	<i>Simul.</i>	<i>NONE</i>
MODEL NUMBER: <i>Item #3116</i>	Chemical Spray	<i>2000PPMB</i> <i>1.14% WT.</i> <i>BORIC ACID</i> <i>PH 9-11</i>	<i>3000PPMB</i> <i>1.72% WT.</i> <i>BORIC ACID</i> <i>PH 9.5-10.5</i>	<i>7.5.1</i> <i>3/4.5</i> <i>3/4.5.6</i>	<i>2.5</i>	<i>Simul.</i>	<i>NONE</i>
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>28</i>	<i>200</i>	<i>WCAP 7410-1</i> <i>Vol 1</i>	<i>2.5</i>	<i>Simul.</i>	<i>NONE</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>	Submergence	<i>SUBMERGED.</i>	<i>FLOODUP Tubes</i>		<i>61</i>	<i>COMBINATION</i>	<i>NONE</i>
LOCATION: <i>IN AND OUT of Containment</i>							
FLOOD LEVEL ELEV: <i>612'</i> ABOVE FLOOD LEVEL: <i>NO</i>							

*Documentation References:

25. *ISOMEDIX CORP. Test Report of Nov, 1975*

61. *FLOODUP TUBE QUALIFICATION PACKET*

Notes:

from Ref. 25. Qualified by Isomedix Corp. Test Report of November 1975

Type of Test: Simultaneous, gamma radiation
steam
chemical spray

Test Profile:

.2 - .3 Mrads/hr, 200 Mrads
346°F, 113 psig for 5 hrs
265°F, 28 psig for 4 days
215°F, 2 psig for 26 days

Chemical Spray: 3000 ppm boron as boric acid in solution with .064 molar sodium thiosulfate buffered with sodium hydroxide to a PH of 9 to 11.

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58 AD
 OF ELEV.
 (7092)
 60-63
 85
 90
 94-95
 97-98
 118-119
 205 206
 217
 227-231

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>1 DAY</i>	<i>7 1/2 DAYS</i>	<i>FSAR TABLE 7.5-2</i>	<i>7</i>	<i>Seq.</i>	<i>NONE</i>
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	<i>Fig 2.7-1, -2 328.2 PEAK</i>	<i>325</i>	<i>FSAR APP Q</i>	<i>7</i>	<i>Seq.</i>	<i>NONE</i>
COMPONENT: <i>Power Cable</i>	Pressure (PSIA)	<i>Fig 1 Fig. 2</i>	<i>96.7</i>	<i>REW 6504</i>	<i>7</i>	<i>Seq.</i>	<i>NONE</i>
MANUFACTURER: <i>KERITE Co.</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>7</i>	<i>Seq.</i>	<i>NONE</i>
MODEL NUMBER: <i>Item #3116</i>	Chemical Spray	<i>2000PPMB 1.14% WT. BORIC ACID</i>	<i>2600PPMB 1.5% WT. BORIC ACID PH 9.5</i>	<i>T.S. 314.5 314.6</i>	<i>7</i>	<i>Seq.</i>	<i>NONE</i>
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>28</i>	<i>120</i>	<i>WCA-00 7410 LL Vol. 1.1</i>	<i>7</i>	<i>Seq.</i>	<i>NONE</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>							
LOCATION: <i>IN AND Out of Containment</i>							
FLOOD LEVEL ELEV: <i>6/2'</i> ABOVE FLOOD LEVEL: <i>NO</i>	Submergence	<i>SUBMERGED</i>	<i>FLOOD UP Tubes</i>		<i>61</i>	<i>COMBINATION</i>	<i>NONE</i>

*Documentation References:

Notes:

7. KERITE Co. REPORT ON THE EFFECTS OF GAMMA RAD.
 AND AUTOCLAVING ON KERITE POWER & CONTROL CABLES.
 61. FLOOD UP TUBE QUALIFICATION PACKET

From Ref. 7. Qualified by Kerite Co. Report on the effects of Gamma Radiation
April 30, 1970. *and outslowing on Kerite Power Control Cables*

Type of Test: Sequential, gamma radiation
steam
chemical spray

Test Profile:

.8 Mrads/hr, 120 Mrads
325°F, 82 psig for 13 hrs
228°F, 5 psig for 7 days

Chemical Spray: Borated water, 1-1/2% solution of
boric acid and distilled water
buffered at a PH of 9.5



EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>1 year</i>					<i>NONE</i>
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	<i>Fig 0-27</i>	<i>See Note 2</i>	<i>FSAR APP. 0</i>	<i>Note 2</i>	<i>Engineering Review</i>	<i>NONE</i>
COMPONENT: <i>Power CABLE</i>	Pressure (PSIA)	<i>Fig 0-27</i>	<i>See Note 2</i>	<i>FSAR APP. 0</i>	<i>Note 2</i>	<i>Engineering Review</i>	<i>NONE</i>
MANUFACTURER: <i>Amcon DA</i>	Relative Humidity (%)	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
MODEL NUMBER: <i>Item # 2102</i>	Chemical Spray	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>1.6/SI pump 4.5/RHR pump</i>	<i>10</i>	<i>59</i>	<i>Note 1</i>	<i>Engineering Review</i>	<i>NONE</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>							
LOCATION: <i>Outside Containment</i>							
FLOOD LEVEL ELEV: <i>612'</i> ABOVE FLOOD LEVEL: <i>NO</i>	Submergence	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>

*I.D. NO.
OF Equip.
(P. 316)
74-75 MI
~~74-75 MI~~*

*Documentation References:

of Enclosure 4

Notes:

- Note 1) As per TABLE C-1 App C to NRC IE Bulletin 79013,
Cable insulation material (EPR-Hypalon) is good for 10 MRADS) AND ≥ 10 yrs AGING*
- 2) Cable Temp rating equals 90°C (194°F); 230°F for 10 secs and 11.5 psig for 1 sec does not represent a challenge to the cable mechanical or electrical quality.*
- 59) AEPSC NS+L Calculation DC-N 6420-2, with distance taken into account.*

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>1 year</i>					<i>NONE</i>
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	<i>Fig 00-27</i>	<i>see Note 2</i>	<i>FSAR App 0</i>	<i>Note 2</i>	<i>Engineering Review</i>	<i>NONE</i>
COMPONENT: <i>Power Cable</i>	Pressure (PSIA)	<i>Fig 00-27</i>	<i>see Note 2</i>	<i>FSAR App 0</i>	<i>Note 2</i>	<i>Engineering Review</i>	<i>NONE</i>
MANUFACTURER: <i>ANACONDA</i>	Relative Humidity (%)	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
MODEL NUMBER: <i>Item #3103</i>	Chemical Spray	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>0.6/cc pump 3.1/CTS pump</i>	<i>10</i>	<i>59</i>	<i>Note 1</i>	<i>Engineering Review</i>	<i>NONE</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>							
LOCATION: <i>Outside Containment</i>							
FLOOD LEVEL ELEV: <i>NA</i> ABOVE FLOOD LEVEL: <i>NA</i>	Submergence	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>

*Documentation References:

of Enclosure 4

Notes:

- Note 1) As per Table C-1 App C, NRC IE Bulletin 79018, Cable insulation material (EPR-Hypalon) is good for 10 MRADS AND ≥ 10 yr AGING*
- 2) Cable temp rating equals 90°C (194°F), 230°F for 10 secs and 11.5 psig for 1 sec does not represent a challenge to the cable mech. or elect. quality;*
- 59) AEPSC NS&L Calculation DC-N-6420-2, with distance taken into account.*

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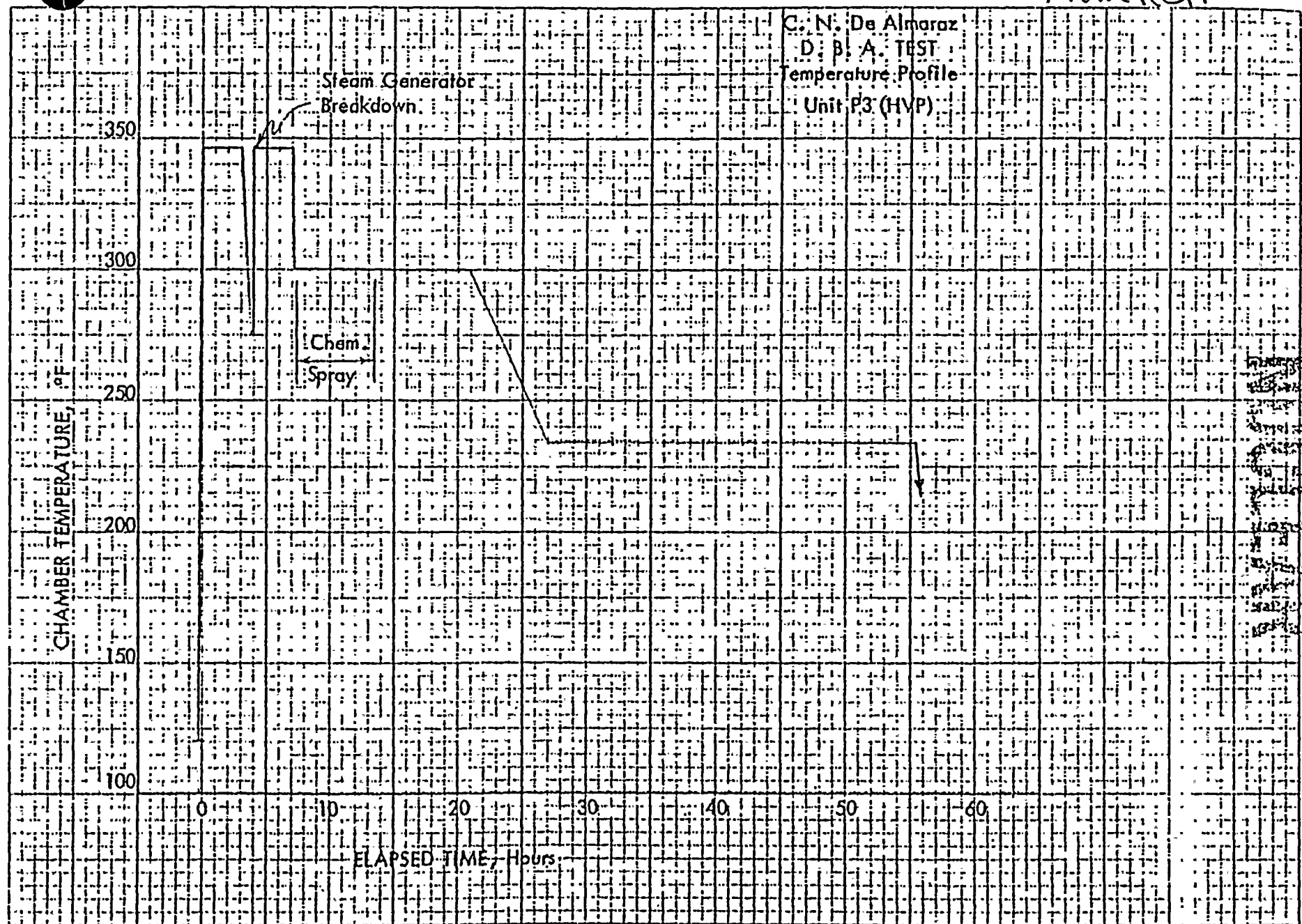
EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>NA</i>	Operating Time	<i>1 year</i>	<i>> 1.1 YRS</i>	<i>Table 7.5-2 FSAR</i>	<i>60</i>	<i>COMBINATION</i>	<i>NONE</i>
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	<i>FIG. 022.9-1-2 328.2 PEAK</i>	<i>346</i>	<i>FSAR APP. Q.</i>	<i>3</i>	<i>Seq.</i>	<i>NONE</i>
COMPONENT: <i>4KV ELECTRICAL PENETRATIONS</i>	Pressure (PSIA)	<i>FIG. 1 FIG. 2</i>	<i>122</i>	<i>AEW 6504</i>	<i>3</i>	<i>Seq.</i>	<i>NONE</i>
MANUFACTURER: <i>CONAX CORP.</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>3</i>	<i>Seq.</i>	<i>NONE</i>
MODEL NUMBER: <i>EP-1</i>	Chemical Spray	<i>2000 PPMB 1.14% WT BORIC ACID PH 9-11</i>	<i>2000 PPMB 1.2% WT BORIC ACID PH 9-5</i>	<i>Tech Spec 314.5 314.6.5</i>	<i>3</i>	<i>Seq.</i>	<i>NONE</i>
FUNCTION: <i>Containment Isolation</i>	Radiation (10 ⁶ rads)	<i>60</i>	<i>100</i>	<i>LETTER V-AEP AEW-72</i>	<i>3</i>	<i>Seq.</i>	<i>NONE</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)	<i>40</i>	<i>> 40</i>		<i>60</i>	<i>COMBINATION</i>	<i>NONE</i>
SERVICE: <i>ISOLATE Containment</i>	Submergence		<i>Yes</i>		<i>17/18</i>	<i>Sequential</i>	<i>NONE</i>
LOCATION: <i>Inside Containment</i>							
FLOOD LEVEL ELEV: <i>612'</i>							
ABOVE FLOOD LEVEL: <i>No</i>							

*Documentation References:

3. CONAX Corp. Test Report IPS-137
17. CONAX Corp Test Report IPS-326
18. CONAX Corp Test Report IPS-327
60. ELECTRICAL PENETRATION ANALYSIS

Notes: *See note page EP01-1, Unit 1.*

from Ret. 3



IPS-137

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>NA</i>	Operating Time	<i>1 year</i>	<i>>1 YRS</i>	<i>TABLE 7.5-2 FSAR</i>	<i>60</i>	<i>COMBINATION</i>	<i>NONE</i>
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	<i>Fig 5.0229-4-2 328.2 PWB</i>	<i>340</i>	<i>FSAR APP. Q</i>	<i>1</i>	<i>Seq</i>	<i>NONE</i>
COMPONENT: <i>600V AND BELOW ELECTRICAL PENETRATIONS</i> MANUFACTURER: <i>CONAX Corp</i>	Pressure (PSIA)	<i>Fig 1. Fig 2</i>	<i>116</i>	<i>AEW 6504</i>	<i>1</i>	<i>Seq</i>	<i>NONE</i>
MODEL NUMBER: <i>EP-2 through EP-14</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>1</i>	<i>Seq</i>	<i>NONE</i>
FUNCTION: <i>Containment Isolation</i>	Chemical Spray	<i>2000 PPMB 1.14% WT BORIC ACID PH 9-11</i>	<i>2000 PPMB 1.2% WT BORIC ACID PH 9.5</i>	<i>T.S. 3/4.5 3/4.6.5</i>	<i>3</i>	<i>Seq</i>	<i>NONE</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Radiation (10 ⁶ rads)	<i>60</i>	<i>100</i>	<i>WCAP 7410-4 VOL 2</i>	<i>1</i>	<i>Seq</i>	<i>NONE</i>
SERVICE: <i>ISOLATE Containment</i>	Aging (years)	<i>40</i>	<i>>40</i>		<i>60</i>	<i>COMBINATION</i>	<i>NONE</i>
LOCATION: <i>Inside Containment</i>	Submergence	<i>SUBMERGED</i>	<i>Yes</i>		<i>17,18</i>	<i>Sequential</i>	<i>NONE</i>
FLOOD LEVEL ELEV: <i>612'</i> ABOVE FLOOD LEVEL: <i>No</i>							

*Documentation References:

Notes: * See note page EP01-1, Unit 1.

1. CONAX Corp. Test Report IPS-234
3. CONAX Corp. Test Report IPS-137
17. CONAX Corp. Test Report IPS-326
18. CONAX Corp. Test Report IPS-327
60. ELECTRICAL PENETRATION ANALYSIS

1. Qualified by Conax Corp. Test Report IPS-234

June 9 1977

Type of Test: Sequential. Irradiation / Steam

Test Profile

100 - 111 Mrads/hr for 100 hrs.

100 - 110 Mrads total dose

340°F, 116 psia for 3 hrs

Perform leakage test and repeat steam test

340°F, 116 psia for 3 hrs.

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>1 YEAR</i>	<i>>1.1 YRS</i>	<i>Table 7.5-2</i>	<i>63 21</i>	<i>COMBINATION</i>	<i>NONE</i>
PLANT ID NO: <i>HV-CEQ-1</i> <i>HV-CEQ-2</i>	Temperature (°F)	<i>Fig 13.13-1</i>	<i>320</i>	<i>ESAR APP N</i>	<i>21</i>	<i>SE 8</i>	<i>NONE</i>
COMPONENT: <i>FAN MOTORS</i>	Pressure (PSIA)	<i>Fig 1</i> <i>Fig 2</i>	<i>89.7</i>	<i>AWD 6804</i>	<i>21</i>	<i>SE 8</i>	<i>NONE</i>
MANUFACTURER: <i>WESTINGHOUSE CORP.</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>21</i>	<i>SE 8</i>	<i>NONE</i>
MODEL NUMBER: <i>TBDP</i>	Chemical Spray	<i>2000PPMB</i> <i>1.14% WT BORIC ACID</i> <i>PH 9-11</i>	<i>2500PPMB</i> <i>1.43% WT BORIC ACID</i> <i>PH 9.5-10</i>	<i>T.S.</i> <i>3/4.5</i> <i>3/4.5.6</i>	<i>21</i>	<i>SE 8</i>	<i>NONE</i>
FUNCTION: <i>CIRCULATE Aie</i>	Radiation (10 ⁶ rads)	<i>150</i>	<i>200</i>	<i>WCAP 7410-L Vol 1</i>	<i>21</i>	<i>SE 8</i>	<i>NONE</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						<i>NONE</i>
SERVICE: <i>VARIOUS</i>	Submergence	<i>NA</i>	<i>NA</i>		<i>NA</i>	<i>NA</i>	<i>NA</i>
LOCATION: <i>INSIDE</i> <i>CONTAINMENT</i>							
FLOOD LEVEL ELEV: <i>612'</i> ABOVE FLOOD LEVEL: <i>YES</i>							

*Documentation References:

Notes:

21. WESTINGHOUSE CORP. TEST REPORT WCAP-7829
63. REQUIRED TIME QUALIFICATION PACKET

from Ref. 21.

Qualified by Westinghouse Corp. Test Reports:
WCAP-7829, April, 1972.

Type of Test: Sequential: Irradiation
Steam
Chemical Spray

Test Profile (for motor without heat exchanger)

324°F, 80 psig for 4 hrs.
250°F, 16 psig for 7 days

Test Profile (for motor with heat exchanger)

320°F, 75 psig for 24 hrs.
250°F, 16 psig for 168 hrs.

Chemical Spray: 1.43 weight percent boric acid
PH=9.5 with Na OH

Irradiation: .5 Mrad/hr., 200 Mrads.

See page 33 of WCAP-7829 for Test Profile summary.



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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	1 DAY	> 1 yr.	See Note C.	Ref. 47	TEST	
PLANT ID NO: <i>MOBILUX EP-2</i>	Temperature (°F)	Fig 028.9-1-2	250 Cont. Service 350 drop pt.	FEAR APP Q	Ref. 48	Tech Description sheet	
COMPONENT: <i>GREASE</i>	Pressure (PSIA)	Fig 1 Fig 2	See Note A	AEW 6504	Ref. 48	"	
MANUFACTURER: <i>MOBIL</i>	Relative Humidity (%)	100	100		Ref. 48	"	
MODEL NUMBER:	Chemical Spray :	2000PPMB 1.14% WT BORIC ACID PH 9-11	See Note B	T.S. 3/4.5 3/4.6.5	1 NA	NA	
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	26	240	WCAP 7410-L Vol. 1	Ref. 47	TEST	
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS - Valve OPERATOR MOTORS</i>							
LOCATION: <i>In + Out Containment</i>							
FLOOD LEVEL ELEV: ABOVE FLOOD LEVEL:	Submergence	NA	NA				

*Documentation References:

47. QUAL. by Letter of 6-2-71

FROM: WF Hergrueter - Customer Service LAB
 BKLYN, NY

TO: A.H. Statton - Boston Edison Co.

48. Letter of 4-11-80 from J.M. Allen (Mobil Oil Corp) to Allen Feibelman (AEP).

Notes:

- A. Refer to Tech. Description sheet.
 B. Grease enclosed in a container will not be subjected to direct caustic spray impingement
 C. Letters from J. Tillinghast (AEP) to K. Kniel (NRC) dated 4-14-75 and 7-29-75.

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Mobilux® EP 0, 1, 2

Extreme Pressure Industrial Greases

Mobilux EP 0, 1, and 2 are unleaded multiservice, extreme pressure greases designed for normal through heavy-duty industrial applications. They are formulated to resist the effects of both the extremely heavy loads and shock loads to which plant equipment is commonly exposed. Heavy loads tend to squeeze lubricant from mating surfaces, and shock loads rupture the lubricant film, thus creating a condition of metal-to-metal contact and causing parts wear, shortening equipment life. Equipment experiencing these loading extremes may also be exposed to conditions where extremes of temperature, moisture, or water washing are present: Greases for these applications must provide good extreme pressure characteristics and cling strongly to resist the pressures and pounding to which they are exposed. They must also provide good protection against rust and corrosion, resist water washing and dispense and lubricate satisfactorily over a broad range of temperature. The Mobilux EP greases fulfill these requirements.

PRODUCT DESCRIPTION

The Mobilux EP greases are lithium 12 hydroxystearate soap based greases which contain an unleaded EP additive and

oxidation, rust and corrosion inhibitors. They are smooth textured, brown colored greases in the NLGI No. 0, 1, or 2 consistency classification.

The use of lithium 12 hydroxystearate as the soap base for these greases ensures good resistance to softening under severe working, good water resistance and a consistency which will remain relatively constant over the recommended operating temperature range.

The extreme pressure characteristic of the Mobilux EP greases is supplied by an unleaded additive which provides them with exceptional wear protection, also improving their ecological acceptability. Other formulation improvements provide good water wash resistance, low temperature dispensing, and long service life in bearings operating at elevated temperatures.

The petroleum oil used in the greases meets the lubrication requirements of most heavy-duty industrial operations. It also provides low temperature pumpability and enhances the greases' high temperature oxidation resistance.

The Mobilux EP greases pass the ASTM Rust Test (D 1743) and are noncorrosive to steel and copper. The latter is of importance because of the use of bronze cages in many anti-friction bearings. The greases show good resistance to bleeding and superior resistance to water washout. Their load carrying and antiwear characteristics are illustrated by their Timken OK load of 40 lbs., 18.2 Kg.

Characteristic	Mobilux EP 0	Mobilux EP 1	Mobilux EP 2
NLGI No.	0	1	2
Structure	smooth	smooth	smooth
Soap Type	Unleaded Lithium 12 Hydroxystearate		
Color	brown	brown	brown
Penetration at 77°F (25°C)			
Unworked, min-max	350-390	305-345	260-300
Worked 60 strokes, min-max	355-385	310-340	265-295
Dropping Point, min. F (C)	340 (171)	340 (171)	350 (177)
Mineral Oil %	92	89	87
Viscosity			
SUS at 100°F	750	750	750
SUS at 210°F	75	75	75
cSt at 40°C	143	143	143
cSt at 100°C	13.8	13.8	13.8
Timken OK Load, min. lb (kg)	40 (18)	40 (18)	40 (18)
Rust Test ASTM D 1743	Pass	Pass	Pass
Bomb Oxidation Stability			
ASTM D942			
PSI Drop, max	10	10	10

Mobilux EP 0, 1, 2

Extreme Pressure Greases

TYPICAL CHARACTERISTICS

Physical and chemical characteristics of the Mobilux EP greases are shown in the data sheet table. Values not shown as maximums or minimums are typical characteristics and may vary slightly.

APPLICATION

Mobilux EP greases are recommended for the lubrication of plain and rolling element bearings in normal through heavy-duty industrial applications. They are particularly recommended where loads are high or shock loads are present, or where severe vibration is a problem. They are also suitable for the lubrication of geared couplings. The softer grade may be considered for the lubrication of gear sets that do not have oil-tight cases.

Mobilux EP 0 and 1 greases have excellent handling and dispensing properties at low temperature. The lowest recommended ambient temperature for operating bearings lubricated with Mobilux EP 0 or 1 is about -20°F (-29°C); and for Mobilux EP 2, a stiffer grease, about -10°F (-23°C).

All the Mobilux EP greases are recommended for the lubrication of plain bearings. The highest operating temperature recommended for these greases is 250°F (121°C). For continuous service at temperatures above 200°F, proper purging and relubrication frequencies are critical to maintenance of correct bearing protection.

The excellent water resistance and rust and corrosion protection afforded by the Mobilux EP greases makes them particularly applicable for equipment such as the wet ends of paper machines, steel mill hot strip rolling operations, underground mining equipment, tunneling projects and ore crushing plants where moisture or wet conditions are com-

mon. Their excellent dispensing characteristics will also be advantageous in many of these applications because of the exposed nature of the operations.

Mobilux EP greases are compatible with some other greases, particularly those made with lithium soap. However, the best procedure is not to mix greases of different soap types. When replacing another grease with a Mobilux EP grease, the previously used grease should be completely cleaned or flushed from the system.

In plants where human or animal foods are being processed, Mobilux EP greases, despite their unleaded extreme pressure formulation, are not recommended for applications where contamination of food could result. Mobilux EP greases have U.S. Department of Agriculture (USDA) Category BB approval.

ADVANTAGES

When used as recommended, the Mobilux EP greases will provide the following outstanding benefits and advantages:

Superior lubrication under heavy or shock loading

Good load carrying ability

Longer service life in bearings at temperatures up to 250°F

Good low temperature dispensing characteristics

Excellent resistance to water washing

Good rust protection and corrosion resistance

Extreme pressure protection with an unleaded formulation

Reduction of plant inventories through multipurpose capabilities

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS		
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.				
SYSTEM: <i>ESSENTIAL SERVICE WATER</i>	Operating Time	<i>500 hours for Pump</i>	<i>N/A</i>	<i>Mfg. Lit.</i>	<i>—</i>	<i>TESTS + CONSULTATION WITH MOBIL</i>	<i>NONE</i>		
PLANT ID NO: <i>PP-007</i>	Temperature (°F)	<i>110 AMBIENT</i>	<i>250 cont. Service 350 drop pt.</i>	<i>FSAR Sect. 9.9.2</i>	<i>#48</i>				
COMPONENT: <i>PUMP GREASE</i>	Pressure (PSIA)	<i>1500</i>	<i>No effect</i>	<i>Mfg. Lit.</i>	<i>—</i>				
MANUFACTURER: <i>MOBIL</i>	Relative Humidity (%)	<i>N/A</i>	<i>No effect</i>	<i>—</i>	<i>—</i>				
MODEL NUMBER: <i>MOBILUX #2</i>	Chemical Spray	<i>N/A</i>	<i>N/A</i>	<i>—</i>	<i>—</i>				
FUNCTION: <i>Lubrication</i>	Radiation (10 ⁶ rads)	<i>N/A</i>	<i>100</i>	<i>—</i>	<i>#48</i>				
ACCURACY: SPEC: <i>N/A</i> DEMON: <i>N/A</i>	Aging (years)	<i>N/A</i>	<i>N/A</i>	<i>—</i>	<i>—</i>				
SERVICE: <i>ESW PUMP</i>									
LOCATION: <i>Aux Bldg. 591-D</i>									
FLOOD LEVEL ELEV: <i>N/A</i> ABOVE FLOOD LEVEL: <i>N/A</i>	Submergence	<i>N/A</i>	<i>N/A</i>	<i>—</i>	<i>—</i>				

*Documentation References: *48. Letter of 4-17-80 from J.M. Allen Notes: (Mobil) to A. Feihelman (AEP).*

Pump manufacturer recommends the following greases:

Shell Oil Co. - Darina EP #2
Mobil Oil Co. - Mobilux EP #2
Phillips Petroleum Co. - Philube EP #2
Std. Oil Co. - Chevron Industrial Grease - Heavy
Union Oil Co. - Royal Unobon #2
Tenneco Inc. - Multifak #2
Atlantic Richfield Oil Co. - Rocolube #2 MP

AEP uses Mobilux No. 2 grease.

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS		
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.				
SYSTEM: <i>CONTAINMENT SPRAY</i>	Operating Time	<i>N/A</i>	<i>N/A</i>	—	—	<i>TESTS + CONSULTATION WITH MOBIL</i>	<i>NONE</i>		
PLANT ID NO: <i>PP-009</i>	Temperature (°F)	<i>AMBIENT 110</i>	<i>250 cont service 400 flash pt.</i>	<i>FSAR Sect. 9.9.2</i>	<i>#48</i>				
COMPONENT: <i>MOTOR OIL</i>	Pressure (PSIA)	<i>N/A</i>	<i>NO EFFECT</i>	—	—				
MANUFACTURER: <i>MOBIL</i>	Relative Humidity (%)	<i>N/A</i>	<i>NO EFFECT</i>	—	—				
MODEL NUMBER: <i>DIE OIL MEDIUM</i>	Chemical Spray	<i>N/A</i>	<i>N/A</i>	—	—				
FUNCTION: <i>LUBRICATION</i>	Radiation (10 ⁶ rads)	<i>17</i>	<i>100</i>	<i>AEFSC NS&L calc. DC-N-6420-2</i>	<i>#48</i>				
ACCURACY: SPEC: <i>N/A</i> DEMON:	Aging (years)	<i>N/A</i>	<i>N/A</i>	—	—				
SERVICE: <i>CTS Pump MOTOR</i>	Submergence	<i>N/A</i>	<i>N/A</i>	—	—				
LOCATION: <i>Avx Bldg EL. 573'-0"</i>									
FLOOD LEVEL ELEV: <i>N/A</i>									
ABOVE FLOOD LEVEL: <i>N/A</i>									

*Documentation References:

Notes:

48. Letter of 4-17-80 from J.M. Allen (Mobil) to A. Feibelman (AEF).

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS		
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.				
SYSTEM: <i>CONTAINMENT SPRAY</i>	Operating Time	<i>N/A</i>	<i>N/A</i>	—	—	<i>TESTS + CONSULTATION WITH MOBIL</i>	<i>NONE</i>		
PLANT ID NO: <i>PP-009</i>	Temperature (°F)	<i>AMBIENT 110</i>	<i>250 cont. service 350 drop pt.</i>	<i>FSAR Sect. 9.9.2</i>	<i>#48</i>				
COMPONENT: <i>MOTOR GREASE</i>	Pressure (PSIA)	<i>N/A</i>	<i>No effect</i>	—	—				
MANUFACTURER: <i>MOBIL</i>	Relative Humidity (%)	<i>N/A</i>	<i>No effect</i>	—	—				
MODEL NUMBER: <i>MOBILUX #2</i>	Chemical Spray	<i>N/A</i>	<i>N/A</i>	—	—				
FUNCTION: <i>LUBRICATION</i>	Radiation (10 ⁶ rads)	<i>17</i>	<i>100</i>	<i>AEPSC NS&L calc. DC-N-6420-2</i>	<i>#48</i>				
ACCURACY: SPEC: <i>N/A</i> DEMON: <i>N/A</i>	Aging (years)	<i>N/A</i>	<i>N/A</i>	—	—				
SERVICE: <i>CTS Pump Motor</i>	Submergence	<i>N/A</i>	<i>N/A</i>	—	—				
LOCATION: <i>Aux Bldg El 573'0"</i>									
FLOOD LEVEL ELEV: <i>N/A</i>									
ABOVE FLOOD LEVEL: <i>N/A</i>									

2. D. 116-117
OF EQUIP.
(Page)

*Documentation References:

Notes:

48. Letter dated 4-17-80 from J.M. Allen (Mobil) to A. Feibelman (AEP).

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS		
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.				
SYSTEM: <i>COMPONENT COOLING WATER</i>	Operating Time	<i>N/A</i>	<i>N/A</i>	<i>—</i>	<i>—</i>	<i>TESTS + CONSULTATION WITH MOBIL</i>	<i>NONE</i>		
PLANT ID NO: <i>PP-010</i>	Temperature (°F)	<i>AMBIENT 110</i>	<i>Flash Pt. 410</i>	<i>FSAR sect 9.7.2</i>	<i># 48</i>				
COMPONENT: <i>PUMP OIL</i>	Pressure (PSIA)	<i>N/A</i>	<i>NO EFFECT</i>	<i>—</i>	<i>—</i>				
MANUFACTURER: <i>MOBIL</i>	Relative Humidity (%)	<i>N/A</i>	<i>NO EFFECT</i>	<i>—</i>	<i>—</i>				
MODEL NUMBER: <i>DTE 797 0.1</i>	Chemical Spray	<i>N/A</i>	<i>N/A</i>	<i>—</i>	<i>—</i>				
FUNCTION: <i>Lubrication</i>	Radiation (10 ⁶ rads)	<i>N/A</i>	<i>100</i>	<i>—</i>	<i># 48</i>				
ACCURACY: SPEC: <i>N/A</i> DEMON: <i>N/A</i>	Aging (years)	<i>N/A</i>	<i>N/A</i>	<i>—</i>	<i>—</i>				
SERVICE: <i>CCW Pump</i>	Submergence	<i>N/A</i>	<i>N/A</i>	<i>—</i>	<i>—</i>	<i>▽</i>	<i>▽</i>		
LOCATION: <i>Aux Bldg Fl. 609'6"</i>									
FLOOD LEVEL ELEV: ABOVE FLOOD LEVEL: <i>N/A</i>									

*Documentation References: 48. Letter of 4-17-80 from J.A. Allen (Mobil) to A. Feibelman (AEP).
Pump Manufacturer recommends oil with characteristics:

<u>Oil Characteristic</u>	<u>Naphthene Base</u>	<u>Paraffin Base</u>
Flash Point	300°F, min	360°F, min
Saybolt Viscosity 100°F	150 sec, min 200 sec, max	140 sec, min 185 sec, max
Pour Point	50°F max	30°F max

AEP uses Mobil D.T.E 797 O.I., a paraffinic oil which meets mfr specifications.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS		
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.				
SYSTEM: <i>COMPONENT COOLING WATER</i>	Operating Time	<i>N/A</i>	<i>N/A</i>	—	—	<i>TESTS + CONSULTATION WITH MOBILE</i>	<i>NONE</i>		
PLANT ID NO: <i>PP-DID</i>	Temperature (°F)	<i>AMBIENT 110</i>	<i>250 cont. service 350 drop pt.</i>	<i>FSAR sect 9.9.2</i>	<i>#48</i>				
COMPONENT: <i>COUPLING GREASE</i>	Pressure (PSIA)	<i>N/A</i>	<i>NO EFFECT</i>	—	—				
MANUFACTURER: <i>MOBIL</i>	Relative Humidity (%)	<i>N/A</i>	<i>NO EFFECT</i>	—	—				
MODEL NUMBER: <i>COUPLING GREASE</i>	Chemical Spray	<i>N/A</i>	<i>N/A</i>	—	—				
FUNCTION: <i>LYBRICATION</i>	Radiation (10 ⁶ rads)	<i>N/A</i>	<i>100</i>	—	<i>#48</i>				
ACCURACY: SPEC: <i>N/A</i> DEMON:	Aging (years)	<i>N/A</i>	<i>N/A</i>	—	—				
SERVICE: <i>CCW Pump Coupling</i>	Submergence	<i>N/A</i>	<i>N/A</i>	—	—				
LOCATION: <i>Aux Bldg E1 609'6"</i>									
FLOOD LEVEL ELEV: ABOVE FLOOD LEVEL: <i>N/A</i>									

*Documentation References: *48. Letter of 4-17-80 from J.H. Allen Notes: (Mobil) to A. Fejbelman (AEP).*

Coupling manufacturer recommends grease with NGLI No. 2 with worked penetration value of 250 to 300.

AEP uses Mobilux No. 2 grease which meets mfg specs.



T. L. MO.
OF FSAP
(5/22/80)

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD		OUTSTANDING ITEMS	
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.				
SYSTEM: SAFETY INJECTION	Operating Time	N/A	N/A	—	—	TESTS + CONSULTATION WITH MOBIL		NONE	
PLANT ID NO: PP-026	Temperature (°F)	AMBIENT 110	Flash pt. 410	FSAR Sect 9.9.2	# 48.				
COMPONENT: Pump Oil	Pressure (PSIA)	N/A	NO EFFECT	—	—				
MANUFACTURER: MOBIL	Relative Humidity (%)	N/A	NO EFFECT	—	—				
MODEL NUMBER: DTE 797 0.1	Chemical Spray	N/A	N/A	—					
FUNCTION: Lubrication	Radiation (10 ⁶ rads)	.17	100	AEPSC NS&L calc. 86-N-6470-1	# 48				
ACCURACY: SPEC: N/A DEMON: N/A	Aging (years)	N/A	N/A	—	—				
SERVICE: SI Pump	Submergence	N/A	N/A	—	—				
LOCATION: Avx BLOC Ft 587'-0"									
FLOOD LEVEL ELEV: ABOVE FLOOD LEVEL: N/A									

*Documentation References: 48. Letter of 4-17-80 From J. M. Allen Notes:

(Mobil) to A. Feibelman (AEP),
 Pump manufacturer recommends
 high grade turbine oil with a
 viscosity of 150 SSU @ 100°F }
 AEP uses Mobil
 DTE 797 oil which
 meets listed spec.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS		
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.				
SYSTEM: SAFETY INJECTION	Operating Time	N/A	N/A	—	—	TS5751 CONSULTATION WITH MOBIL	NONE		
PLANT ID NO: PP-026	Temperature (°F)	AMBIENT 110	250 cont. service 400 flash pt	FSAR Sect 9.9.2	# 48				
COMPONENT: MOTOR OIL	Pressure (PSIA)	N/A	NO EFFECT	—	—				
MANUFACTURER: MOBIL	Relative Humidity (%)	N/A	NO EFFECT	—	—				
MODEL NUMBER: DTE OIL Heavy Medium	Chemical Spray	N/A	N/A	—	—				
FUNCTION: Lubrication	Radiation (10 ⁶ rads)	17	100	AEPSC NS&L calc. DE-N-6420-2	# 48				
ACCURACY: SPEC: N/A DEMON: N/A	Aging (years)	N/A	N/A	—	—				
SERVICE: SI Pump Motor	Submergence	N/A	N/A	—	—				
LOCATION: Aux Bldg El. 587'-0"									
FLOOD LEVEL ELEV: ABOVE FLOOD LEVEL: N/A									

*Documentation References: 48. letter of 4-17-80 from J. M. Allen Notes:

(Mobil) to A. Feibelman (AEP).
Motor manufacturer recommends oil with viscosity of 180 to 220 SSV @ 100°F. } AEP uses Mobil D.T.E. Oil Heavy Medium.

J. D. WOOD
OF EQUIP.
(Page 1)

100-101

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS		
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.				
SYSTEM: RESIDUAL HEAT REMOVAL	Operating Time	N/A	N/A	—	—	TESTS + CONSULTATION WITH MOBIL	NONE		
PLANT ID NO: PP-035	Temperature (°F)	110 AMBIENT	250 cont. Service 350 drop pt.	FSAB Sect 9.9.2	# 48				
COMPONENT: PUMP + MOTOR GREASE	Pressure (PSIA)	N/A	No effect	—	—				
MANUFACTURER: MOBIL	Relative Humidity (%)	N/A	No effect	—	—				
MODEL NUMBER: Mobilux #2	Chemical Spray	N/A	N/A	—	—				
FUNCTION: Lubrication	Radiation (10 ⁶ rads)	17	100	AEPSC NSRL calc. DC-N-6470-2	#18				
ACCURACY: SPEC: N/A DEMON: N/A	Aging (years)	N/A	N/A	—	—				
SERVICE: RHR Pump RHR Pump Motor	Submergence	N/A	N/A	—	—				
LOCATION: Ave Bldg. EL. 573'-0"									
FLOOD LEVEL ELEV: N/A									
ABOVE FLOOD LEVEL: N/A									

*Documentation References: 48. Letter of 4-17-80 from J. A. Allen Notes:
(Mobil) to A. Feibelman (AEP).

Motor Manufacturer recommends.

Westinghouse Grease #55272-BA

AEP uses Mobilux No. 2 Grease,
recommended by Mobil as
a suitable substitute.



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OF EQUIP.
(PAGE)

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS		
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.				
SYSTEM: CVCS/ECCS	Operating Time	N/A	N/A	—	—	TESTS + CONSULTATION WITH MOBIL	NONE		
PLANT ID NO: PP-050	Temperature (°F)	AMBIENT 110	250 cont. service 400 flash pt.	FSAP Swt 7.7.2	# 48				
COMPONENT: Pump + Motor 0.1	Pressure (PSIA)	N/A	NO EFFECT	—	—				
MANUFACTURER: Mobil	Relative Humidity (%)	N/A	NO EFFECT	—	—				
MODEL NUMBER: D.T.E Oil Heavy Medium	Chemical Spray	N/A	N/A	—	—				
FUNCTION: Lubrication	Radiation (10 ⁶ rads)	17	100	AEPSC NS&L Calc. PC-N- 6470-2	# 48				
ACCURACY: SPEC: N/A DEMON:	Aging (years)	N/A	N/A	—	—				
SERVICE: CCh ₄ Pump	Submergence	N/A	N/A	—	—	▽	▽		
LOCATION: Aux Bldg EL 587' 0"									
FLOOD LEVEL ELEV: ABOVE FLOOD LEVEL: N/A									

*Documentation References: 48, Letter of 4-17-80 from J. H. Allen Notes:
(Mobil) to A. Feibelman (AEP).

Pump manufacturer recommends using high grade mineral oil of the turbine type, having viscosity of 150-250 SSU @ 100°F.

Motor manufacturer recommends bearing oil with a viscosity of 200 SSU @ 100°F

Gear case manufacturer recommends oil with viscosity of 180-240 SSU @ 100°F

AEP uses Mobil D.T.E Oil Heavy Medium.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS		
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.				
SYSTEM: CVCS/ECCS	Operating Time	N/A	N/A	—	—	TESTS: CONSULTATION WITH MOBIL	NONE		
PLANT ID NO: PP-050	Temperature (°F)	AIRBENT 110	drop pt. 400	FSAR Sec 9.9.2	# 48				
COMPONENT: COUPLING GREASE	Pressure (PSIA)	N/A	NO EFFECT	—	—				
MANUFACTURER: Mobil	Relative Humidity (%)	N/A	NO EFFECT	—	—				
MODEL NUMBER: Sovarex L-0	Chemical Spray	N/A	N/A	—	—				
FUNCTION: Lubrication	Radiation (10 ⁶ rads)	17	100	AEP SC NS & L Calc. DE-N-6470-2	# 48				
ACCURACY: SPEC: DEMON: N/A	Aging (years)	N/A	N/A	—	—				
SERVICE: Cent. Charging Pump Coupling	Submergence	N/A	N/A	—	—				
LOCATION: Aux Bldg FI 587'-0"									
FLOOD LEVEL ELEV: ABOVE FLOOD LEVEL: N/A									

*Documentation References: 48. Letter of 4-17-80 from J. H. Allen Notes: (Mobil) to A. Feibelman (AEP).

Coupling manufacturer recommends the following greases:

ATLANTIC REFINING COMPANY
 AMERICAN OIL COMPANY
 ARKOKS OIL COMPANY
 ARK SERVICE PETROLEUM, Inc.
 ARK TITINENTAL OIL COMPANY
 ARK BROTHERS REFINING COMPANY
 ARK QIL CORPORATION
 ARK OIL AND REFINING COMPANY
 ARK STONE LUBRICATING COMPANY
 ARK LUBRICANTS COMPANY
 ARK PETROLEUM COMPANY
 ARK OIL COMPANY

ATLANTIC LUBRICANT #17
 AMOBAR S
 LEADOLINE 375 LIGHT
 TROJAN GREASE A-1
 CONOCO SUPER LUBE
 LUBRIPLATE #630 AA
 CROWN #1
 FIBRAX 370 OR NEBULA EP 0
 KEYSTONE #15 EP XX LIGHT
 LUBRIKO GREASE M-54
 PHILUBE #1 STOCK 401
 POCO FIBRE GREASE #1

RICHFIELD OIL CORPORATION
 SHELL OIL COMPANY
 SINCLAIR REFINING COMPANY
 SOCONY-MOBIL OIL CO., Inc.
 STANDARD OIL CO. OF CALIFORNIA
 STANDARD OIL CO. OF OHIO
 SUN OIL COMPANY
 TEXAS COMPANY
 TIDEWATER ASSOCIATED OIL CO.
 UNION OIL CO. OF CALIFORNIA

ROCOLUBE RR
 SHELL ALVANIA GREASE #2
 SIMNIA 012
 SINCOLURE #1, OR LITHOLINE
 MULTI-PURPOSE GREASE #2
 SOVAREX L-0
 MOBILPLEX EP #0
 CALOL SA #1
 SOHIO #77
 N 751 AND 741 EP
 MARFAK #1
 TYCOL ALITHO #10
 BALL ROLL #1 OR EINOBA #1

AEP uses Mobil Sovarex L-0 grease

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: Hydrogen Recombiner	Operating Time	3 months	> 3.3 MTHS	Table 2.5-2	63 20	COMBINATION	NONE
PLANT ID NO: H2-1 H2-2	Temperature (°F)	Fig 13.13-1	310	FSAR APP D	20	SEP	NONE
COMPONENT: HYDROGEN RECOMBINERS	Pressure (PSIA)	Fig 1 Fig. 2	77	AEW 6504	20	SEP	NONE
MANUFACTURER: Westinghouse	Relative Humidity (%)	100	100		20	SEP	NONE
MODEL NUMBER: NA	Chemical Spray	2000 PPMB 1.14% WT BORIC ACID PH 9-11	2500 PPMB 1.43% WT BORIC ACID PH 10	Fig. 3/4.5 3/4.5.6	20	SEP	NONE
FUNCTION: Hydrogen Recombiner	Radiation (10 ⁶ rads)	85	200	WCAP 7410-L VOL I	20	SEP	NONE
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: Hydrogen Recombiner	Submergence	NA	NA	NA	NA	NA	NONE
LOCATION: INSIDE CONTAINMENT							
FLOOD LEVEL ELEV: 612'							
ABOVE FLOOD LEVEL: YES							

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H1

*Documentation References:

Notes: so heatup + Cooldown.

20. WESTINGHOUSE CORP. TEST REPORT WCAP-7709-L, SUPPL. 2.
63. REQUIRED TIME QUALIFICATION PACKET

Ref. 20.

Qualified by Westinghouse report WCAP-7709-L, supplement 2 of Sept. 1973.

Type of Test: Separate, seismic steam/chem. spray gamma radiation.

Test Profile:

Horizontal (side-to-side) force = 2g
(back-to-back) force = 2g

Vertical force = 1.33g
Frequencies = 1 through 35 Hz

.33 to .80 Mrads/hr
200-220 Mrads

Assumed (310°F, 77 psia for 4 hrs
saturated) 259°F, 35 psia for 20 hrs
steam. (228°F, 20 psia for 1 hr

Chemical Spray: Sodium thiosulfate 2500 ppm boron as boric acid with Na OH added for a PH = 10.

Page H1-2

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: LIST H PLANT ID NO: BLP-110,111,112, 120,121,122,130,131,132, 140, 141 & 142 COMPONENT: DIFFERENTIAL PRESSURE TRANSMITTER MANUFACTURER: ITT BARTON MODEL NUMBER: 764 FUNCTION: ACTUATION ACCURACY: SPEC: +10% DEMON: -25% SERVICE: STEAM GENERATOR LEVEL LOCATION: INSIDE CONTAINMENT FLOOD LEVEL ELEV: 612'-0" ABOVE FLOOD LEVEL: NO	Operating Time	22.1 SEC	≤1.5 SEC	TABLE 14.2.8-1	TECH. SPEC 3.3-2	RESPONSE TIME TESTING	NONE
	Temperature (°F)	328.2	360	Q FIG 022.9-1E-2	REF 30	SEQUENTIAL & SEPARATE EFFECTS	NONE
	Pressure (PSIA)	22	89.7 & 14.7	N13.7-3	REF 30	SEQUENTIAL & SEPARATE EFFECTS	NONE
	Relative Humidity (%)	100	100	7.5	REF 30	SEQUENTIAL & SEPARATE EFFECTS	NONE
	Chemical Spray	1.14% BORIC ACID & .15% NADH	1.14% BORIC ACID & .17% NADH	N 5.3.6	REF 30	SEQUENTIAL	NONE
	Radiation (10 ⁶ rads)	0.6	50		REF 30	SEPARATE EFFECTS	NONE
	Aging (years)						
FLOOD LEVEL ELEV: 612'-0" ABOVE FLOOD LEVEL: NO	Submergence	12 FT.	75 PSIG	DRWG 5570E	ENGRG JDBMT	ENGINEERING REVIEW	NONE

*Documentation References: UNLESS OTHERWISE NOTED
 ALL REFERENCES ARE FSAR SECTIONS.
 REF 30 = WESTINGHOUSE ELECTRIC CORP
 COMMUNICATION; NS-TMA-1950

Notes: 14.2.8 IS THE ACCIDENT ANALYSIS GENERATING
 AN ADVERSE ENVIRONMENT FOR WHICH CREDIT IS ASSUMED
 FOR OPERATION OF THESE DEVICES.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: LIST H PLANT ID NO: BLP-110, 111, 112, 120, 121, 122, 130, 131, 132, 140, 141 & 141 COMPONENT: DIFFERENTIAL PRESSURE TRANSMITTER MANUFACTURER: I T T BARTON MODEL NUMBER: 764 LONG TERM FUNCTION: POST ACCIDENT & NORMAL MONITORING ACCURACY: SPEC: $\pm 25\%$ DEMON: -5% SERVICE: STEAM GENERATOR LEVEL LOCATION: INSIDE CONFINEMENT FLOOD LEVEL ELEV: 614'-0" ABOVE FLOOD LEVEL: NO	Operating Time	4 MONTH	4 MONTH	(B) Q 030.1	REF. 30	SEQUENTIAL & COMBINED EFFECTS	NONE
	Temperature (°F)	160	160	FIG 14.3.4-2	REF. 30	SEQUENTIAL & COMBINED EFFECTS	NONE
	Pressure (PSIA)	22	89.7 & 14.7	N 13.7-3	REF. 30	SEQUENTIAL & COMBINED EFFECTS	NONE
	Relative Humidity (%)	100	100	7.5	REF. 30	SEQUENTIAL	NONE
	Chemical Spray	1.14% BORIC ACID & 0.15% NaOH	1.14% BORIC ACID & 0.17% NaOH	N 5.3.6	REF. 30	SEQUENTIAL	NONE
	Radiation (10 ⁶ rads)	0.6	50	REF 30	REF. 30	COMBINED EFFECTS	NONE
	Aging (years)						
	Submergence	12 FT.	75 PSIG	DRWG 5570E	ENGRG JDGHT	ENGINEERING REVIEW	NONE

*Documentation References: UNLESS OTHERWISE NOTED ALL REFERENCES ARE FSAR SECTIONS.
 REF. 30 = WESTINGHOUSE ELECTRIC CORP. COMMUNICATION; NS-TMA-1950

Notes: 14.2.8 IS THE ACCIDENT ANALYSIS GENERATING AN ADVERSE ENVIRONMENT FOR WHICH CREDIT IS ASSUMED FOR OPERATION OF THESE DEVICES.

CBJ REQUIREMENTS ADDRESSED IN REF. 30 WHICH WAS SUBMITTED IN RESPONSE TO QUESTION 030.1

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>AUXILIARY FEEDWATER</i> PLANT ID NO: <i>CLR 110 E III</i> COMPONENT: <i>DIFFERENTIAL PRESSURE TRANSMITTER</i> MANUFACTURER: <i>TAYLOR INSTRUMENT</i> MODEL NUMBER: <i>304 TD 00 Z 12</i> FUNCTION: <i>MONITORING</i> ACCURACY: <i>SPEC:</i> <i>DEMON:</i> SERVICE: <i>CONDENSATE STORAGE TANK LEVEL</i> LOCATION: <i>OUTSIDE CONTAINMENT</i> FLOOD LEVEL ELEV: <i>N/A</i> ABOVE FLOOD LEVEL:	Operating Time						
	Temperature (°F)						
	Pressure (PSIA)						
	Relative Humidity (%)						
	Chemical Spray						
	Radiation (10 ⁶ rads)						
	Aging (years)						
	Submergence						

*Documentation References:

Notes:

THE TRANSMITTER IS LOCATED SUCH THAT NO SOURCE-TARGET INTERACTION OR ADVERSE ENVIRONMENT WILL EFFECT IT. THE SIGNAL LINES ARE SUBJECT TO MSLB AND MFVLB ENVIRONMENT. HOWEVER, FAILURE OF THE SIGNAL LINE (PNEUMATIC) CAUSES THE SIGNAL TO GO TO ZERO THEREBY CAUSING THE OPERATOR TO SWITCH TO AUXILIARY FEEDWATER BACKUP SOURCE.

2. D. NO.
OF EQUIP.
(P. 36)
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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: MAIN FEEDWATER REACTOR TRIP ACTUATION	Operating Time	1.5 ± 25 SEC	± 1.5	TABLE 0-27 & 0-28	TECH. SPEC. 3.3-2	RESPONSE TIME TESTING FOR STM. GEN WATER LEVEL	NONE
PLANT ID NO: FCC 210, 211, 220, 221, 230, 231, 240, 241	Temperature (°F)	223	290	FIG 0-26	WCAP 8541	SEQUENTIAL	NONE
COMPONENT: DIFFERENTIAL PRESSURE TRANSMITTER	Pressure (PSIA)	5.8	74.7	FIG 0-26	WCAP 8541	SEQUENTIAL	NONE
MANUFACTURER: FOXBORO	Relative Humidity (%)	100	100	7.5	WCAP 8541	SEQUENTIAL	NONE
MODEL NUMBER: E13DM-HS001 (MCA)	Chemical Spray	NA	NA	NA	NA		NONE
FUNCTION: NORMAL MONITOR & ACTUATION	Radiation (10 ⁶ rads)	NA	NA	NA	NA		NONE
ACCURACY: SPEC: ± 16% DEMON: -11.75%	Aging (years)						
SERVICE: MAIN FEEDWATER FLOW	Submergence	NA	NA	NA	NA		NONE
LOCATION: OUTSIDE CONTAINMENT							
FLOOD LEVEL ELEV: N/A ABOVE FLOOD LEVEL: N/A							

*Documentation References: UNLESS OTHERWISE NOTED
ALL REFERENCES ARE PSRK SECTIONS.
WCAP 8541 - WESTINGHOUSE ELECTRIC CORP
TOPICAL REPORT FOR ENVIRONMENTAL
TESTING OF FOXBORO TRANSMITTERS

Notes: 0.4.2 & 14.2.8 ARE THE ADVERSE ENVIRONMENT
GENERATING ACCIDENT ANALYSIS FOR WHICH
CREDIT IS ASSUMED FOR OPERATION OF THESE
DEVICES.



EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: AUXILIARY FEEDWATER PLANT ID NO: FFI 210 220 230 & 240 COMPONENT: DIFFERENTIAL PRESSURE TRANSMITTER MANUFACTURER: ITT BARTON MODEL NUMBER: 368 FUNCTION: MONITORING ACCURACY: SPEC: DEMON: SERVICE: AUXILIARY FEEDWATER FLOW LOCATION: OUTSIDE CONTAINMENT FLOOD LEVEL ELEV: N/A ABOVE FLOOD LEVEL:	Operating Time	CONTINUOUS	NOTE(L)	14.2.8	NOTE(L)	NOTE (L)	NONE
	Temperature (°F)	230		FIG 0.27			NONE
	Pressure (PSIA)	26.2		FIG 0.27			NONE
	Relative Humidity (%)	100	X	7.5	X	X	NONE
	Chemical Spray	NR					NONE
	Radiation (10 ⁶ rads)	NR					NONE
	Aging (years)						
	Submergence	NR					NONE

*Documentation References: UNLESS OTHERWISE NOTED
ALL REFERENCES ARE FSAR SECTIONS.

Notes: (L) PRESENTLY INSTALLED DEVICES ARE CONTROL GRADE DEVICES WHICH ARE TO BE REPLACED TO MEET THE REQUIREMENTS ON NUREG 0578 ITEM 2.1.7.b. SEE REF: NRC: 00253 DATED OCT. 24 1979.

THESE DEVICES HAVE NOT EXPOSED TO LOCA LONG TERM REGENERATION RADIATION EXPOSURE DOSES.

T.D. NO.
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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: EMERGENCY CORE COOLING PLANT ID NO: IFC 315 1 325 COMPONENT: DIFFERENTIAL PRESSURE SWITCH MANUFACTURER: ITT BARTON MODEL NUMBER: 789 A/199 FUNCTION: PUMP PROTECTION ACCURACY: SPEC:FUNCTIONAL DEMON: $\pm 6\%$ SERVICE: RHR PUMP MINIMUM FLOW CONTROLLER LOCATION: OUTSIDE CONTAINMENT FLOOD LEVEL ELEV: N/A ABOVE FLOOD LEVEL:	Operating Time	4 MONTHS	4 MONTHS	EMRGY RRDLS	ENRG DDMT	ENGINEERING REVIEW	NONE
	Temperature (°F)	110	200	9.9	MNFTR LIT.	ENGINEERING REVIEW	NONE
	Pressure (PSIA)	14.7	14.7	9.9	MNFTR LIT	ENGINEERING REVIEW	NONE
	Relative Humidity (%)	90°F DRY BULB 76°F WET BULB	WEATHER- PROOF CASE	9.9	MNFTR LIT	ENGINEERING REVIEW	NONE
	Chemical Spray	NA	NA				NONE
	Radiation (10 ⁶ rads)	NOTE (M)	NA	NOTE (M)	NOTE (M)	ENGINEERING REVIEW	NONE
	Aging (years)						
	Submergence	NA	NA				NONE

*Documentation References: UNLESS OTHERWISE NOTED ALL REFERENCES ARE TO FSAR SECTIONS
 MNFTR LIT ITT BARTON PRODUCT/BULLETIN
 789A/289A-2 AND TECHNICAL MANUAL 50S-4(A)

Notes: (M) LOCATION OF PRESSURE SWITCH IS OUTSIDE ROOM CONTAINING RADIATION SOURCE AND IS THEREFORE SHIELDED FROM EFFECT.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: EMERGENCY CORE COOLING	Operating Time	< 60 MIN	90 MIN	TABLE 7.5-2	WCNP 8541	SEPARATE EFFECTS	NONE
PLANT ID NO: IFI 51, 52, 53 & 54	Temperature (°F)	250	290	NO. 3.1 3 & FIG 13.13-1	WCNP 8541	SEQUENTIAL	NONE
COMPONENT: DIFFERENTIAL PRESSURE TRANSMITTER MANUFACTURER: FOXBORO	Pressure (PSIA)	29.1	74.7	14.3.4	WCNP 8541	SEQUENTIAL	NONE
MODEL NUMBER: E1304-HSAHI MCA	Relative Humidity (%)	100	100	7.5	WCNP 8541	SEQUENTIAL	NONE
FUNCTION: MONITORING	Chemical Spray	1.14% BORIC ACID & 15% NHOH	1.5% BORIC ACID @ 725 TO 10 PH NHOH	N	WCNP 8541	SEQUENTIAL	NONE
ACCURACY: SPEC: FUNCTIONAL DEMON: ± 6%	Radiation (10 ⁶ rads)	3.9	76	WCNP 7410-2 Vol. I	WCNP 8541	SEPARATE EFFECTS	NONE
SERVICE: BORON INJECTION TANK DISCHARGE FLOW	Aging (years)						
LOCATION: INSIDE CONTAINMENT	Submergence	11'-6"	60 PSIG	DRWG 5570B CUE	ENGRG 306HT	ENGINEERING REVIEW	NONE
FLOOD LEVEL ELEV: 614'-0" ABOVE FLOOD LEVEL: NO							

*Documentation References: UNLESS OTHERWISE NOTED ALL REFERENCES ARE FEAR SECTIONS
 AEW-8541 WESTINGHOUSE ELECTRIC CORP
 TOPICAL REPORT FOR ENVIRONMENTAL
 TESTING OF FOXBORO TRANSMITTERS

Notes: NO SPECIFIC ACCIDENT ANALYSIS TAKES CREDIT FOR ASSUMED OPERATION OF THESE DEVICES. THEIR USE IS REFERENCED BY EMERGENCY OPERATING PROCEDURES.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: EMERGENCY CORE COOLING	Operating Time	< 60 MIN	90 MIN	TABLE 7.5-2	WCNP 8541	SEPARATE EFFECTS	NONE
PLANT ID NO: IFI 51, 52, 53 & 54	Temperature (°F)	160	290	FIG 14, 3.4-2	WCNP 8541	SEQUENTIAL	NONE
COMPONENT: DIFFERENTIAL PRESSURE TRANSMITTER MANUFACTURER: FOXBORO	Pressure (PSIA)	27.2	74.7	AEW 6504	WCNP 8541	SEQUENTIAL	NONE
MODEL NUMBER: E-13 DI-HSAHI MCA	Relative Humidity (%)	100	100	7.5	WCNP 8541	SEQUENTIAL	NONE
FUNCTION: LONG TERM MONITORING	Chemical Spray	1.14% BORIC ACID & 15% NaOH @ 10 PH	1.5% BORIC ACID @ 9.25 TO 10 PH NaOH	N 5.3.6	WCNP 8541	SEQUENTIAL	NONE
ACCURACY: SPEC: FUNCTIONAL DEMON: ± 6%	Radiation (10 ⁶ rads)	40	76	REF 30	WCNP 8541	SEPARATE EFFECTS	NONE
SERVICE: BORON INJECTION TANK DISCHARGE FLOW	Aging (years)						
LOCATION: INSIDE CONTAINMENT	Submergence	11'-6"	60 PSIG	DRWG 5570B C USE	ENGRG J06MT	ENGINEERING REVIEW	NONE
FLOOD LEVEL ELEV: 614'-0" ABOVE FLOOD LEVEL: NO							

*Documentation References: UNLESS OTHERWISE NOTED ALL REFERENCES ARE FSAR SECTIONS
 AEW-8541 WESTINGHOUSE ELECTRIC CORP
 TOPICAL REPORT FOR ENVIRONMENTAL
 TESTING OF FOXBORO TRANSMITTERS

Notes: NO SPECIFIC ACCIDENT ANALYSIS TAKES CREDIT FOR ASSUMED OPERATION OF THESE DEVICES. THEIR USE IS REFERENCED BY EMERGENCY OPERATING PROCEDURES.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: EMERGENCY CORE COOLING	Operating Time	60 MIN	90 MIN	TABLE 7.5-2	WCNP 8541	SEPARATE EFFECTS	NONE
PLANT ID NO: IFI 51, 52, 53 & 54	Temperature (°F)	328.2	290	FIG 022.9-1 E-2	WCNP 8541	SEQUENTIAL	NONE
COMPONENT: DIFFERENTIAL PRESSURE TRANSMITTER	Pressure (PSIA)	22	74.7	N13.7-3	WCNP 8541	SEQUENTIAL	NONE
MANUFACTURER: FOXBORO	Relative Humidity (%)	100	100	7.5	WCNP 8541	SEQUENTIAL	NONE
MODEL NUMBER: E13DH-HSAHI-MCA	Chemical Spray	1.14% BORIC ACID & 15% NITROGEN	1.5% BORIC ACID @ 725 TO 10 PH NITROGEN	N 5.3.6	WCNP 8541	SEQUENTIAL	NONE
FUNCTION: MONITORING	Radiation (10 ⁶ rads)	6	76	REF 30	WCNP 8541	SEPARATE EFFECTS	NONE
ACCURACY: SPEC: FUNCTIONAL DEMON: ± 6%	Aging (years)						
SERVICE: BORDON INJECTION TANK DISCHARGE FLOW	Submergence	11'-6"	60 PSIG	DRWG 5570B C. D. E.	ENGRG 306MT	ENGINEERING REVIEW	NONE
LOCATION: INSIDE CONTAINMENT							
FLOOD LEVEL ELEV: 614'-0" ABOVE FLOOD LEVEL: NO							

*Documentation References: UNLESS OTHERWISE NOTED ALL REFERENCES ARE FSAR SECTIONS
 AEW-8541 WESTINGHOUSE ELECTRIC CORP.
 TOPICAL REPORT FOR ENVIRONMENTAL
 TESTING OF FOXBORO TRANSMITTERS

Notes: NO SPECIFIC ACCIDENT ANALYSIS TAKES CREDIT FOR ASSUMED OPERATION OF THESE DEVICES. THEIR USE IS REFERENCED BY EMERGENCY OPERATING PROCEDURES. INDICATIONS FROM OTHER DIVERSE INSTRUMENTS CAN SERVE OR CORROBORATE THE INTENDED FUNCTION.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: EMERGENCY COKE COOLING PLANT ID NO: IFI-7.60 & 266 COMPONENT: DIFFERENTIAL PRESSURE TRANSMITTER MANUFACTURER: ITT BARTON MODEL NUMBER: 332 FUNCTION: MONITORING ACCURACY: SPEC: FUNCTIONAL DEMON: FUNCTIONAL SERVICE: SIS PUMP DISCHARGE FLOW LOCATION: OUTSIDE CONTAINMENT FLOOD LEVEL ELEV: ABOVE FLOOD LEVEL: N/A	Operating Time	CONTINUOUS	CONTINUOUS	EMRGY PROCS	ENGRG JDMT	ENG'G REVIEW	NONE
	Temperature (°F)	110	160	9.9	MNFTR LIT.	ENG'G REVIEW	NONE
	Pressure (PSIA)	14.7	14.7	9.9	MNFTR LIT.	ENG'G REVIEW	NONE
	Relative Humidity (%)	90°F DRY BULB 76°F WET BULB	EXPLOSION PROOF CASE	9.9	MNFTR LIT.	ENG'G REVIEW	NONE
	Chemical Spray	NA	NA				NONE
	Radiation (10 ⁶ rads)	NA(M)	NA (M)	NA (M)	NOTE (M)	ENG'G REVIEW	NONE
	Aging (years)						
	Submergence	NA	NA				NONE

*Documentation References:

ALL REFS ARE TO FSAR SECTIONS
 UNLESS OTHERWISE NOTED

Notes: (M) TRANSMITTER IS LOCATED OUTSIDE
 ROOM CONTAINING RADIATION SOURCE
 & IS THUS SHIELDED FROM EFFECT.

MNFTR LIT: ITT BARTON PRODUCT/BULLETIN
 G1-23-3



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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: EMERGENCY CORE COOLING PLANT ID NO: IFI 310 4 320 COMPONENT: DIFFERENTIAL PRESSURE TRANSMITTER MANUFACTURER: FOXBORO MODEL NUMBER: E13DM-HSAM1 FUNCTION: MONITORING ACCURACY: SPEC: FUNCTIONAL DEMON: 1 6% SERVICE: RHR FLOW HEAT EXCHANGER OUTLET LOCATION: OUTSIDE CONTAINMENT FLOOD LEVEL ELEV: N/A ABOVE FLOOD LEVEL:	Operating Time	CONTINUOUS	CONTINUOUS	ENRGY PROCS	MNFTR LIT & WCAP 8591	SEPARATE EFFECTS & ENGINEERING REVIEW	NONE
	Temperature (°F)	110	180	9.9	MNFTR LIT.	ENGINEERING REVIEW	NONE
	Pressure (PSIA)	14.7	14.7	9.9	MNFTR LIT	ENGINEERING REVIEW	NONE
	Relative Humidity (%)	90°F DRY BULB 76°F WET BULB	NEMA 4 WATERTIGHT	9.9	MNFTR LIT	ENGINEERING REVIEW	NONE
	Chemical Spray	NA	NA				NONE
	Radiation (10 ⁶ rads)	NA (M)	NA (M)	NA (M)	NOTE (M)	ENGINEERING REVIEW	NONE
	Aging (years)						
	Submergence	NA	NA				NONE

*Documentation References: UNLESS OTHERWISE NOTED ALL REFERENCES ARE PSAR SECTIONS.

MNFTR-LIT - FOXBORO GENERAL SPECIFICATION GS-2A-1C1E

Notes: (M) LOCATION OF TRANSMITTER IS OUTSIDE ROOM FOR WHICH RADIATION SOURCE IS GENERATED THEREFORE SHIELDED FROM EFFECT

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: EMERGENCY CORE COOLING PLANT ID NO: IFI 311 & 321. COMPONENT: DIFFERENTIAL PRESSURE TRANSMITTER MANUFACTURER: ITT BARTON MODEL NUMBER: 332 FUNCTION: MONITORING ACCURACY: SPEC: FUNCTIONAL DEMON: FUNCTIONAL SERVICE: RHR FLOW HEAT EXCHANGER OUTLET LOCATION: OUTSIDE CONTAINMENT FLOOD LEVEL ELEV: N/A ABOVE FLOOD LEVEL: N/A	Operating Time	CONTINUOUS	CONTINUOUS	EMRGY PROC.	ENGRG JDMT	ENGINEERING REVIEW	NONE
	Temperature (°F)	110	160	9.9	MNFR LIT.	ENGINEERING REVIEW	NONE
	Pressure (PSIA)	14.7	14.7	9.9	MNFR LIT.	ENGINEERING REVIEW	NONE
	Relative Humidity (%)	90°F DRY BULB 76°F WET BULB	EXPLOSION PROOF CASE	9.9	MNFR LIT.	ENGINEERING REVIEW	NONE
	Chemical Spray	NA	NA				NONE
	Radiation (10 ⁶ rads)	NA (M)	NA (LM)	NA	NOTE (LM)	ENGINEERING REVIEW	NONE
	Aging (years)						
	Submergence	NA	NA				NONE

*Documentation References: ALL REFERENCES ARE FSAR SECTIONS UNLESS OTHERWISE NOTED
MNFR LIT. ITT BARTON PRODUCT/BULLETIN
G1-23-3

Notes: (LM) LOCATION OF TRANSMITTER IS OUTSIDE ROOM FOR WHICH RADIATION SOURCE IS GENERATED THEREFORE SHIELDED FROM EFFECT.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: LIST A PLANT ID NO: MFC-110, 111, 120, 121, 130, 131, 140 & 141 COMPONENT: DIFFERENTIAL PRESSURE TRANSMITTER MANUFACTURER: ITT BARTON MODEL NUMBER: 764 FUNCTION: ACTUATION & NORMAL MONITORING ACCURACY: SPEC: -10% DEMON: +5% SERVICE: MAIN STEAM FLOW LOCATION: IN CONTAINMENT FLOOD LEVEL ELEV: 614'-0" ABOVE FLOOD LEVEL: NO	Operating Time	1.5 SEC	4/sec 10 MINS	Q. 022.9-3 12-2	REF. 30	RESPONSE TIME TEST SEQUENTIAL	NONE
	Temperature (°F)	328.2	360 + 250	Q FIG. 022.9-1 & 2	REF. 30	SEQUENTIAL & COMBINED EFFECTS	NONE
	Pressure (PSIA)	22	89.7 + 14.7	N 13.7-3	REF 30	SEQUENTIAL & COMBINED EFFECTS	NONE
	Relative Humidity (%)	100	100	7.5	REF 30	SEQUENTIAL	NONE
	Chemical Spray	1.14% BORIC ACID & .15% NaOH	1.14% BORIC ACID & .17% NaOH	N 5.3.6	REF 30	SEQUENTIAL	NONE
	Radiation (10 ⁶ rads)	.04	50 @ 2.5/HR	REF 30	REF 30	COMBINED EFFECTS	NONE
	Aging (years)						
FLOOD LEVEL ELEV: 614'-0" ABOVE FLOOD LEVEL: NO	Submergence	18 FT	75 PSIG	DRWG 5570D	ENGR JDGMT	ENGINEERING REVIEW	

*Documentation References: UNLESS OTHERWISE NOTED ALL REFERENCES ARE FSAR SECTIONS.
 30 - WESTINGHOUSE ELECTRIC CORP.
 COMMUNICATION NS-TMA-1950

Notes: ADVERSE ENVIRONMENT GENERATING ACCIDENT ANALYSIS FOR WHICH CREDIT IS ASSUMED FOR OPERATION OF THESE DEVICES ARE 14.2.5 AND UNIT 2 14.2.8

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: MAIN STEAM & REACTOR TRIP ACTUATION PLANT ID NO: MPC 253 & 254 COMPONENT: PRESSURE TRANSMITTER MANUFACTURER: FOXBORD MODEL NUMBER: E11GM-HSADI FUNCTION: NORMAL MONITOR & ACTUATION ACCURACY: SPEC: DEMON: SERVICE: FIRST STAGE TURBINE PRESSURE LOCATION: OUTSIDE CONTAINMENT FLOOD LEVEL ELEV: N/A ABOVE FLOOD LEVEL:	Operating Time						
	Temperature (°F)						
	Pressure (PSIA)						
	Relative Humidity (%)						
	Chemical Spray						
	Radiation (10 ⁶ rads)						
	Aging (years)						
	Submergence						

*Documentation References:

Notes:

THESE DEVICES WERE INCLUDED IN THE FIRST SUBMITTAL OF IEB 79-01B TO ACCOUNT FOR DEVICES REFERENCED BY 14.2.5 ACCIDENT ANALYSIS. THESE DEVICES ARE NOT REQUIRED EQUIPMENT DUE TO THE 4022.16 EXCLUSION OF THE NEUTRON DETECTOR. THE DETECTORS AND THESE DEVICES FORMED A COINCIDENCE LOGIC FOR REACTOR TRIP. THEREFORE EXCLUSION OF THE DETECTORS CAUSES EXCLUSION OF THESE DEVICES.

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: LIST B PLANT ID NO: MPP 210, 211, 220, 221, 230, 231, 240 & 241 COMPONENT: PRESSURE TRANSMITTER MANUFACTURER: FOXBORO MODEL NUMBER: E11GM-HSAE1 (MCA) FUNCTION: POST ACCIDENT NORMAL MONITOR & ACTION ACCURACY: SPEC: +10% DEMON: -12.5% SERVICE: MAIN STEAM PRESSURE LOCATION: OUTSIDE CONTAINMENT FLOOD LEVEL ELEV: N/A ABOVE FLOOD LEVEL: N/A	Operating Time	5 SEC & LONG TERM	≤ 3 SEC	NI3.7-1	TECH. SPEC 3.3-5	RESPONSE TIME TESTING	NONE
	Temperature (°F)	230	318	FIG. 0-27	NS-PLC-5023	SEQUENTIAL	NONE
	Pressure (PSIA)	2.6.2	90	FIG. 0-27	NS-PLC-5023	SEQUENTIAL	NONE
	Relative Humidity (%)	100	100	7.5	NS-PLC-5023	SEQUENTIAL	NONE
	Chemical Spray	NONE	NONE	N/A	N/A	N/A	NONE
	Radiation (10 ⁶ rads)	N/A	50	N/A	NS-PLC-5023	SEPARATE EFFECTS	NONE
	Aging (years)						
FLOOD LEVEL ELEV: N/A ABOVE FLOOD LEVEL: N/A	Submergence	N/A	N/A				

*Documentation References: UNLESS OTHERWISE NOTED
ALL REFERENCES ARE TO FSAR SECTIONS

Notes: ADVERSE ENVIRONMENT GENERATING ACCIDENT ANALYSIS FOR WHICH CREDIT IS ASSUMED FOR OPERATION OF THESE DEVICES IS 14.2.5

NS-PLC-5023 WESTINGHOUSE ELECTRIC CORP.
CORRESPONDENCE WITH AS NOTED
IDENTITY.

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: LIST C PLANT ID NO: MPP-212, 222, 232 & 242 COMPONENT: PRESSURE TRANSMITTER MANUFACTURER: FOXBORO MODEL NUMBER: E11GM-HSAE1 FUNCTION: POST ACCIDENT & NORMAL MONITOR & ACTIVATION ACCURACY: SPEC: +10% DEMON: ± 2.5% SERVICE: MAIN STEAM PRESSURE LOCATION: OUTSIDE CONTAINMENT FLOOD LEVEL ELEV: N/A ABOVE FLOOD LEVEL: N/A	Operating Time	5 SEC & LONG TERM	≤ 3 SEC	N13.7	TECH. SPEC. 3.3-5	RESPONSE TIME TESTING	NONE
	Temperature (°F)	230	180	FIG. 0-27	MANFTR LIT.	ENGINEERING REVIEW	NONE
	Pressure (PSIA)	26.2	14.7	FIG 0-27	NONE	ENGINEERING REVIEW	NONE
	Relative Humidity (%)	100	NEMA 4 WATER-TIGHT	7.5	MANFTR LIT.	ENGINEERING REVIEW	NONE
	Chemical Spray	NONE	NONE	N/A	N/A	N/A	NONE
	Radiation (10 ⁶ rads)	N/A	N/A	N/A	N/A	N/A	NONE
	Aging (years)						
	Submergence	N/A	N/A				

*Documentation References: UNLESS OTHERWISE NOTED
 ALL REFERENCES ARE TO FSAR SECTIONS.
 MANFTR LIT FOXBORO PRODUCT SPECIFICATION
 PSS 7H-1B3H

Notes: THE ARRANGEMENT OF THE DIFFERENTIAL PRESSURE BETWEEN STEAMLINES LOGIC IS SUCH THAT FAILURE OF THESE DEVICES COUPLED WITH A SINGLE FAILURE WILL STILL GENERATE THE ACCIDENT ANALYSIS ASSUMED OPERATION. THEREFORE CONTROL GRADE HARDWARE IS ACCEPTABLE. ACCIDENT ANALYSIS SECTION IS 14.2.5.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: REDUCTOR TRIP ACTUATION PLANT ID NO: N 35 & 36 COMPONENT: 10N CHAMBER MANUFACTURER: WESTINGHOUSE MODEL NUMBER: WL 23690 FUNCTION: NORMAL MONITORING & ACTUATION (D) ACCURACY: SPEC: DEMON: SERVICE: INTERMEDIATE RANGE NEUTRON FLUX LOCATION: INSIDE CONTAINMENT FLOOD LEVEL ELEV: ABOVE FLOOD LEVEL:	Operating Time						
	Temperature (°F)						
	Pressure (PSIA)						
	Relative Humidity (%)						
	Chemical Spray						
	Radiation (10 ⁶ rads)						
	Aging (years)						
	Submergence						

NOT APPLICABLE

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(117)
134-135

*Documentation References:

Notes: (D) ACTUATION REQUIREMENTS ARE FOR NON-ADVERSE ENVIRONMENT ACCIDENT ANALYSIS. CREDIT FOR FUNCTION OF DEVICE REFERENCED BY P1, 14.3.1, 14.2.5 & 14.2.8 ANALYSIS. A PER C. 14.2.10; OPERATION IS NOT ASSUMED IN LOCA OR HELB ANALYSIS.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: REACTOR TRIP ACTUATION PLANT ID NO: N 41A, 41B, 42A, 42B, 43A, 43B, 44A & 44B COMPONENT: 10N CHAMBER MANUFACTURER: WESTINGHOUSE MODEL NUMBER: WL 23686 FUNCTION: NORMAL MONITORING & ACTUATION (D) ACCURACY: SPEC: DEMON: SERVICE: POWER RANGE NEUTRON FLUX LOCATION: INSIDE CONTAINMENT FLOOD LEVEL ELEV: ABOVE FLOOD LEVEL:	Operating Time						
	Temperature (°F)						
	Pressure (PSIA)						
	Relative Humidity (%)						
	Chemical Spray						
	Radiation (10 ⁶ rads)						
	Aging (years)						
	Submergence						

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*Documentation References:

Notes: (D) ACTUATION REQUIREMENTS ARE FOR
NON-ADVERSE ENVIRONMENT ACCIDENT ANALYSIS.
CREDIT FOR FUNCTION OF DEVICE REFERENCED
BY P.1, 14.3.1, 14.2.5 & 14.2.8 ANALYSIS. A. P. 1.1
(14.2.10), OPERATION IS NOT ASSUMED
IN LOCA OR HELB ANALYSTS.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: LIST J	Operating Time	4 MONTHS	4 MONTHS	Q ^(B) 030.1	REF 30	SEQUENTIAL & COMBINED EFFECTS	NONE
PLANT ID NO: NLP-151 NLP-152 NLP-153	Temperature (°F)	160	160	FIG. 14.3.4 -2	II	II	II
COMPONENT: DIFFERENTIAL PRESSURE TRANSMITTER	Pressure (PSIA)	27.2	89.7 & 14.7	AEW 6504	II	II	II
MANUFACTURER: ITT BARTON	Relative Humidity (%)	100	100	7.5	II	II	II
MODEL NUMBER: 764	Chemical Spray	1.14% BORIC ACID & 0.15% NaOH pH 8.4	1.14% BORIC ACID & 0.17% NaOH pH 8.5	N 5.3.6	II	SEQUENTIAL	II
FUNCTION: LONG TERM POST ACCIDENT & NORMAL MONITORING *	Radiation (10 ⁶ rads)	40	50 AT 2.5 /HR.	Q ^(B) 030.1	II	COMBINED EFFECTS	II
ACCURACY: SPEC: +25 % DEMON: -5 %	Aging (years)						
SERVICE: PRESSURIZER LEVEL	Submergence	NA	NA	DRWG 5581B	NA	NA	NONE
LOCATION: INSIDE CONTAINMENT							
FLOOD LEVEL ELEV: 6111'-0"							
ABOVE FLOOD LEVEL: YES							

*Documentation References: UNLESS OTHERWISE NOTED
ALL REFERENCES ARE FSAR SECTIONS.
REF. 30 - WESTINGHOUSE ELECTRIC CORP.
(COMMUNICATION) NS-TMA-19.57

Notes: (B) - REQUIREMENTS ADDRESSED IN REF. 30
WHICH WAS SUBMITTED IN RESPONSE TO
QUESTION 030.1

*ACTUATION FUNCTION IN 14.2.5 ANALYSIS IS RELIEVED
PER OUR RESPONSE TO IER-79-06A WHICH
REPLACED LEVEL CONTRIBUTION TO ACTUATION
LOGIC WITH A CONSTANT "TRIP" SIGNAL.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: LIST E	Operating Time	1.5 SEC E 4 MONTH	23 SEC F 4 MONTH	Q030.1 EQ022.1 1-3 (B)	TECH SPEC 3.3-5 REF 30	RESPONSE TIME TESTING AND SEQUENTIAL	NONE
PLANT ID NO: NPP-151 152 E 153	Temperature (°F)	328.2 peak	360 E 250	Q FIG 022.7-1 E-2	REF 30	SEQUENTIAL + COMBINED EFFECTS	NONE
COMPONENT: PRESSURE TRANSMITTER MANUFACTURER: ITT BARTON	Pressure (PSIA)	22	89.7 E 14.7	N13.7-3	REF 30	SEQUENTIAL + COMBINED EFFECTS	NONE
MODEL NUMBER: 763	Relative Humidity (%)	100	100	7.5	REF 30	SEQUENTIAL + COMBINED EFFECTS	NONE
FUNCTION: POST ACCIDENT E NORMAL MONITOR + ACTUATION	Chemical Spray	1.14% BORIC ACID + 15% NAOH PH 8.5	1.14% BORIC ACID + 17% NAOH PH 8.5	N5.3.6	REF 30	SEQUENTIAL	NONE
ACCURACY: SPEC: ± 10% DEMON: +14% (A) E - 5%	Radiation (10 ⁶ rads)	.6	.76	REF 30	REF 30	COMBINED EFFECTS	NONE
SERVICE: PRESSURIZER PRESSURE	Aging (years)						
LOCATION: INSIDE CONTAINMENT							
FLOOD LEVEL ELEV: 614'-0" ABOVE FLOOD LEVEL: YES	Submergence	NA	NA	NA	DRWG 55818	NA	NONE

*Documentation References: UNLESS OTHERWISE NOTED ALL REFERENCES ARE FSAR SECTIONS.

REF. 30 - WESTINGHOUSE ELECTRIC CORP.
CORRESPONDENCE NS-TMA-1950

Notes: (B) REQUIREMENTS ADDRESSED IN REFERENCE 30 WHICH WAS SUBMITTED IN RESPONSE TO QUESTION 020.1 14.2.5 E 14.2.8 IS THE ACCIDENT ANALYSIS GENERATING AN ADVERSE ENVIRONMENT FOR WHICH CREDIT IS ASSUMED FOR OPERATION OF THESE DEVICES.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: LIST E PLANT ID NO: NPP 151 152 E153 COMPONENT: PRESSURE TRANSMITTER MANUFACTURER: I T T BARTON MODEL NUMBER: 763 FUNCTION: POST ACCIDENT MONITOR + ACTUATION ACCURACY: SPEC: $\pm 10\%$ DEMON: $\pm 14\%$ (A) SERVICE: PRESSURIZER PRESSURE LOCATION: INSIDE CONTAINMENT FLOOD LEVEL ELEV: 614'-0" ABOVE FLOOD LEVEL: YES	Operating Time	.715 SEC LLOCA 78 SEC SLOCA	11.0 SEC 4 MONTH	TABLE 14.3-1-6 14.3-2-1	TECH SPEC 3.3-2-1 REF 30	RESPONSE TIME TEST AND SEQUENTIAL	NONE
	Temperature (°F)	250	320 + 250	NO. 3.1-3 + FIG N13.13-1	REF 30	SEQUENTIAL + COMBINED EFFECTS	NONE
	Pressure (PSIA)	29.1	89.7 + 14.7	14.3.4	REF 30	SEQUENTIAL + COMBINED EFFECTS	NONE
	Relative Humidity (%)	100	100	7.5	REF 30	SEQUENTIAL + COMBINED EFFECTS	NONE
	Chemical Spray	1.14% BORIC ACID + .15% NaOH	1.14% BORIC ACID + .17% NaOH	N5.3.6	REF 30	SEQUENTIAL	NONE
	Radiation (10 ⁶ rads)	.07	50 @ 2.5/HR	WCAP 7410-L VOL I	REF 30	COMBINED EFFECTS	NONE
	Aging (years)						
	Submergence	NA	NA	NA	DRWG 55818	NA	NONE

*Documentation References: UNLESS OTHERWISE NOTED ALL REFERENCES ARE FSAR SECTIONS

Notes: 14.3-1 IS THE ACCIDENT ANALYSIS GENERATING AN ADVERSE ENVIRONMENT FOR WHICH CREDIT IS ASSUMED FOR OPERATION OF THESE DEVICES.

REF 30 - WESTINGHOUSE ELECTRIC CORP.
CORRESPONDENCE NS-TMA-1950

(A) FRACTURE MECHANICS ANALYSIS HAS SHOWN THIS VALUE TO BE ACCEPTABLE REFERENCE
AEP: NRC: 00192

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: LIST E PLANT ID NO: NPP-151, 152, 153 COMPONENT: PRESSURE TRANSMITTER MANUFACTURER: ITT BARTON MODEL NUMBER: 763 LONG TERM FUNCTION: POST ACCIDENT & NORMAL MONITOR & ACTUATION ACCURACY: SPEC: $\pm 10\%$ DEMON: -5% SERVICE: PRESSURIZER PRESSURE LOCATION: INSIDE CONTAINMENT FLOOD LEVEL ELEV: 614'-0" ABOVE FLOOD LEVEL: YES	Operating Time	4 MONTH	4 MONTH	Q ^(B) 030.1	REF 30	SEQUENTIAL & COMBINED EFFECTS	NONE
	Temperature (°F)	160	160	F16 14.3.4-2	REF 30	SEQUENTIAL & COMBINED EFFECTS	NONE
	Pressure (PSIA)	27.2	89.7	REW 6504	REF 30	SEQUENTIAL & COMBINED EFFECTS	NONE
	Relative Humidity (%)	100	100 & 0	7.5	REF 30	SEQUENTIAL & COMBINED EFFECTS	NONE
	Chemical Spray	1.14% BORIC ACID + .15% NaOH	1.14% BORIC ACID + .17% NaOH	NS.3.6	REF 30	SEQUENTIAL	NONE
	Radiation (10 ⁶ rads)	40	50 @ 2.5/HK	Q ^(B) 030.1	REF 30	COMBINED EFFECTS	NONE
	Aging (years)						
FLOOD LEVEL ELEV: 614'-0" ABOVE FLOOD LEVEL: YES	Submergence	NA	NA	NA	DWRG 55818	NA	NONE

*Documentation References: UNLESS OTHERWISE NOTED ALL REFERENCES ARE FSAR SECTIONS.

REF. 30 - WESTINGHOUSE ELECTRIC CORP.
CORRESPONDENCE NS-TMA-1950.

Notes: (B) REQUIREMENTS ADDRESSED IN REFERENCE 30 WHICH WAS SUBMITTED IN RESPONSE TO FSAR QUESTION 030.1 14.3.1 IS THE ACCIDENT ANALYSIS GENERATING AN ADVERSE ENVIRONMENT FOR WHICH CREDIT IS ASSUMED FOR OPERATION OF THESE DEVICES.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: REACTOR COOLANT + POST ACCIDENT MONITOR PLANT ID NO: NPS 121 + 122 COMPONENT: PRESSURE TRANSMITTER MANUFACTURER: ITT BARTON MODEL NUMBER: 763 FUNCTION: MONITORING ACCURACY: SPEC: $\pm 10\%$ DEMON: $\pm 10\%$ SERVICE: REACTOR COOLANT PRESSURE LOCATION: INSIDE CONTAINMENT FLOOD LEVEL ELEV: 614'-0" ABOVE FLOOD LEVEL: NO	Operating Time	4 MONTHS	4 MONTHS	REF 30	REF 30	SEQUENTIAL + COMBINED EFFECTS	NONE
	Temperature ($^{\circ}$ F)	328.2	330 \pm 32.0	FIG Q 022.9-1 E-2	REF 30	SEQUENTIAL + COMBINED EFFECTS	NONE
	Pressure (PSIA)	22	89.7 \pm 14.7	N13.7-3	REF 30	SEQUENTIAL + COMBINED EFFECTS	NONE
	Relative Humidity (%)	100	100	7.5	REF 30	SEQUENTIAL	NONE
	Chemical Spray	1.14% BORIC ACID + .15% NAOH	1.14% BORIC ACID + .17% NAOH	N 5.3.6	REF 30	SEQUENTIAL	NONE
	Radiation (10^6 rads)	4.6	.76	REF 30	REF 30	SEQUENTIAL + COMBINED EFFECTS	NONE
	Aging (years)						
FLOOD LEVEL ELEV: 614'-0" ABOVE FLOOD LEVEL: NO	Submergence	12 FT	75 PSIG	DRWG 557081C	ENGR JUGMT	ENGINEERING REVIEW	NONE

*Documentation References: UNLESS OTHERWISE NOTED
ALL REFERENCES ARE FSAR SECTIONS.
30 - WESTINGHOUSE ELECTRIC CORP.
COMMUNICATION NS-TMA-1950.

Notes: Q022.8, Q022.16 + Q212.35 ARE THE
ADVERSE ENVIRONMENT GENERATING ACCIDENT
ANALYSIS FOR WHICH CREDIT IS ASSUMED
FOR OPERATION OF THESE DEVICES.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: REACTOR COOLANT & POST ACCIDENT MONITOR	Operating Time	4 MONTHS	4 MONTHS	REF 30	REF 30	SEQUENTIAL & COMBINED EFFECTS	NONE
PLANT ID NO: NPS 121 & 122	Temperature (°F)	250 & 160	280	FIGS 14.3.4-2 & 113.13-1	REF 30	SEQUENTIAL & COMBINED EFFECTS	NONE
COMPONENT: PRESSURE TRANSMITTER	Pressure (PSIA)	29.1 & 27.2	89.7 & 14.7	14.3.4 & REW 6504	REF 30	SEQUENTIAL & COMBINED EFFECTS	NONE
MANUFACTURER: ITT BARTON	Relative Humidity (%)	100	100	7.5	REF 30	SEQUENTIAL	NONE
MODEL NUMBER: 763	Chemical Spray	1.14% BORIC ACID & .15% NaOH	1.14% BORIC ACID & .17% NaOH	N 5.3.6	REF 30	SEQUENTIAL	NONE
FUNCTION: LONG TERM MONITORING	Radiation (10 ⁶ rads)	40	50	REF 30	REF 30	SEQUENTIAL & COMBINED EFFECTS	NONE
ACCURACY: SPEC: ± 10% DEMON: ± 10%	Aging (years)						
SERVICE: REACTOR COOLANT PRESSURE	Submergence	12 FT	75 PSIG	DRWG 55708X	ENGR JDGMT	ENGINEERING REVIEW	NONE
LOCATION: INSIDE CONTAINMENT							
FLOOD LEVEL ELEV: 614'-0"							
ABOVE FLOOD LEVEL: NO							

*Documentation References: UNLESS OTHERWISE NOTED
ALL REFERENCES ARE FSAR SECTIONS.

REF. 30 - WESTINGHOUSE ELECTRIC CORP.
COMMUNICATION NS-TMA-1950,

Notes: Q022.8, Q022.16 & Q212.35 ARE THE
ADVERSE ENVIRONMENT GENERATING ACCIDENT
ANALYSIS FOR WHICH CREDIT IS ASSUMED
FOR OPERATION OF THESE DEVICES.

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: REACTOR COOLANT & REMOTE SHUTDOWN MONITORING PLANT ID NO: NPS 153 COMPONENT: PRESSURE TRANSMITTER MANUFACTURER: ITT BARTON MODEL NUMBER: 703 FUNCTION: LONG TERM MONITORING ACCURACY: SPEC: $\pm 10\%$ DEMON: -5% SERVICE: PRESSURIZER PRESSURE LOCATION: INSIDE CONTAINMENT FLOOD LEVEL ELEV: 61'-0" ABOVE FLOOD LEVEL: YES	Operating Time	4 MONTH	4 MONTH	Q030.1 NOTE(B)	REF. 30	SEQ. & SEP. EFFECTS	NONE
	Temperature (°F)	160	160	FIG. 14.3.4.2	REF. 30	SEQ. & SEP. EFFECTS	NONE
	Pressure (PSIA)	27.2	89.7	AEW 6504	REF. 30	SEQ. & SEP. EFFECTS	NONE
	Relative Humidity (%)	100	100 & 0	7.5	REF. 30	SEQ. & SEP. EFFECTS	NONE
	Chemical Spray	1.14% boric acid & .15% NaOH	1.14% boric acid & .15% NaOH	N 5.3.6	REF. 30	SEQ.	NONE
	Radiation (10 ⁶ rads)	40	50 @ 2.5/HR	Q030.1 NOTE(B)	REF. 30	SEP. EFFECTS	NONE
	Aging (years)						
FLOOD LEVEL ELEV: 61'-0" ABOVE FLOOD LEVEL: YES	Submergence	NA	NA	DRNG 5581B	ENGRG REVIEW	ENGINEERING REVIEW	NONE

*Documentation References:

UNLESS OTHERWISE NOTED, ALL
REFS ARE TO FSAR SECTIONS.

REF 30: WESTINGHOUSE ELECTRIC CORP.
CORRESPONDENCE NS-TMA-1950.

Notes: REQUIREMENT & QUALIFICATIONS SAME AS
MONITORING PHASE REQUIREMENTS AND QUALI-
FICATIONS OF NPP-151, 152 & 153 DEVICES.

(B) REQUIREMENTS ADDRESSED IN REF 30
WHICH WAS SUBMITTED IN RESPONSE
TO FSAR QUESTION Q030.1.
14.3.1 IS THE ACCIDENT ANALYSIS.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: LIST D PLANT ID NO: NTP-III, 121, 131, 141, 211, 221, 231 & 241 COMPONENT: RESISTANCE TEMPERATURE DETECTOR MANUFACTURER: SOSTMAN OR ROSEMOUNT MODEL NUMBER: 11834B OR 176 KF RESPECTIVELY FUNCTION: ISOLATION ACTION & NDKMHL MONITOR ACCURACY: SPEC: $\pm 7.3\%$ DEMON: -2.29% SERVICE: REACTOR COOLANT TEMPERATURE LOCATION: INSIDE CONTAINMENT FLOOD LEVEL ELEV: 614'-0" ABOVE FLOOD LEVEL: YES	Operating Time	10 SEC	<6 sec 2 WKS	N13.7	TECH SPEC 3.3-2 REF 28	RESPONSE TIME TEST SEQUENTIAL	NONE
	Temperature (°F)	328.2	330	Q FIG 022.9-1 & -2	REF 28	SEQUENTIAL	NONE
	Pressure (PSIA)	22.0	89.7	N13.7-3	REF 28	SEQUENTIAL	NONE
	Relative Humidity (%)	100	100	7.5	REF 28	SEQUENTIAL	NONE
	Chemical Spray	1.14% BORIC ACID + .15% NaOH	1.14% BORIC ACID + .17% NaOH	N5.3.6	REF 28	SEQUENTIAL	NONE
	Radiation (10 ⁶ rads)	.04	100	WCAP 7410-L VOL I	REF. 28	SEQUENTIAL	NONE
	Aging (years)						
FLOOD LEVEL ELEV: 614'-0" ABOVE FLOOD LEVEL: YES	Submergence	NA	NA	NA	DRWG 5507		

*Documentation References: UNLESS OTHERWISE NOTED:

ALL REFERENCES ARE FSAR SECTIONS

2.8 - WESTINGHOUSE ELECTRIC CORP.

ENVIRONMENTAL QUALIFICATIONS

WCAP-9157

Notes: ADVERSE ENVIRONMENT GENERATING ACCIDENT ANALYSIS FOR WHICH CREDIT IS ASSUMED FOR OPERATION OF THESE DEVICES IS N13.7, 14.2.5 & 14.2.8.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: REACTOR COOLANT PLANT ID NO: NTP 110 120 130 140 210 220 230 & 240 COMPONENT: RESISTANCE TEMPERATURE DETECTOR MANUFACTURER: SOSTMAN OR KOSEMOUNT MODEL NUMBER: 11834B OR 176KF RESPECTIVELY FUNCTION: IN PLACE SPARES ACCURACY: SPEC: N/A DEMON: SERVICE: REACTOR COOLANT TEMPERATURE LOCATION: INSIDE CONTAINMENT FLOOD LEVEL ELEV: ABOVE FLOOD LEVEL:	Operating Time						
	Temperature (°F)						
	Pressure (PSIA)						
	Relative Humidity (%)						
	Chemical Spray						
	Radiation (10 ⁶ rads)						
	Aging (years)						
	Submergence						

SEE NTP-III, 121, 131, 141, 211, 221, 231 & 241 SHEETS

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*Documentation References:

Notes: REQUIREMENTS AND QUALIFICATION FOR THESE DEVICES IDENTICAL TO NTP-III ETC. REQUIREMENTS AND QUALIFICATIONS

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: REACTOR COOLANT POST ACCIDENT MONITORING	Operating Time	4 MONTHS	4 MONTHS	NOTE LE1	REF. 28	SEQUENTIAL, COMBINED EFFECTS ENGINEERING ANALYSIS	NONE
PLANT ID NO: NTR-110, 120, 130, 140, 210, 220, 230 & 240	Temperature (°F)	160 & 328.2	160 & 330	FIGS 14, 3.42 & Q0227-1	11	SEQUENTIAL	11
COMPONENT: RESISTANCE TEMPERATURE DETECTOR MANUFACTURER: SOSTMOM OR ROSEMOUNT	Pressure (PSIA)	27.2 & 22	89.7	REV 6504 & TABLE H137-3	11	11	11
MODEL NUMBER: 119015 OR 176 KS	Relative Humidity (%)	100	100	7.5	11	11	11
FUNCTION: NORMAL & ACCIDENT MONITORING ACCURACY: SPEC: FUNCTIONAL DEMON: -7.5%	Chemical Spray	1.14% BORIC ACID & 15% NACOH PH 8.4	1.14% BORIC ACID & 17% NACOH PH 8.55	N 5.3.6	11	11	11
SERVICE: REACTOR COOLANT TEMPERATURE	Radiation (10 ⁶ rads)	40	100	NOTE LE1	11	COMBINED EFFECTS AND ENGINEERING ANALYSIS	11
LOCATION: INSIDE CONTAINMENT	Aging (years)						
FLOOD LEVEL ELEV: 614'-0" ABOVE FLOOD LEVEL: YES	Submergence	NA	NA	NA	DRWG- 5507	ENGINEERING REVIEW	NONE

*Documentation References: UNLESS OTHERWISE NOTED
REF 28 = WESTINGHOUSE ELECTRIC CORP
ENVIRONMENTAL QUALIFICATION REPORT
MCP-9157

Notes: Q-022.8 Q-022.16 & Q-022.35 ARE THE ADVERSE
ENVIRONMENT GENERATING ACCIDENT ANALYSES FOR
WHICH CREDIT IS ASSUMED FOR THE OPERATION OF THESE DEVICES.
(E) REF 28 STATES THAT A RADIATION DOSE OF 1x10⁶ RADS IS
EQUVALENT TO 12 YEARS OF OPERATION PLUS 2 WEEKS OF
MONITORING. REVIEW OF FIG. 2-1 IN REF 28 SHOWS THAT FOR
THE ACCIDENT DOSE OF 40x10⁶ RADS SPECIFIED FOR OTHER
ACCIDENT MONITORING DEVICES AT 1 MONTHS, THESE DEVICES
WOULD QUALIFY FOR ANNUAL 8 YEARS OF OPERATION.

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: LIST F PLANT ID NO: PPP - 300, 301 & 302 COMPONENT: PRESSURE TRANSMITTER MANUFACTURER: FOXBORO MODEL NUMBER: E11GM-HSRAI FUNCTION: ACCIDENT MONITORING & ACTUATION ACCURACY: SPEC: DEMON: SERVICE: CONTAINMENT PRESSURE LOCATION: OUTSIDE CONTAINMENT FLOOD LEVEL ELEV: N/A ABOVE FLOOD LEVEL:	Operating Time						
	Temperature (°F)						
	Pressure (PSIA)						
	Relative Humidity (%)						
	Chemical Spray						
	Radiation (10 ⁶ rads)						
	Aging (years)						
FLOOD LEVEL ELEV: N/A ABOVE FLOOD LEVEL:	Submergence						

*Documentation References:

Notes:

THESE DEVICES WERE INCLUDED IN THE FIRST SUBMITTAL OF 79-01B TO ACCOUNT FOR DEVICES REFERENCED BY ACCIDENT ANALYSIS P.1, 14.2.5, 14.2.8 & 14.3.1. AS DISCUSSED IN Q 022.16 & R 212.55 THESE DEVICES ARE NOT EXPOSED TO AN ADVERSE ENVIRONMENT FOR AN IN CONTAINMENT EVENT AND FOR AN ACCIDENT EVENT OUTSIDE CONTAINMENT NO CONTAINMENT PRESSURE SUPPRESSION IS REQUIRED. THESE DEVICES THEREFORE ARE ADEQUATELY PROTECTED FROM THE ACCIDENT EVENT.

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OF B&W
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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: LIST G	Operating Time						
PLANT ID NO: PPP-303	Temperature (°F)						
COMPONENT: PRESSURE TRANSMITTER	Pressure (PSIA)						
MANUFACTURER: FOXBORO	Relative Humidity (%)						
MODEL NUMBER: E11GM-HSAA1	Chemical Spray						
FUNCTION: ACCIDENT MONITORING	Radiation (10 ⁶ rads)						
ACCURACY: SPEC: DEMON:	Aging (years)						
SERVICE: CONTAINMENT PRESSURE							
LOCATION: OUTSIDE CONTAINMENT							
FLOOD LEVEL ELEV: N/A ABOVE FLOOD LEVEL: N/A	Submergence						

NOT APPLICABLE

*Documentation References:

Notes:

THESE DEVICES WERE INCLUDED IN THE FIRST SUBMITTAL OF 79-DIB TO ACCOUNT FOR DEVICES REFERENCED BY ACCIDENT ANALYSIS P. 14.2.5, 14.2.8, & 14.3.1. AS DISCUSSED IN Q 022.16 & Q 212.35, THESE DEVICES ARE NOT EXPOSED TO AN ADVERSE ENVIRONMENT FOR AN INCONTAINMENT EVENT AND FOR AN ACCIDENT EVENT OUTSIDE CONTAINMENT NO CONTAINMENT PRESSURE SUPPRESSION IS REQUIRED. THESE DEVICES THEREFORE ARE INADEQUATELY PROTECTED FROM THE ACCIDENT EVENT.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: CONTAINMENT VENTILATION ISOLATION PLANT ID NO: VRC-302	Operating Time	NA	NA				
COMPONENT: RADIATION MONITOR MANUFACTURER: WESTINGHOUSE MODEL NUMBER: 1101 FUNCTION: ACTUATION ACCURACY: SPEC: $\pm 6\%$ DEMON: $\pm 1\%$	Temperature ($^{\circ}$ F)	250	120	FIG 13.13-18 NO.3.1-3	E SPEC 677271		NONE (C)
	Pressure (PSIA)	28.8 \pm 29.1	28.7	N13.2 \pm 14.3 4	E SPEC 677271		NONE (C)
	Relative Humidity (%)	100	100	7.5	E SPEC 677271		NONE (C)
	Chemical Spray	1.14% BORIC ACID \pm .15% NaOH	NONE	N53.6			NONE (C)
SERVICE: CONTAINMENT AREA RADIATION	Radiation (10^6 rads)	.07	10 mR/HR	WLDP 7410-1 VOL I	E SPEC 677271		NONE (C)
LOCATION: INSIDE CONTAINMENT	Aging (years)						
FLOOD LEVEL ELEV: 612'-0" ABOVE FLOOD LEVEL: YES	Submergence	NA	NA				

*Documentation References:

Notes:

(C) INCLUDED IN FIRST SUBMITTAL OF 79-013 TO ACCOUNT FOR DEVICES WHICH ARE A CONTAINMENT PURGING ISOLATION ACTUATION DEVICE. THIS DEVICE IS ONE OF THE "DEFENSE IN DEPTH" DEVICES FOR ISOLATION WHICH INCLUDES ALL ESF ACTUATION DEVICES, THE CONTAINMENT AIR PARTICULATE & RADIOGAS DETECTOR, CONTAINMENT PRESSURE AND THIS AREA MONITOR. SINCE FOR AN INCONTAINMENT ACCIDENT EVENT THIS DEVICE SERVES A SECONDARY FUNCTION IN RELATION TO THE ESF ACTUATION AND CONTAINMENT PRESSURE DEVICES THE USE OF CONTROL GRADE EQUIPMENT IS CONSIDERED ADEQUATE. FURTHER THIS DEVICE IS TO BE UPGRADED AS REQUIRED BY OUR COMMITMENT TO NUREG 0578 ITEMS. THEREFORE THIS DOES NOT REPRESENT AN OUTSTANDING ITEM. Page 131

E SPEC: WESTINGHOUSE EQUIPMENT SPECIFICATION 677271.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: ESW	Operating Time	1 day		WCAP 9600			NONE
PLANT ID NO: WPS702, 706	Temperature (°F)	Fig 0-27	See note below	FSAR APP 6			NONE
COMPONENT: Pressure Switch	Pressure (PSIA)	Fig 0-27	See note below	FSAR APP 6			NONE
MANUFACTURER: Mercoid	Relative Humidity (%)	NA	NA	NA	NA	NA	NA
MODEL NUMBER: DA-7031-153	Chemical Spray	NA	NA	NA	NA	NA	NA
FUNCTION: Auto. Pump Start	Radiation (10 ⁶ rads)	NA	NA	NA	NA	NA	NA
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: ESW pressure	Submergence	NA	NA	NA	NA	NA	NA
LOCATION: Outside Containment							
FLOOD LEVEL ELEV: NA ABOVE FLOOD LEVEL: NA							

*Documentation References:

Notes: Justification for not having these switches qualified is as follows: The normally closed contact of these switches allows automatic starting of the ESW pump motors. Should the accident disable the switch making its contact go open (and stay open), the motor can be started by manually placing the control switch in the "close" position. We intend to replace these switches with ones that are qualified to survive the HELB environment.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: Reactor Coolant	Operating Time	1 DAY	30 DAYS	FSAR TABLE 7.5-2	43	Seq.	NONE
PLANT ID NO: Same as valve served	Temperature (°F)	Fig 022.9-1, -2	340	FSAR APP 9	43	Seq.	NONE
COMPONENT: Limit Switch	Pressure (PSIA)	Fig 1 Fig 2	84.7	ASME 6704	43	Seq.	NONE
MANUFACTURER: Namco	Relative Humidity (%)	100	100		43	Seq.	NONE
MODEL NUMBER: EA 180 *	Chemical Spray	2000PPMB 1.14% WT BORIC ACID PH 9-11	3000PPMB 1.72% WT BORIC ACID PH 10-5	T.S. 314.5 314.56	43	Seq.	NONE
FUNCTION: valve position indication	Radiation (10 ⁶ rads)	28	204	WCAP 7410-L Vol 1	43	Seq.	NONE
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: Per PORV's: NRV-151, 152, -153	Submergence	NA	NA	NA	NA	NA	NA
LOCATION: IN Containment							
FLOOD LEVEL ELEV: 612'							
ABOVE FLOOD LEVEL: yes							

*Documentation References:

43. Acme-Cleveland Development Co: Qual of Namco Controls
Limit Switch, Sept 5, 1978

Notes:

* to be installed as per NUREG 578.

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SII
LSI

from Ref. 43. QUAL. of NAMCO Controls Limit Switch

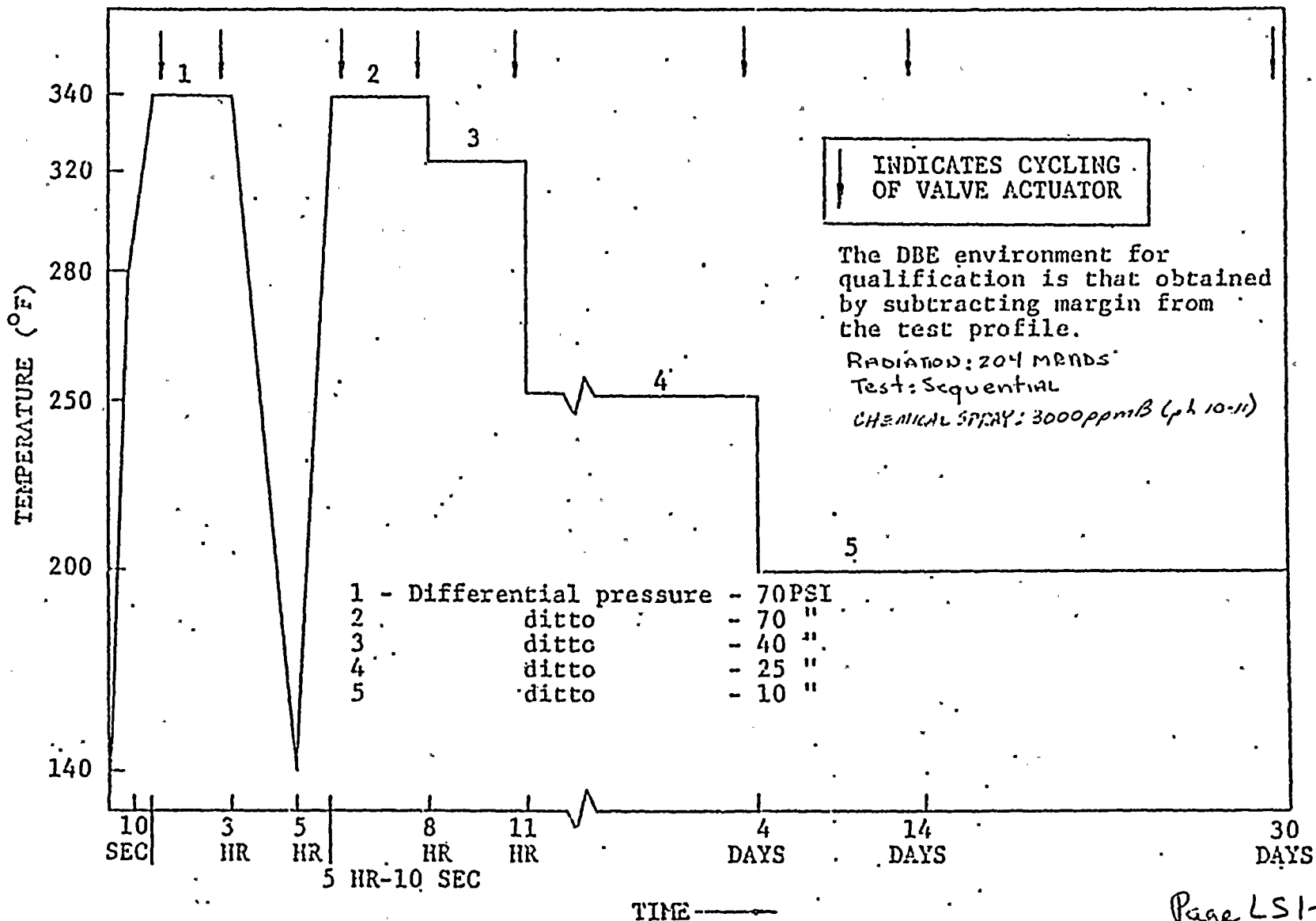


Fig 1
 Test Chamber Temperature Profile for Accident Environment Simulation
 (Taken from IEEE Standard 382-1972)

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: CYC S, SI, RHR	Operating Time	1 YEAR	> 1 YRS		See Note B.	ENGINEERING REVIEW	NONE
PLANT ID NO: P.P-050,026, 035	Temperature (°F)	NA	NA	NA	NA	NA	NA
COMPONENT: Pump Motor	Pressure (PSIA)	NA	NA	NA	NA	NA	NA
MANUFACTURER: WESTINGHOUSE	Relative Humidity (%)	NA	NA	NA	NA	NA	NA
MODEL NUMBER: 5808Z, 5009H, 5009-P24	Chemical Spray	NA	NA	NA	NA	NA	NA
FUNCTION: Emergency Core Cooling	Radiation (10 ⁶ rads)	16.6	200	See Note A	See Note B	ENGINEERING REVIEW	NONE
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: Centrifugal Charging, Safety Injection & Residual Heat Removal Pumps	Submergence	NA	NA	NA	NA	NA	NA
LOCATION: Outside Containment							
FLOOD LEVEL ELEV: NA ABOVE FLOOD LEVEL: NA							

*Documentation References:

Notes:

- A) AEPSC NS&L calculation DC-N-6520-2.
- B) Westinghouse Test Report WCAP 7829.
letter of LFCASO(AEP) to F.Noone(WELCO) of 3-20-80.
letter of F.Noone(WELCO) to LFCASO(AEP) of 4-21-80.

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: Containment Spray PLANT ID NO: PP-009 COMPONENT: Pump Motor MANUFACTURER: Reliance MODEL NUMBER: frame # 5810 P FUNCTION: CT Spray ACCURACY: SPEC: NA DEMON: NA SERVICE: Containment Spray Pump LOCATION: Outside CT FLOOD LEVEL ELEV: NA ABOVE FLOOD LEVEL: NA	Operating Time	1 year	>1 YR		64	ENGINEERING REVIEW	NONE
	Temperature (°F)	NA	NA	NA	NA	NA	NA
	Pressure (PSIA)	NA	NA	NA	NA	NA	NA
	Relative Humidity (%)	NA	NA	NA	NA	NA	NA
	Chemical Spray	NA	NA	NA	NA	NA	NA
	Radiation (10 ⁶ rads)	17	100	AEPSC NS&L Calc, DC-N-6420-2	64	ENGINEERING REVIEW	NONE
	Aging (years)						
FLOOD LEVEL ELEV: NA ABOVE FLOOD LEVEL: NA	Submergence	NA	NA	NA	NA	NA	NA

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*Documentation References:

Notes:

64. Letter of 4/28/80 From
P.K Eaper to AEP- NRC-00344D.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: MAIN FEEDWATER & CONTAINMENT ISOLATION PLANT ID NO: FKV-210, 220, 230 & 240 COMPONENT: DIAPHRAM FOR AIR OPERATOR MANUFACTURER: FISHER CONTROLS CO. MODEL NUMBER: 667 FUNCTION: SHUTOFF & REGULATION ACCURACY: SPEC: FAIL CLOSED DEMON: FAIL CLOSED SERVICE: FEEDWATER FLOW REGULATION LOCATION: OUTSIDE CONTAINMENT FLOOD LEVEL ELEV: N/A ABOVE FLOOD LEVEL: N/A	Operating Time						
	Temperature (°F)						
	Pressure (PSIA)						
	Relative Humidity (%)						
	Chemical Spray						
	Radiation (10 ⁶ rads)						
	Aging (years)						
	Submergence						

SEE VCR-11 & 21

*Documentation References:

Notes:

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: FRV-210,220,230, & 240 PLANT ID NO: EPT 210,220, 230 & 240 COMPONENT: ELECTRO - PNEUMATIC TRANSDUCER MANUFACTURER: FISHER CONTROLS COMPANY MODEL NUMBER: 546 FUNCTION: VALVE MODULATION CONTROL ACCURACY: SPEC: FUNCTIONAL DEMON: FUNCTIONAL SERVICE: MAIN FEEDWATER FLOW CONTROL LOCATION: OUTSIDE CONFINEMENT FLOOD LEVEL ELEV: NA ABOVE FLOOD LEVEL: NA	Operating Time	NA	NA	EMRGY PRDCS	ENGRG ADGINT		NONE
	Temperature (°F)	223	320/288	FIG D-26	MNFTR LIT	SEQUENTIAL	NONE
	Pressure (PSIA)	20.5	90/59	FIG D-26	MNFTR LIT	SEQUENTIAL	NONE
	Relative Humidity (%)	100	100	FIG D-26	MNFTR LIT	SEQUENTIAL	NONE
	Chemical Spray	NA	NA				NONE
	Radiation (10 ⁶ rads)	NA	NA				NONE
	Aging (years)						
FLOOD LEVEL ELEV: NA ABOVE FLOOD LEVEL: NA	Submergence	NA	NA				NONE

*Documentation References: FSAR APPENDIX D.

MNFTR LIT - FISHER CONTROLS COMPANY

OPERATIONAL TESTS OF FISHER

TYPE 546 ELECTRO-PNEUMATIC TRANSDUCER

Notes:

The subject transducer is not required for the FRV to perform its safety function in the case of a LOCK or HELB.



EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: 1-210, FRU-220, FRU-230, FRU-240	Operating Time	25 SEC.	5 SEC.	D.4.2		VALVE TESTING	NONE
PLANT ID NO: XSD-241, 242, 243, 274, 275, 276, 277, 298	Temperature (°F)	223	160	FIG. D-26	MANF. LIT.	ANALYSIS BASED ON MEASURED DATA & MANF. LIT.	YES (F) REPLACE WITH MODEL 206-381-28VU
COMPONENT: SOLENOID VALVE	Pressure (PSIA)	20.5	NA	FIG D-26			II
MANUFACTURER: AUTOMATIC SWITCH CO. COMPANY	Relative Humidity (%)	100	NA	FIG D-26			II
MODEL NUMBER: HF-8300C58RU OR HF-8300B58RU	Chemical Spray	NA	NA				
FUNCTION: TRIP REGULATORY VALVE CLOSED.	Radiation (10 ⁶ rads)	NA	NA				
ACCURACY: SPEC: FUNCTIONAL DEMON: FUNCTIONAL	Aging (years)	NA	NA				
SERVICE: MAIN FEEDWATER MODULATING VALVES TRIP VALVES	Submergence	NA	NA				
LOCATION: OUTSIDE CONTAINMENT							
FLOOD LEVEL ELEV: NA							
ABOVE FLOOD LEVEL: NA							

*Documentation References: UNLESS OTHERWISE NOTED REFERENCES ARE FSAR SECTIONS

Notes: D.4.2 14.2.5 & 14.2.8 ARE THE ADVERSE ENVIRONMENT ACCIDENT ANALYSES FOR WHICH CREDIT FOR FUNCTION IS ASSUMED.

PRESENT CONFIGURATION ACCEPTABLE PENDING SOLENOID REPLACEMENT BECAUSE: MAIN FEEDWATER SHUT-OFF VALVES FMD-201 202 203 204 AND PUMP DISCHARGE VALVES FMD-251 & 252 AND PUMP TRIP ALSO STOP FEEDWATER FLOW WITHIN THE BOUNDS OF D.4.2 ACCIDENT ANALYSIS.

MANF. LIT: AUTOMATIC SWITCH CO. CATALOG NO. 30.

BULLETINS. 8300, 8302, 8315.

(F) QUALIFIED REPLACEMENTS ORDERED VIA PURCHASE ORDER 7895-251-9 DATED MAY 1, 1977. DEVICE IS ON SITE.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: RESIDUAL HEAT REMOVAL	Operating Time						
PLANT ID NO: IRY-310 & 320	Temperature (°F)						
COMPONENT: DIAPHRAM FOR RHR OPERATOR	Pressure (PSIA)						
MANUFACTURER: BAILEY	Relative Humidity (%)						
MODEL NUMBER: 656	Chemical Spray						
FUNCTION: VALVE POSITIONING	Radiation (10 ⁶ rads)						
ACCURACY: SPEC: FAIL OPEN DEMON: FAIL OPEN	Aging (years)						
SERVICE: RHR HEAT EXCHANGER OUTLET FLOW MODULATOR	Submergence						
LOCATION: OUTSIDE CONTAINMENT							
FLOOD LEVEL ELEV: NR ABOVE FLOOD LEVEL:							

*Documentation References:

Notes:

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: MAIN STEAM & CONTAINMENT ISOLATION PLANT ID NO: MRV 210, 220, 230 & 240 COMPONENT: STEAM PISTON FDR SLIDE VALVE MANUFACTURER: RTWOOD-MOKEL MODEL NUMBER: NONE FUNCTION: SHUTOFF ACCURACY: SPEC:FAIL CLOSED DEMON:FAIL CLOSED SERVICE: MAIN STEAM FLOW SHUTOFF LOCATION: OUTSIDE CONTAINMENT FLOOD LEVEL ELEV: N/A ABOVE FLOOD LEVEL:	Operating Time						
	Temperature (°F)						
	Pressure (PSIA)						
	Relative Humidity (%)						
	Chemical Spray						
	Radiation (10 ⁶ rads)						
	Aging (years)						
	Submergence						

*Documentation References:

Notes: VENTING OF THE STEAM SPACE ABOVE THE PISTON BY DUMP VALVES MRV-211, 212, 221, 222, 231, 232, 241 OR 242 FOR THEIR RESPECTIVE STEAM GENERATOR STOP VALVE WILL CAUSE MAIN STEAM SYSTEM PRESSURE TO DRIVE THE SUBJECT VALVE CLOSED. SEE FSAR SECTION 10 AND RESPONSE TO QUESTIONS 10.1 & 10.2 FOR FULL DESCRIPTION OF VALVE OPERATION.



EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: MAIN STEAM PLANT ID NO: MKV 211,212, 221,222,231,232, 241 & 242 COMPONENT: DIAPHRAM FOR AIR OPERATOR MANUFACTURER: FISHER CONTROLS CO. MODEL NUMBER: 657 FUNCTION: SHUTOFF INITIATION ACCURACY: SPEC:FAIL OPEN DEMON:FAIL OPEN SERVICE:STEAM GENERATOR STOP VALVE DUMP VALVE LOCATION: OUTSIDE CONTAINMENT FLOOD LEVEL ELEV: N/A ABOVE FLOOD LEVEL: N/A	Operating Time						
	Temperature (°F)						
	Pressure (PSIA)						
	Relative Humidity (%)						
	Chemical Spray						
	Radiation (10 ⁶ rads)						
	Aging (years)						
	Submergence						

*Documentation References:

Notes:

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: MRY 211, 212, 221, 222, 231, 232, 241 & 242 PLANT ID NO: XSO-211, 212, 221, 222, 231, 232, 241 & 242 COMPONENT: SOLENOID MANUFACTURER: AUTOMATIC SWITCH CO. MODEL NUMBER: HT 8316 B17 FUNCTION: CLOSURE ACTUATION ACCURACY: SPEC: FUNCTIONAL DEMON: FUNCTIONAL SERVICE: STEAM GENERATOR STOP VALVE DUMP VALVE LOCATION: OUTSIDE CONTAINMENT FLOOD LEVEL ELEV: N A ABOVE FLOOD LEVEL:	Operating Time	5 SEC	5 SEC	14.2.5	TECH SPEC 3.7.1.5	RESPONSE TIME TESTING	NONE
	Temperature (°F)	230	180	FIG 0-27	MFTR LIT		NONE (L)
	Pressure (PSIA)	26.2	14.7	FIG 0-27	MFTR LIT		NONE (L)
	Relative Humidity (%)	100	0	7.5	MFTR LIT		NONE (L)
	Chemical Spray	NA	NA				NA
	Radiation (10 ⁶ rads)	NA	NA				NA
	Aging (years)						
	Submergence	NA	NA				NA

*Documentation References:

MFTR LIT- AUTOMATIC SWITCH CO.
 CATALOG NO 30
 BULLETIN 8316

Notes: 14.2.5 & 14.2.8 ARE THE ADVERSE ENVIRONMENT.
 ACCIDENT ANALYSIS FOR WHICH CREDIT IS ASSUMED
 FOR OPERATION OF THE DEVICE.

(L) ACCIDENT ANALYSIS: Q212.25 SHOWS THAT
 MAIN STEAM LINE BREAK PLUS THE FAILURE OF ANOTHER
 STEAM LINE TO ISOLATE IS ACCEPTABLE. SINCE
 THE LOCATION OF THESE DEVICES IS SUCH THAT ONLY
 TWO STEAM GENERATOR STOP VALVES CAN BE AFFECTED
 BY ANY ONE BREAK. USE OF ^{Page} 57
 CONTROL GRADE DEVICES IS ACCEPTABLE

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: MAIN STEAM & CONTAINMENT ISOLATION PLANT ID NO: MRV 213, 223, 233 & 243 COMPONENT: DIAPHRAM FOR AIR OPERATOR MANUFACTURER: FISHER CONTROLS CO. MODEL NUMBER: 667 FUNCTION: PRESSURE RELIEF ACCURACY: SPEC: FAIL CLOSED DEMON: FAIL CLOSED SERVICE: MAIN STEAM PRESSURE RELIEF LOCATION: OUTSIDE CONTAINMENT FLOOD LEVEL ELEV: N/A ABOVE FLOOD LEVEL: N/A	Operating Time						
	Temperature (°F)						
	Pressure (PSIA)						
	Relative Humidity (%)						
	Chemical Spray						
	Radiation (10 ⁶ rads)						
	Aging (years)						
	Submergence						

*Documentation References:

Notes:

No credit is taken for
 the subject MRV's (the Steam Generator
 PORV's) in LOCA or HELB accident analysis.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: MRV-213, 223, 233 & 243 PLANT ID NO: EPT-213, 223, 233 & 243 COMPONENT: ELECTRO- PNEUMATIC TRANSDUCER MANUFACTURER: FISHER CONTROLS CO. MODEL NUMBER: 546 FUNCTION: VALVE MODULATION CONTROL ACCURACY: SPEC: FUNCTIONAL DEMON: FUNCTIONAL SERVICE: MAIN STEAM PRESSURE RELIEF LOCATION: OUTSIDE CONTAINMENT FLOOD LEVEL ELEV: NA ABOVE FLOOD LEVEL:	Operating Time	NA	NA	EMRGY PROC	ENGRG JDMT		NONE
	Temperature (°F)	230	320/288	FIG 0-27	MNFTK LIT	SEQUENTIAL	NONE
	Pressure (PSIA)	26.2	90/59	FIG 0-27	MNFTK LIT	SEQUENTIAL	NONE
	Relative Humidity (%)	100	100	FIG 0-27	MNFTK LIT	SEQUENTIAL	NONE
	Chemical Spray	NA	NA				NONE
	Radiation (10 ⁶ rads)	NA	NA				NONE
	Aging (years)						
	Submergence	NA	NA				NONE

*Documentation References: FSAR APPENDIX D

MNFTK LIT. FISHER CONTROLS COMPANY
 OPERATIONAL TESTS OF FISHER
 TYPE 546 ELECTRO-PNEUMATIC
 TRANSDUCER

Notes: No credit is taken for the subject
 MRV's (the Steam Generator PORV's)
 for LOCA or HELB accident analysis.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: REACTOR COOLANT PLANT ID NO: NRV-151 152 & 153 COMPONENT: DIAPHRAGM FOR AIR OPERATOR MANUFACTURER: MASONIELAN MODEL NUMBER: 37 AND 38 FUNCTION: PRESSURE RELIEF ACCURACY: SPEC: FAIL CLOSED DEMON: FAIL CLOSED SERVICE: PRESSURIZER POWER OPERATED RELIEF VALVE LOCATION: INSIDE CONFINEMENT FLOOD LEVEL ELEV: 612' ABOVE FLOOD LEVEL: YES	Operating Time						
	Temperature (°F)						
	Pressure (PSIA)						
	Relative Humidity (%)						
	Chemical Spray						
	Radiation (10 ⁶ rads)						
	Aging (years)						
	Submergence						

*Documentation References:

Notes:



EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: NRV-151 NRV-152 NRV-153	Operating Time	NA	NA	NA	SEE NOTE		NONE
PLANT ID NO: XSD-503 XSD-505 XSD-507	Temperature (°F)	328.2	SEE TEST PROFILE	FIG 022.9-12-2	REF. 29	SEQUENTIAL	NONE
COMPONENT: SOLENOID VALVE	Pressure (PSIA)	35.5	SEE TEST PROFILE	N13.8	II	II	II
MANUFACTURER: AUTOMATIC SWITCH COMPANY	Relative Humidity (%)	100	100	7.5	II	II	II
MODEL NUMBER: NP-831654V	Chemical Spray	1.14% BORIC ACID & .15% NaOH	3000 TPA BORIC ACID WITH 1.064M Na ₂ SiO ₃	N 5.3.6	II	II	II
FUNCTION: TRIP CONTROL VALVE CLOSED	Radiation (10 ⁶ rads)	40	150	REF 30	II	II	II
ACCURACY: SPEC: FUNCTIONAL DEMON: FUNCTIONAL	Aging (years)		4		II	II	II
SERVICE: PRESSURIZER PRESSURE CONTROL	Submergence	AIR	NA	NA	REF DRUGS	ENGINEERING DRAFTING REVIEW	
LOCATION: INSIDE CONTAINMENT							
FLOOD LEVEL ELEV: 612'-0"							
ABOVE FLOOD LEVEL: YES							

*Documentation References: UNLESS OTHERWISE NOTED ALL REFERENCES ARE FOR SECTIONS.
REF #29: AUTOMATIC SWITCH COMPANY REPORT NOS 21678/TR.

Notes: FUNCTION OF THESE DEVICES IS NOT ASSUMED BY ADVERSE ENVIRONMENT ACCIDENT ANALYSIS. SEE GENERAL NOTE 4.

REF. 30 - WESTINGHOUSE ELECTRIC CORP. COMMUNICATIONS NS-TMA-1950.

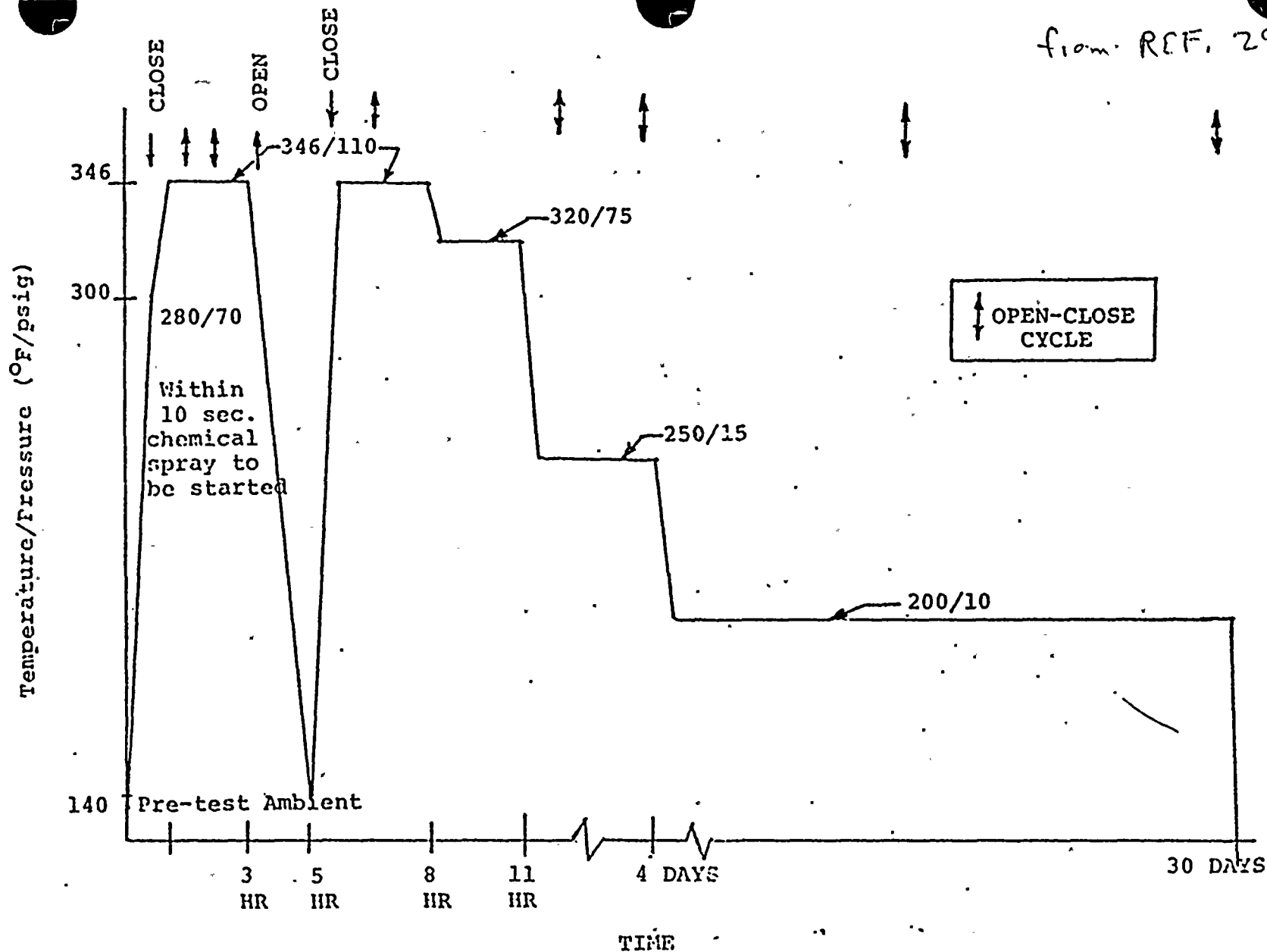


FIGURE 1
LOCA SIMULATION BY ENVIRONMENTAL
EXPOSURE (STEAM/CHEMICAL)

3-3

Temperature/Pressure Profile for simulation of loss-of coolant accident (LOCA) design basis event (DBE) by steam/chemical-spray environmental exposure.

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: CONTAINMENT ISOLATION	Operating Time						
PLANT ID NO: VCR-11 & 21	Temperature (°F)						
COMPONENT: DIAPHRAM FOR AIR OPERATOR	Pressure (PSIA)						
MANUFACTURER: G. KINNELL	Relative Humidity (%)						
MODEL NUMBER: 3250	Chemical Spray						
FUNCTION: ISOLATION	Radiation (10 ⁶ rads)						
ACCURACY: SPEC: FAIL LOADED DEMON: FAIL LOADED	Aging (years)						
SERVICE: ICE CONDENSER REFRIGERANT SUPPLY	Submergence						
LOCATION: INSIDE CONTAINMENT							
FLOOD LEVEL ELEV: 112'-0"							
ABOVE FLOOD LEVEL: YES							

*Documentation References:

Notes: FAILURE MECHANISM OF DIAPHRAM, DUE TO ACTUATOR SPRING LOADING, WILL CAUSE VALVE TO POSITION TO PROPER POSITION. THEREFORE NO QUALIFICATION TO ACCIDENT CONDITIONS IS NECESSARY.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: CONTAINMENT ISOLATION	Operating Time						
PLANT ID NO: VCR-1DI&102	Temperature (°F)						
COMPONENT: DIAPHRAM FOR AIR OPERATOR	Pressure (PSIA)						
MANUFACTURER: BAILEY	Relative Humidity (%)						
MODEL NUMBER: 656	Chemical Spray						
FUNCTION: ISOLATION	Radiation (10 ⁶ rads)						
ACCURACY: SPEC: FAIL CLOSED DEMON: FAIL CLOSED	Aging (years)						
SERVICE: INSTRUMENT ROOM PURGE SUPPLY & EXHAUST. RESPECTIVELY	Submergence						
LOCATION: INSIDE CONTAINMENT							
FLOOD LEVEL ELEV: 612'-0"							
ABOVE FLOOD LEVEL: YES							

*Documentation References:

Notes:

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: CONTAINMENT ISOLATION	Operating Time						
PLANT ID NO: VCR-103 & 105	Temperature (°F)						
COMPONENT: DIAPHRAM FOR AIR OPERATOR	Pressure (PSIA)						
MANUFACTURER: BAILEY	Relative Humidity (%)						
MODEL NUMBER: 722 & 732 RESPECTIVELY	Chemical Spray						
FUNCTION: ISOLATION	Radiation (10 ⁶ rads)						
ACCURACY: SPEC: FAIL CLOSED DEMON: FAIL CLOSED	Aging (years)						
SERVICE: CONTAINMENT PURGE SUPPLY	Submergence						
LOCATION: INSIDE CONTAINMENT							
FLOOD LEVEL ELEV: 612'-0"							
ABOVE FLOOD LEVEL: YES							

*Documentation References:

Notes:

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: CONTAINMENT ISOLATION	Operating Time						
PLANT ID NO: VCR-104 & 106	Temperature (°F)						
COMPONENT: DIAPHRAM FOR AIR OPERATOR	Pressure (PSIA)						
MANUFACTURER: BAILEY	Relative Humidity (%)						
MODEL NUMBER: 732 & 722 RESPECTIVELY	Chemical Spray						
FUNCTION: ISOLATION	Radiation (10 ⁶ rads)						
ACCURACY: SPEC: FAIL CLOSED DEMON: FAIL CLOSED	Aging (years)						
SERVICE: CONTAINMENT PURGE EXHAUST	Submergence						
LOCATION: INSIDE CONTAINMENT							
FLOOD LEVEL ELEV: 6118'-0"							
ABOVE FLOOD LEVEL: YES							

*Documentation References:

Notes:

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: CONTAINMENT ISOLATION	Operating Time						
PLANT ID NO: VCR-107	Temperature (°F)						
COMPONENT: DIAPHRAM FOR AIR OPERATOR	Pressure (PSIA)						
MANUFACTURER: BAILEY	Relative Humidity (%)						
MODEL NUMBER: 656	Chemical Spray						
FUNCTION: ISOLATION	Radiation (10 ⁶ rads)						
ACCURACY: SPEC: FAIL CLOSED DEMON: FAIL CLOSED	Aging (years)						
SERVICE: CONTAINMENT PRESSURE RELIEF EXHAUST	Submergence						
LOCATION: INSIDE CONTAINMENT							
FLOOD LEVEL ELEV: 42'-0"							
ABOVE FLOOD LEVEL: YES							

*Documentation References:

Notes:

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VCR-11, 21, 101, 102, 103, 104, 105, 106 & 107	Operating Time	5 SEC.	≤ 10 SEC.	Q D22.4	TECH. SPEC. 3.6-1	TIME RESPONSE TESTING	NONE
PLANT ID NO: XSO-12, 21, 121, 112, 123, 124, 125, 126 & 127	Temperature (°F)	328.2	SEE TEST PROFILE	FIG. REF. 0229-1 8-2	29	SEQUENTIAL	NONE
COMPONENT: SOLENOID VALVE	Pressure (PSIA)	35.5	SEE TEST PROFILE	N 13.8	11	11	11
MANUFACTURER: AUTOMATIC SWITCH COMPANY	Relative Humidity (%)	100	100	7.5	11	11	11
MODEL NUMBER: NP-831654V	Chemical Spray	1.14% BORE ACID AND 0.15% NaOH	3000 PPM BORIC ACID WITH 1.064M Na ₂ S ₂ O ₅	N 5.3.6	11	11	11
FUNCTION: TRIP ISOLATION VALVE CLOSED	Radiation (10 ⁶ rads)	110	150	REF. 30	11	11	11
ACCURACY: SPEC: FUNCTIONAL DEMONSTRATION	Aging (years)		4		11	11	11
SERVICE: CONTAINMENT VENTILATION & TCE CONDENSATE REJECTION ISOLATION	Submergence	NA	NA	NA	A.E.P. DRWG.	ENGINEERING DRAWING REVIEW	11
LOCATION: INSIDE CONTAINMENT AREAS							
FLOOD LEVEL ELEV: 11-612' 0"							
ABOVE FLOOD LEVEL: YES							

*Documentation References: UNLESS OTHERWISE NOTED REFERENCES ARE FSAR SECTIONS.

Notes:

REF #29 = AUTOMATIC SWITCH COMPANY REPORT AQS 21678/1TR.

REF #30 = WESTINGHOUSE ELECTRIC CORP. COMMUNICATION NS-TMA-1950.

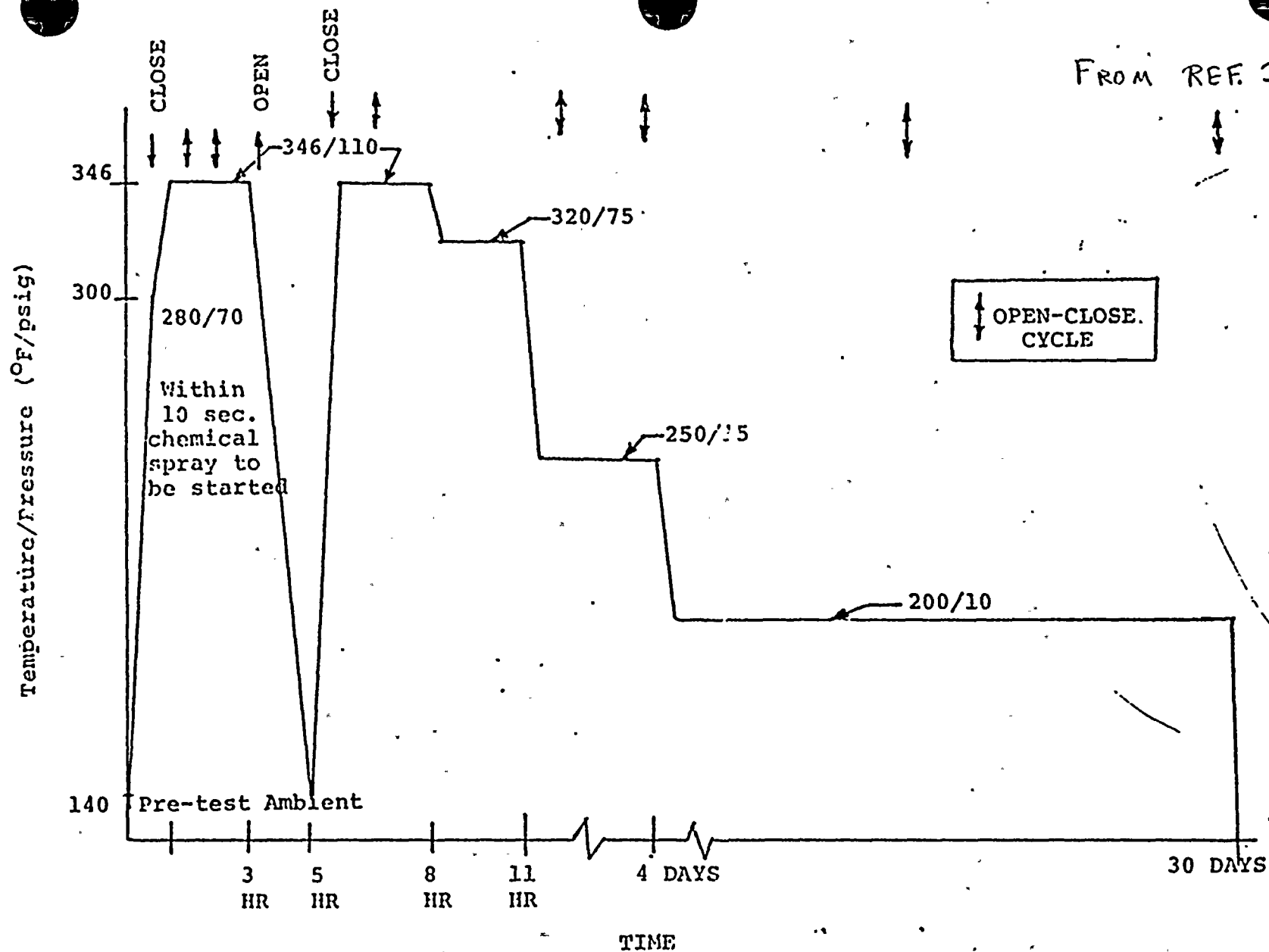


FIGURE 1
LOCA SIMULATION BY ENVIRONMENTAL
EXPOSURE (STEAM/CHEMICAL)

Temperature/Pressure Profile for simulation of loss-of coolant accident (LOCA) design basis event (DBE) by steam/chemical-spray environmental exposure.

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: QCM 250	Operating Time	1 hr	7 DAYS	Table 7.5-2	22	Simul.	NONE
PLANT ID NO: QCM 250	Temperature (°F)	Fig 022.9-1, 2 328:2 PEAK	330	FSAR APP Q	22	Simul.	NONE
COMPONENT: CONTROL CABLE TERMINATION MANUFACTURER: N/A	Pressure (PSIA)	Fig 1 Fig 2	104.7	AEW 6504	22	Simul.	NONE
MODEL NUMBER: CABLE TERMINATION AT QCM 250 FUNCTION:	Relative Humidity (%)	100	100		22	Simul.	NONE
ACCURACY: SPEC: N/A DEMON: N/A	Chemical Spray	2000PPMB 1.14% WT BORIC ACID PH 9-11	2600PPMB 1.5% WT BORIC ACID PH 7.67	T.S 3/4.5 3/4.6	22	Simul.	NONE
SERVICE: AT VALVE LIM. SW	Radiation (10 ⁶ rads)	4	See Note A	WCAP 7410-L VOL 1		Engineering Review	NONE
LOCATION: IN CONTAINMENT	Aging (years)						
FLOOD LEVEL ELEV: 612' ABOVE FLOOD LEVEL: NO	Submergence	SUBMERGED	IN FLOODUP Tubes		61	COMBINATION	NONE

*Documentation References:

22. Limitorque Corp Test Report #600198
61. FLOOD UP TUBE QUALIFICATION PACKET

Notes:

- A.) VALVE will perform its function in the first 15 secs. (Tech Spec Table 3.6-1), corresponding to a calculated LOCA dose of only $.02 \times 10^6$ rads. (WCAP 7410-L Fig. 5), not significantly more than its normal environment accumulated doses.

22. Qualified by Linitorque Corp. Test Laboratory
Project #600198. November 1968

22
9%
Type of Test: simultaneous, steam
chemical spray
separate seismic test

Type Profile:

328°F, 90 psig for 1 hr
312°F, 70 psig for 2 hrs
287°F, 40 psig for 2 hrs
271°F, 20 psig for 19 hrs
250°F, 15 psig for 6 days

Chemical Spray:

1.5% boric acid buffered with Na OH to a PH of 7.67.

Seismic Test 8/20/79

Horizontal Force, 5.3 G at 35 Hz
Vertical force 5.3 G at 35 Hz
No resonance freq from 5 to 35 Hz



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OF Equip.
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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS PLANT ID NO: N/A COMPONENT: CONTROL CABLE TERMINATION MANUFACTURER: N/A MODEL NUMBER: CABLE TERMINATION AT VALVES FUNCTION: ACCURACY: SPEC: N/A DEMON: N/A SERVICE: VARIOUS LOCATION: In Containment FLOOD LEVEL ELEV: 612' ABOVE FLOOD LEVEL: Yes	Operating Time	1 hr	16 DAYS	Table 7.5-2	24	Seq	NONE
	Temperature (°F)	Fig 13.13-1 250 Upper Volume	250	FSAR APP N	24	Seq.	NONE
	Pressure (PSIA)	Fig 1 Fig 2	39.7	NEW 6004	24	Seq.	NONE
	Relative Humidity (%)	100	100		24	Seq.	NONE
	Chemical Spray	See Note A	NA	See Note B	NA	NA	NONE
	Radiation (10 ⁶ rads)	4	204	WCAP 7410-L Vol 1	24	Seq.	NONE
	Aging (years)						
	Submergence	NA	NA	NA	NA	NA	NA

*Documentation References:

24. Limitorque Corp Test Report # 600461

Notes:

A. Valve Location is not subjected to direct caustic spray impingement.

B. metal installation drawings
2-5427

TEMPERATURE PROFILE

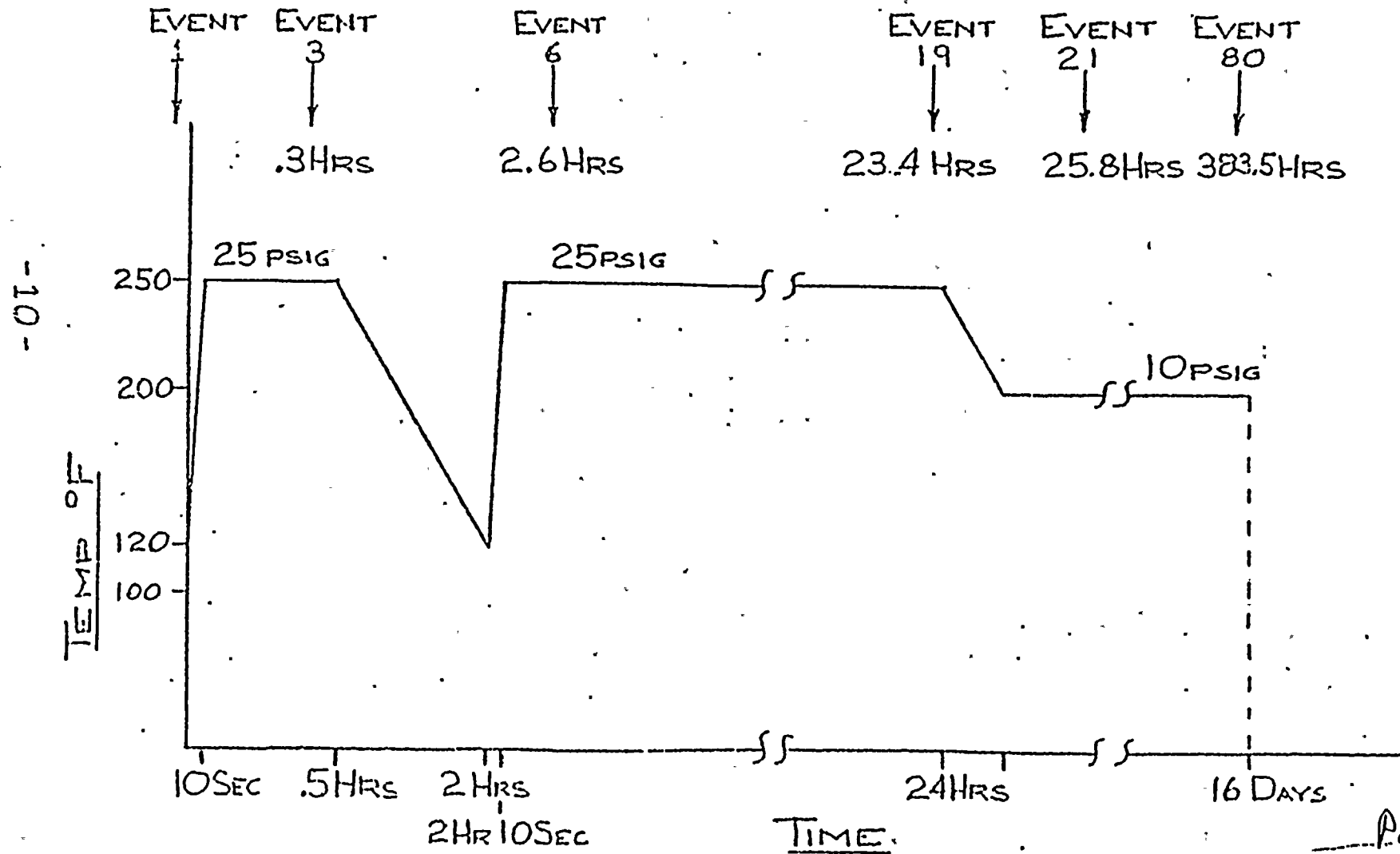


FIGURE 1

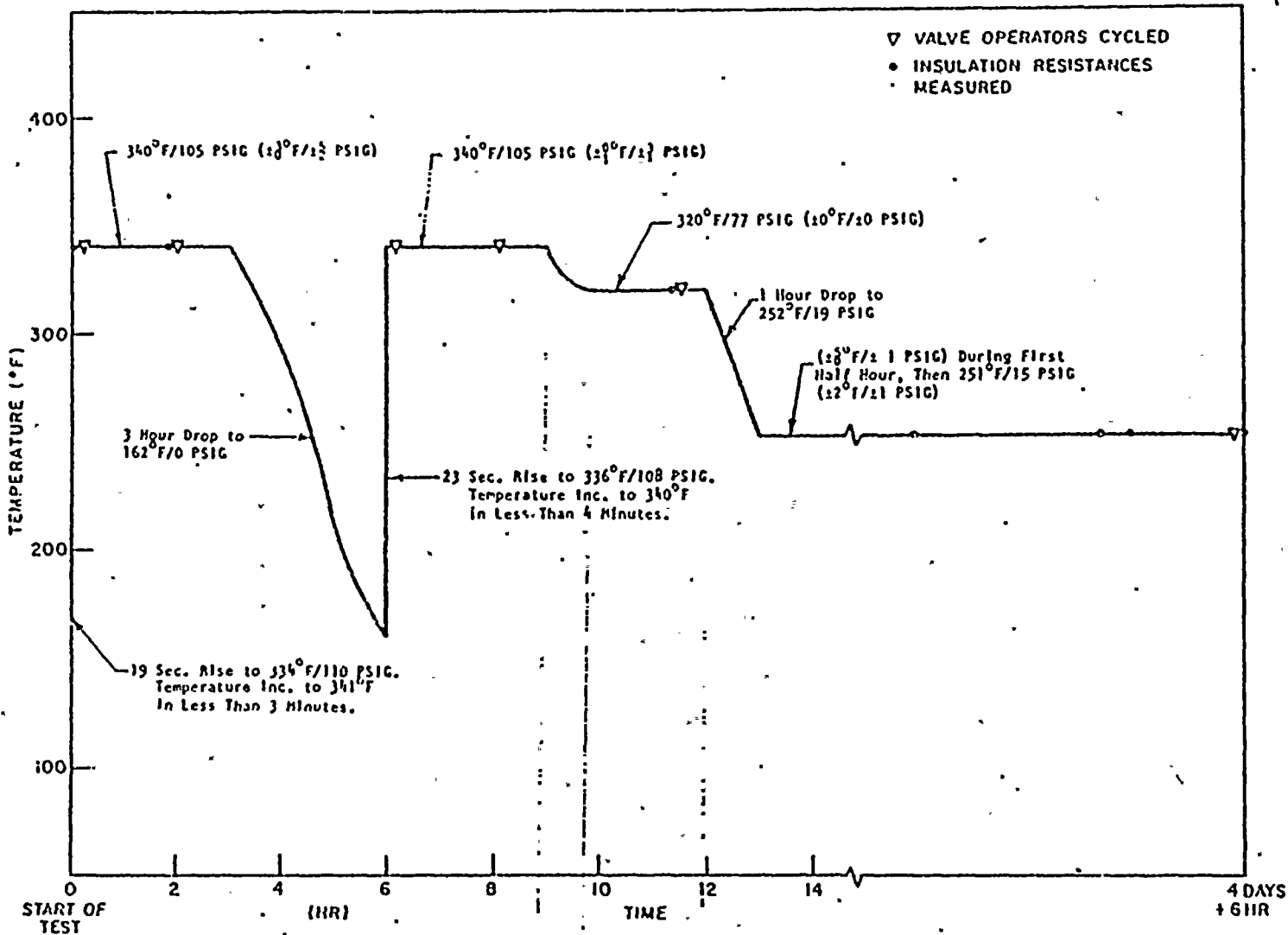
EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	1 hr.	30 DAYS	See Note	23	Seq	NONE
PLANT ID NO: N/A	Temperature (°F)	Fig 022.9-1-2 328.2 PEAK	340	FSAR APP Q	23	SEQ	NONE
COMPONENT: CONTROL CABLE TERMINATION MANUFACTURER: N/A	Pressure (PSIA)	Fig 1 Fig 2	119.7	AEP 6504	23	SEQ.	NONE
MODEL NUMBER: CABLE TERMINATION AT VALVES	Relative Humidity (%)	100	100		23	SEQ	NONE
FUNCTION:	Chemical Spray	2000 PPMB 1.14% WT BORIC ACID PH 9-11	2600 PPMB 1.5% WT BORIC ACID PH 7.67	T.S. 3/4.5 3/4.54	22	Simul.	NONE
ACCURACY: SPEC: DEMON:	Radiation (10 ⁶ rads)	4	204	WCAP 7410-6 VOL 1	23	SEQ.	NONE
SERVICE: VARIOUS	Aging (years)						
LOCATION: IN CONTAINMENT							
FLOOD LEVEL ELEV: 612' ABOVE FLOOD LEVEL: NO	Submergence	SUBMERGED	IN FLOODUP Tubes		61	COMBINATION	NONE

*Documentation References:

22. Limitorgue Corp. Test Report # 600198
 23. Limitorgue Corp. Test Report # 600376A.
 61. FLOOD UP TUBE QUALIFICATION PACKET

Notes: Letters from J. Tillinghast (AEP) to K. Knud (NRC)
 dated 4-14-75 and 9-29-75.

from Ref. 23



F-C3441

Figure 3. Actual Steam Exposure Profile



IB-ND.
OF EQUIP.
(P) (C)
83 V2
92 V2
94-95 V2

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	1 DAY	30 DAYS	below	16	Seq	NONE
PLANT ID NO: N/A	Temperature (°F)	Fig 13.13-1 250	315	FSAR APP D	16	SEQ.	NONE
COMPONENT: CONTROL CABLE TERMINATION	Pressure (PSIA)	Fig 1 Fig 2	84.7	AED 6504	16	SEQ.	NONE
MANUFACTURER: N/A	Relative Humidity (%)	100	100		16	SEQ.	NONE
MODEL NUMBER: CABLE TERM. AT VALVES	Chemical Spray	2000 PPMB 1.14% WT BORIC ACID PH 9-11	3000 PPMB 1.72% WT BORIC ACID PH 10.5	T.S. 3/4.5 3/4.56	16	SEQ.	NONE
FUNCTION:	Radiation (10 ⁶ rads)	28	204	WCAP 7410-L VOL 1	16	SEQ.	NONE
ACCURACY: SPEC: N/A DEMON: N/A	Aging (years)						
SERVICE: VARIOUS							
LOCATION: INSIDE CONTAINMENT							
FLOOD LEVEL ELEV: 612' ABOVE FLOOD LEVEL: No	Submergence	SUBMERGED	IN FLOODUP TUBES		61	COMBINATION	NONE

*Documentation References:

16. Limitorque Corp. Test Report # 600456
61. FLOOD UP TUBE QUALIFICATION PACKET

Notes: Letter of J. Tillinghast (NRC) to K. Knud (NRC) of 4-14-75 and 9-29-75.

from Ref. 16

Specified Accident Profile

Temperature
°F

Take Insulation
readings and operate
Valve Control

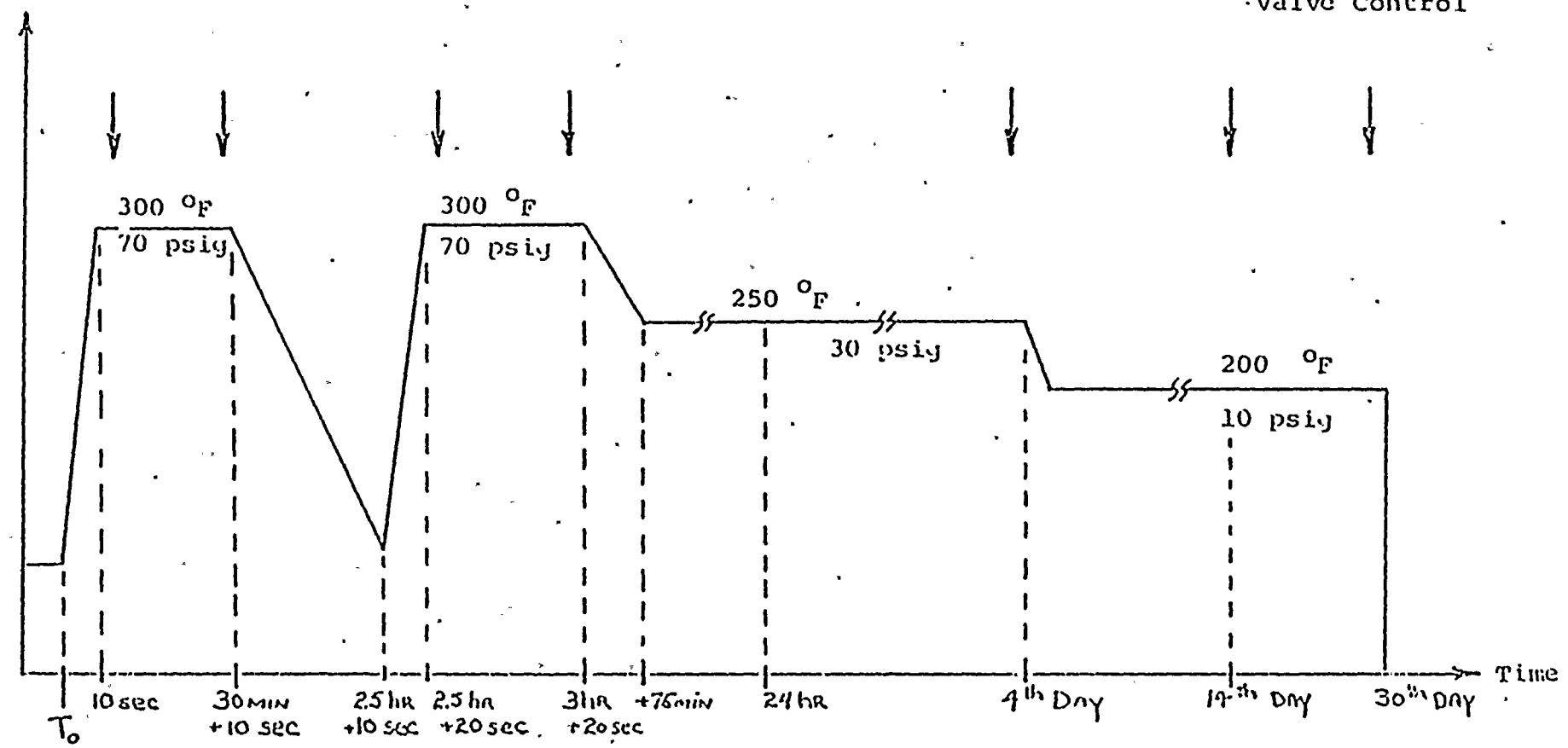


Figure 5

Page 104-2

ACTUAL ACCIDENT PROFILE

From Ref. 16



FIGURE 1

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>1 DAY</i>	<i>116 HRS</i>	<i>Table 7.5-2</i>	<i>13</i>	<i>Seq.</i>	<i>NONE</i>
PLANT ID NO: <i>N/A</i>	Temperature (°F)	<i>Fig 022.9-1, -2 328.2 PEAK</i>	<i>340</i>	<i>FSAR APP Q</i>	<i>13</i>	<i>Seq.</i>	<i>NONE</i>
COMPONENT: <i>CONTROL CABLE TERMINATION</i> MANUFACTURER: <i>N/A</i>	Pressure (PSIA)	<i>Fig 1 FIG 2</i>	<i>178</i>	<i>AEO 6504</i>	<i>13</i>	<i>Seq.</i>	<i>NONE</i>
MODEL NUMBER: <i>SOLID KAPTON SPLICED TO STRANDED KAPTON</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>13</i>	<i>Seq.</i>	<i>NONE</i>
FUNCTION: <i>TERM. AT PENETRATION INSIDE FLOOD UP TUBE</i>	Chemical Spray	<i>Not Req'd</i>	<i>2500PPMB 1.45% WT BORIC ACID PH 9.5</i>	<i>T.S. 314.5 314.6</i>	<i>13</i>	<i>Seq.</i>	<i>NONE</i>
ACCURACY: SPEC: <i>N/A</i> DEMON: <i>N/A</i>	Radiation (10 ⁶ rads)	<i>28</i>	<i>60</i>	<i>104.5 AEW 729</i>	<i>13</i>	<i>Seq.</i>	<i>NONE</i>
SERVICE: <i>VARIOUS</i>	Aging (years)						
LOCATION: <i>In Containment</i>	Submergence	<i>SUBMERGED</i>	<i>In FLOOD UP TUBES</i>		<i>61</i>	<i>COMBINATION</i>	<i>NONE</i>
FLOOD LEVEL ELEV: <i>6/2'</i> ABOVE FLOOD LEVEL: <i>NO</i>							

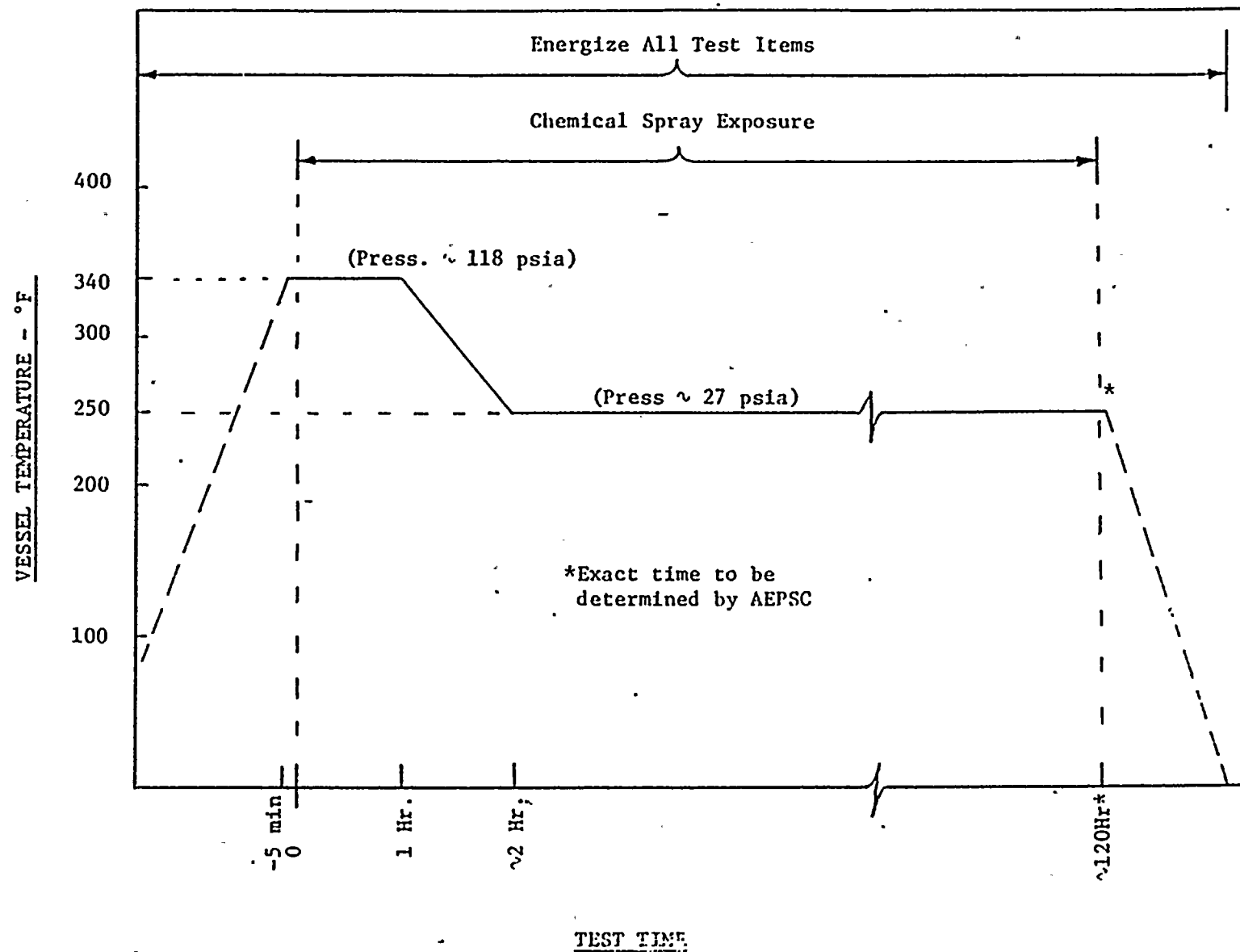
*Documentation References:

Notes:

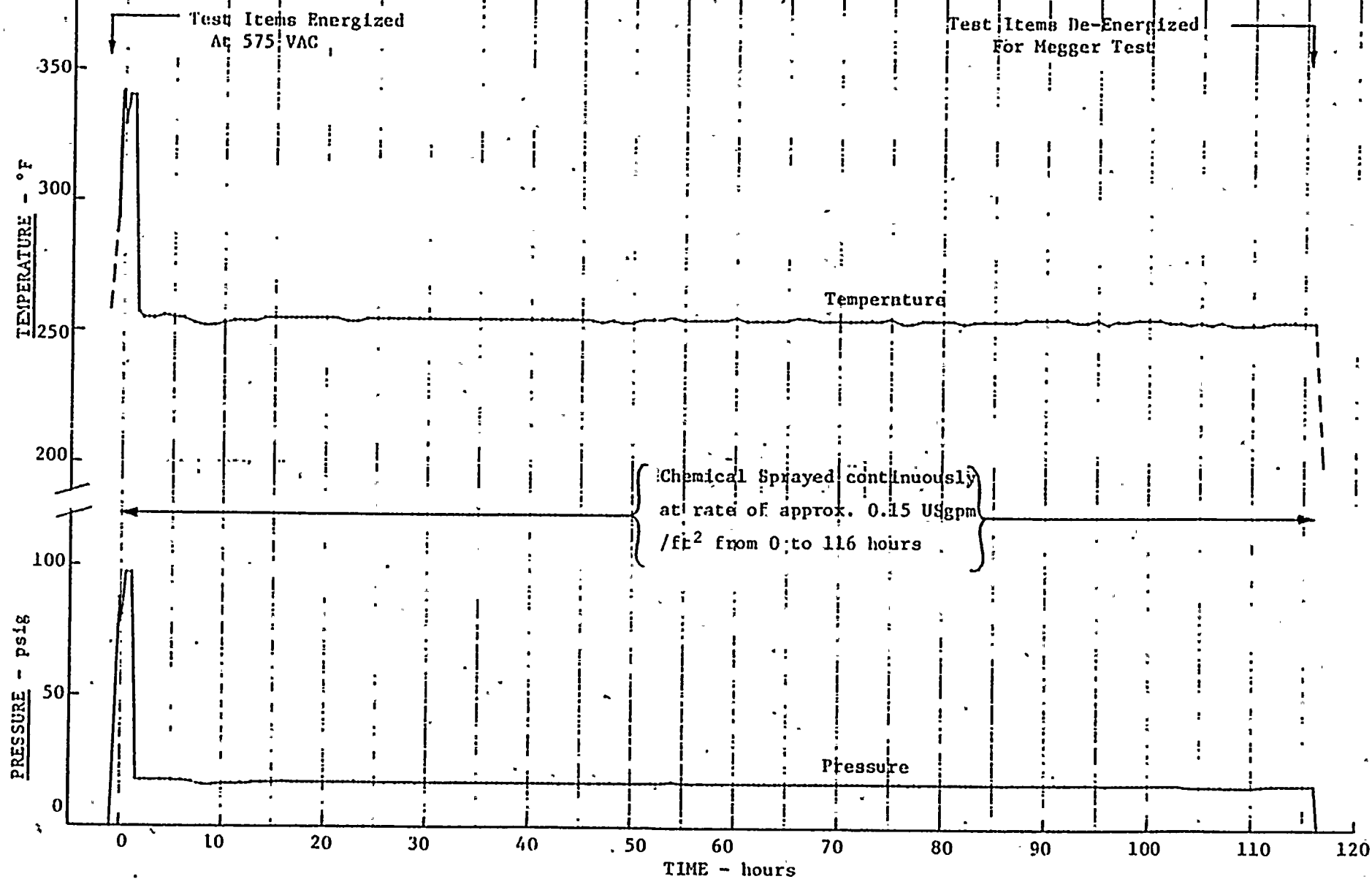
13. Westinghouse-CANADA Test Report CWAPD-332
61. FLOOD UP TUBE QUALIFICATION PACKET

FIGURE 2 - TEST PROFILE

from Re 13



From Reel 3





EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>1 DAY</i>	<i>119 HRS</i>	<i>Table 7.5-2</i>	<i>8</i>	<i>Seq</i>	<i>NONE</i>
PLANT ID NO: <i>N/A</i>	Temperature (°F)	<i>328.2</i> <i>PEAK</i>	<i>345</i>	<i>FSAR APP Q</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
COMPONENT: <i>CONTROL CABLE TERMINATION</i>	Pressure (PSIA)	<i>F161</i> <i>F162</i>	<i>124.7</i>	<i>AEO 6804</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
MANUFACTURER: <i>N/A</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>14</i>	<i>Simul.</i>	<i>NONE</i>
MODEL NUMBER: <i>STRANDED KAPTON. SPLICED TO SOLID XL POLYETHYLENE</i>	Chemical Spray	<i>2000 PPMB 1.14% WT BORIC ACID PH 9-11</i>	<i>2500 PPMB 1.43% WT BORIC ACID PH 9-10</i>	<i>T.S. 314.5 314.6</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
FUNCTION: <i>AT FLOODUP TERM. BOX</i>	Radiation (10 ⁶ rads)	<i>28</i>	<i>150</i>	<i>WCAP 7410-L VOL I</i>	<i>8</i>	<i>Seq.</i>	<i>NONE</i>
ACCURACY: SPEC: <i>N/A</i> DEMON: <i>N/A</i>	Aging (years)				<i>11</i>		
SERVICE: <i>VARIOUS</i>	Submergence	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
LOCATION: <i>In Containment</i>							
FLOOD LEVEL ELEV: <i>612'</i>							
ABOVE FLOOD LEVEL: <i>Yes</i>							

7-D. NO. OF EQUIP. (1792)

60-63 85 90

92-95 90.7

110-119

205-206

217-236

232-236

*Documentation References:

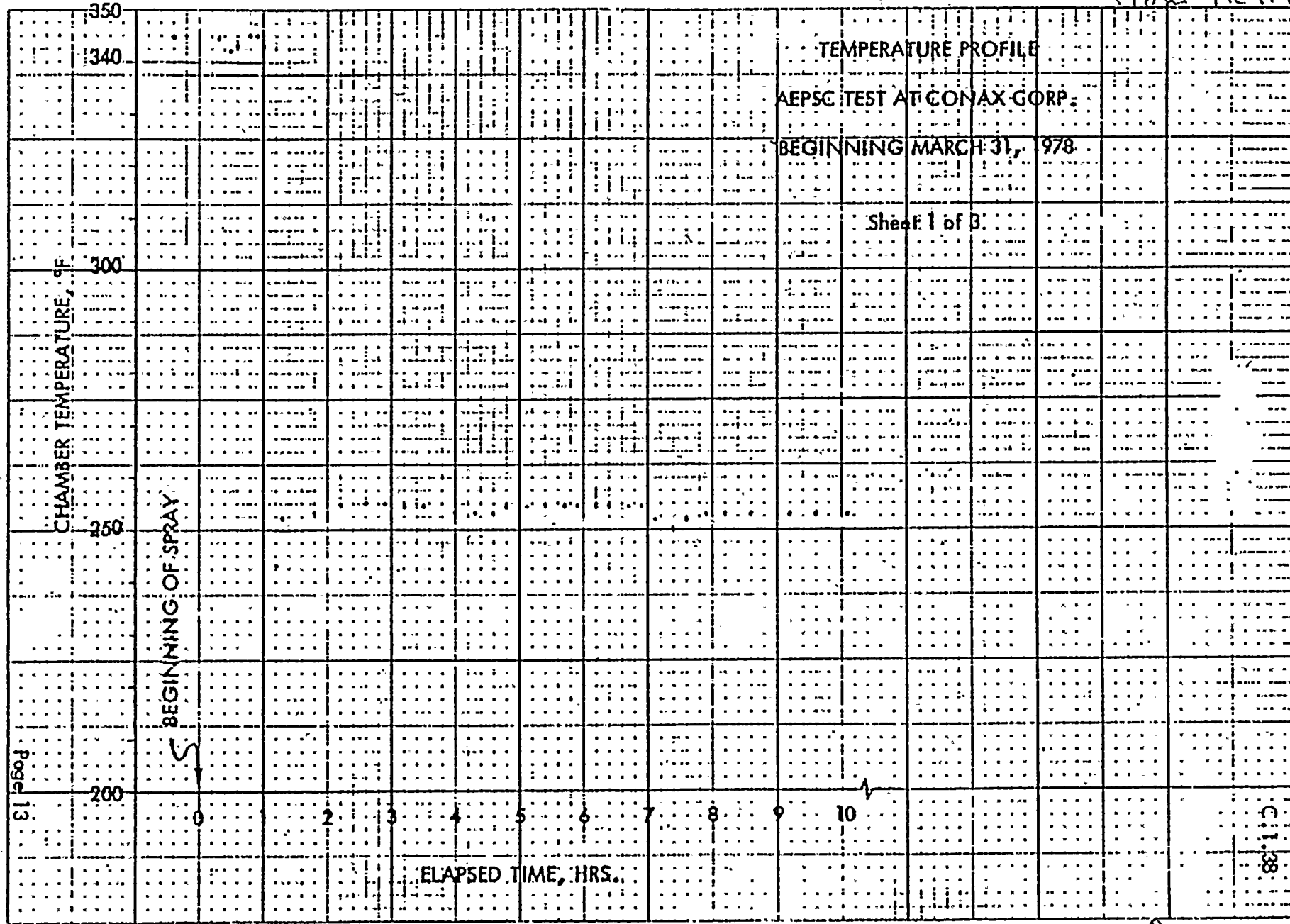
Notes:

8. CONAX Corp. Test Report IPS-348

14. FIRL TEST REPORT F-C4033-3

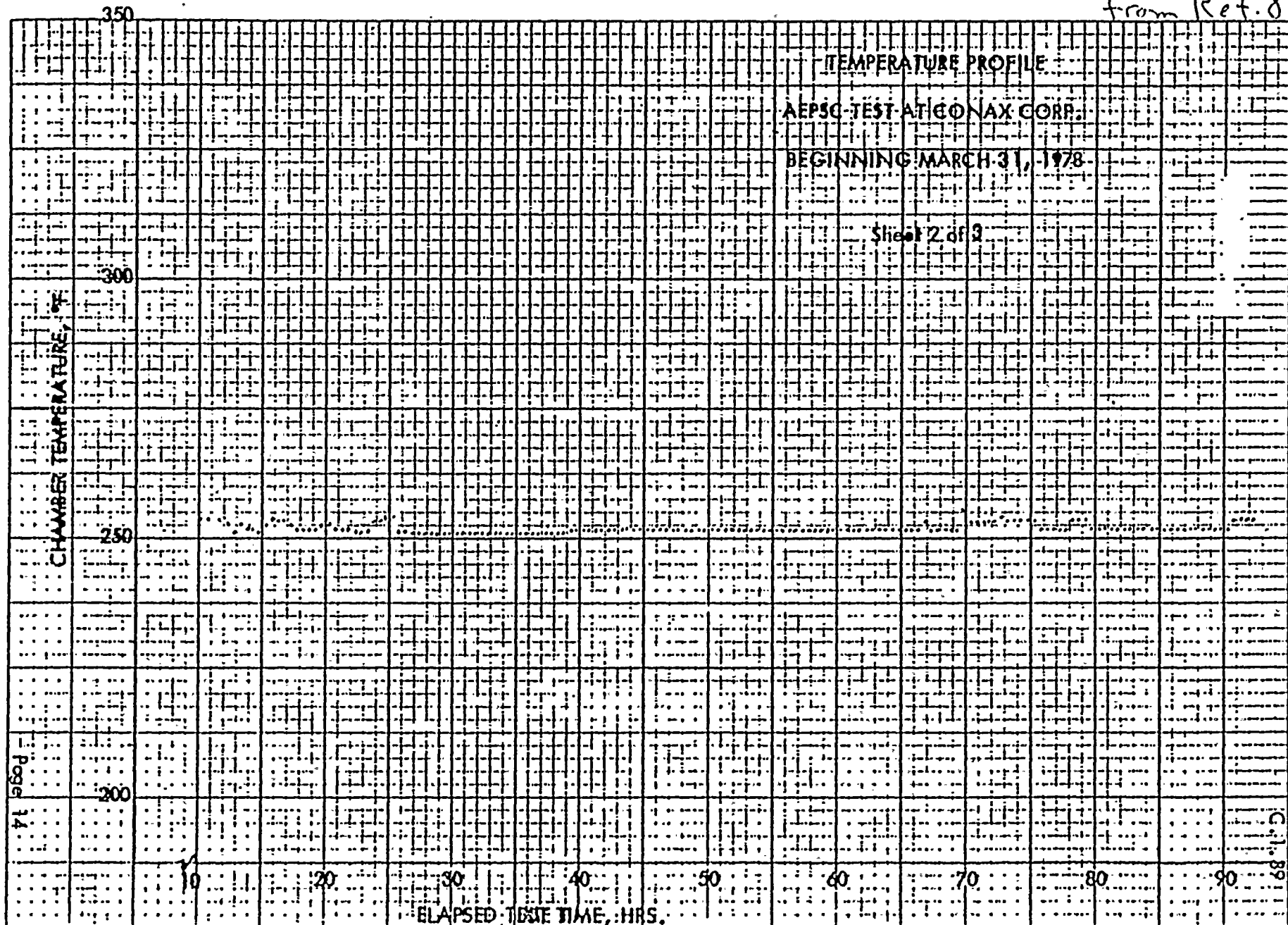


From Ref. 8

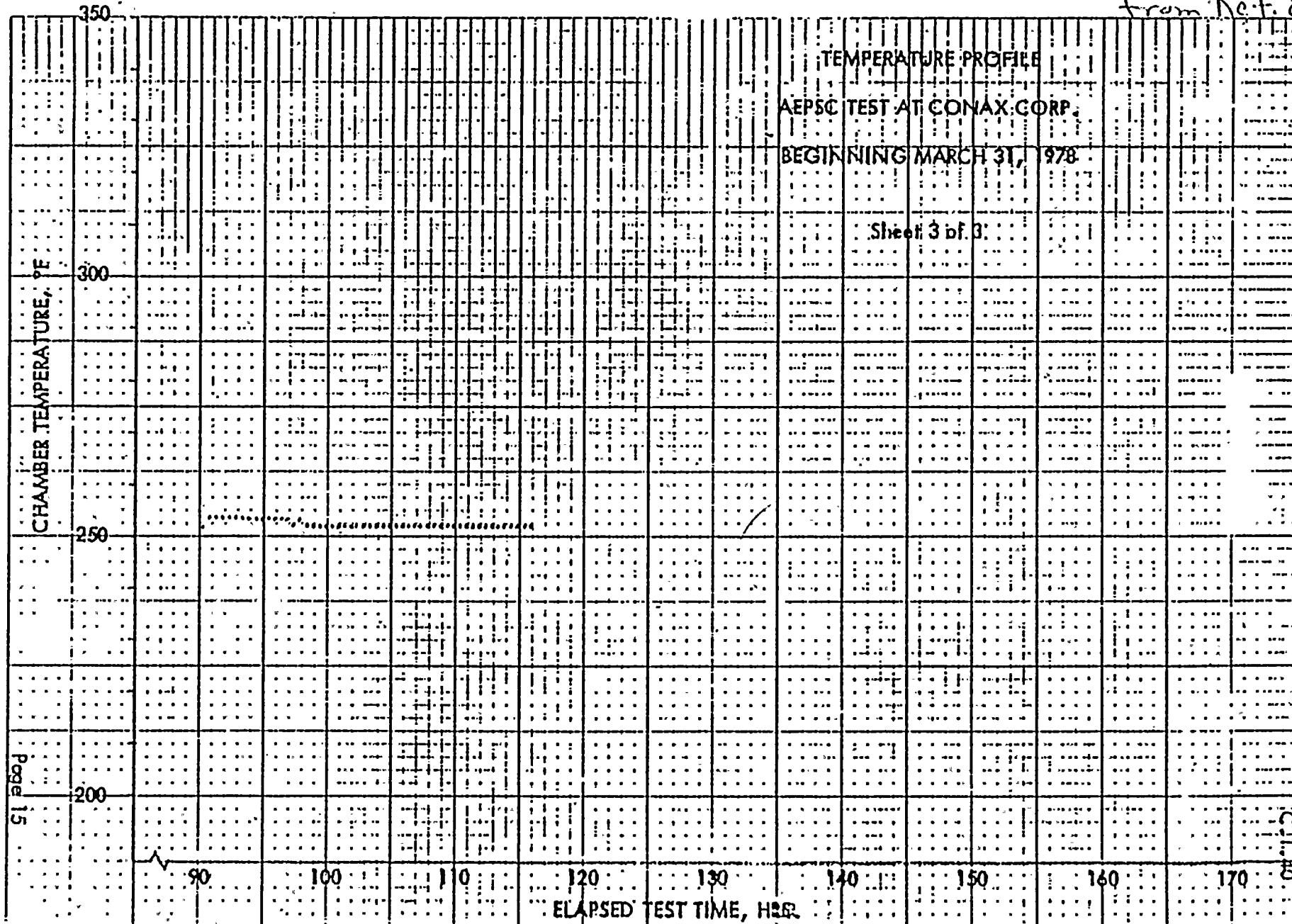


IPS-348

from Ref. 8



from Ref. 8





EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	4 MONTHS	> 4.4 MTHS	Table 7.5-2	63 8	COMBINATION	NONE
PLANT ID NO: N/A	Temperature (°F)	Fib 022.9-1, -2 328.2 PEAK	345	FSAR APP. 9	8	Seq.	NONE
COMPONENT: CABLE TERMINATION MANUFACTURER: N/A	Pressure (PSIA)	FIL. 1.1 FIG 2	124.7	AEO 6504	8	Seq.	NONE
MODEL NUMBER: XL Polyethylene solid sliced to XL Polyethylene solid	Relative Humidity (%)	100	100		14	Simul.	NONE
FUNCTION: AT TEM BOXES NEAR VALVE ACTUATOR	Chemical Spray	200 OPPMB 1.14% WT. BORIC ACID PH 9-11	250 OPPMB 1.43% WT. BORIC ACID PH 9-10	T.S. 3/4.5 3/4.5.6	8	Seq.	NONE
ACCURACY: SPEC: N/A DEMON: N/A	Radiation (10 ⁶ rads)	95	150	WCAP 7410-L VOL 1	8	Seq.	NONE
SERVICE: VARIOUS	Aging (years)						
LOCATION: In Containment	Submergence	NA	NA	NA	NA	NA	NA
FLOOD LEVEL ELEV: 612' ABOVE FLOOD LEVEL: Yes							

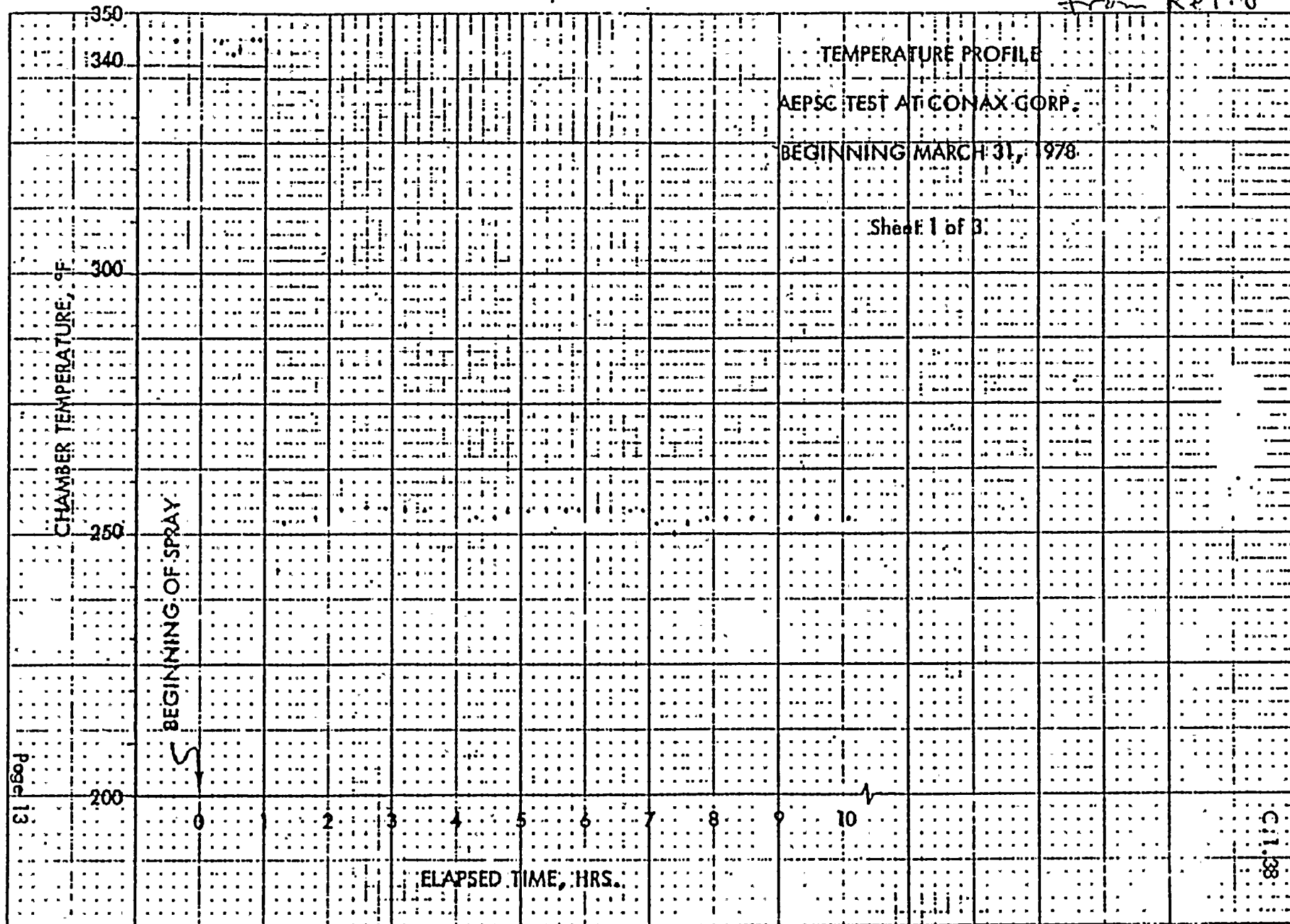
*Documentation References:

Notes:

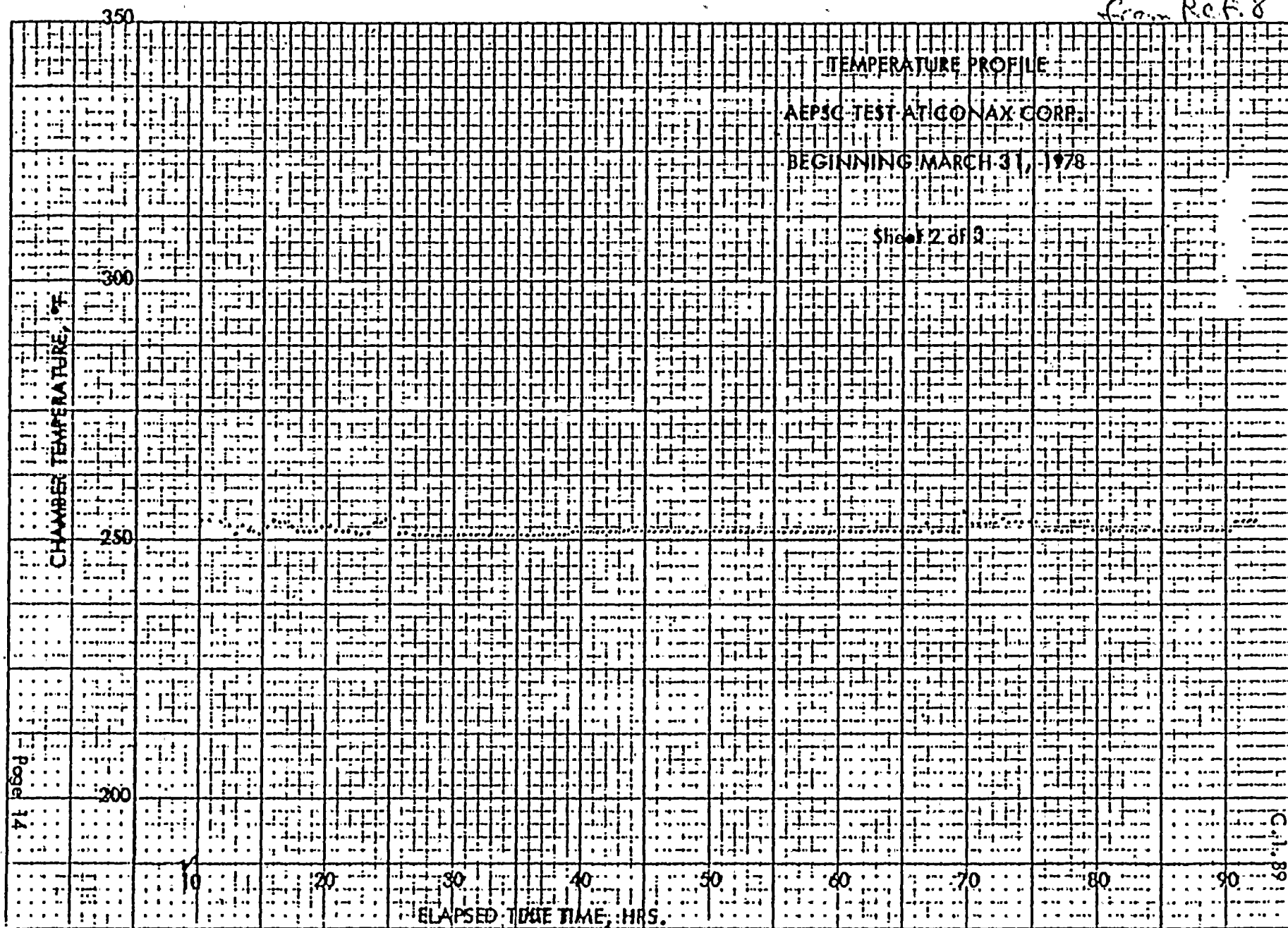
- 8. CONAX Corp. Test Report IPS-348
- 14. FIRC Test Report F-C4033-3
- 63. REQUIRED TIME QUALIFICATION PACKET



from Ref. 8

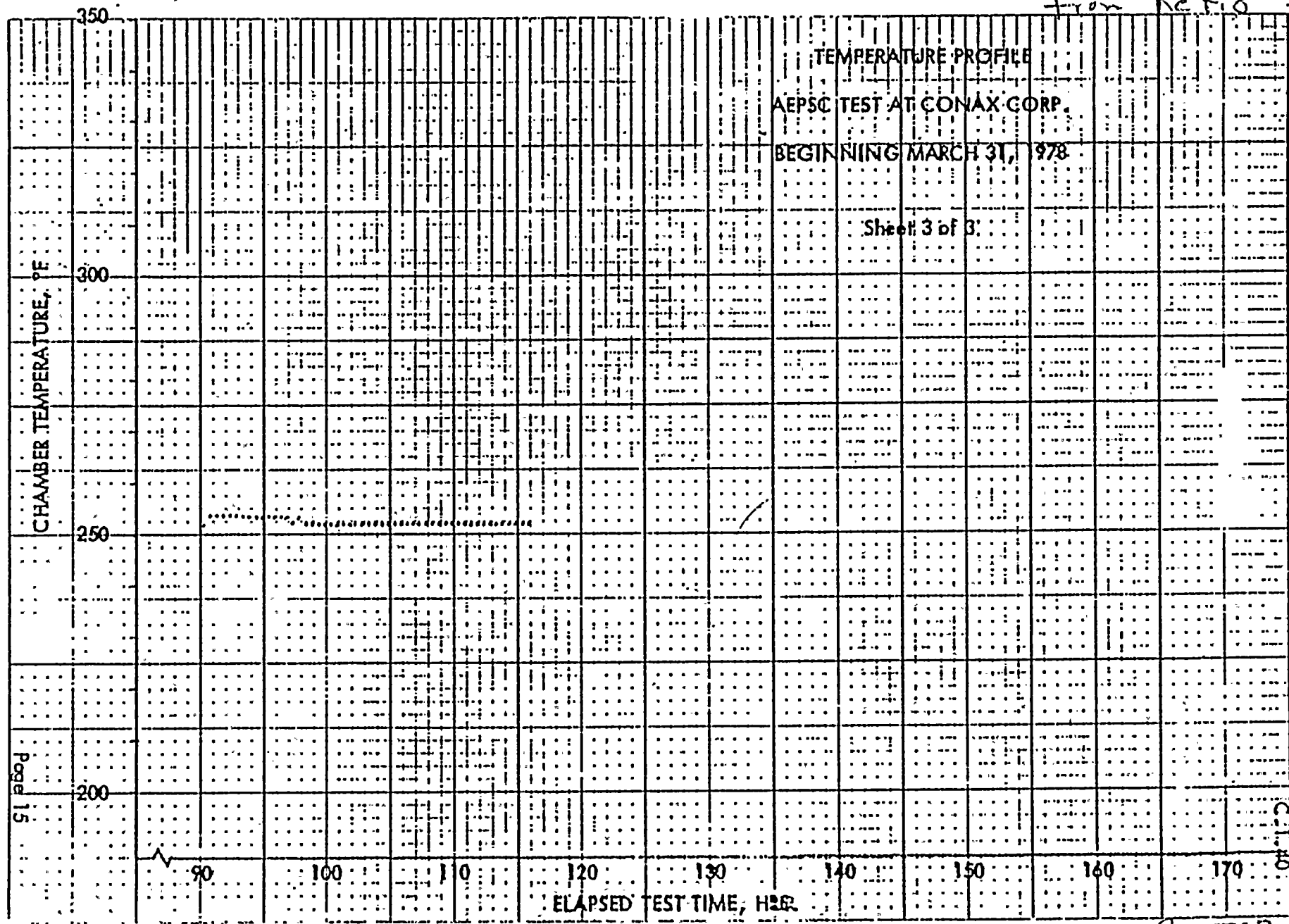


From R.C.F. 8





from Ref. 8



EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	1 day	> 1 DAYS	Note A below	63 14	COMBINATION	NONE
PLANT ID NO: VARIOUS	Temperature (°F)	Fig 0-27	212	FSAR App 0	44*	SEQ	NONE
COMPONENT: CONTROL CABLE TERMINATION MANUFACTURER: N/A	Pressure (PSIA)	Fig 0-27	14.7	FSAR App 0	44	SEQ	NONE
MODEL NUMBER: TERM. AT VALVE MOTOR OPERATOR FUNCTION: VARIOUS	Relative Humidity (%)	NA	100		44	SEQ	NONE
ACCURACY: SPEC: N/A DEMON: N/A	Chemical Spray	NA	NA	NA	NA	NA	NA
SERVICE: VARIOUS	Radiation (10 ⁶ rads)	4.1	See Note 1 on Valve Motor operators	NEPSC NSLL calc. 8470-2			See Note 1 on Valve Motor operators
LOCATION: OUTSIDE CONTAINMENT	Aging (years)						
FLOOD LEVEL ELEV: NA ABOVE FLOOD LEVEL: NA	Submergence	NA	NA	NA	NA	NA	NA

*Documentation References:

Notes: * see Note 2 on Cable Termination

44. FIRE TEST REPORT F-C3271

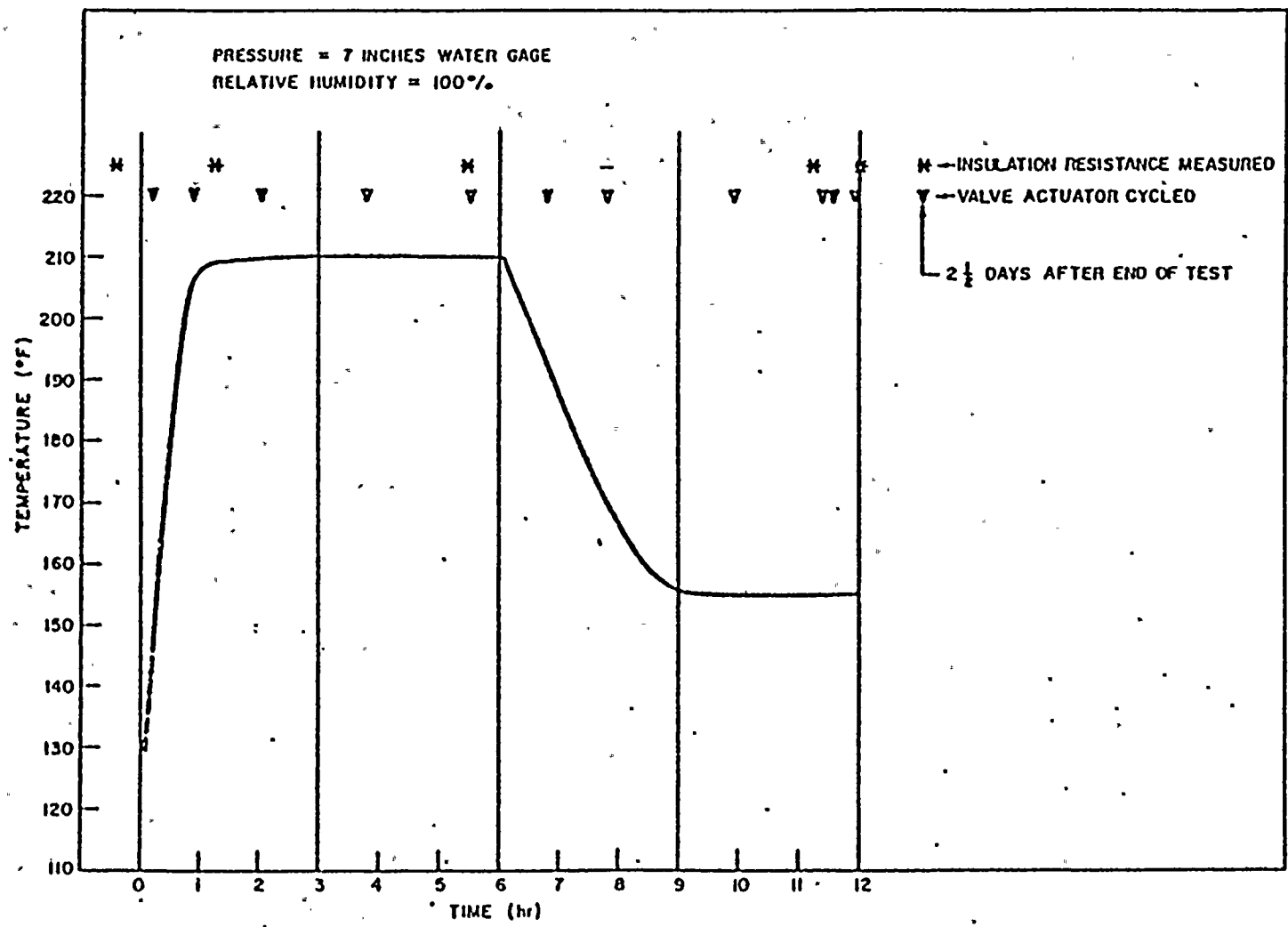
63. REQUIRED TIME QUALIFICATION PACKET

A) Letters from J. Tillinghast (AEP) to K. Knuel (NRC) dated 4-14-75 & 9-29-75.

44.

THE FLAVIN INSTITUTE RESEARCH LABORATORIES

3-6



Page TC 9-2

Figure 3. Test Profile

F-C3271

11-11-11



EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	1 DAY	7 DAYS		23	SEQ	NONE
PLANT ID NO: VARIOUS	Temperature (°F)	FIG 0-27	340	FSAR APP 0	23	SEQ	NONE
COMPONENT: CONTROL CABLE TERMINATION	Pressure (PSIA)	FIG 0-27	119.7	FSAR APP 0	23	SEQ	NONE
MANUFACTURER: N/A	Relative Humidity (%)	100	100		23	SEQ	NONE
MODEL NUMBER: VARIOUS	Chemical Spray	2000PPMB 1.14% WT BORIC ACID PH 9-11	2600PPMB 1.5% WT BORIC ACID PH 7.67	T.S. 3/4.5 3/4.6	22	SIMUL.	NONE
FUNCTION: AT VALVE MOTOR OPERATOR	Radiation (10 ⁶ rads)	16.6	204	159	23	SEQ	NONE
ACCURACY: SPEC: N/A DEMON: N/A	Aging (years)						
SERVICE: VARIOUS	Submergence	NA	NA	NA	NA	NA	NA
LOCATION: OUTSIDE CONTAINMENT							
FLOOD LEVEL ELEV: NA ABOVE FLOOD LEVEL: NA							

*Documentation References:

Notes:

22. LIMITORQUE TEST REPORT # 600198

23. LIMITORQUE TEST REPORT # 600376A

59) NEPSC NS+L calculation SC-N-6420-2



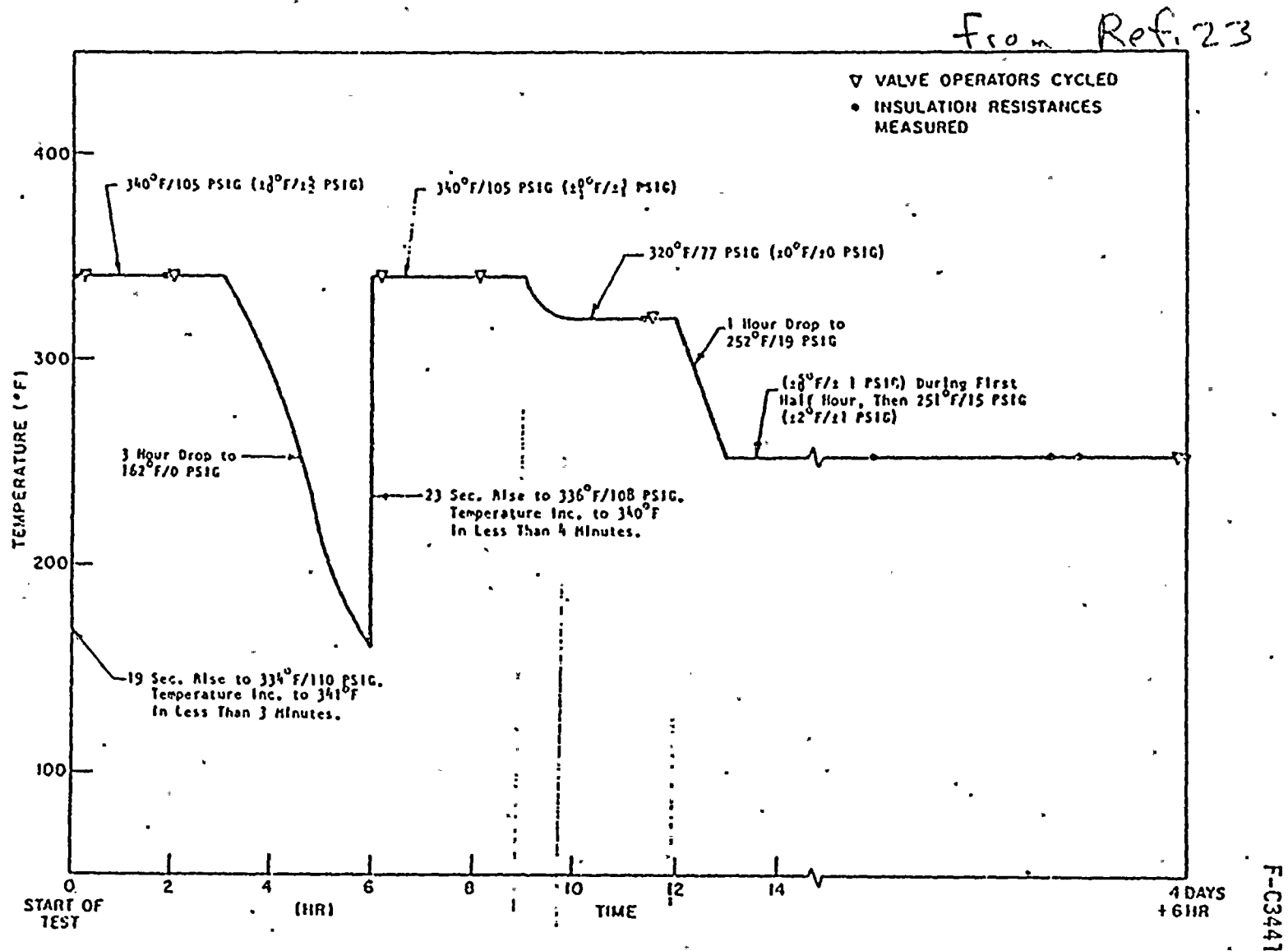


Figure 3. Actual Steam Exposure Profile

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	1 DAY	16 DAYS		24	Seq	NONE
PLANT ID NO: <i>N/A</i>	Temperature (°F)	<i>F16</i> 0-27	250	<i>FSAR</i> APP 0	24	SEQ.	NONE
COMPONENT: <i>CONTROL CABLE</i> TERMINATION MANUFACTURER: <i>N/A</i>	Pressure (PSIA)	<i>F16</i> 0-27	39.7	<i>FSAR</i> APP 0	24	SEQ	NONE
MODEL NUMBER: <i>TERM. AT</i> <i>VALVE MOTOR</i> FUNCTION: <i>VARIOUS</i>	Relative Humidity (%)	100	100		24	SEQ	NONE
ACCURACY: SPEC: <i>N/A</i> DEMON: <i>N/A</i>	Chemical Spray	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
SERVICE: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>1616</i>	204	<i>59</i>	24	SEQ.	NONE
LOCATION: <i>OUTSIDE</i> <i>CONTAINMENT</i>	Aging (years)						
FLOOD LEVEL ELEV: <i>NA</i> ABOVE FLOOD LEVEL: <i>NA</i>	Submergence	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>

25 - 32V6
34 - 32V6
37 - 42V6
52 - 53V6
64 - 65V6
67 - 70V6
82 - 84V6
91 - 93V6
207 - 210V6
215 - 216V6

*Documentation References:

24. LIMITORQUE TEST REPORT # 600461

Notes:

59.) AEPSC NS&L calculation BC-D-6420-2

TEMPERATURE PROFILE

from Ref. 24

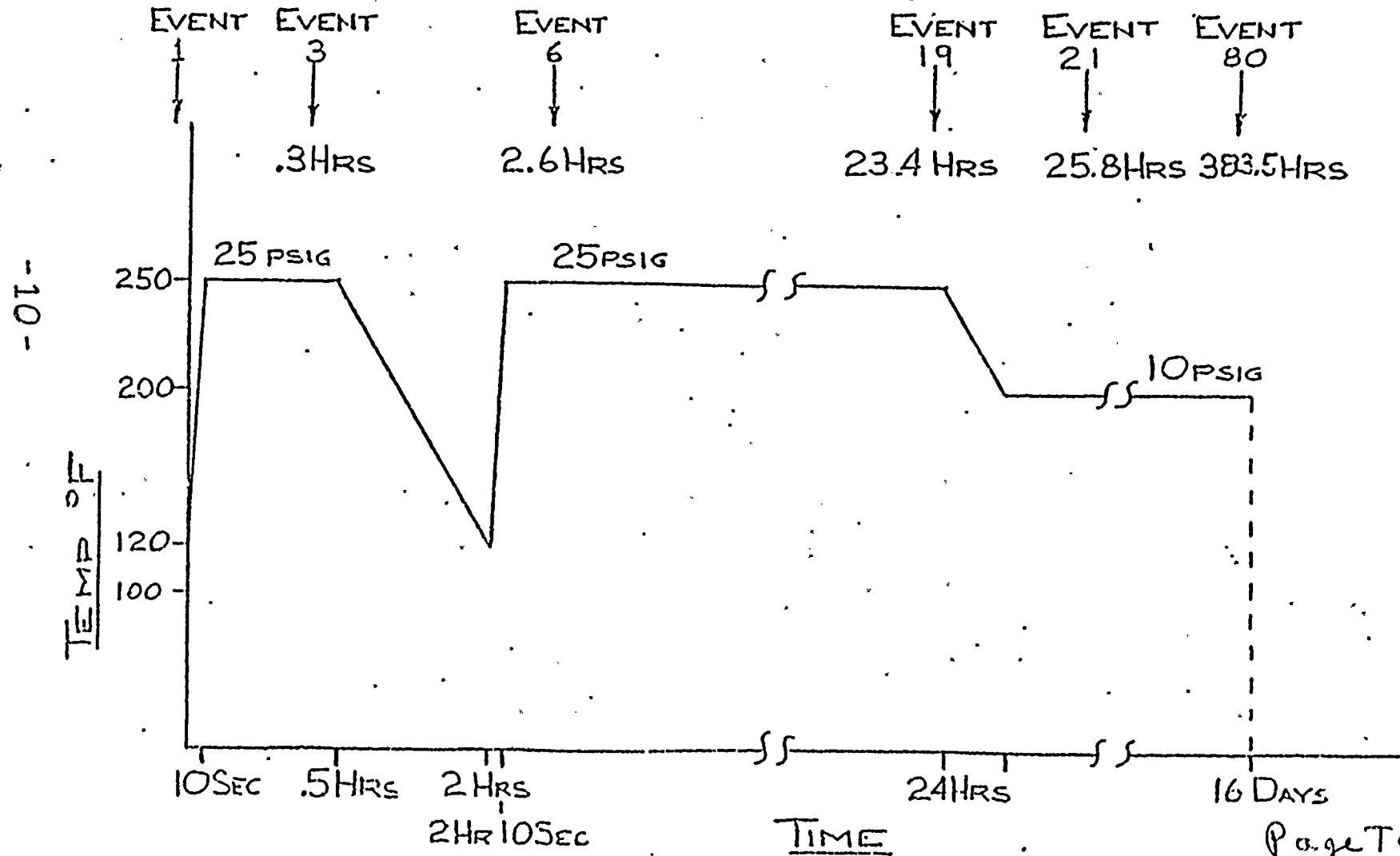


FIGURE 1

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>1 DAY</i>	<i>16 DAYS</i>	<i>Table 7.5-2</i>	<i>24</i>	<i>Seq</i>	<i>NONE</i>
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	<i>F16 022.9-1-2</i>	<i>250</i> <i>see Note C</i>	<i>F3AR APP. Q</i>	<i>24</i>	<i>SE8</i>	<i>NONE</i>
COMPONENT: <i>CONTROL CABLE TERM.</i>	Pressure (PSIA)	<i>F161 F162</i>	<i>39.7</i>	<i>ARW 6504</i>	<i>24</i>	<i>SE8</i>	<i>NONE</i>
MANUFACTURER: <i>N/A</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>	<i>...</i>	<i>24</i>	<i>SE8</i>	<i>NONE</i>
MODEL NUMBER: <i>TERM. AT VALVE MOTOR OPERATOR</i>	Chemical Spray	<i>see note A</i>	<i>NA</i>	<i>see note B</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>28</i>	<i>204</i>	<i>WCAP 7410-4 Vol. 1</i>	<i>24</i>	<i>SE8</i>	<i>NONE</i>
ACCURACY: SPEC: <i>N/A</i> DEMON: <i>N/A</i>	Aging (years)						
SERVICE: <i>VARIOUS</i> <i>inside</i>	Submergence	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
LOCATION: <i>CONTAINMENT</i>							
FLOOD LEVEL ELEV: <i>612'</i>							
ABOVE FLOOD LEVEL: <i>Yes</i>							

T.D. 110.
OF EQUIP.
(1992)
229-231
V9

*Documentation References:

24. LIMITORQUE CORP. TEST REPORT # 600461

Notes:

A) Valve Location is not subjected to direct caustic spray impingement.

B) mech. installation drawings

2-5435

2-5435A

2-5436

C) see General Note 4.

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TEMPERATURE PROFILE

from Ref. 24

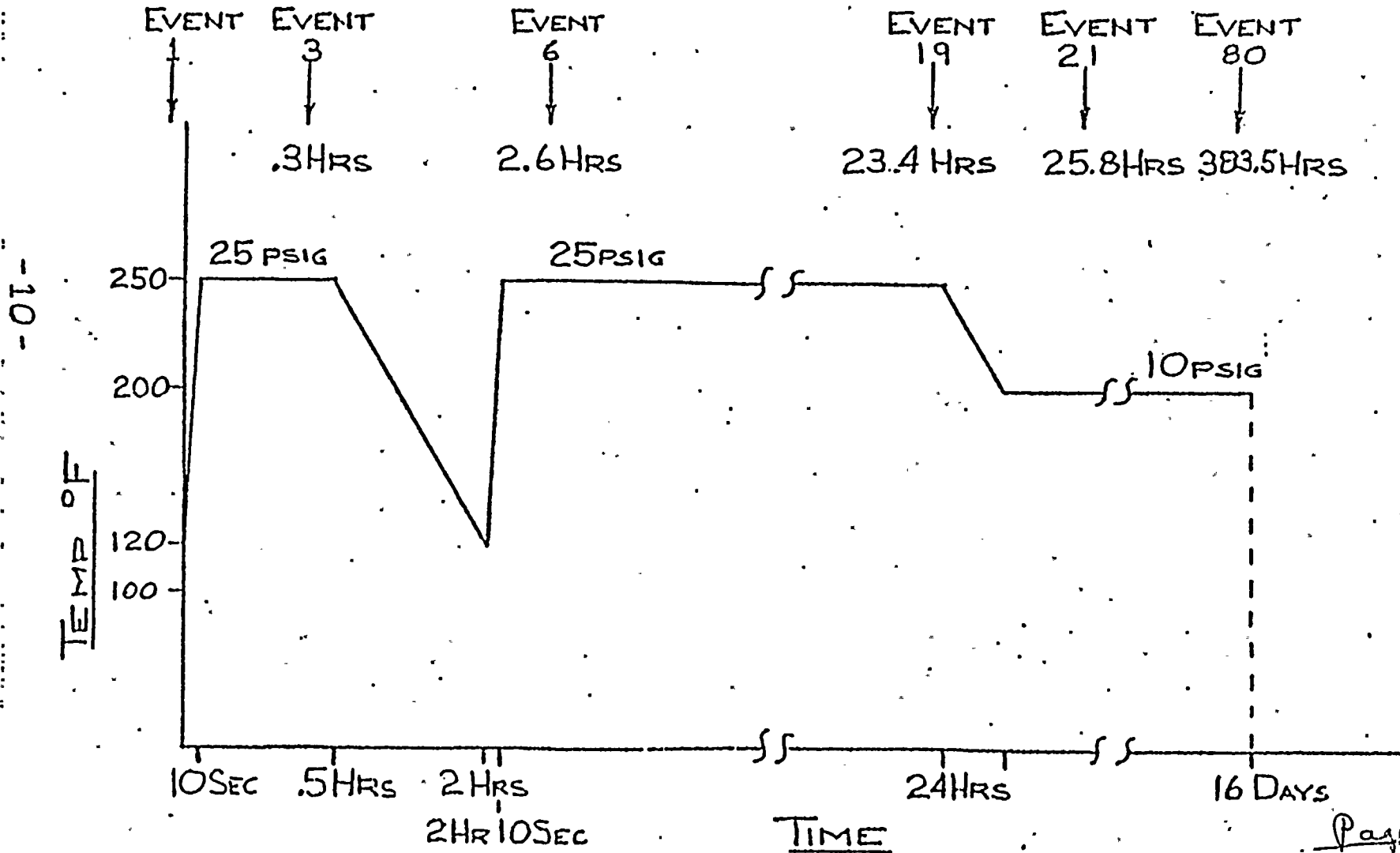


FIGURE 1



ID NO.
 OF EEPH
 (P195)
 557
 657
 17-3V8
 34-3V6
 39-4V6
 44-4V8
 52-5V6
 61-13V8
 76-1V6
 82-8V6
 91-9V6
 96-9V7
 108-115V7
 202-2V6
 V6, V10, V8

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	1 DAY	118 HRS	FSAR TABLE 7.5-2	45	Simul.	NONE
PLANT ID NO: N/A	Temperature (°F)	FIG 0-27	345	FSAR APP 0	45	Simul.	NONE
COMPONENT: CABLE TERMINATION	Pressure (PSIA)	FIG 0-27	124.7	FSAR APP 0	45	Simul.	NONE
MANUFACTURER: N/A	Relative Humidity (%)	NA	100%	NA	45	Simul.	NONE
MODEL NUMBER: Term. AT Term BLOCK	Chemical Spray	NA	PH 9-10 2500 ppm B 1.75% WT BORIC ACID		45	Simul.	NONE
FUNCTION: CABLE CONNECTION	Radiation (10 ⁶ rads)	16.6	20	59	46	Seq	NONE
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: VARIOUS	Submergence	NA	NA	NA	NA	NA	NA
LOCATION: Outside Cont.							
FLOOD LEVEL ELEV: NA							
ABOVE FLOOD LEVEL: NA							

*Documentation References:

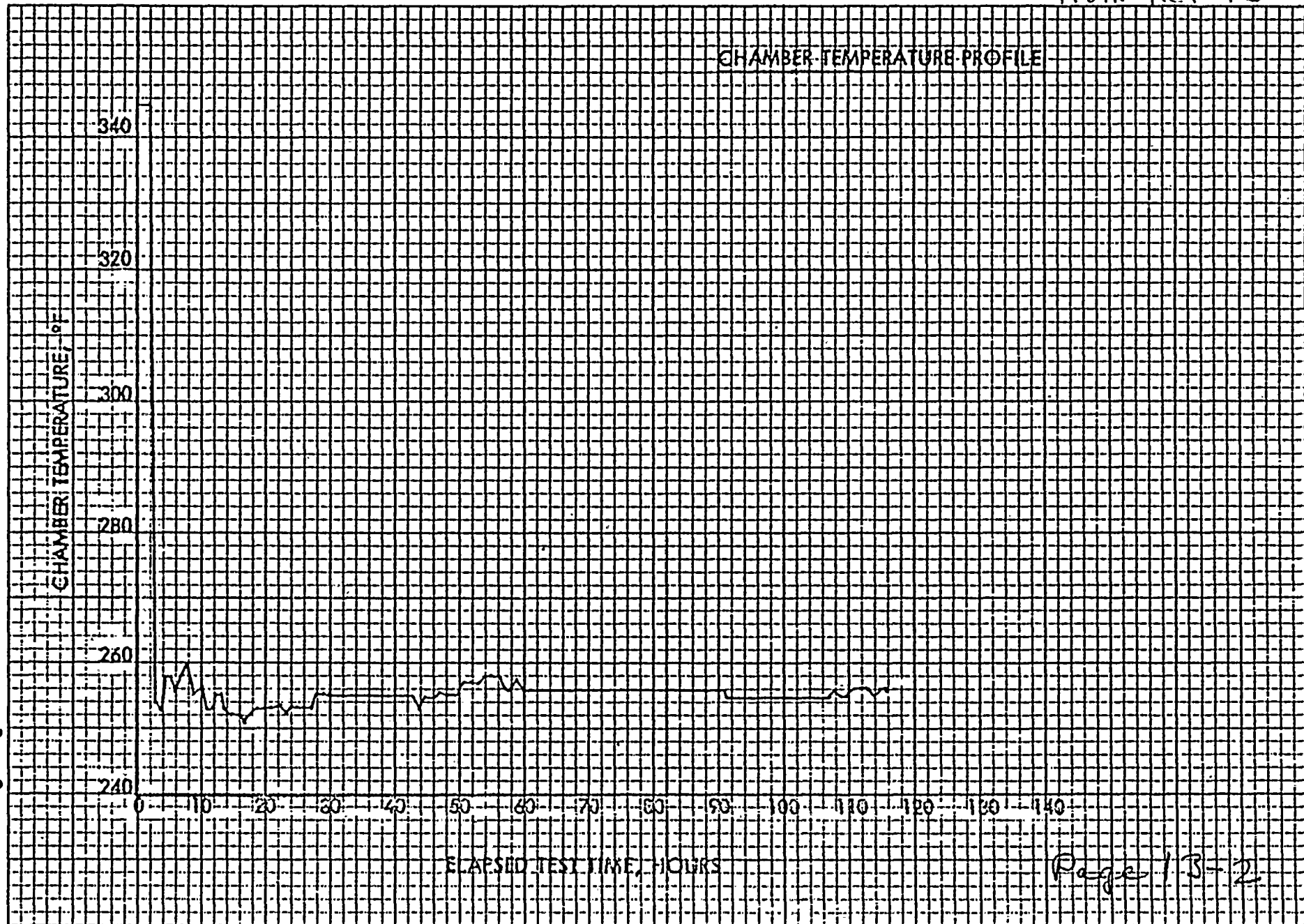
45. Conax Test Report IPS-339
 46. Conax Test Report IPS-349

Notes:

59) AEPSC NSPL calculation DC-N-6420-2



from Ret. 45



I.D. NO.
OF EQUIP.
(Page)

211-212-1/0

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: RHR	Operating Time	1 DAY	7 DAYS	See Note (A)	22	Simul.	NONE
PLANT ID NO: TCM-305, 306	Temperature (°F)	FIG 022.9-1, -2	330	FSAR APP Q	22	Simul.	NONE
COMPONENT: Control Cable Termination	Pressure (PSIA)	FIG 1 FIG 2	104.7	AEW 6504	22	Simul.	NONE
MANUFACTURER: NA	Relative Humidity (%)	100	100		22	Simul.	NONE
MODEL NUMBER: Cable Term. at Valves.	Chemical Spray	NA	2600 PPMB 1.5% WT BORIC ACID PH 7.67	inside CT ext.	22	Simul.	NONE
FUNCTION: long term post accident cooling	Radiation (10 ⁶ rads)	28	100	ABP. NET L. CALCUL. DE-N-6420-2	1	SE.Q.	NONE
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: RECIRCULATION SWITCHOVER TO SUMP SUCTION	Submergence	SUBMERGED	FLOODUP Tubes		61	COMBINATION	NONE
LOCATION: IN Containment							
FLOOD LEVEL ELEV: 612'							
ABOVE FLOOD LEVEL: No							

*Documentation References:

22. Limiting Corp Test Report 600198.
1. Conax Corp. Test Report IP 5-234.
61. FLOODUP TUBE QUALIFICATION PACKET

Notes: (A) Letter of J. Tillinghast (AEP) to R. Knud (NRE) dated 4-14-75 and 9-29-75.

from Ref. 22. Qualified by Limitorque Corp. Test Laboratory
Project #600198. November 1968

Type of Test: simultaneous, steam
chemical spray
separate seismic test

Type Profile:

328°F, 90 psig for 1 hr
312°F, 70 psig for 2 hrs
287°F, 40 psig for 2 hrs
271°F, 20 psig for 19 hrs
250°F, 15 psig for 6 days

Chemical Spray:

1.5% boric acid buffered with Na OH to a PH of 7.67.

Seismic Test 8/20/79

Horizontal Force, 5.3 G at 35 Hz
Vertical force 5.3 G at 35 Hz
No resonance freq from 5 to 35 Hz

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>5 SEC</i>	<i>> 1 hr</i>	<i>14.2.5</i>	<i>SEE NOTE BELOW</i>	<i>ENGINEERING RE REVIEW</i>	<i>NONE</i>
PLANT ID NO: <i>NA</i>	Temperature (°F)	<i>Fig 0-27</i>	<i>180</i>	<i>FSAR APPO</i>	<i>MFTR LIT</i>	<i>Eng'g Review</i>	<i>NONE(L)</i>
COMPONENT: <i>CABLE TERM</i>	Pressure (PSIA)	<i>Fig 0-27</i>	<i>14.7</i>	<i>FSAR APPO</i>	<i>"</i>	<i>Eng'g Review</i>	<i>NONE(L)</i>
MANUFACTURER: <i>NA</i>	Relative Humidity (%)	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
MODEL NUMBER: <i>Control Cable Term at Solenoid</i>	Chemical Spray	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>	Submergence	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
LOCATION: <i>Outside Containment</i>							
FLOOD LEVEL ELEV: <i>NA</i> ABOVE FLOOD LEVEL: <i>NA</i>							

*Documentation References:

MFTR LIT - AUTOMATIC SWITCH CO.
CATALOG NO. 30
BULLETIN 8316

Notes: 14.2.5 & 14.2.8 ARE THE ADVERSE ENVIRONMENT ACCIDENT ANALYSIS FOR WHICH CREDIT IS ASSUMED FOR OPERATION OF THE DEVICE.

(L) ACCIDENT ANALYSIS Q212.25 SHOWS THAT MAIN STEAM LINE BREAK PLUS THE FAILURE OF ANOTHER STEAM LINE TO ISOLATE IS ACCEPTABLE. SINCE THE LOCATION OF THESE DEVICES IS SUCH THAT ONLY TWO STEAM GENERATOR STOP VALVES CAN BE AFFECTED BY ONE BREAK, USE OF CONTROL GRADE DEVICES IS ACCEPTABLE.

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6 S7
7 S7
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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIBOS</i>	Operating Time	<i>5 SEC</i>	<i>> 1 hr</i>	<i>Q</i> 022.4	<i>29</i>	ENGINEERING REVIEW	NONE
PLANT ID NO: <i>NA</i>	Temperature (°F)	<i>Fig 022.9-1, -2</i>	SEE TEST PROFILE	FSAR APP. Q	REF. 29	SEQUENTIAL	NONE
COMPONENT: <i>CABLE TERM</i>	Pressure (PSIA)	<i>Fig 1 Fig 2</i>	SEE TEST PROFILE	AEP 6504	"	"	"
MANUFACTURER: <i>NA</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>	<i>7.5</i>	"	"	"
MODEL NUMBER: <i>Control Cable Term at Solenoid</i>	Chemical Spray	<i>2000 PPMB 1.14% WT BORIC ACID PH 9-11</i>	<i>3000 ppm B BORIC ACID WITH .064 M. NA₂S₂O₃</i>	<i>T.S. 3/4.5 3/4.2.5</i>	"	"	"
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>< 1</i>	<i>150</i>	<i>WCAP 7410-L VOL I</i>	"	"	"
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>							
LOCATION: <i>IN Containment</i>							
FLOOD LEVEL ELEV: <i>612'</i> ABOVE FLOOD LEVEL: <i>YES</i>	Submergence	<i>NA</i>	<i>NA</i>		AEP DWG	ENGINEERING DRAWING REVIEW	"

*Documentation References: UNLESS OTHERWISE STATED
REFERENCES ARE FSAR SECTIONS.

Notes:

REF #29 - AUTOMATIC SWITCH CO. REPORT AQS 21678/TR



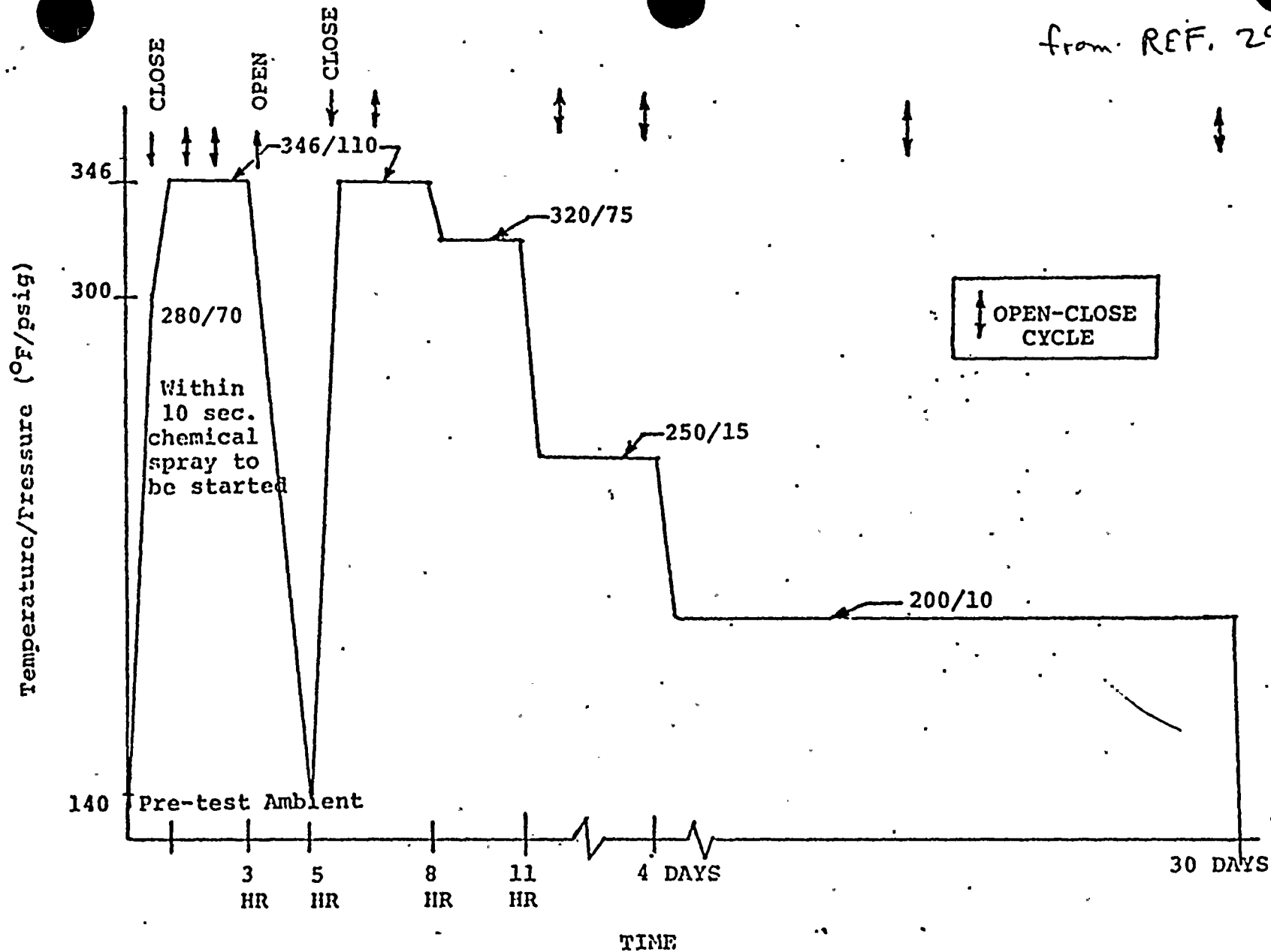


FIGURE 1
LOCA SIMULATION BY ENVIRONMENTAL
EXPOSURE (STEAM/CHEMICAL)

5-5

Temperature/Pressure Profile for simulation of loss-of coolant accident (LOCA) design basis event (DBE) by steam/chemical-spray environmental exposure.

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58-3110
76-7776
154-772
178, 20, 21, 22, 25
181-183
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J1, 2

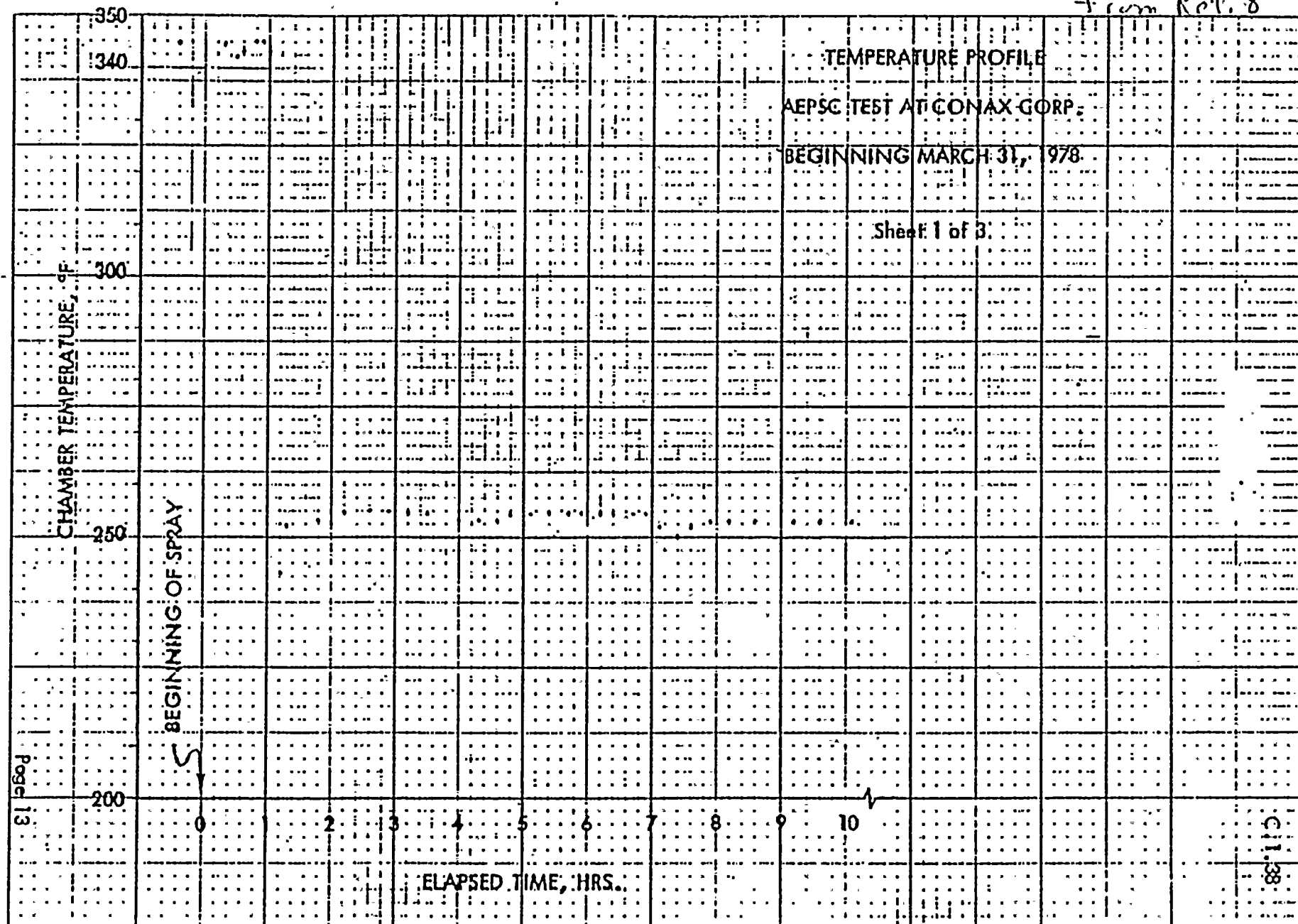
EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	4 MONTHS	> 4.4 MTHS	Table 63	63	COMBINATION	NONE
PLANT ID NO: N/A	Temperature (°F)	Fig 62.9-1, 2 328.2	340	FSAR App Q	62	COMBINATION	NONE
COMPONENT: INSTRUMENTATION TERMINATION	Pressure (PSIA)	Fig 1 Fig 2	119.7	AEW 6504	62	COMBINATION	NONE
MANUFACTURER: N/A	Relative Humidity (%)	100	100		62	COMBINATION	NONE
MODEL NUMBER: BARTON INSTRUMENT TERMINATION FUNCTION:	Chemical Spray	2000PPMB 1.14% WT. BORIC ACID PH 9-11	2000PPMB 1.14% WT. BORIC ACID PH 9-11	T.S. 8/4.5 3/4.5.6	62	COMBINATION	NONE
ACCURACY: SPEC: N/A DEMON: N/A	Radiation (10 ⁶ rads)	95	150	WCAP 7410-L VOL 1	62	COMBINATION	NONE
SERVICE: VARIOUS	Aging (years)						
LOCATION: IN AND OUT Containment	Submergence	SUBMERGED	Yes		62	COMBINATION	NONE
FLOOD LEVEL ELEV: 612' ABOVE FLOOD LEVEL: No							

*Documentation References:

Notes:

62. INSTRUMENT CABLE TERMINATION PACKET
63. REQUIRED TIME QUALIFICATION PACKET

from Ref. 8

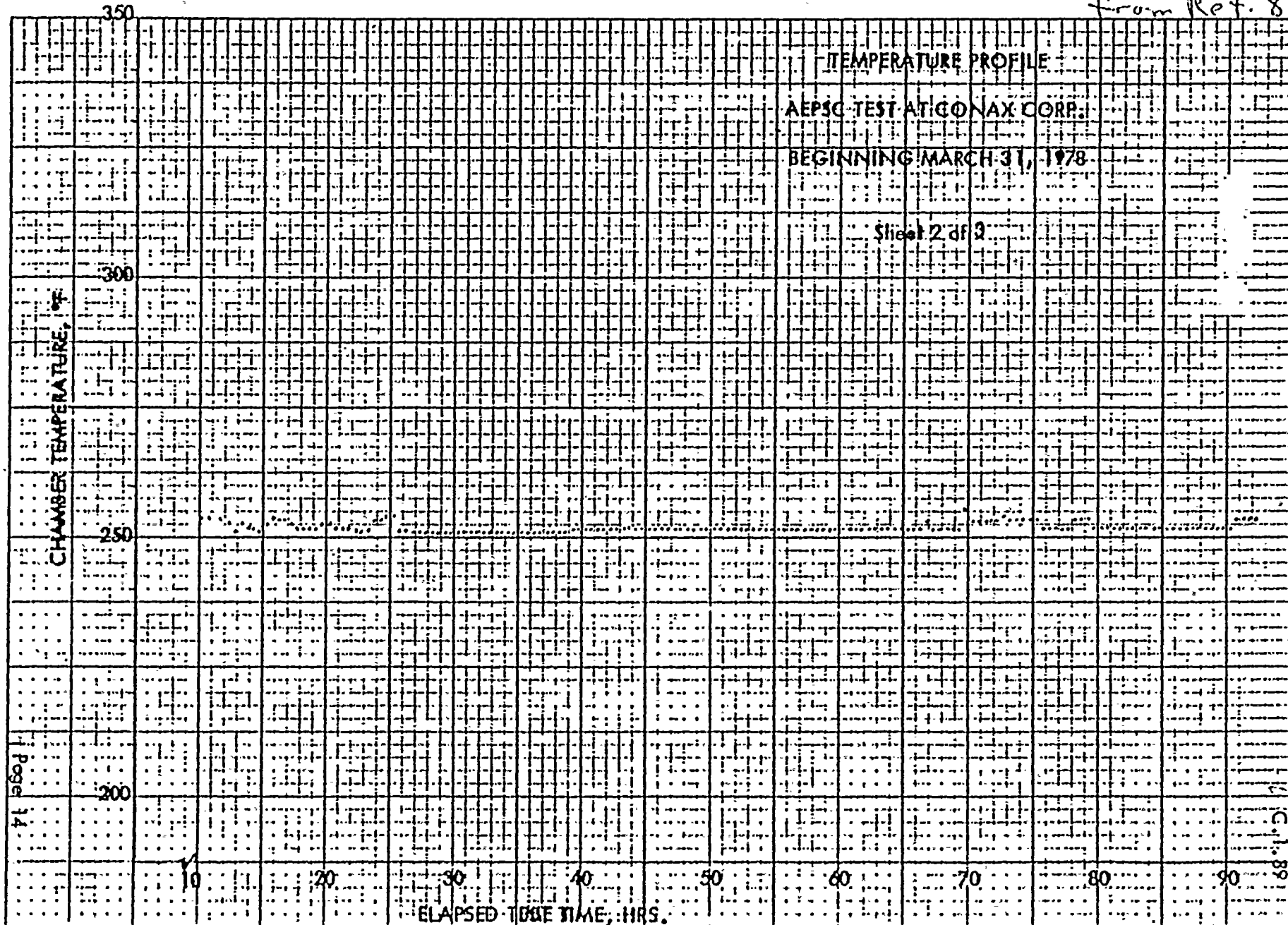


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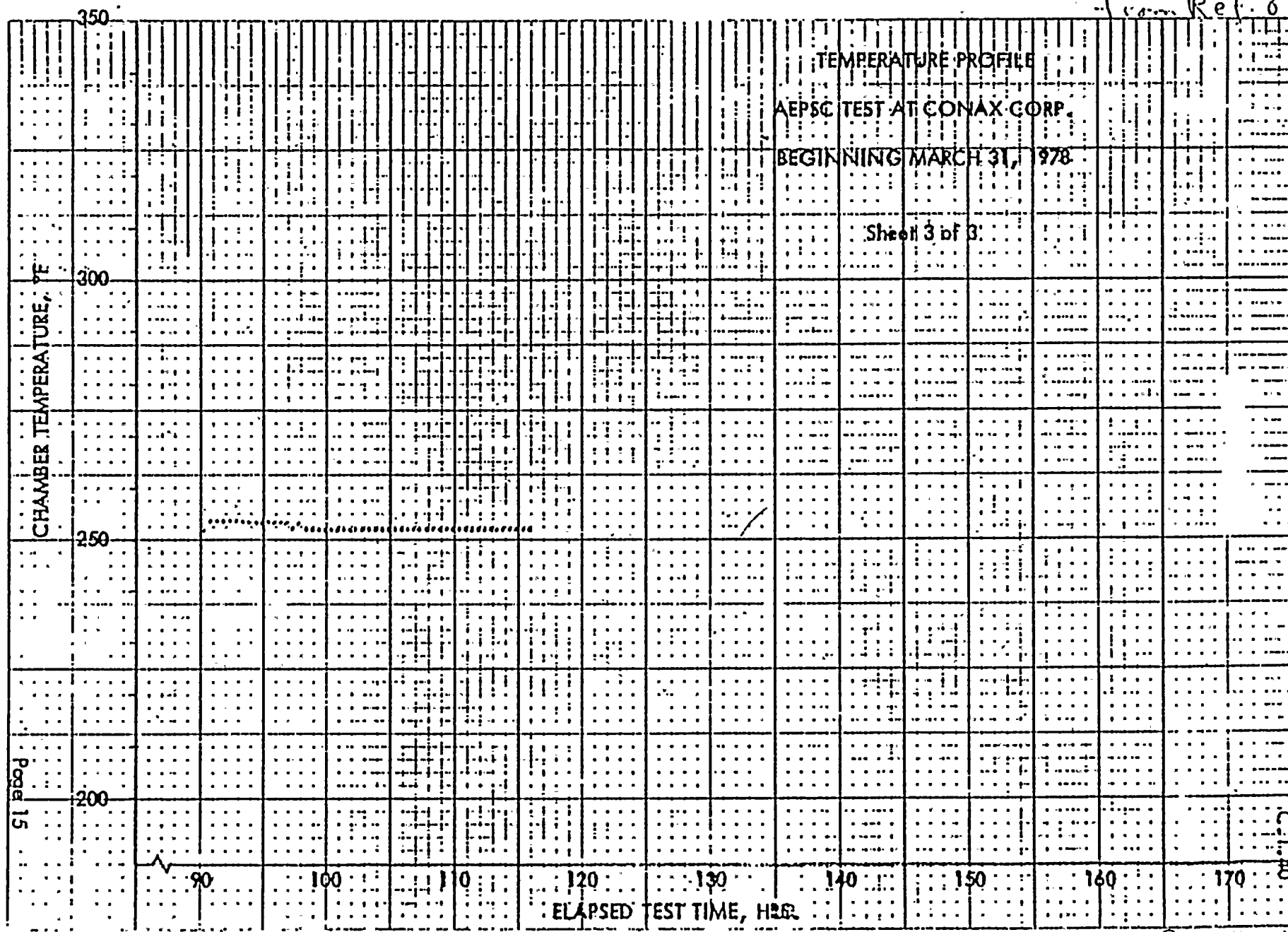
IPS-348

from Ref. 8





From Ref. 8.



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C-11-40

From Ref. 9. Qualified by FIRL Test Report F-C4033-1 of Jan. 1975 9

Type of Test: Simultaneous, gamma radiation
steam
chemical spray

Test Profile:

.2 - .3 Mrads/hr, 200 Mrads
351°F, 70 psig for 10 hrs
275°F, 31 psig for 4.5 days
212°F, 10 psig for 26 days

Chemical Spray: 3000 ppm boron as boric acid, .064 molar
sodium thiosulfate and adjusted with
Na OH to a PH of 10.5 at room temp.

From Ref. 9. Qualified by FIRL Test Report F-C4033-1 of Jan. 1975

Type of Test: Simultaneous, gamma radiation
steam
chemical spray

Test Profile:

.2 - .3 Mrads/hr, 200 Mrads
351°F, 70 psig for 10 hrs
275°F, 31 psig for 4.5 days
212°F, 10 psig for 26 days

Chemical Spray: 3000 ppm boron as boric acid, .064 molar
sodium thiosulfate and adjusted with
Na OH to a PH of 10.5 at room temp.

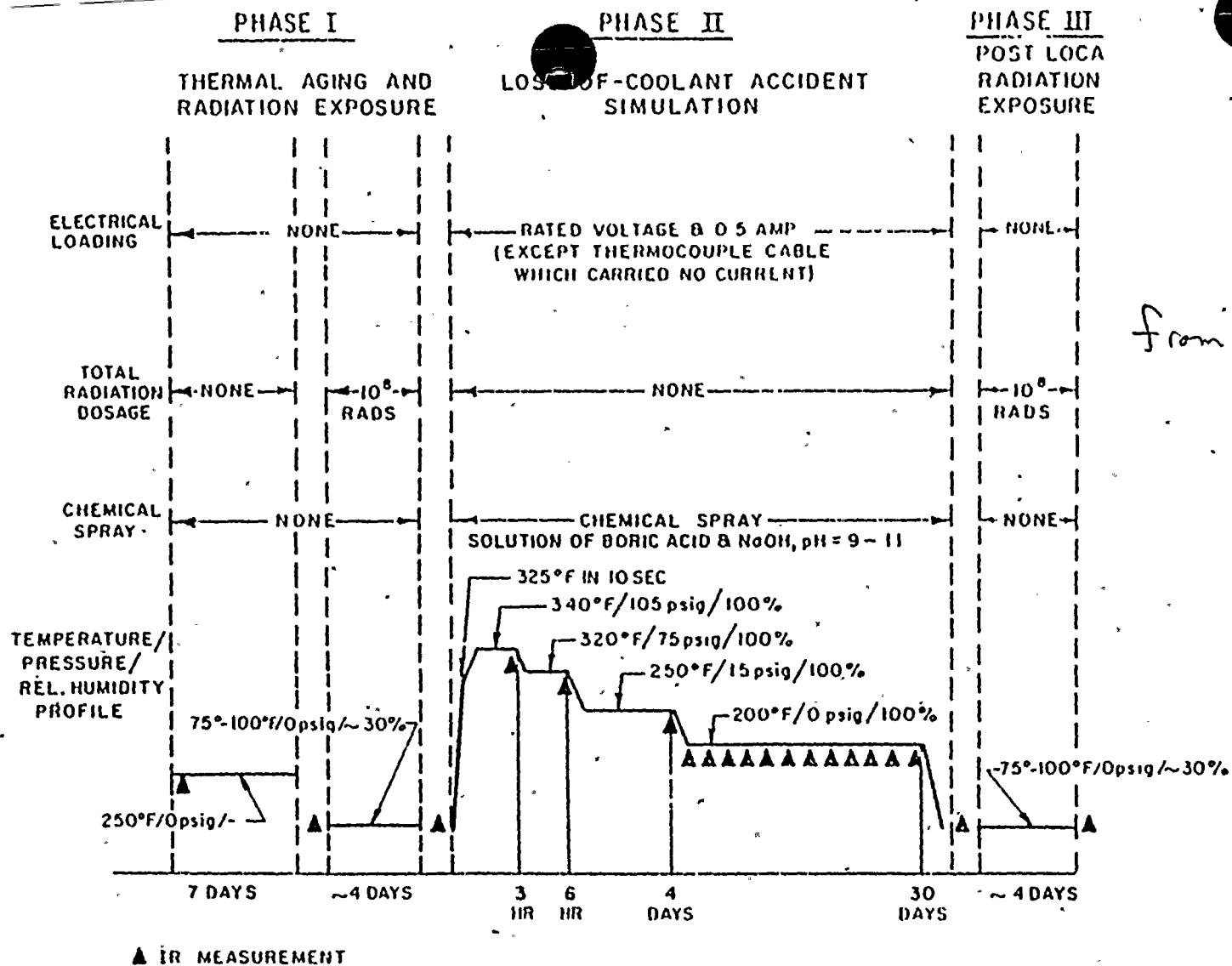
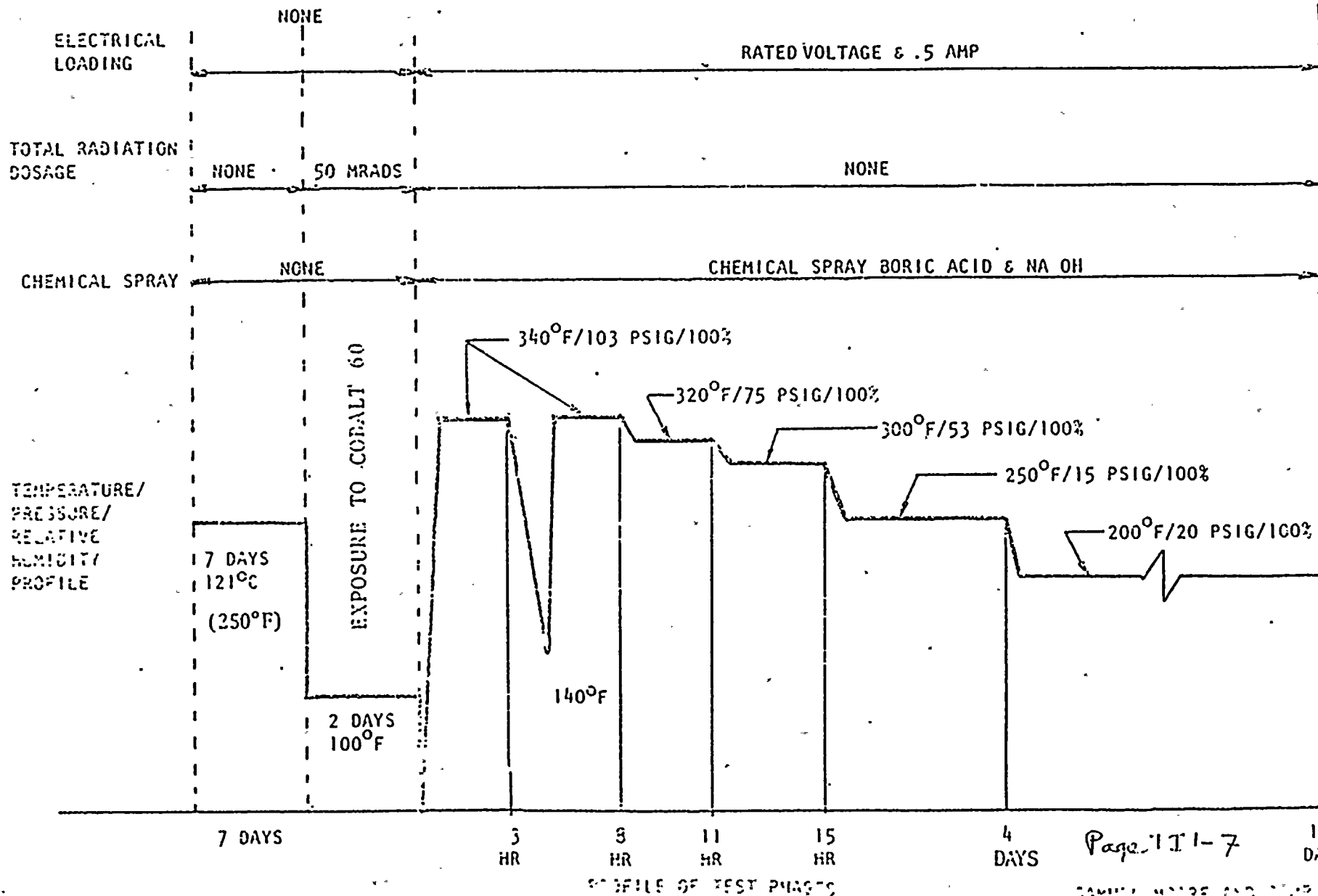


Figure 2. Profile of Test Phases



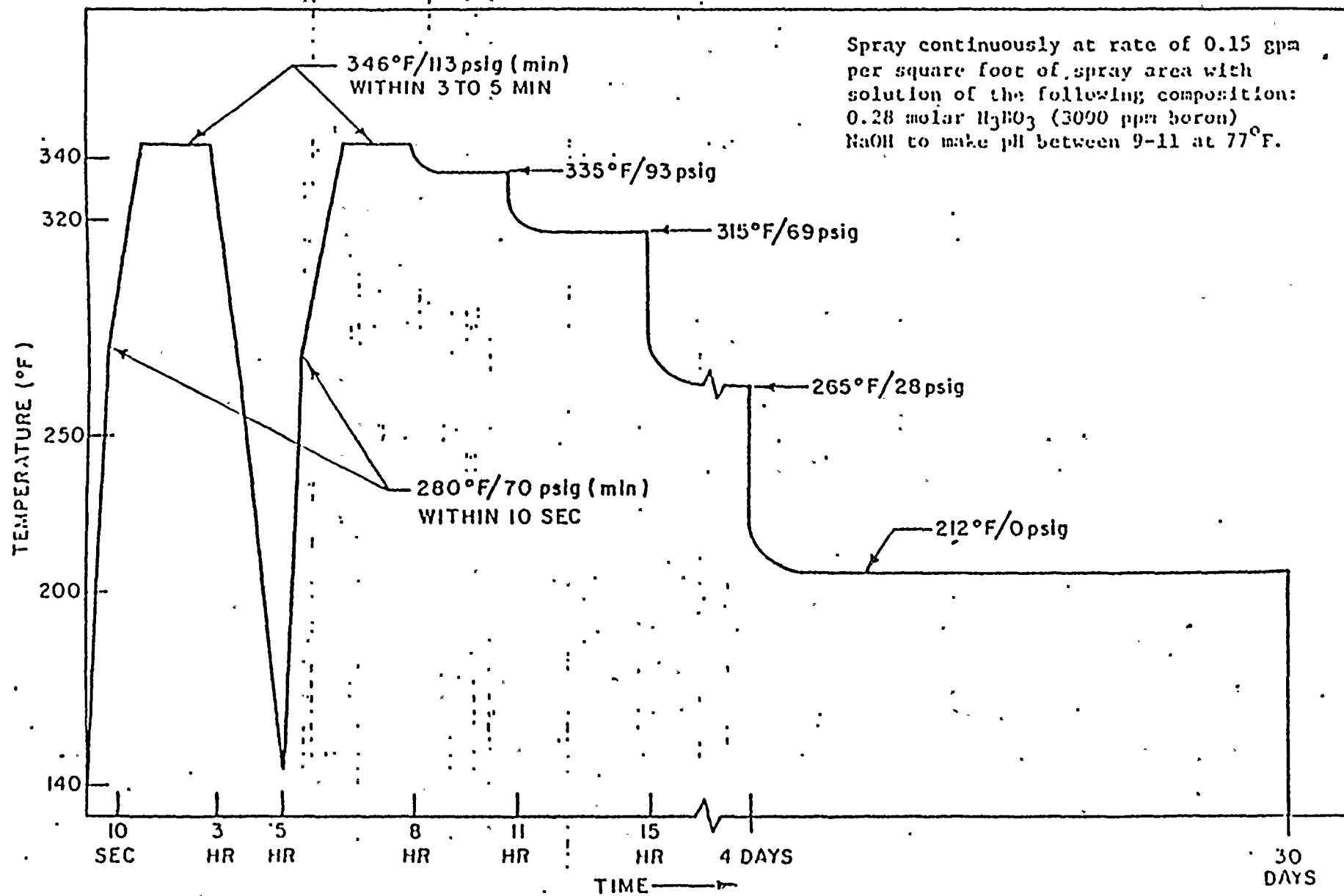
THERMAL AGING AND
RADIATION EXPOSURE

LOSS-OF-COOLANT ACCIDENT SIMULATION





LOCA Profile



Spray continuously at rate of 0.15 gpm per square foot of spray area with solution of the following composition:
0.28 molar H_2BO_3 (3000 ppm boron)
NaOH to make pH between 9-11 at 77°F.

LOCA PROFILE

7.

from Ref 14. Type of Test (F-C4033-3): Simultaneous
Radiation/chem. spray/steam.

Test Profile:

.2-.3 Mrads/hr, 200 Mrads
351°F, 70 psig for 10 hrs
275°F, 31 psig for 4.5 days
212°F, 10 psig for 26 days

Chemical spray: 3000 ppm boron as boric acid,
.004 molar sodium thiosulfate and adjusted with
Na OH to a PH of 10.5.

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(Page 2)

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	4 MONTHS	74.4 MTHS	Table 25-2	63 62	COMBINATION	NONE
PLANT ID NO: N/A	Temperature (°F)	Fig 02.9-1-2 328.2	340	FSAR App Q	62	COMBINATION	NONE
COMPONENT: RTD TERMINATION	Pressure (PSIA)	Fig 1. F162	119.7	ASD 6504	62	COMBINATION	NONE
MANUFACTURER: N/A	Relative Humidity (%)	100	100		62	COMBINATION	NONE
MODEL NUMBER: RTD TERMINATION	Chemical Spray	2000PPMB 1.14% WT BORIC ACID PH 9-11	2000PPMB 1.14% WT BORIC ACID PH 9-11	T.S. 3/4.5 5/4.5.6	62	COMBINATION	NONE
FUNCTION:	Radiation (10 ⁶ rads)	95	150	WCAD 7410-L VOL1	62	COMBINATION	NONE
ACCURACY: SPEC: N/A DEMON: N/A	Aging (years)						
SERVICE: VARIOUS	Submergence	NA	NA		62	COMBINATION	NONE
LOCATION: In AND Out Containment							
FLOOD LEVEL ELEV: 612'							
ABOVE FLOOD LEVEL: YES							

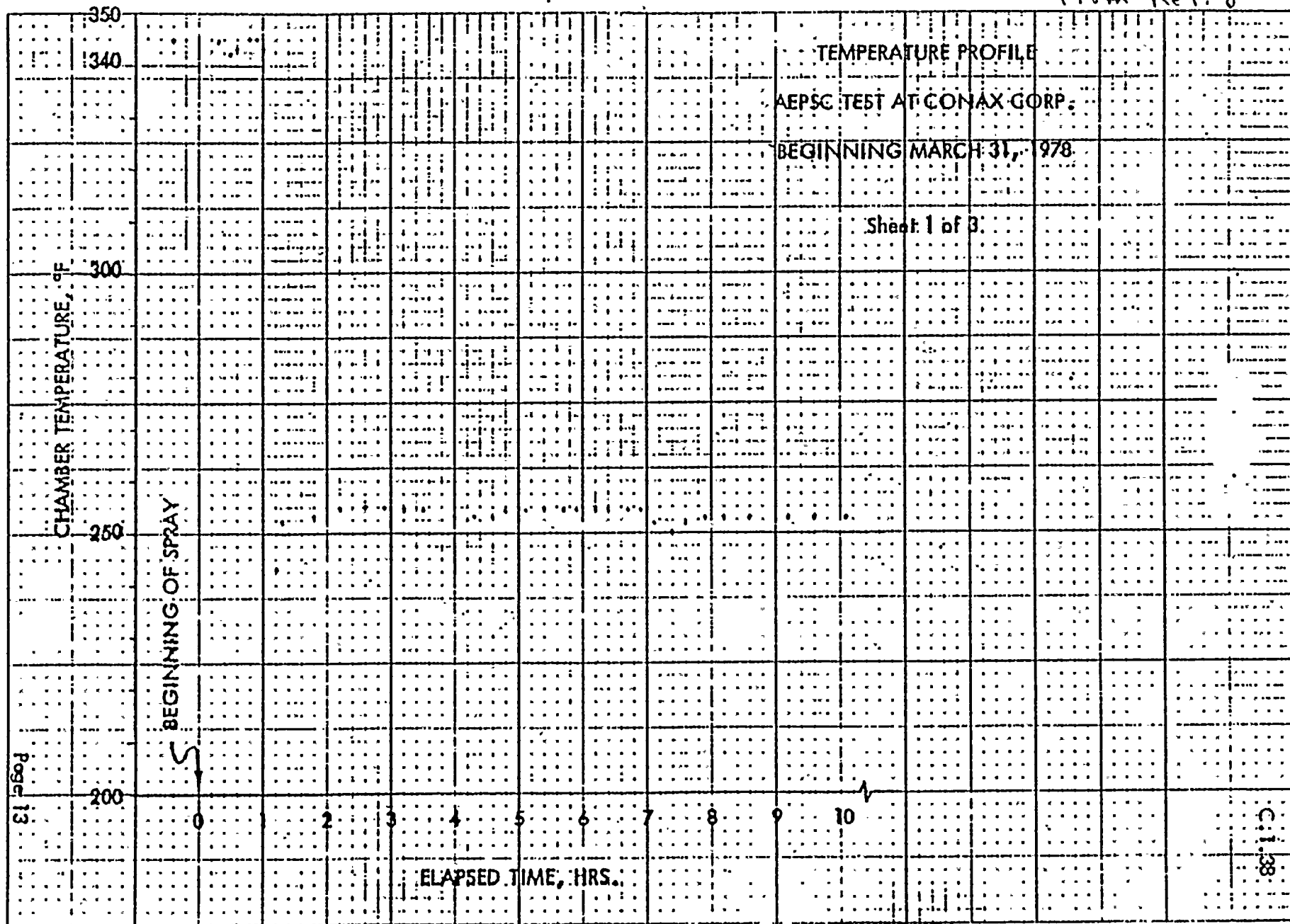
*Documentation References:

Notes:

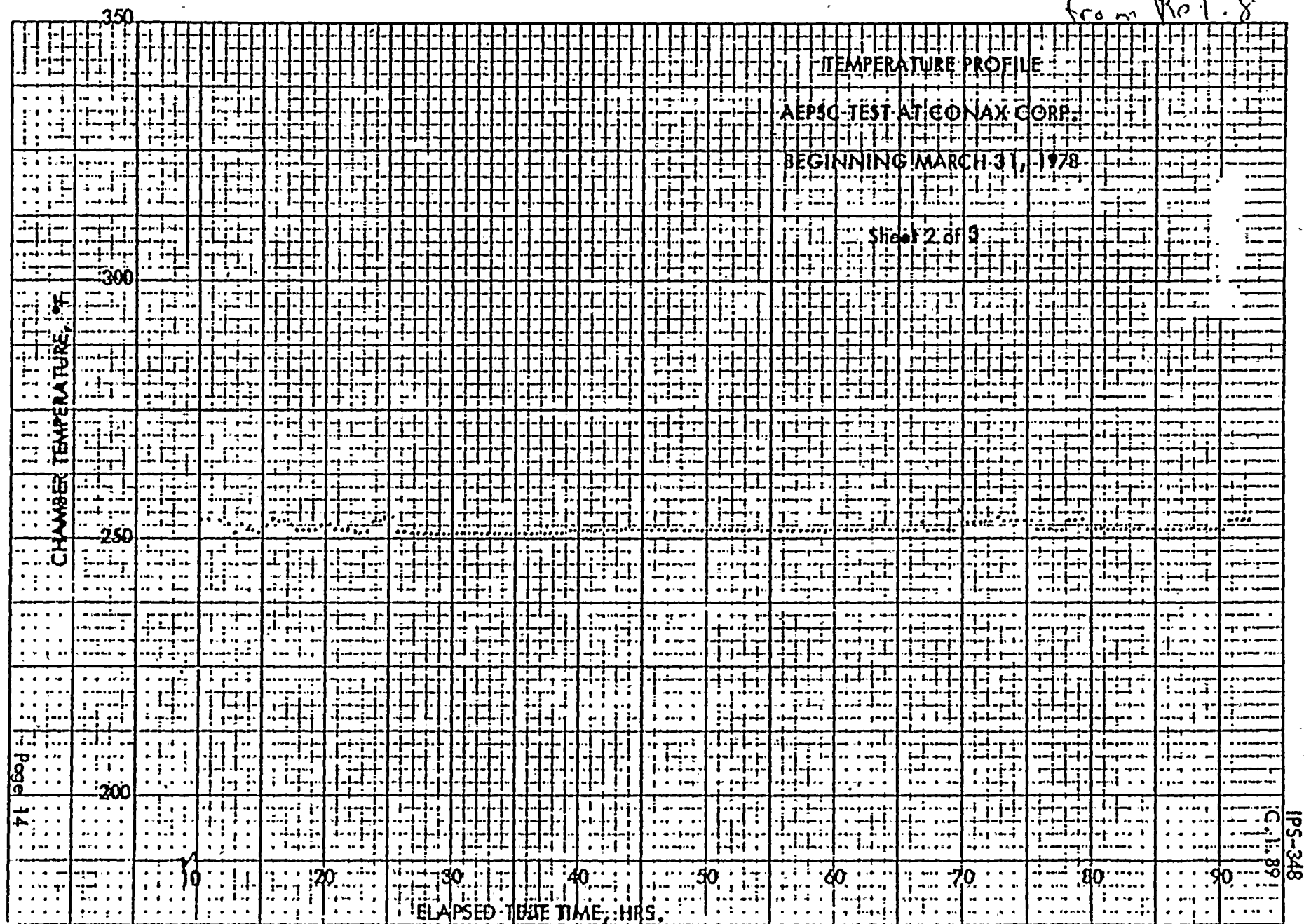
62. INSTRUMENT CABLE TERMINATION PACKET

63. REQUIRED TIME QUALIFICATION PACKET

from Ref. 8

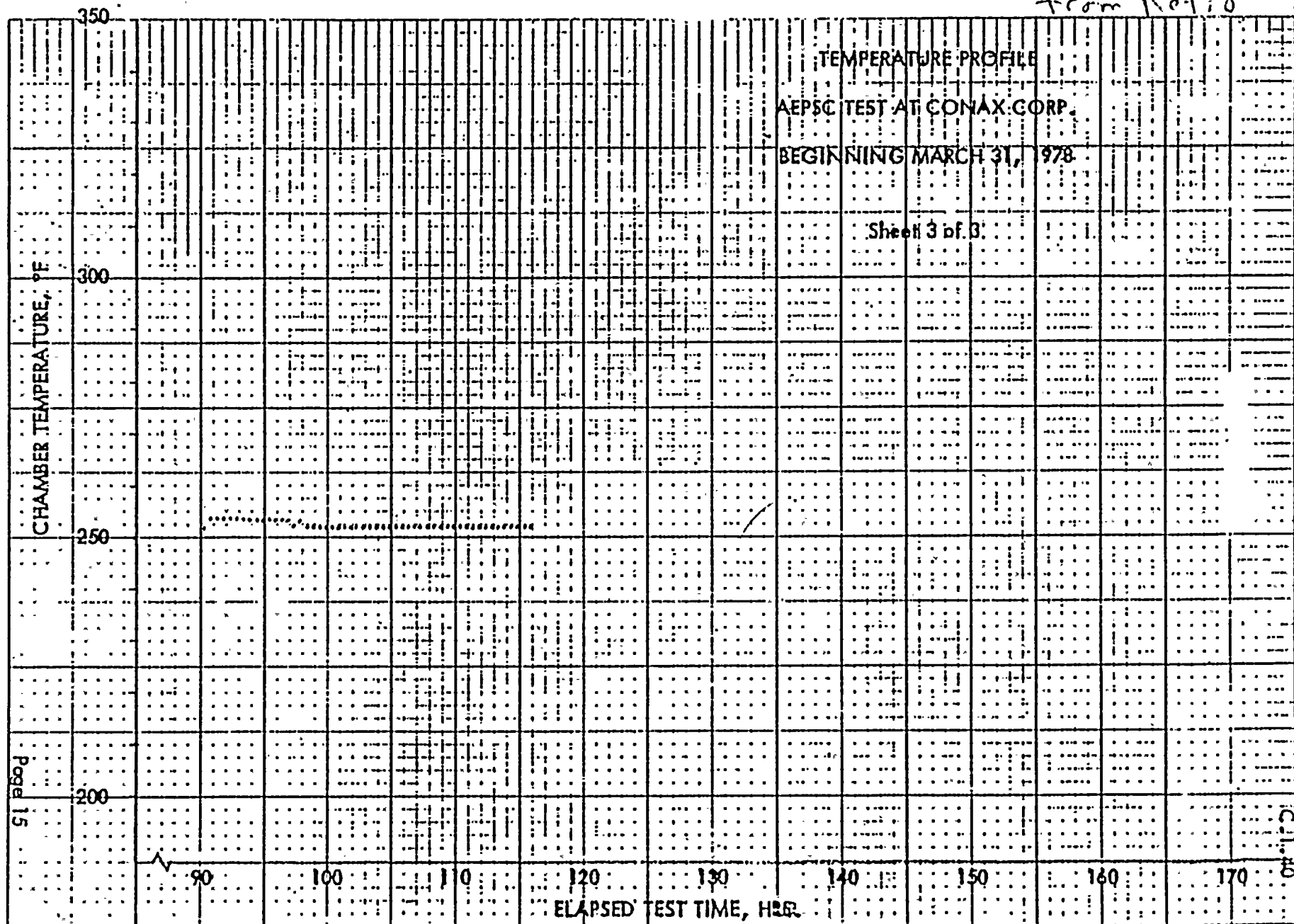


From Ref. 8



W-1212-3

from Ref. 8



from Ref. 9. Qualified by FIRL Test Report F-C4033-1 of Jan. 1975 9

Type of Test: Simultaneous, gamma radiation
steam
chemical spray

Test Profile:

.2 - .3 Mrads/hr, 200 Mrads
351°F, 70 psig for 10 hrs
275°F, 31 psig for 4.5 days
212°F, 10 psig for 26 days

Chemical Spray: 3000 ppm boron as boric acid, .064 molar
sodium thiosulfate and adjusted with
Na OH to a PH of 10.5 at room temp.



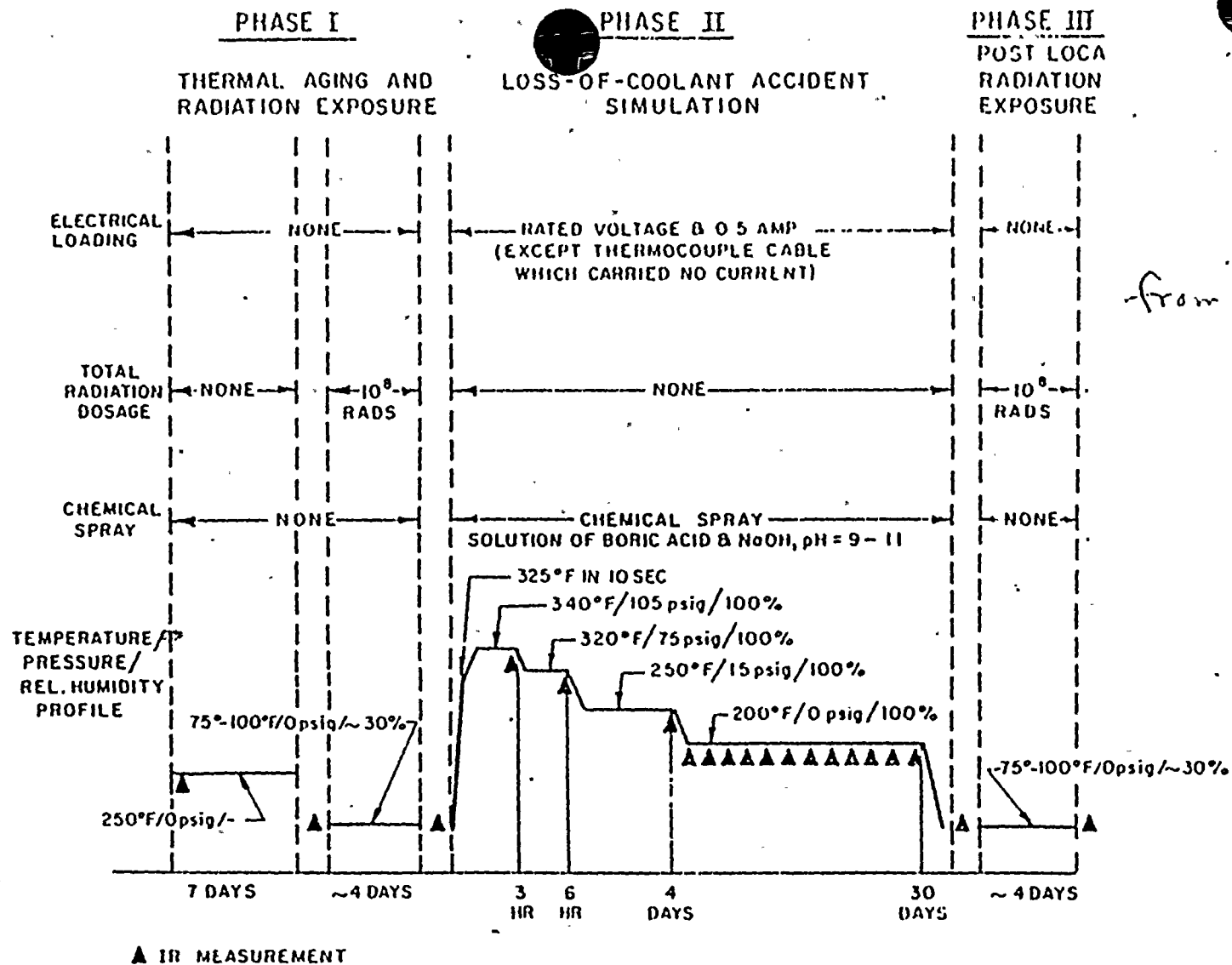
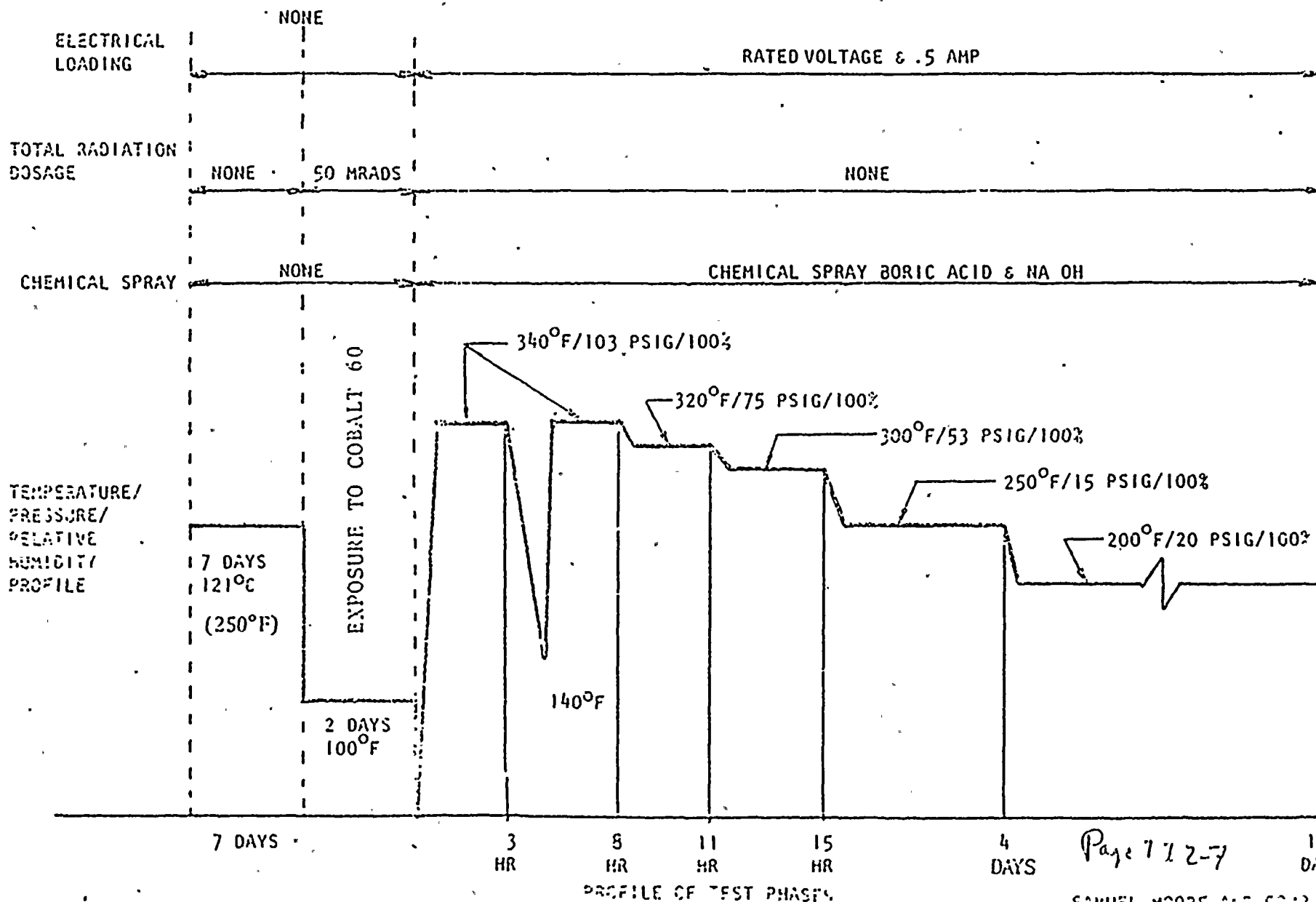


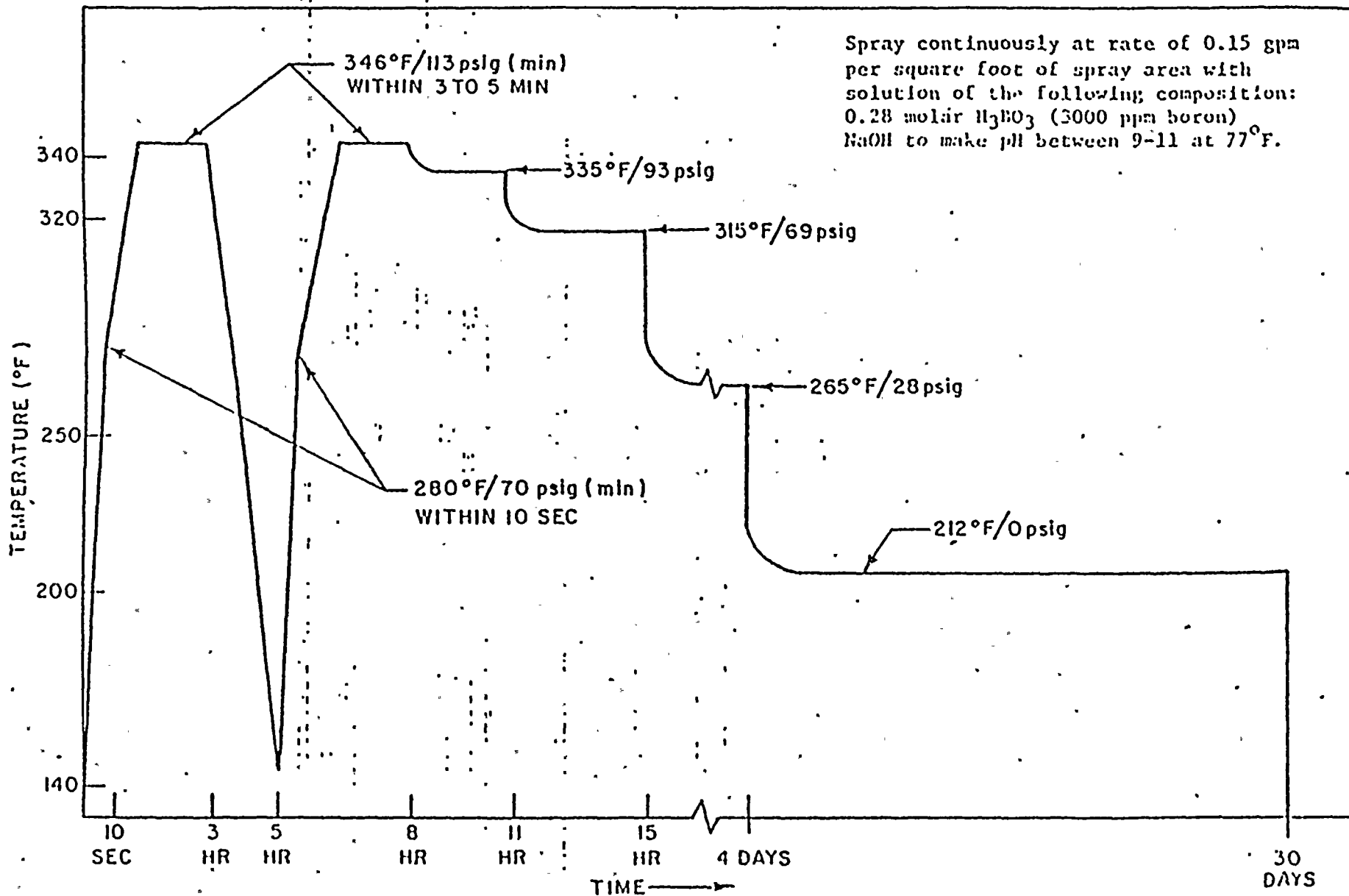
Figure 2. Profile of Test Phases

THERMAL AGING AND
RADIATION EXPOSURE

LOSS-OF-COOLANT ACCIDENT SIMULATION



LOCA Profile



Spray continuously at rate of 0.15 gpm per square foot of spray area with solution of the following composition:
0.28 molar H_2BO_3 (3000 ppm boron)
NaOH to make pH between 9-11 at 77°F.

LOCA PROFILE

6/13/78

From Ref. 14. Type of Test (F-C4033-3): Simultaneous
Radiation/chem. spray/steam.

Test Profile:

.2-.3 Mrads/hr, 200 Mrads
351°F, 70 psig for 10 hrs
275°F, 31 psig for 4.5 days
212°F, 10 psig for 26 days

Chemical spray: 3000 ppm boron as boric acid,
.004 molar sodium thiosulfate and adjusted with
Na OH to a PH of 10.5.

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	4 MONTHS	> 4.4 MTHS	Table 2.15-2	63 13	COMBINATION	NONE
PLANT ID NO: N/A	Temperature (°F)	Fig 022.9-1, -2 328.2	340	FSAR AMP 9	13	Seq.	NONE
COMPONENT: INSTRUMENT PENETRATION TERMINATION MANUFACTURER: N/A	Pressure (PSIA)	Fig 1 Fig 2	118	AED 6504	13	Seq.	NONE
MODEL NUMBER: PENETRATION TERMINATION FUNCTION:	Relative Humidity (%)	100	100		13	Seq.	NONE
ACCURACY: SPEC: N/A DEMON: N/A	Chemical Spray	Not Req'd.	2500 PPMB 1.43% WT. BORIC ACID... PH 9.5	FS 314.5 314.6	13	Seq.	NONE
SERVICE: VARIOUS	Radiation (10 ⁶ rads)	95	150	AED 729	13	Seq.	NONE
LOCATION: In Containment	Aging (years)						
FLOOD LEVEL ELEV: 612' ABOVE FLOOD LEVEL: No	Submergence	SUBMERGED	FLOODUP TUBES		61	COMBINATION	NONE

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05 6.24
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43 4.24
123, 124
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1789
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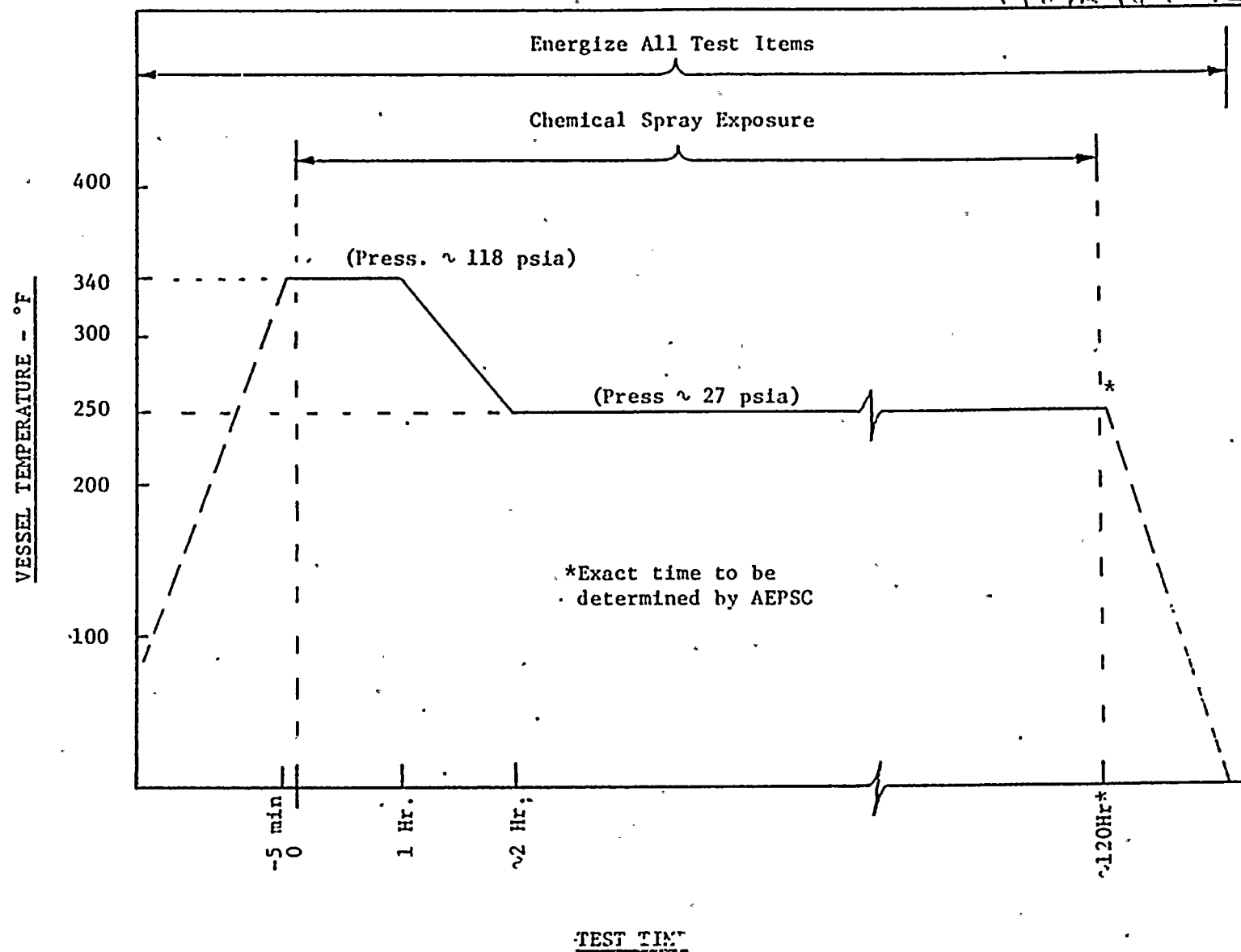
*Documentation References:

Notes:

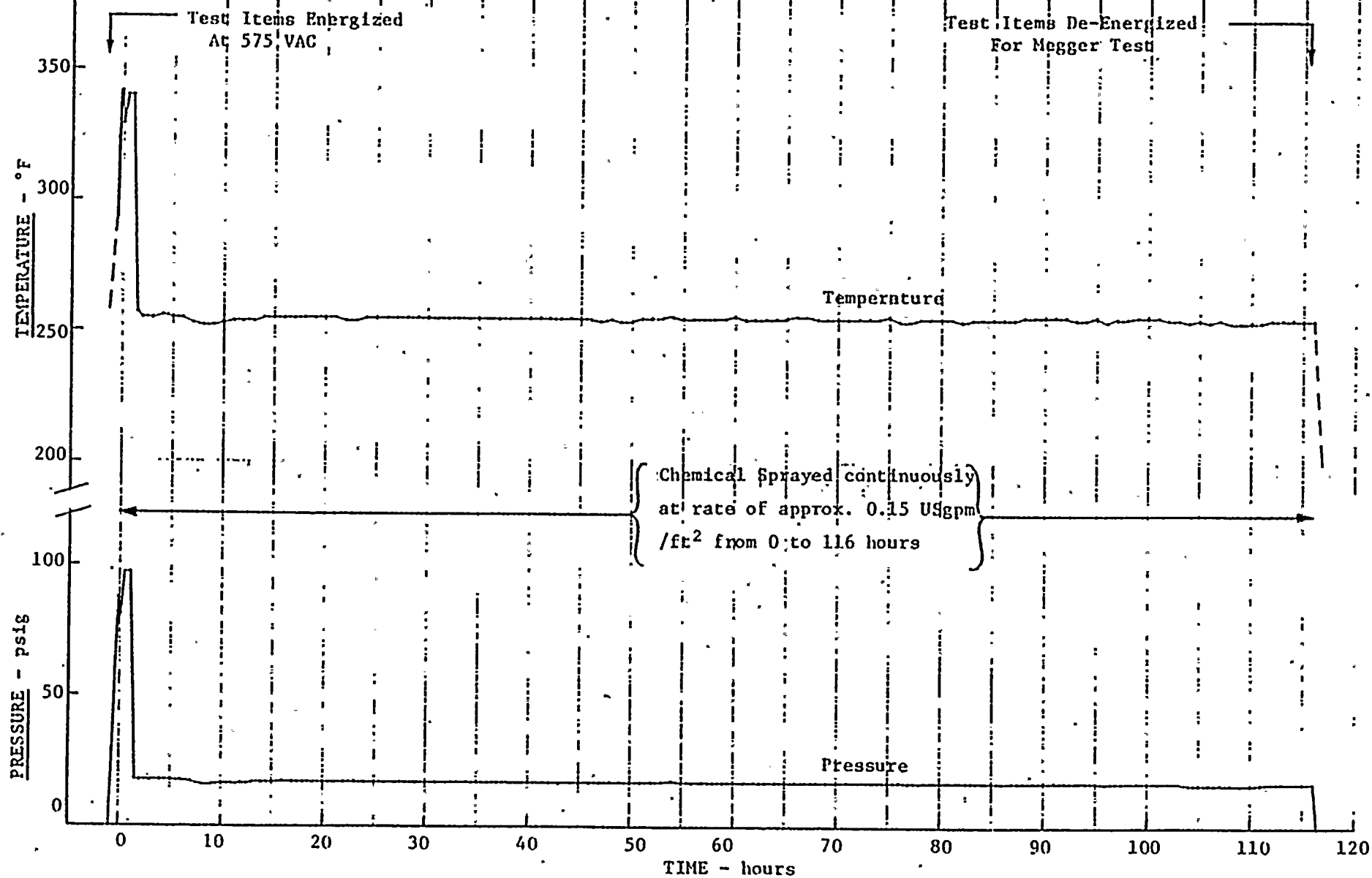
13. Westinghouse - CANADA Test Report CWAPD-332
61. FLOOD UP TUBE QUALIFICATION PACKET
63. REQUIRED TIME QUALIFICATION PACKET

FIGURE 2

TEST PROFILE







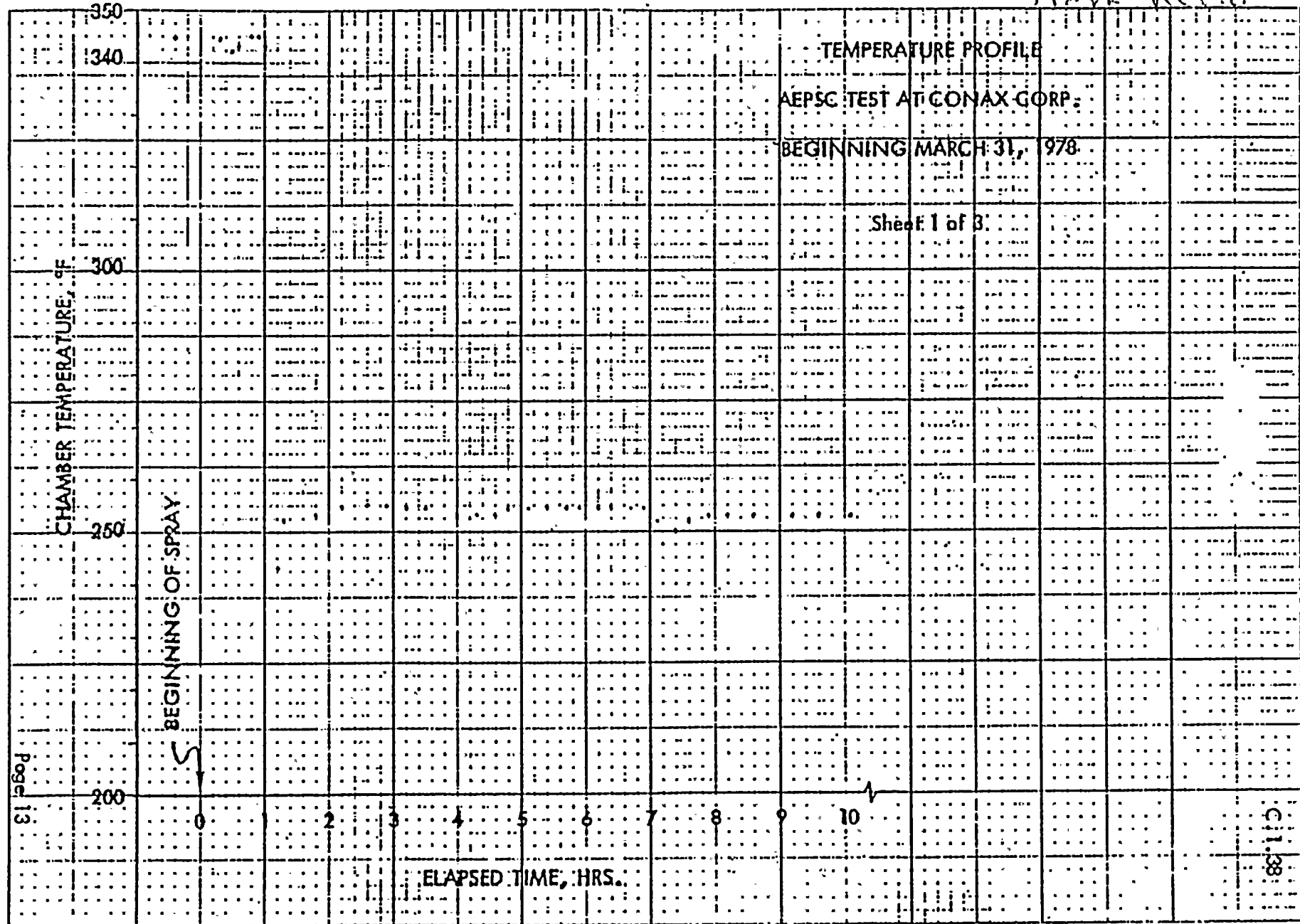
EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	4 MONTHS	> 4.4 MTHS	Table 7.5-2	63 62	COMBINATION	NONE
PLANT ID NO: N/A	Temperature (°F)	616 022.9-1-2 328.2	340	ESAR APP Q	62	COMBINATION	NONE
COMPONENT: INSTRUMENT CABLE TERMINATION	Pressure (PSIA)	616 1 FIG 2	119.7	ASCO 6504	62	COMBINATION	NONE
MANUFACTURER: N/A	Relative Humidity (%)	100	100		62	COMBINATION	NONE
MODEL NUMBER: INSTRUMENT CABLE	Chemical Spray	2000PPMB 1.14% WT. BORIC ACID PH 9-11	2000PPMB 1.14% WT. BORIC ACID PH 9-11	7.5. 3/4.5 3/4.5.6	62	COMBINATION	NONE
SPLICE AT PENETRATION FUNCTION:	Radiation (10 ⁶ rads)	95.	150	WCAP 7410-L Vol 1	62	COMBINATION	NONE
ACCURACY: SPEC: N/A DEMON: N/A	Aging (years)						
SERVICE: VARIOUS	Submergence	SUBMERGED	Yes		62	COMBINATION	NONE
LOCATION: In Containment							
FLOOD LEVEL ELEV: 612'							
ABOVE FLOOD LEVEL: No							

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 OF Equip.
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 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

*Documentation References:
 62. INSTRUMENT CABLE TERMINATION PACKET
 63. REQUIRED TIME QUALIFICATION PACKET

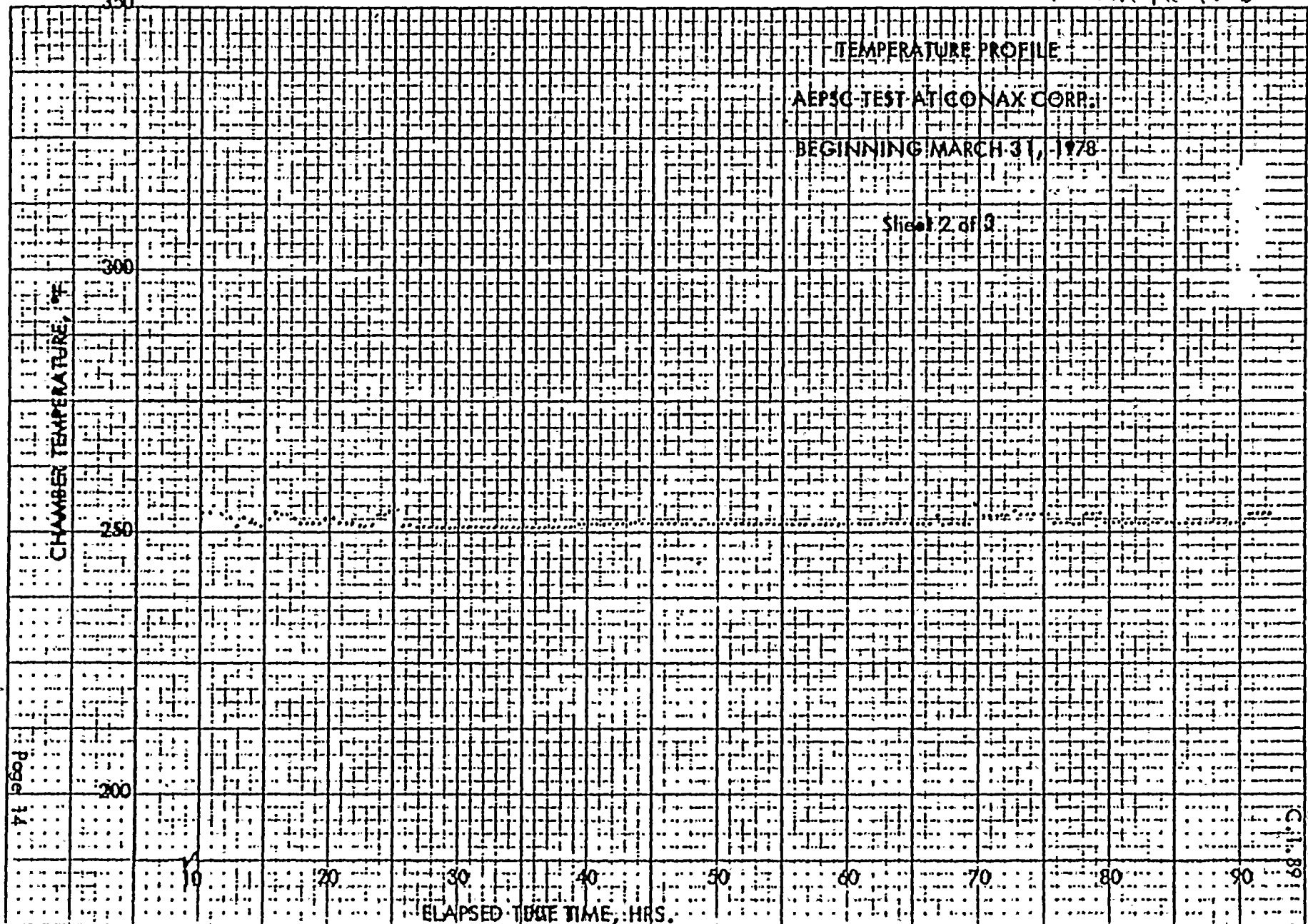
Notes:

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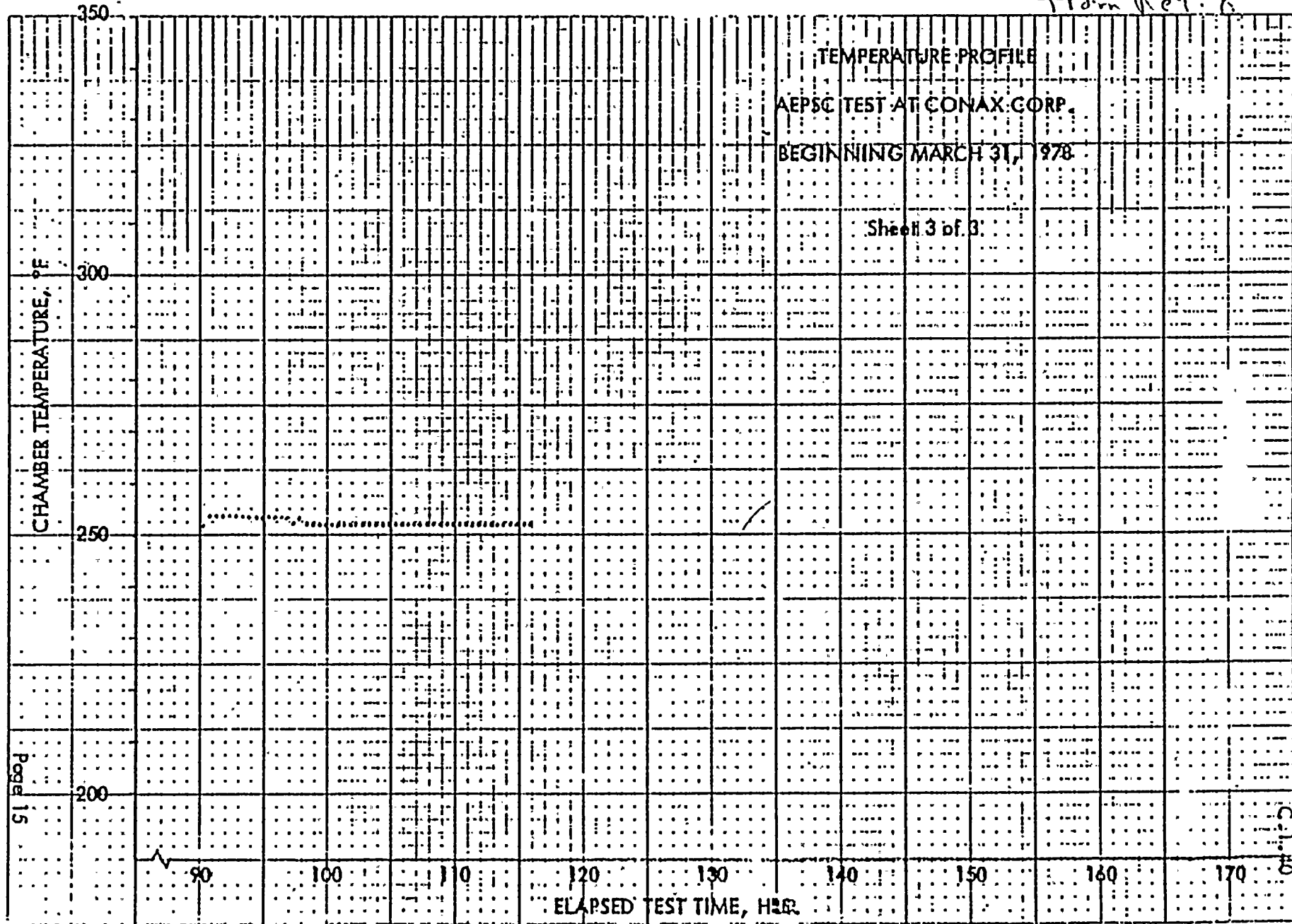


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from Ref. 8



From Ref. 8



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From Ref. 9. Qualified by FIRL Test Report F-C4033-1 of Jan. 1975 .9

Type of Test: Simultaneous, gamma radiation
steam
chemical spray

Test Profile:

.2 - .3 Mrads/hr, 200 Mrads
351°F, 70 psig for 10 hrs
275°F, 31 psig for 4.5 days
212°F, 10 psig for 26 days

Chemical Spray: 3000 ppm boron as boric acid, .064 molar
sodium thiosulfate and adjusted with
Na OH to a PH of 10.5 at room temp.

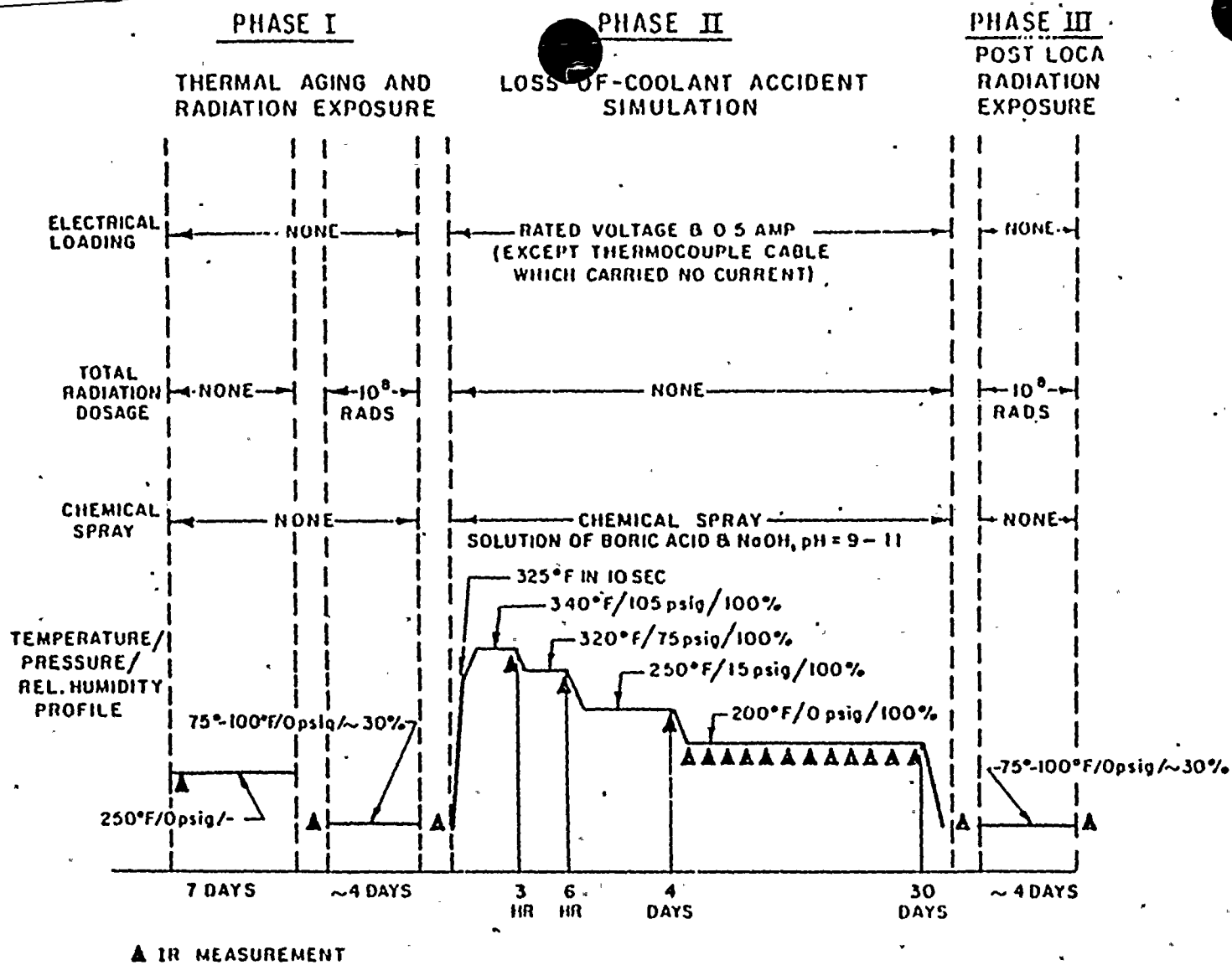
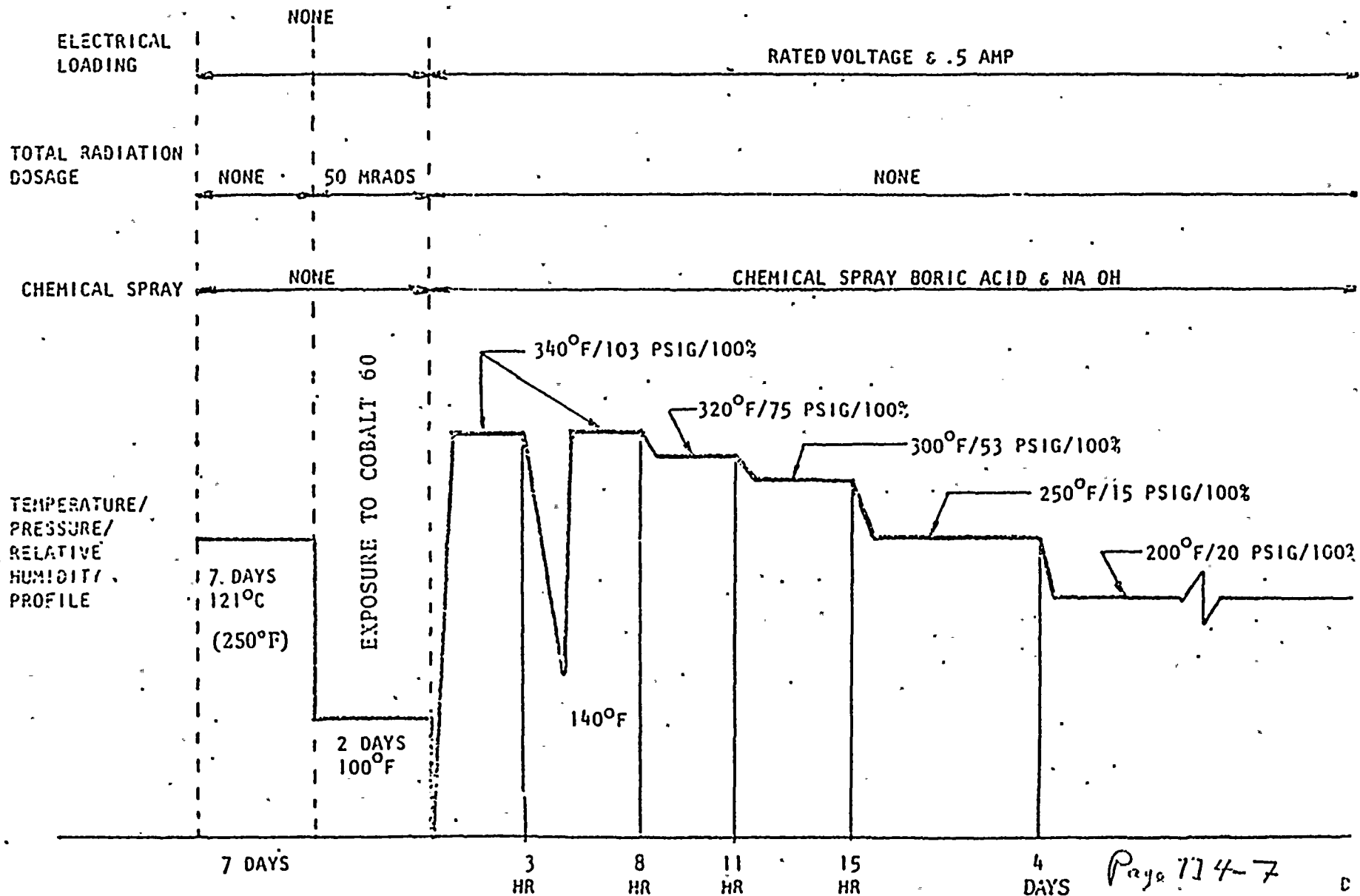


Figure 2. Profile of Test Phases



THERMAL AGING AND
RADIATION EXPOSURE

LOSS-OF-COOLANT ACCIDENT SIMULATION



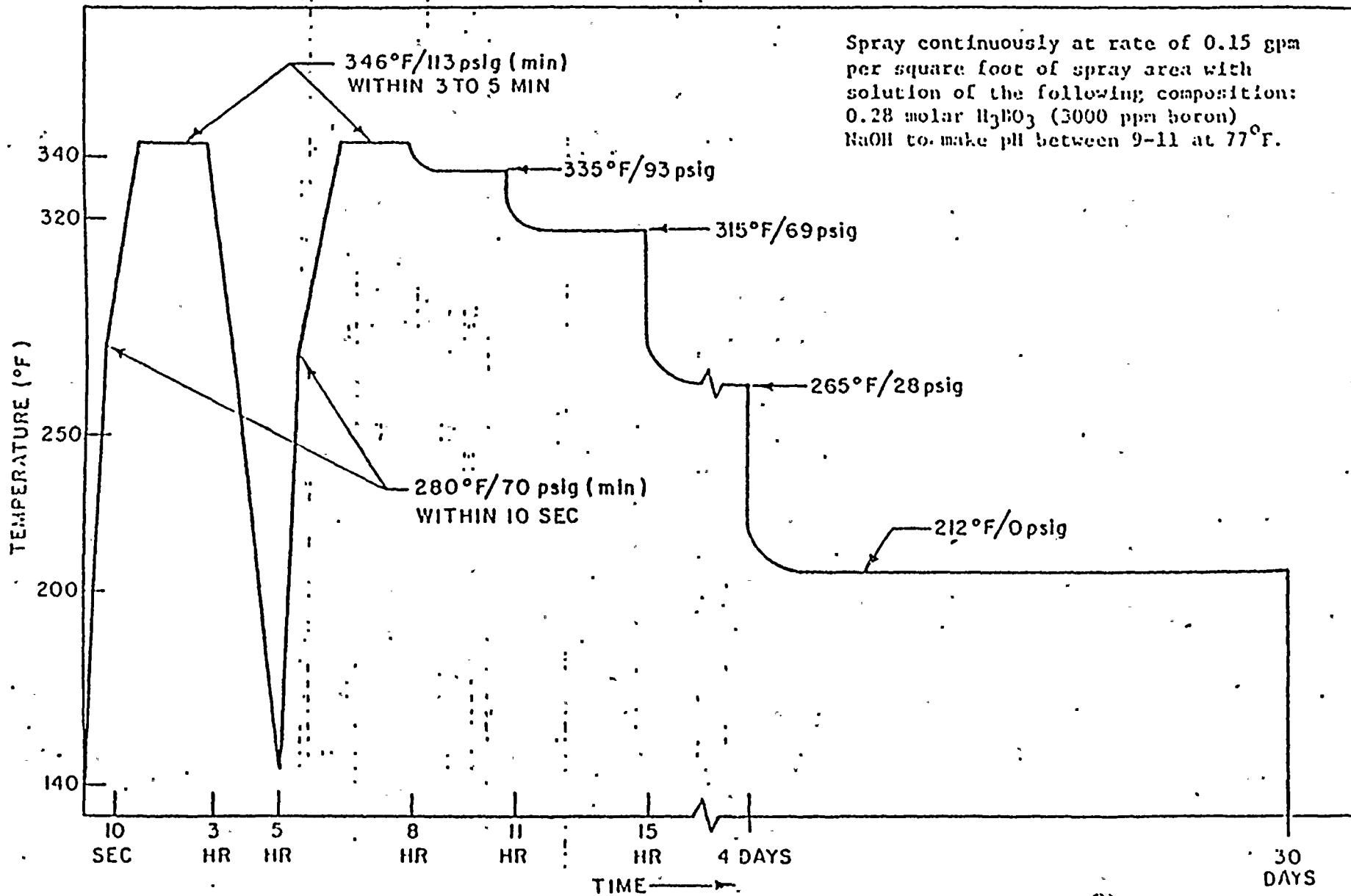
PROFILE OF TEST PHASES

Page 774-7

CAUTION: DO NOT TOUCH



LOCA Profile



Spray continuously at rate of 0.15 gpm per square foot of spray area with solution of the following composition:
0.28 molar H_2BO_3 (3000 ppm boron)
NaOH to make pH between 9-11 at 77°F.

LOCA PROFILE

from Ref. 14. Type of Test (F-C4033-3): Simultaneous
Radiation/chem. spray/steam.

Test Profile:

.2-.3 Mrads/hr, 200 Mrads
351°F, 70 psig for 10 hrs
275°F, 31 psig for 4.5 days
212°F, 10 psig for 26 days

Chemical spray: 3000 ppm boron as boric acid,
.004 molar sodium thiosulfate and adjusted with
Na OH to a PH of 10.5.

from Ref. 18.

Qualified by Conax Corp. Test Report IPS-327
of Jan. 1978.

Type of Test: Sequential, steam
floodup with borated
water.

Test Profile:

340°F, 12 psig for 1 hr
250°F, 12 psig for 6 hrs
190°F, 12 psig for 24 hrs

Floodup borated water

from Ref. 19.

Qualified by Conax Corp. Test Report IPS-329
of Jan. 1978.

Type of Test: Sequential, steam
floodup with borated
water.

Test Profile:

340°F, 12 psig for 2 hr
250°F, 12 psig for 6 hrs
190°F, 12 psig for 24 hrs

Floodup borated water.

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11, 12
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127, 130
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149-200
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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>4 MONTHS</i>	<i>>4.4 MTHS</i>	<i>Table 63</i> <i>7.5-2</i>	<i>27</i>	<i>COMBINATION</i>	<i>NONE</i>
PLANT ID NO: <i>NA</i>	Temperature (°F)	<i>F16</i> <i>1313-1</i>	<i>320</i>	<i>F3AR</i> <i>AP9, 10</i>	<i>27</i>	<i>Seq.</i>	<i>NONE</i>
COMPONENT: <i>Instrument Termination</i>	Pressure (PSIA)	<i>F16 1</i> <i>F142</i>	<i>89.7</i>	<i>AP20</i> <i>6104</i>	<i>27</i>	<i>Seq.</i>	<i>NONE</i>
MANUFACTURER:	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>26</i>	<i>Seq.</i>	<i>NONE</i>
MODEL NUMBER: <i>Instr. Term</i> <i>At Foxboro, Instr.</i>	Chemical Spray	<i>2000PPMB</i> <i>1.14% WT</i> <i>BORIC ACID</i> <i>PH 9-11</i>	<i>2000PPMB</i> <i>1.14% WT</i> <i>BORIC ACID</i> <i>PH 9.25-10</i>	<i>T.S.</i> <i>3/4.5</i> <i>3/4.6.6</i>	<i>27</i>	<i>Seq.</i>	<i>NONE</i>
FUNCTION:	Radiation (10 ⁶ rads)	<i>95</i>	<i>18</i>	<i>WCAD</i> <i>7410-6</i> <i>Vol 1</i>	<i>27</i>	<i>Seq.</i>	<i>NONE</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>	Submergence	<i>SUBMERGED.</i>	<i>Floodup Tubes</i>		<i>61</i>	<i>COMBINATION</i>	<i>NONE</i>
LOCATION: <i>In and Out Containment</i>							
FLOOD LEVEL ELEV: <i>612'</i> ABOVE FLOOD LEVEL: <i>No</i>							

*Documentation References:

26. Foxboro Test Report TE-1013
 27. Westinghouse Corp. Communication NS-PLC-5023
 dated 4/26/78 from T.M. Anderson, Westinghouse
 to E.G. Case NRC.

61. FLOOD UP TUBE QUALIFICATION PACKET
 63. REQUIRED TIME QUALIFICATION PACKET

Notes: NO SPECIFIC ACCIDENT ANALYSIS TAKES CREDIT FOR ASSUMED OPERATION OF THESE DEVICES. THEIR USE IS REFERENCED BY EMERGENCY OPERATING PROCEDURES.

from Ref. 27.

Qualified by Westinghouse Electric Corp. letter of
4/26/78 (NS-PLC-5023).

From: T. M. Anderson - Westinghouse

To: E. G. Case - NRC

Test Type: Sequential

Steam/chemical spray/radiation

Test Profile:

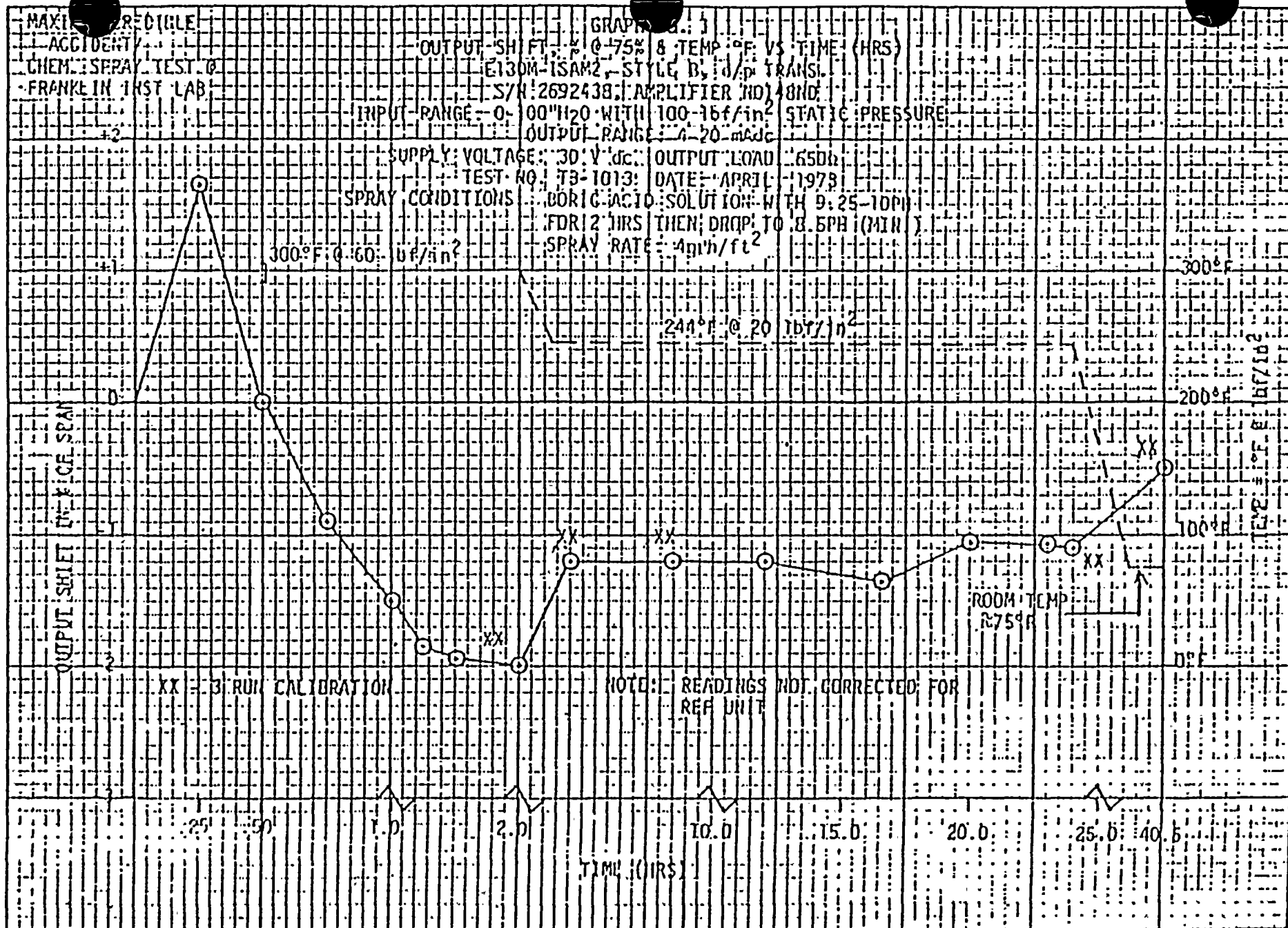
18 Mrads, 1.94 Mrads/hr.

320°F, 75 psig for 20 minutes

From 320°F to 220°F in 24 hrs. (saturated conditions)

220°F, 15 psia for 5.5 days.

Chemical Spray: 1.14% boric acid
.17% Na OH



MAXIMUM CREDIBLE
 CHEMICAL TEST
 FRANKLIN INST. LAB

GRAPH NO. 12
 OUTPUT 5H FT. 2-0-75
 E-1301-15AN2, 1.51 GE B, 1d/p TRANS
 S/N 2692441, AMPLIFIER NO 1481

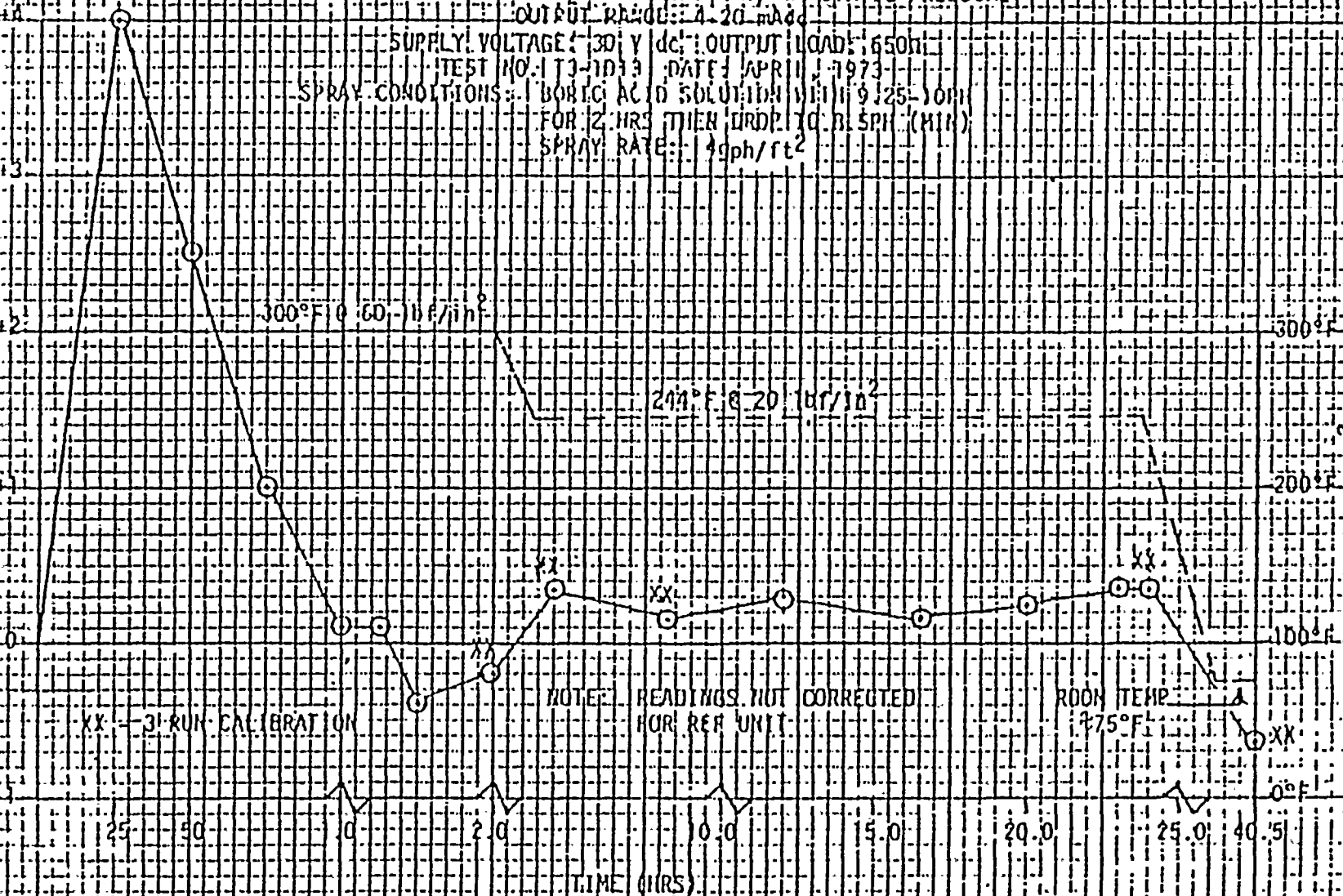
INPUT RANGE: 0-100" H₂O WITH 100 lbf/in² STATIC PRESSURE
 OUTPUT RANGE: 4-20 mA

SUPPLY VOLTAGE: 30 V dc; OUTPUT LOAD: 650Ω

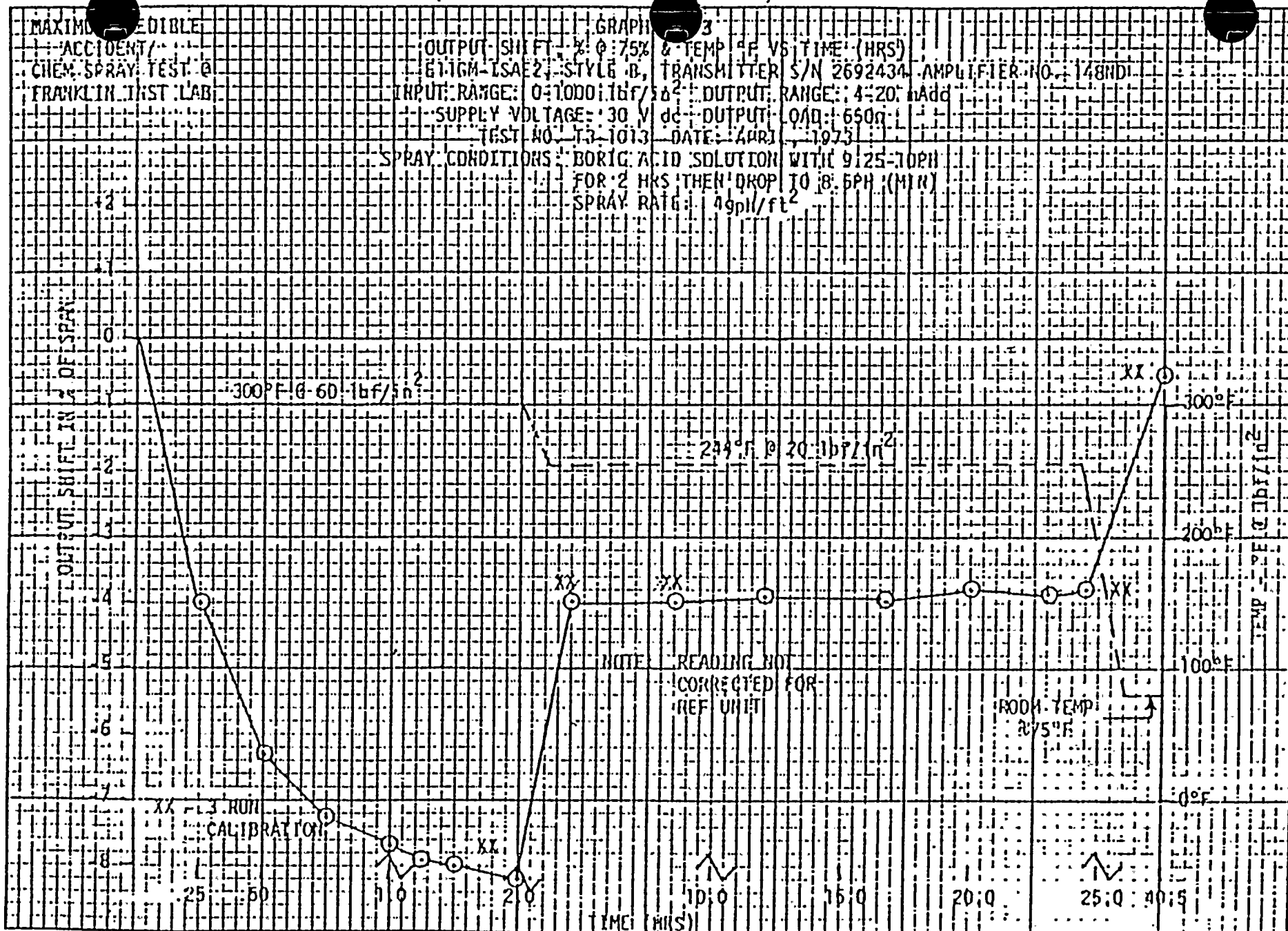
TEST NO. 13-1013 DATE: APRIL 1973

SPRAY CONDITIONS: BORIC ACID SOLUTION WITH 9/25-10PH
 FOR 2 HRS THEN DRIP TO 5PH (MIN)
 SPRAY RATE: 1 gph/ft²

OUTPUT ERROR IN % OF SPAN



8-3 TIS-4



MAXIMUM CREDIBLE

ACCIDENT

CHEM. SPRAY TEST @

FRANKLIN INST. LAB

GRAPH NO. 4

OUTPUT SHIELD % 0.75% & TEMP. °F VS TIME (HRS)

HEIGHT 1 IN 2, STYLE B, TRANSMITTER S/N 2692435, AMPLIFIER NO. 14BND

INPUT RANGE: 0-2000. 16f/in² OUTPUT LOAD: 650Ω

TEST NO. T3-1013 DATE: APR 17 1973

SPRAY CONDITIONS: BORIC ACID SOLUTION IN D. 26-10PH

FOR 2 HRS THEN DROP TO 0.5PH (MIN)

SPRAY RATE: 10gph/ft²

OUTPUT SHIELD IN % DE SPAN

300°F @ 60. 16f/in²

244°F @ 20. 16f/in²

TEMP. °F
16f/in²

ROOM TEMP
1675°F

NOTE: READINGS CORRECTED

FOR REF. UNIT

CALIBRATION

TIME (HRS)

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
PLANT ID NO: <i>NA</i>	Temperature (°F)	<i>Fig 8-27</i>	<i>NA</i>	<i>FSAR APP O</i>	<i>NA</i>	<i>NA</i>	<i>NONE</i>
COMPONENT: <i>INSTR. TERMINATION</i>	Pressure (PSIA)	<i>Fig 8-27</i>	<i>NA</i>	<i>FSAR APP O</i>	<i>NA</i>	<i>NA</i>	<i>NONE</i>
MANUFACTURER: <i>N/A</i>	Relative Humidity (%)	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
MODEL NUMBER: <i>TERMINATION AT MERCOID INSTR.</i>	Chemical Spray	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
FUNCTION:	Radiation (10 ⁶ rads)	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>							
LOCATION: <i>out of containment</i>							
FLOOD LEVEL ELEV: <i>NA</i> ABOVE FLOOD LEVEL: <i>NA</i>	Submergence	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>

*Documentation References:

*Mercoid Switch to be replaced
termination to be qualified with
Inst.*

Notes: INCLUDED IN FIRST 79-01B SUBMITTAL DUE TO
POSSIBLE SOURCE/TARGET INTERACTIONS. SUB-
SEQUENT REVIEW USING ACCEPTANCE CRITERIA
OF FSAR APPENDIX O FOR PROTECTION OF
ELECTRICAL EQUIPMENT. SHOWS NO SOURCE/
TARGET INTERACTION.

*FILE NO.
OF EQUIP
(TAG)
53132
38132*



EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: AUX FEEDWATER	Operating Time	4 MONTHS	NOTE(L)		NOTE L	NOTE L	NONE
PLANT ID NO: N/A	Temperature (°F)	230					NONE
COMPONENT: INST. CABLE TERM. AT FFI - 210, 220, 230 2-240 MANUFACTURER:	Pressure (PSIA)	26.2					NONE
MODEL NUMBER:	Relative Humidity (%)	100					NONE
FUNCTION: VARIOUS	Chemical Spray	NA					
ACCURACY: SPEC: N/A DEMON: N/A	Radiation (10 ⁶ rads)	NA					
SERVICE: VARIOUS	Aging (years)						
LOCATION: OUTSIDE CONT.							
FLOOD LEVEL ELEV: N/A ABOVE FLOOD LEVEL: N/A	Submergence	NA					

*Documentation References:

Notes: (L) QUALIFICATION TEST PROGRAM FOR UTILITY TRANSMITTER. EQPT Passed the TEST
TEST REPORT NOT YET COMPLETED

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS. <i>ELIX 970</i>	Operating Time	1 year	> 1 YR	Table 7.5-2	63 13	COMBINATION	NONE
PLANT ID NO: N/A	Temperature (°F)	Fig 02.9-1, 2 328.2	340	FSAR App Q	13	Seq.	NONE
COMPONENT: POWER CABLE TERMINATION <i>x pin</i>	Pressure (PSIA)	Fig 1 Fig 2	118	AEW 6501	13	Seq.	NONE
MANUFACTURER: N/A	Relative Humidity (%)	100	100		13	Seq.	NONE
MODEL NUMBER: SOLID KAPTON TO STRANDED KAPTON	Chemical Spray	Not Req'd	2500 PPM B 1.43% WT BORIC ACID PH 9.5	T.S. 3/4.5 3/4.6	13	Seq.	NONE
FUNCTION: CABLE CONNECTION	Radiation (10 ⁶ rads)	60	150	AEW 729	13	Seq.	NONE
ACCURACY: SPEC: N/A DEMON: N/A	Aging (years)						
SERVICE: VARIOUS	Submergence	SUBMERGED	Flooded Tubes		61	COMBINATION	NONE
LOCATION: IN CONTAINMENT							
FLOOD LEVEL ELEV: 612'							
ABOVE FLOOD LEVEL: NO							

7. D. NO.
OF EQUIP.
Page:

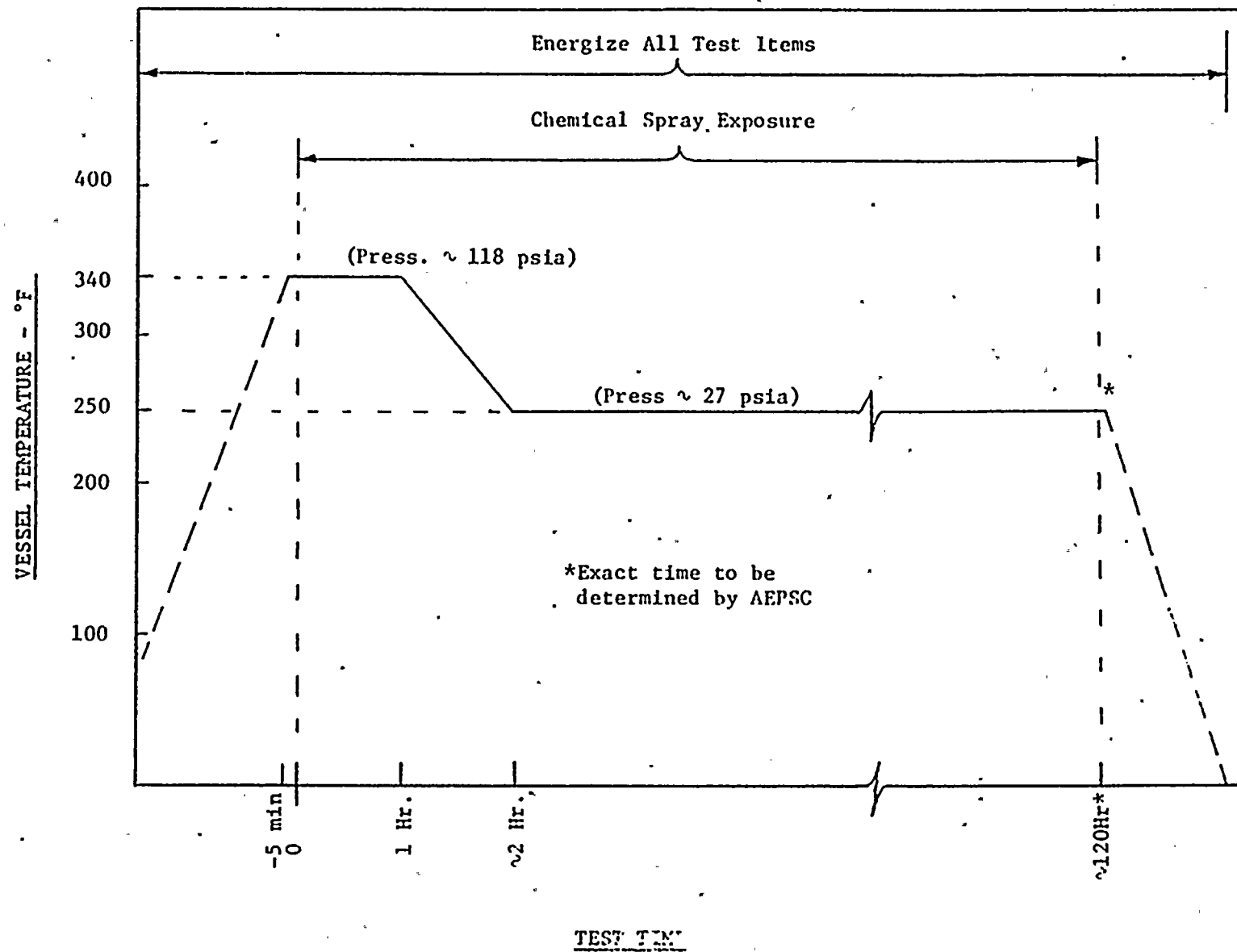
20-63W
85Y2
90V2
94-95V2
- 99A V1
1/5-123
4.5-106
V1, 217V5
229-231
V9

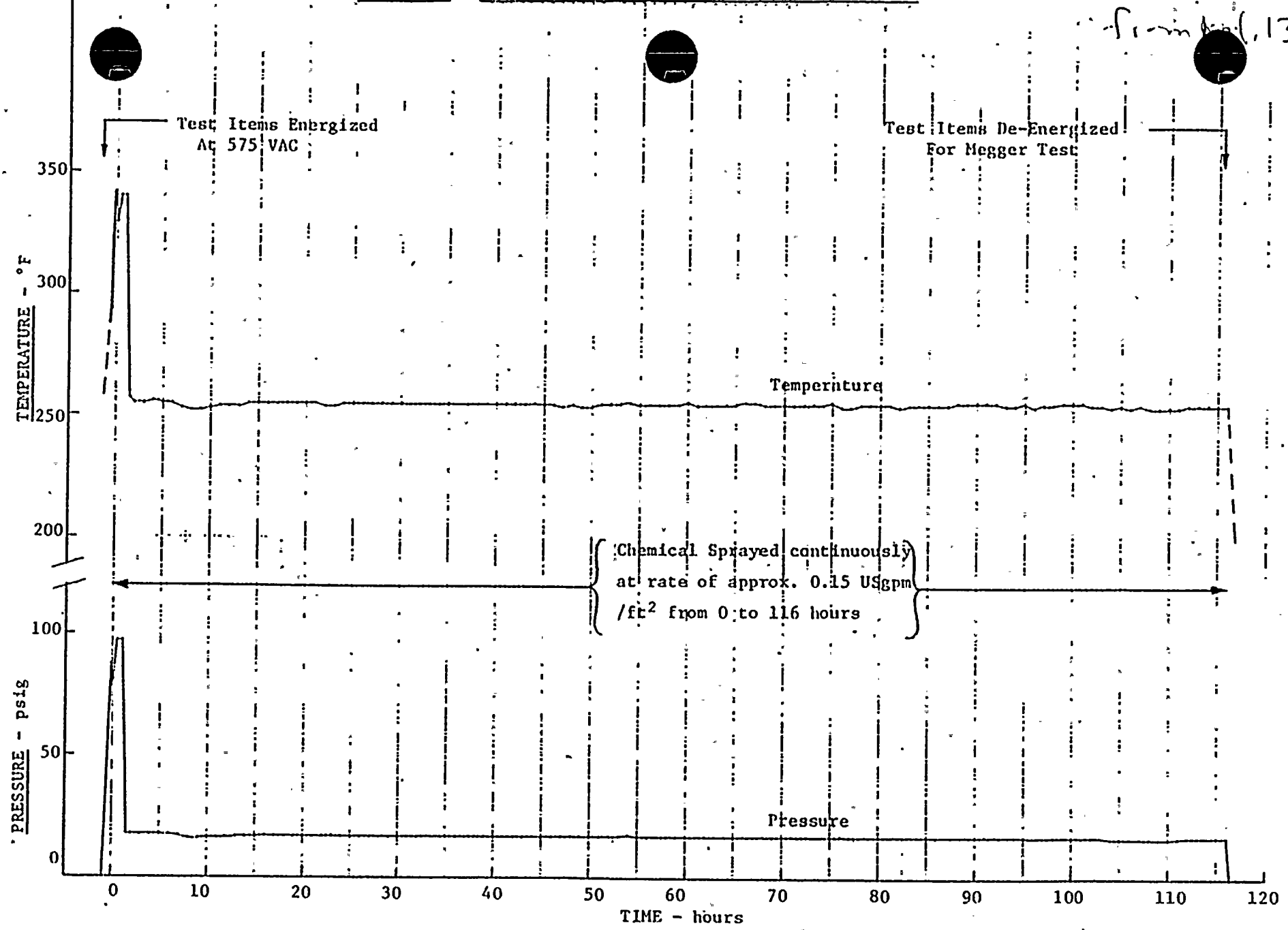
*Documentation References:

Notes:

- 13. Westinghouse-Canada Test Report CWAPD-332
- 61. FLOOD UP TUBE QUALIFICATION PACKET
- 63. REQUIRED TIME QUALIFICATION PACKET

from R-3





EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: VARIOUS	Operating Time	1 year	> 1.1 YR	Table 7.5.2	63 13	COMBINATION	NONE
PLANT ID NO: N/A	Temperature (°F)	F16 022.8-1-2 328.2	340	FSAR APP Q	13	Seq.	NONE
COMPONENT: CABLE TERM.	Pressure (PSIA)	F16.1. F162	118	AEW 6504	13	Seq.	NONE
MANUFACTURER: N/A	Relative Humidity (%)	100	100		13	Seq.	NONE
MODEL NUMBER: STRANDED KAPTON SPliced TO STRANDED NYLON	Chemical Spray	No + Req'd	2500 PPM B 1.43% WT BOPIC ACID- PH 9.5	T.3 1/4.5 3/5.6	13	Seq.	NONE
FUNCTION: CABLE CONNECTION	Radiation (10 ⁶ rads)	150	150	WCAP 2410-L Vol 1	13	Seq.	NONE
ACCURACY: SPEC: N/A DEMON: N/A	Aging (years)						
SERVICE: VARIOUS	Submergence	NA	NA	NA	NA	NA	NA
LOCATION: IN CONTAINMENT							
FLOOD LEVEL ELEV: 612'							
ABOVE FLOOD LEVEL: Yes							

J. D. 110
OF 6017
(Page)
60-6341
85
90
94-95
- 97A
118-123
205-206
217
227-231

*Documentation References:

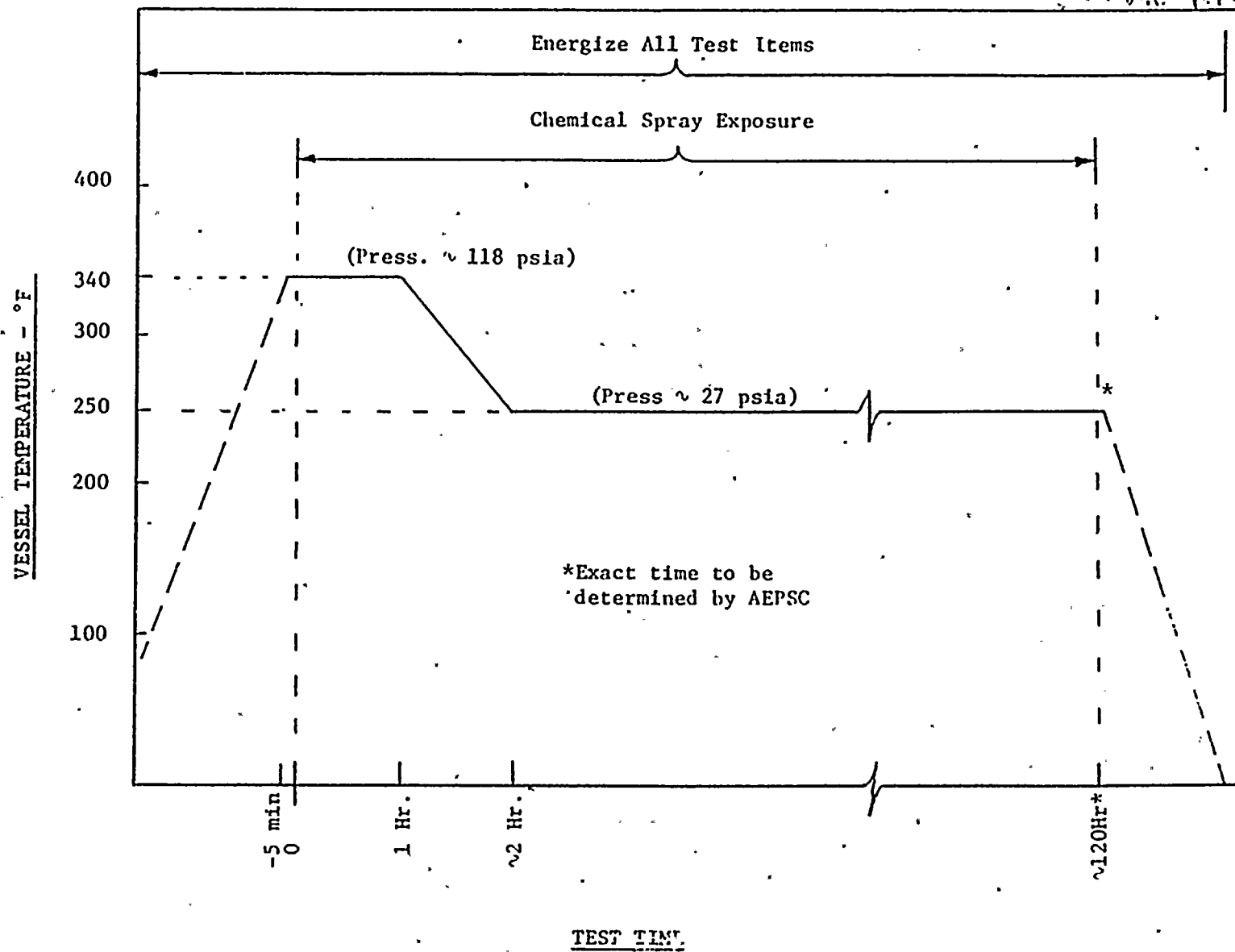
Notes:

13. Westinghouse-Canada Test Report CWAPD-332
63. REQUIRED TIME QUALIFICATION PACKET



FIGURE 2

TEST PROFILE



from Ref 3

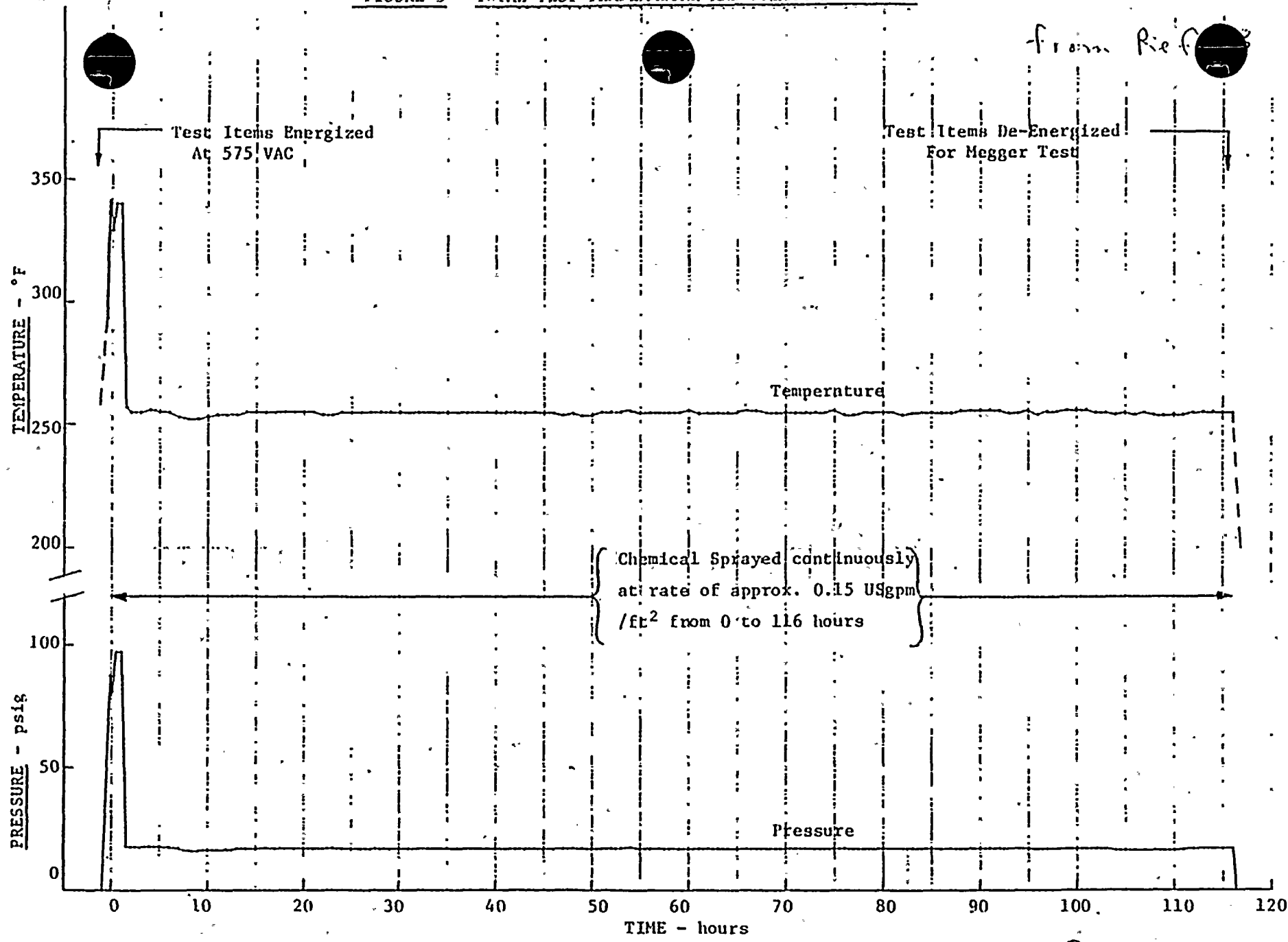
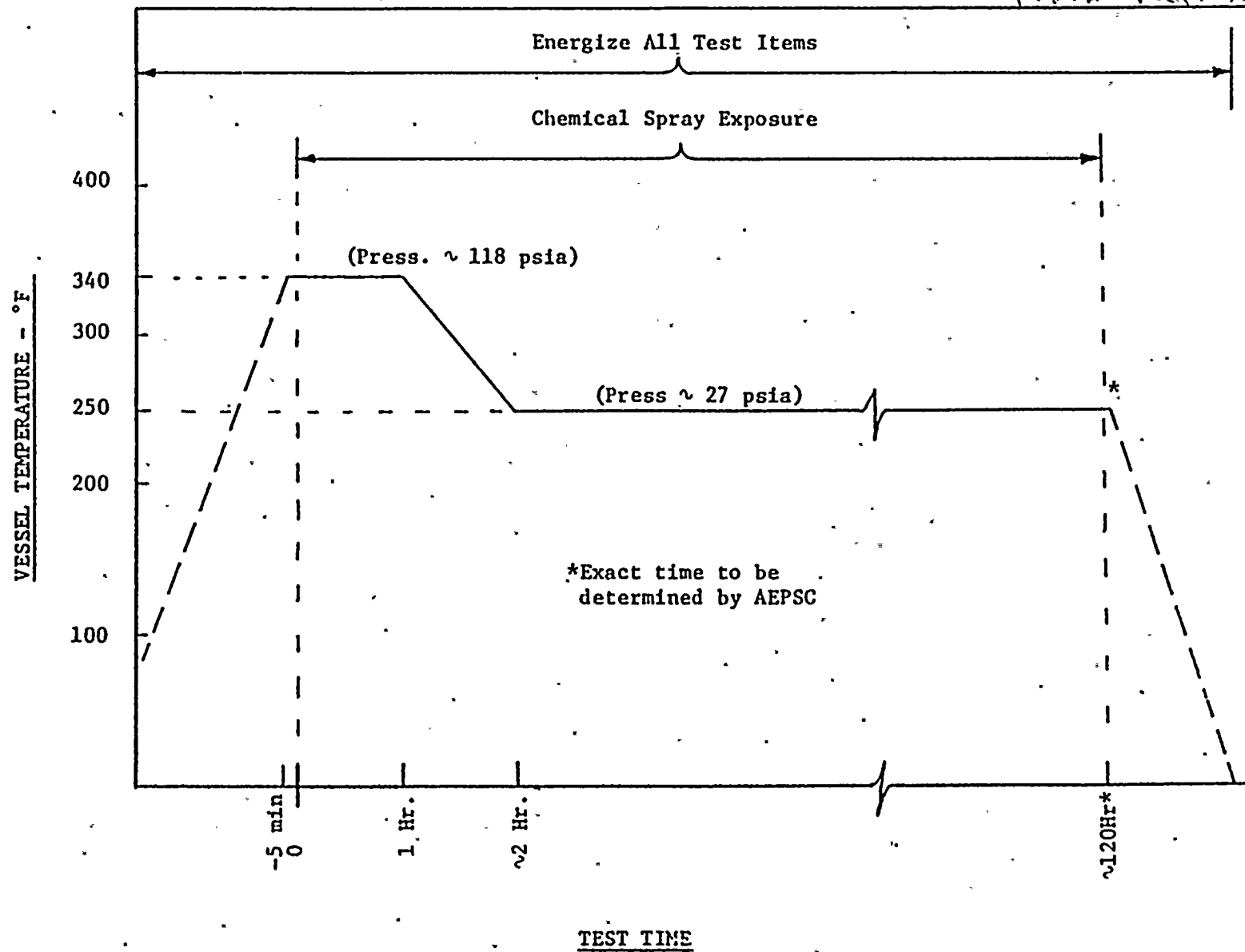


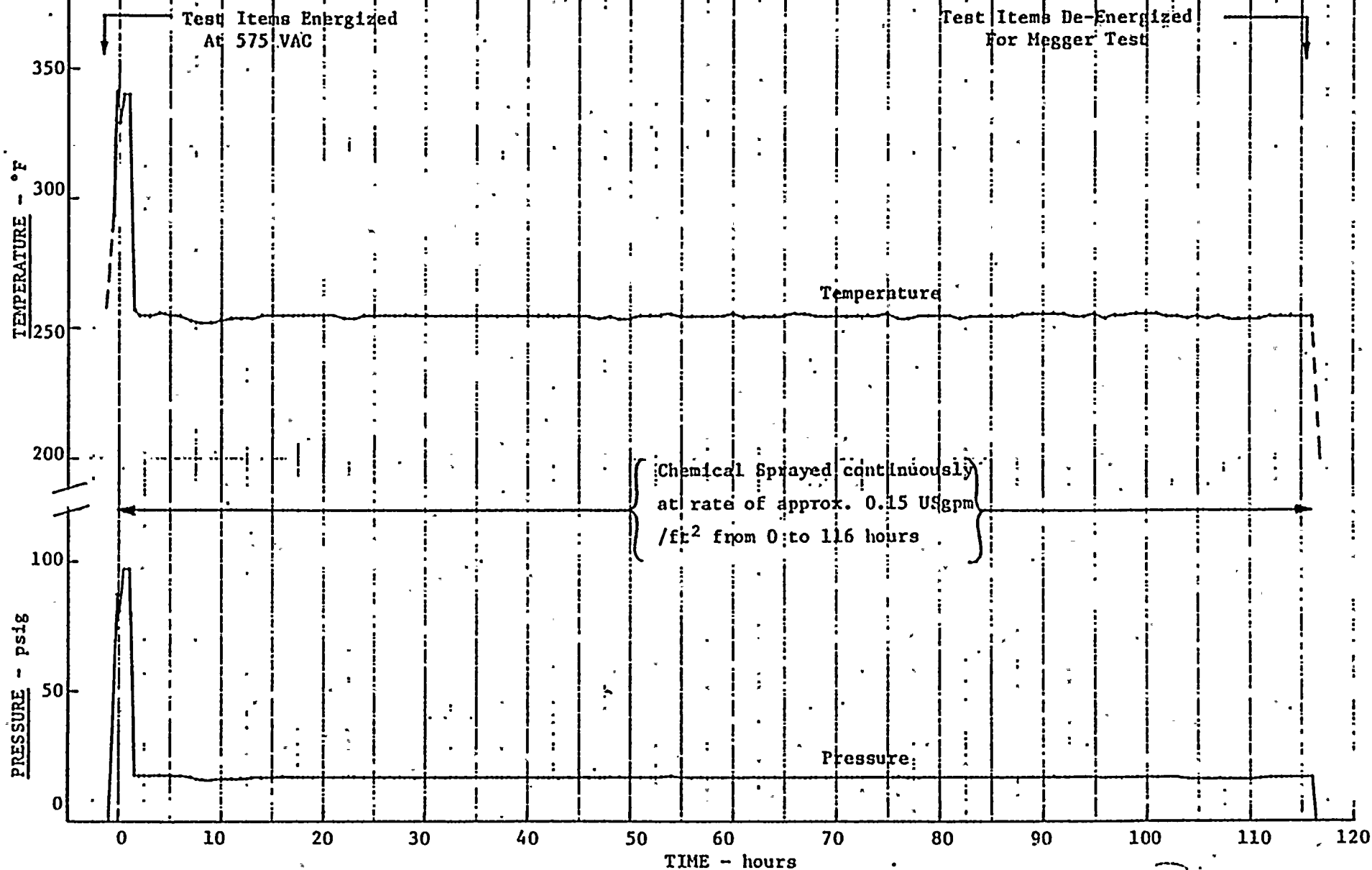
FIGURE 2

TEST PROFILE

from Ref. 13



from R. 13





EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>1 year</i>	<i>1.1 YR</i>		<i>13 63</i>	<i>COMBINATION</i>	<i>NONE</i>
PLANT ID NO: <i>NA</i>	Temperature (°F)	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
COMPONENT: <i>CABLE Term</i>	Pressure (PSIA)	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
MANUFACTURER: <i>NA</i>	Relative Humidity (%)	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
MODEL NUMBER: <i>Power Cable Term at Pump Motor</i>	Chemical Spray	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>16.6</i>	<i>150</i>	<i>59</i>	<i>13</i>	<i>Seq</i>	<i>NONE</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>	Submergence	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
LOCATION: <i>Outside Containment</i>							
FLOOD LEVEL ELEV: <i>NA</i> ABOVE FLOOD LEVEL: <i>NA</i>							

*Documentation References:

Notes:

13. Westinghouse Consider Test Report CWAPD-332 59) NS+L calculations DC-D-6420-2
 63. REQUIRED TIME QUALIFICATION PACKET

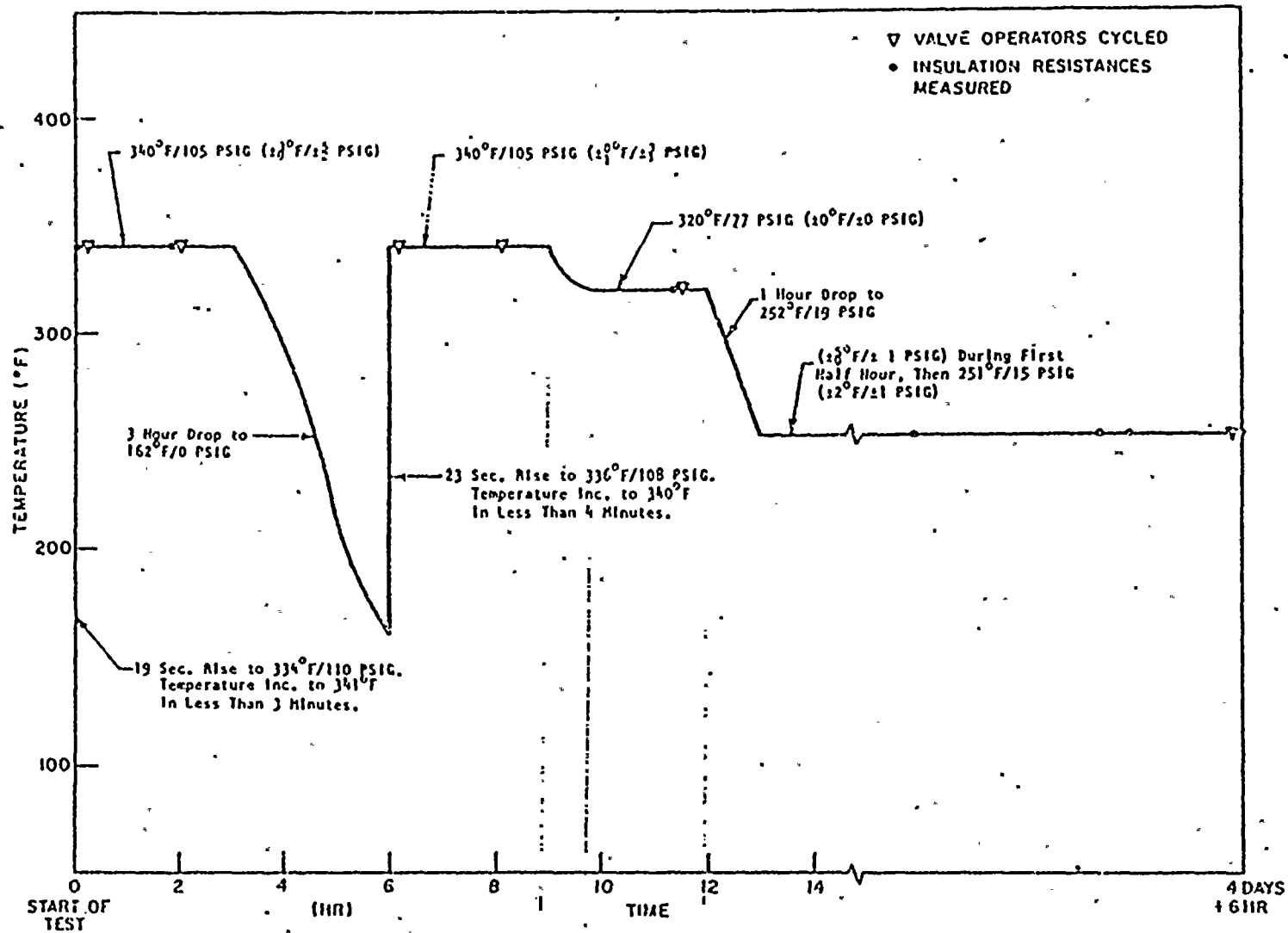


EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: CVCS, RUN	Operating Time	1 hr.	30 DAYS	TABLE 7.2.1 FSAR	23	Seq.	NONE
PLANT ID NO: 110-51, 52, 53, 54, 128, ICM-111, 129	Temperature (°F)	FIG 022.9-1-2 328.2 PEAK	340	FSAR APP. Q	23	SEQ.	NONE
COMPONENT: VALVE MOTOR OPERATOR MANUFACTURER: LIMITORQUE	Pressure (PSIA)	FIG. 1 (FIG 2)	119.7	NEW 6504	23	SEQ.	NONE
MODEL NUMBER: SMB-1 SMB-00 SMB-2	Relative Humidity (%)	100	100		23	SEQ.	NONE
FUNCTION: Core Coupling & Containment Isolation ACCURACY: SPEC: NA DEMON: NA	Chemical Spray	2000PPMB 1.14% WT. BORIC ACID PH 9-11	2600 1.5% WT. BORIC ACID PH 7.67	T.S. 3/4.5 3/4.5.6	22	SIMUL.	NONE
SERVICE: ECCS injection and normal RHR cooling	Radiation (10 ⁶ rads)	4	204	WCAP 7410-7 Vol. 3	23	SEQ.	NONE
LOCATION: INSIDE CONTAINMENT	Aging (years)						
FLOOD LEVEL ELEV: 612' ABOVE FLOOD LEVEL: No	Submergence	SUBMERGED	yes.*		23	SEQ.	NONE

*Documentation References:

22. Limitorque Corp Test Report # 600198
23. Limitorque Corp Test Report # 600376A

Notes: See also FSAR App. Q response to question 40.10 and letter from J. Tillinghast () to K. Knier (NRE) dated 9-29-75 (Item 4).



from Ref. 23

F-C3441

Figure 3. Actual Steam Exposure Profile

E.D. 112.
OF EQUIP.
(page)
85 V2
90 V2
94-95 V2

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: Safety Injection	Operating Time	1 DAY	30 DAYS	Note A: below	16	Seq	NONE
PLANT ID NO: 1 NO-315, 316 325, 326	Temperature (°F)	Fig 13.13-1 250	315	FSAR APP. N	16	SEQ.	NONE
COMPONENT: VALVE MOTOR OPERATOR MANUFACTURER: LIMITORQUE	Pressure (PSIA)	Fig. 1 - Fig. 2	84.7	AEW 6504	16	SEQ.	NONE
MODEL NUMBER: SMB-1	Relative Humidity (%)	100	100		16	SEQ.	NONE
FUNCTION: Switchover to Hot Leg Injection	Chemical Spray	2000 PPHB 1.14% WT BORIC ACID PH 9-11	3000 PPHB 1.72% WT BORIC ACID PH 10-5	T.S. 3/4.5 3/4.56	16	SEQ.	NONE
ACCURACY: SPEC: NA DEMON: NA	Radiation (10 ⁶ rads)	28	204	WCAP 7410.2 VOL I	16	SEQ.	NONE
SERVICE: ECCS Safety Injection	Aging (years)						
LOCATION: INSIDE CONTAINMENT							
FLOOD LEVEL ELEV: 612' ABOVE FLOOD LEVEL: Yes	Submergence	NA	NA	NA	NA	NA	NA

*Documentation References:

1b. Limitorque Test Report # 600456

Notes:

A) Letters J. Tillinghast (AEP) to K. Knief (NRC)
dated 4-14-75 and 9-29-75.

from Ref. 16

ACTUAL ACCIDENT PROFILE

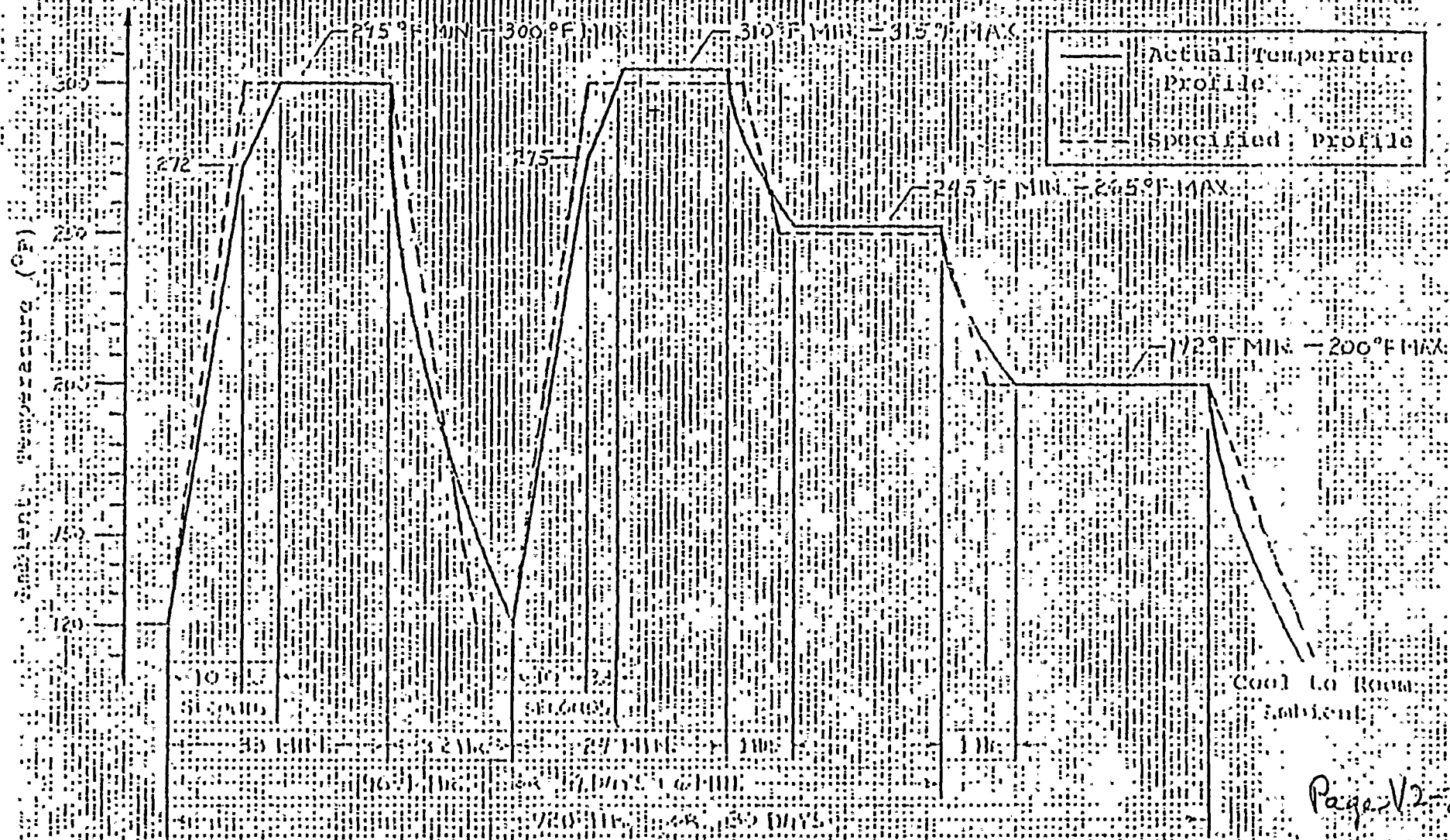


FIGURE 6

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: Containment Air Recirculation	Operating Time	1 hr	16 DAYS	TABLE 7.5-2 FSAR	24	SEP	NONE
PLANT ID NO: VAL-121-142	Temperature (°F)	Fig 13.13-1 250	250	FSAR APP N	24	SEP.	NONE
COMPONENT: VALVE MOTOR OPERATOR	Pressure (PSIA)	Fig 1 FIG. 2	39.7	AEW 6504	24	SEP.	NONE
MANUFACTURER: LIMITORGUE	Relative Humidity (%)	100	100		24	SEP.	NONE
MODEL NUMBER: SMB-000	Chemical Spray	See Note A	NA	See Note B	NA	NA	NONE
FUNCTION: CT air recirc. backdraft dampers	Radiation (10 ⁶ rads)	4	224	WGAP 7410-7 VOL 1	24	SEP.	NONE
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: CT air recirc. backdraft dampers	Submergence	NA	NA	NA	NA	NA	NA
LOCATION: INSIDE CONTAINMENT							
FLOOD LEVEL ELEV: 612'							
ABOVE FLOOD LEVEL: YES							

*Documentation References:

24. Limitorgue Corp. Test Report #600461

Notes:

A. VALVE Location is not subjected to direct acoustic spray impingement.

B. mech installation drawing 2-5427



TEMPERATURE PROFILE

from Ref: 24.

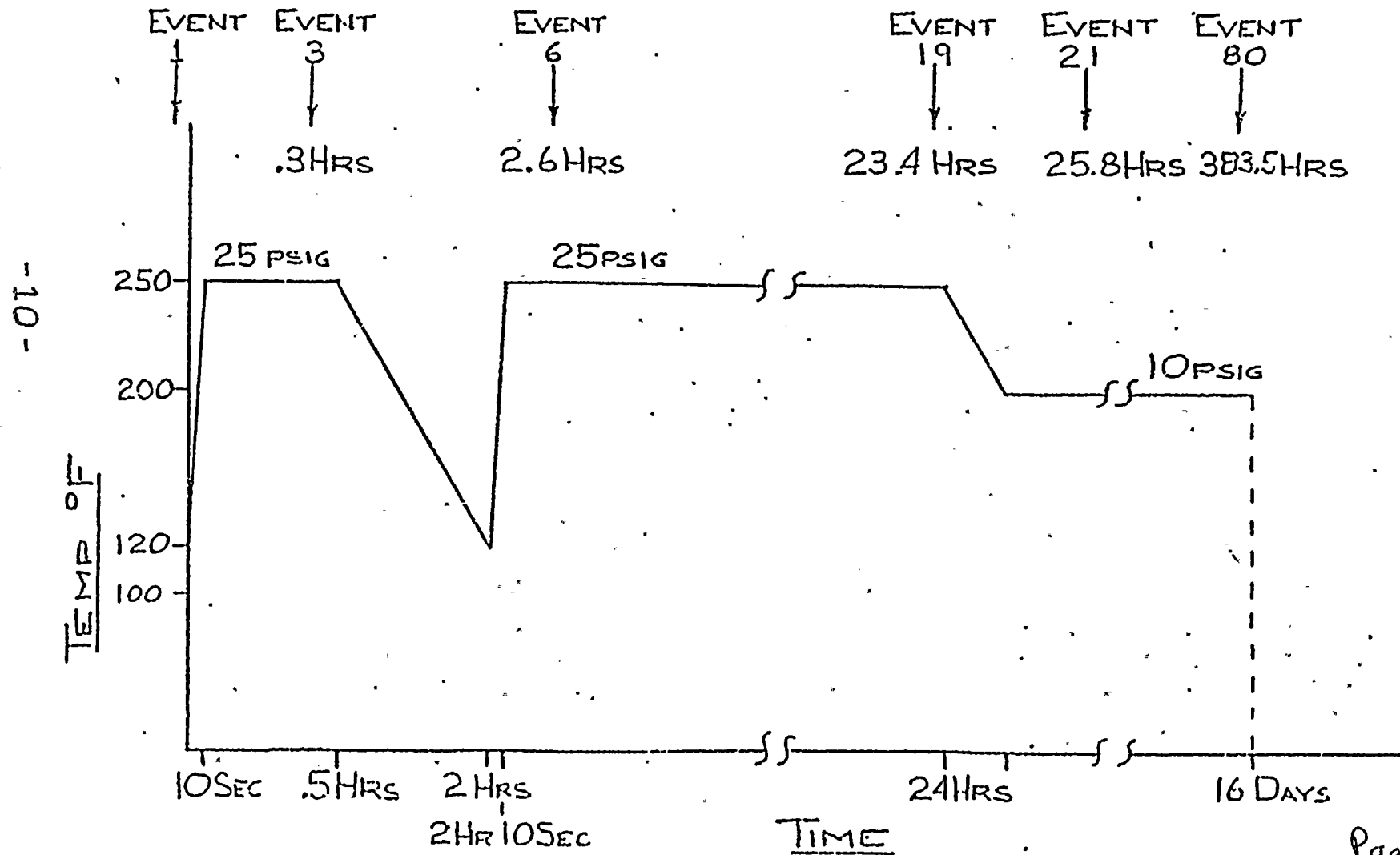


FIGURE 1



EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: SVC 1	Operating Time	1hr	7 DAYS	TABLE 7.5.2 FSAR	22	SIMUL.	NONE
PLANT ID NO: QCA-250	Temperature (°F)	Fig D22.9-1-2 328.2	330	FSAR APP Q	22	SIMUL.	NONE
COMPONENT: VALVE MOTOR OPERATOR	Pressure (PSIA)	Fig 1 Fig. 2	104.7	AEW 6504	22	SIMUL.	NONE
MANUFACTURER: LIMITORQUE	Relative Humidity (%)	100	100		22	SIMUL.	NONE
MODEL NUMBER: SMB-00	Chemical Spray	2000PPMB 1.14% WT BORIC ACID PH 9-11	2600PPMB 1.5% WT BORIC ACID PH 7-67	T.S 3/4.5 3/4.5.6	22	SIMUL.	NONE
FUNCTION: RCP seal water CT isolation valve	Radiation (10 ⁶ rads)	SEE NOTE B		BE LOW.		NA	NA
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: RCP Seal water discharge	Submergence	See Note A	NA		NA	NA	NA
LOCATION: INSIDE CONTAINMENT							
FLOOD LEVEL ELEV: 612'							
ABOVE FLOOD LEVEL: NO							

J. B. N/D.
OF Equip.
(17072)
217V5

*Documentation References:

22. Limitorque Corp. Test Report #600198

Notes:

- A) Communication of 9-29-75 from J. Tillinghast (AE) to K. Kniel (NRC). See also App. Q, FSAR, question 40.10
- B) This valve closes within 15 sec. (Tech. Spec. Table 3.6-1) of receiving a Phase A CT isolation signal, therefore it is not exposed to a radiation dose significantly beyond its normal environment and does not require radiation qualification. page V5-1

from Ref. 22. Qualified by Linitorque Corp. Test Laboratory
Project #600198. November 1968

2
9
Type of Test: simultaneous, steam
chemical spray
separate seismic test

Type Profile:

328°F, 90 psig for 1 hr
312°F, 70 psig for 2 hrs
287°F, 40 psig for 2 hrs
271°F, 20 psig for 19 hrs
250°F, 15 psig for 6 days

Chemical Spray:

1.5% boric acid buffered with Na OH to a PH of 7.67.

Seismic Test 8/20/79

Horizontal Force, 5.3 G at 35 Hz
Vertical force 5.3 G at 35 Hz
No resonance freq from 5 to 35 Hz

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: Various	Operating Time	1 day	16 DAYS	None A Below	24	Seq	NONE
PLANT ID NO: Various	Temperature (°F)	Fig 0-27	250	FSAR App O	24	SEQ.	NONE
COMPONENT: Valve Motor Operator MANUFACTURER: Limitorque	Pressure (PSIA)	Fig 0-27	39.7	FSAR App O	24	SEQ.	NONE
MODEL NUMBER: Various	Relative Humidity (%)	100	100		24	SEQ.	NONE
FUNCTION: Various	Chemical Spray	NA	NA	NA	NA	NA	NA
ACCURACY: SPEC: NA DEMON: NA	Radiation (10 ⁶ rads)	4.1	224	59	24	Seq.	NONE
SERVICE: Various	Aging (years)						
LOCATION: Outside Containment							
FLOOD LEVEL ELEV: NA ABOVE FLOOD LEVEL: NA	Submergence	NA	NA	NA	NA	NA	NA

J. D. n/d:
OF 3041
(015)

25-32V6
34-37V6
37-42V6
46-47V6
52-53V6
62-63V6
67-70V6
82-84V6
91-93V6
207-210V6
215-216V6

*Documentation References:

24. Limitorque Corp. Test Report #600461

Notes:

A) letter J. Tillinghast (AEP) to K. Kniel (NRC) dated 4-14-75
and 9-29-75

59) AEPSC NS&L calculation DC-N-6720-2



TEMPERATURE PROFILE

from Ref. 24

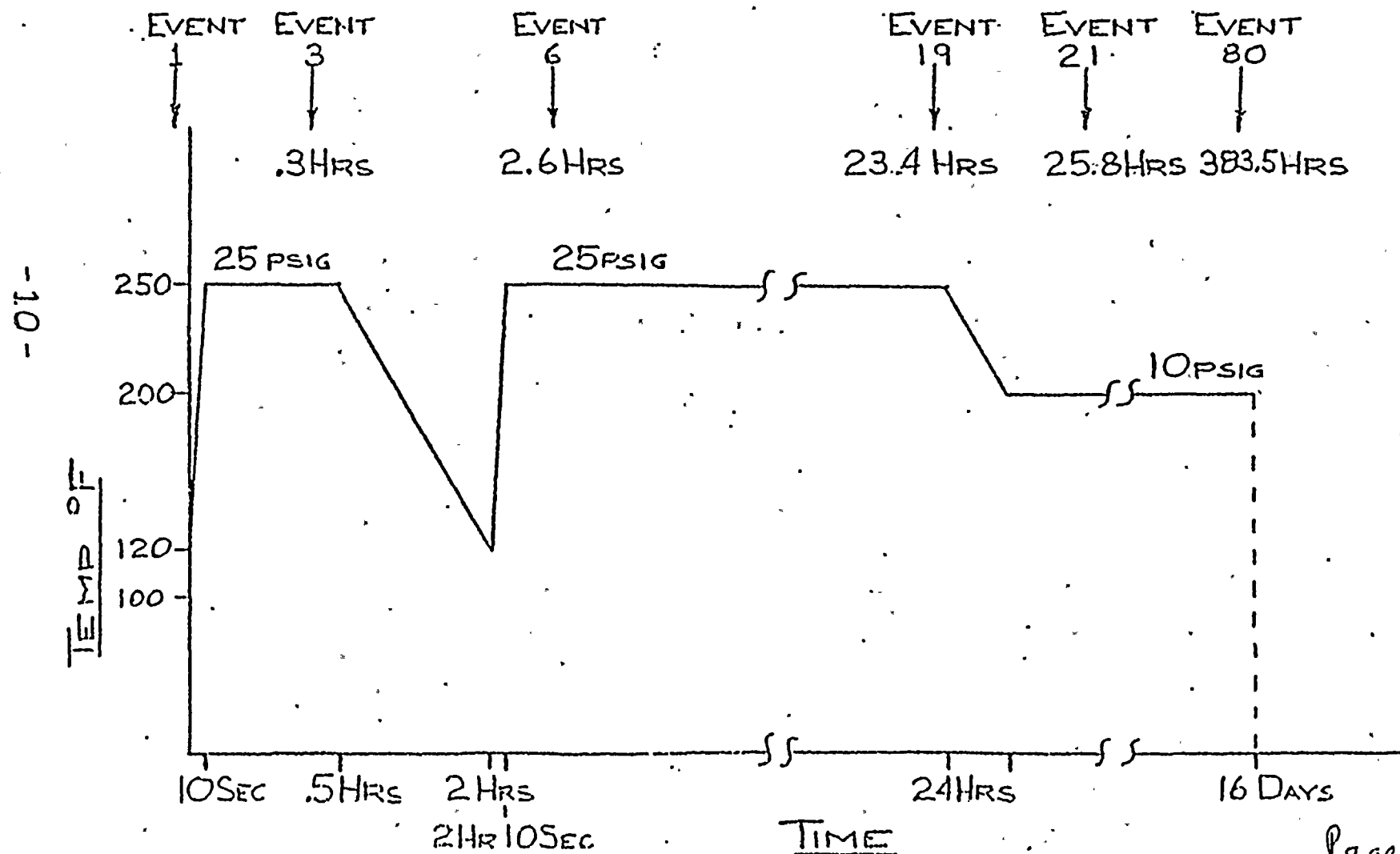


FIGURE 1

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>VARIOUS</i>	Operating Time	<i>1 day</i>	<i>30 DAYS</i>	<i>Note A</i>	<i>23</i>	<i>Seq.</i>	<i>NONE</i>
PLANT ID NO: <i>VARIOUS</i>	Temperature (°F)	<i>Fig 0-27</i>	<i>340</i>	<i>FSAR APPO</i>	<i>23</i>	<i>Seq.</i>	<i>NONE</i>
COMPONENT: <i>VALVE Motor Operator</i>	Pressure (PSIA)	<i>Fig 0-27</i>	<i>119.7</i>	<i>FSAR APPO</i>	<i>23</i>	<i>Seq.</i>	<i>NONE</i>
MANUFACTURER: <i>Limitorque</i>	Relative Humidity (%)	<i>100</i>	<i>100</i>		<i>23</i>	<i>Seq.</i>	<i>NONE</i>
MODEL NUMBER: <i>VARIOUS</i>	Chemical Spray	<i>NA</i>	<i>2600PPMB 1.5% WT BORIC ACID PH 7.67</i>	<i>NA</i>	<i>22</i>	<i>Simul.</i>	<i>NONE</i>
FUNCTION: <i>VARIOUS</i>	Radiation (10 ⁶ rads)	<i>4.1</i>	<i>204</i>	<i>59</i>	<i>23</i>	<i>Seq.</i>	<i>NONE</i>
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>VARIOUS</i>	Submergence	<i>NA</i>	<i>Yes</i>	<i>NA</i>	<i>23</i>	<i>Seq.</i>	<i>NONE</i>
LOCATION: <i>Outside CONTAINMENT</i>							
FLOOD LEVEL ELEV: <i>NA</i> ABOVE FLOOD LEVEL: <i>NA</i>							

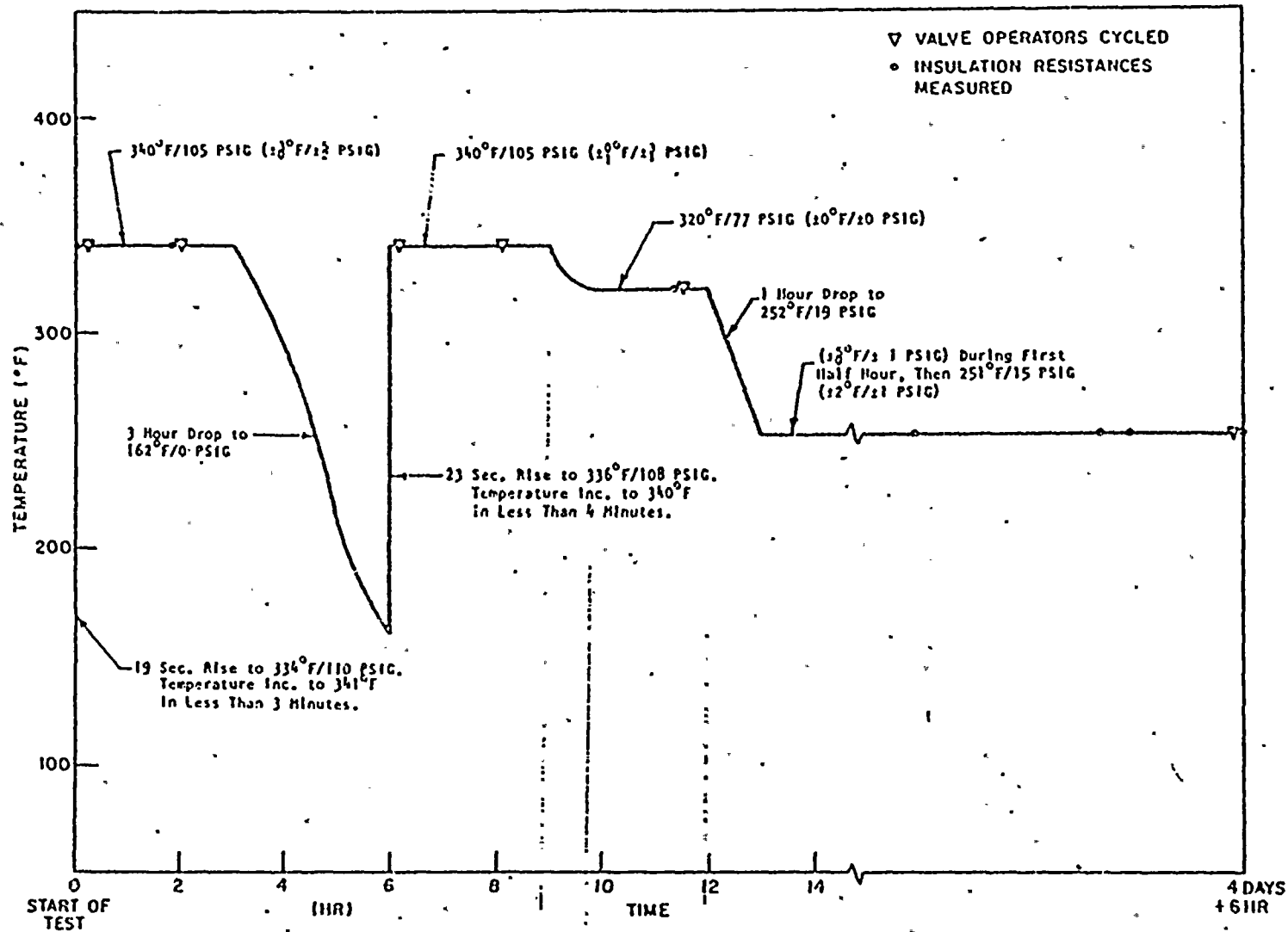
*Documentation References:

22. *Limitorque Corp Test Report #600198*
23. *Limitorque Corp Test Report #600376A*

Notes:

- A) *Letters from J. Tillinghast to K. Kniel (NRC) dated 4-14-75 and 9-29-75.*
59) *AEPSC N3 L CALCULATION DC-N-6420-2*

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16-9-77
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V7



from
Ref. 23

F-C3441

Figure 3. Actual Steam Exposure Profile

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OF Equip.
(Page)

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: Various	Operating Time	1 day	> 1 DAYS	Inst. A	63 44	COMBINATION	NONE
PLANT ID NO: Various	Temperature (°F)	Fig 0-27	212	FSAR APP 101	44	SEQ.	NONE
COMPONENT: Valve Motor Operator	Pressure (PSIA)	Fig 0-27	14.7	FSAR APP 0	44	SEQ.	NONE
MANUFACTURER: Limitorque	Relative Humidity (%)	NA	100		44	SEQ.	NONE
MODEL NUMBER: Various	Chemical Spray	NA	NA	NA	NA	NA	NA
FUNCTION: Various	Radiation (10 ⁶ rads)	4.1	See Valve Motor Operator Note 1	59		SEE ATTACH. #1 VALVE MOTOR OPER. NOTE 1	NONE
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: Various	Submergence	NA	NA	NA	NA	NA	NA
LOCATION: Outside Containment							
FLOOD LEVEL ELEV: NA ABOVE FLOOD LEVEL: NA							

21-24 V8
44-45 V8
66 V8
71-73 V8
98-99 V8
213-214 V8

*Documentation References:

44. FURL TEST REPORT F-C3271
63. REQUIRED TIME QUALIFICATION PACKET

Notes:

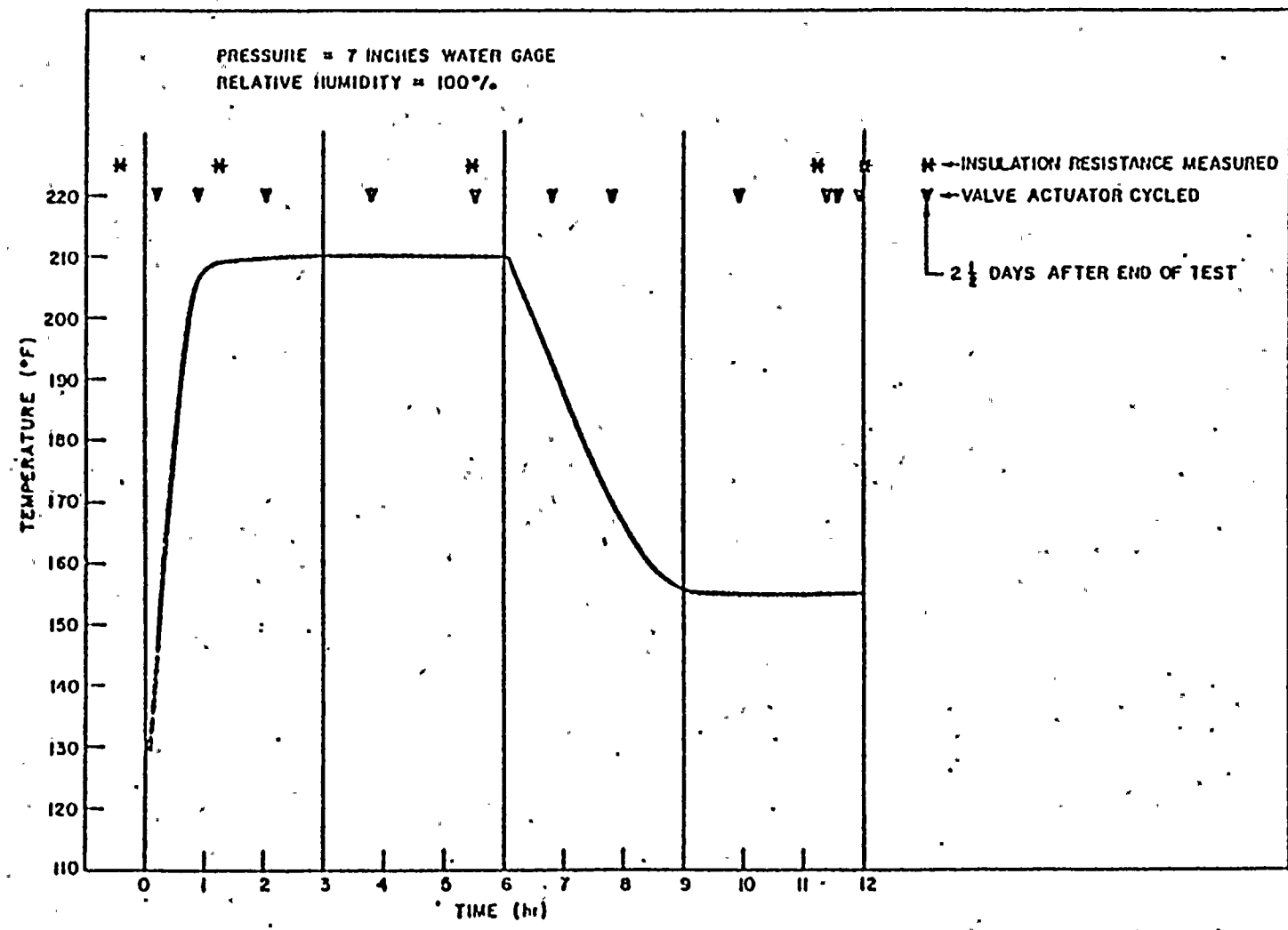
A) Letters from J. Tillinghast (AEP) to K. Kniel (NRC) dated 4-14-75 & 9-29-75.
59) AEPSC NS&L CALCULATION DC-N-6420-2.



44.

THE FLUENT INSTITUTE RESEARCH LABORATORIES

3-6



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Figure 3. Test Profile

F-C3271

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V9

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: <i>1110-151, 152, 153</i>	Operating Time	1 DAY	16 Days		24	Seq.	NONE
PLANT ID NO: <i>1110-151, 152, 153</i>	Temperature (°F)	<i>Fig 1 022.9-1-2</i>	250	<i>FSAR APP Q</i>	24	SEB	NONE
COMPONENT: <i>VALVE MOTOR OPERATOR</i>	Pressure (PSIA)	<i>Fig 1 Fig 2</i>	39.7	<i>AEW 6504</i>	24	SEB	NONE
MANUFACTURER: <i>LIMITORQUE</i>	Relative Humidity (%)	100	100		24	SEB	NONE
MODEL NUMBER: <i>SMB-00</i>	Chemical Spray	<i>See Note A</i>	NA	<i>Installation Drawing Note B</i>	NA	NA	NONE
FUNCTION: <i>Per PORV Block Valves</i>	Radiation (10 ⁶ rads)	28	224	<i>WCAP 7410-L Vol. I</i>	24	SEB	NONE
ACCURACY: SPEC: <i>NA</i> DEMON: <i>NA</i>	Aging (years)						
SERVICE: <i>Per relief line</i>	Submergence	NA	NA				NONE
LOCATION: <i>IN CONTAINMENT</i>							
FLOOD LEVEL ELEV: <i>612'</i> ABOVE FLOOD LEVEL: <i>YES</i>							

*Documentation References:

24. LIMITORQUE CORP. TEST REPORT #600461

Notes:

A) VALVE Location is not subject to Direct Caustic Spray impingement.

B) Mech Drawing Ref.

2-5435
2-5435A
2-5436

TEMPERATURE PROFILE

from Ref. 24

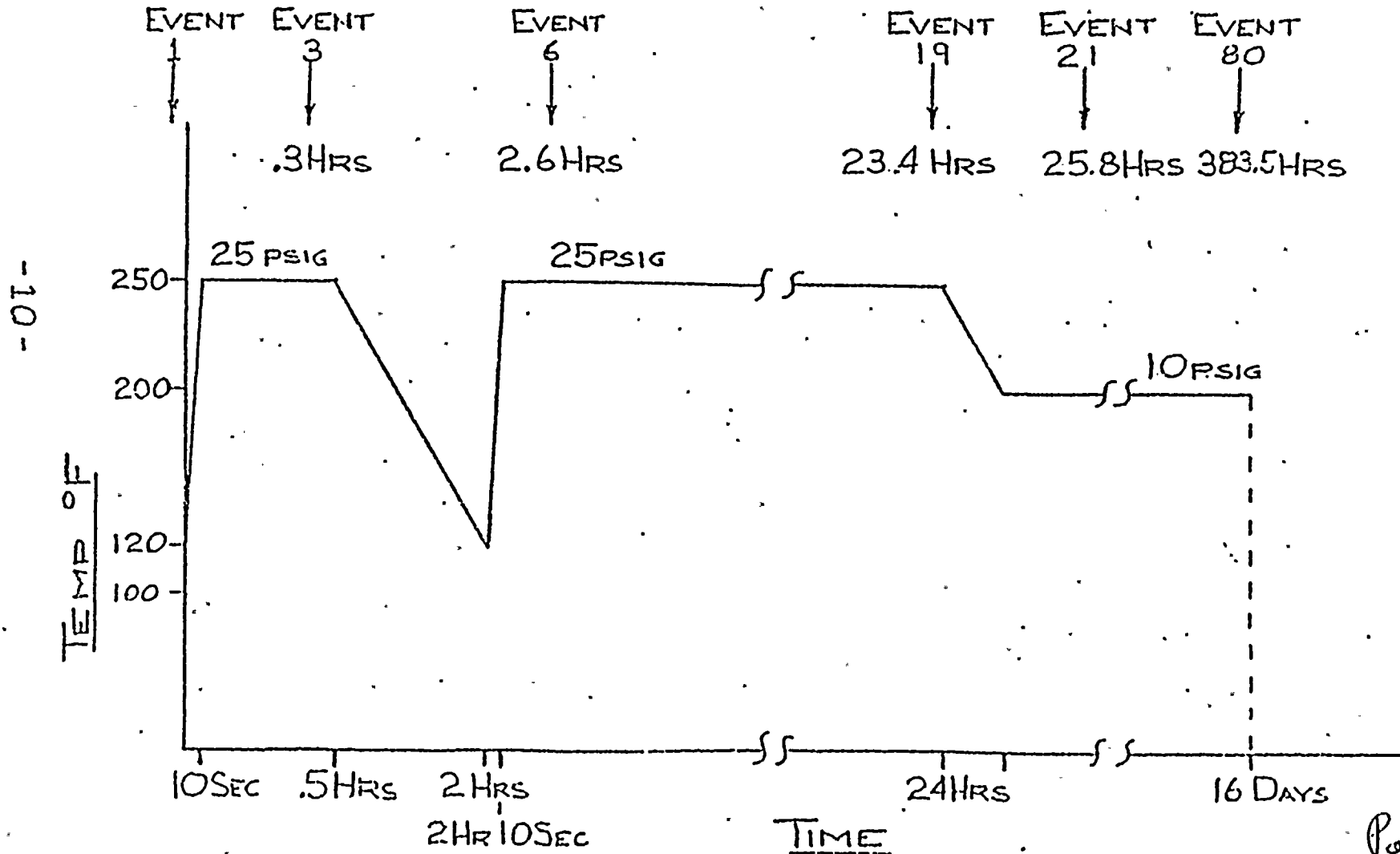


FIGURE 1

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.*		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPEC.	QUAL.	SPEC.	QUAL.		
SYSTEM: Residual Heat Removal	Operating Time	1 day	7 DAYS	See Note A	22	Simul.	NONE
PLANT ID NO: 111-3051306	Temperature (°F)	Fig 022.9-1,-2	330	FSAR APP 9	22	Simul.	NONE
COMPONENT: Valve Motor Operator	Pressure (PSIA)	Fig. 2 Fig 1	104.7	AEPW 6504	22	Simul.	NONE
MANUFACTURER: Limitorque	Relative Humidity (%)	100	100		22	Simul.	NONE
MODEL NUMBER: SMB-2	Chemical Spray	NA	2600PPMB 1.5% WT BORIC ACID PH 7.67	INSPE CT AEPSC NS&L 6420-2	22	Simul.	NONE
FUNCTION: Long term post-accident cooling	Radiation (10 ⁶ rads)	<4.6	See Note B	See Note B below		SEE NOTE B BELOW	NONE
ACCURACY: SPEC: NA DEMON: NA	Aging (years)						
SERVICE: K11 R. suction from CT sump	Submergence	NA	NA	NA	NA	NA	NA
LOCATION: Inside Containment							
FLOOD LEVEL ELEV: 612'							
ABOVE FLOOD LEVEL: yes							

*Documentation References:

22. Limitorque Test Report #600198

Notes:

A) Letters J Tillinghast - AEP to K Kniel - NRC dated 4/14/75 & 9/29/75.

B) These are Westinghouse-supplied valves, insulation class H, specified for nuclear service inside CT. Limit switch material for these valves is white melamine, a radiation resistant material. We are continuing to seek information. page V10-1

REV. 1 9/2/80

Ref. 22. Qualified by Linitorque Corp. Test Laboratory
Project #600198. November 1968

22
95
Type of Test: simultaneous, steam
chemical spray
separate seismic test

Type Profile:

328°F, 90 psig for 1 hr
312°F, 70 psig for 2 hrs
287°F, 40 psig for 2 hrs
271°F, 20 psig for 19 hrs
250°F, 15 psig for 6 days

Chemical Spray:

1.5% boric acid buffered with Na OH to a PH of 7.67.

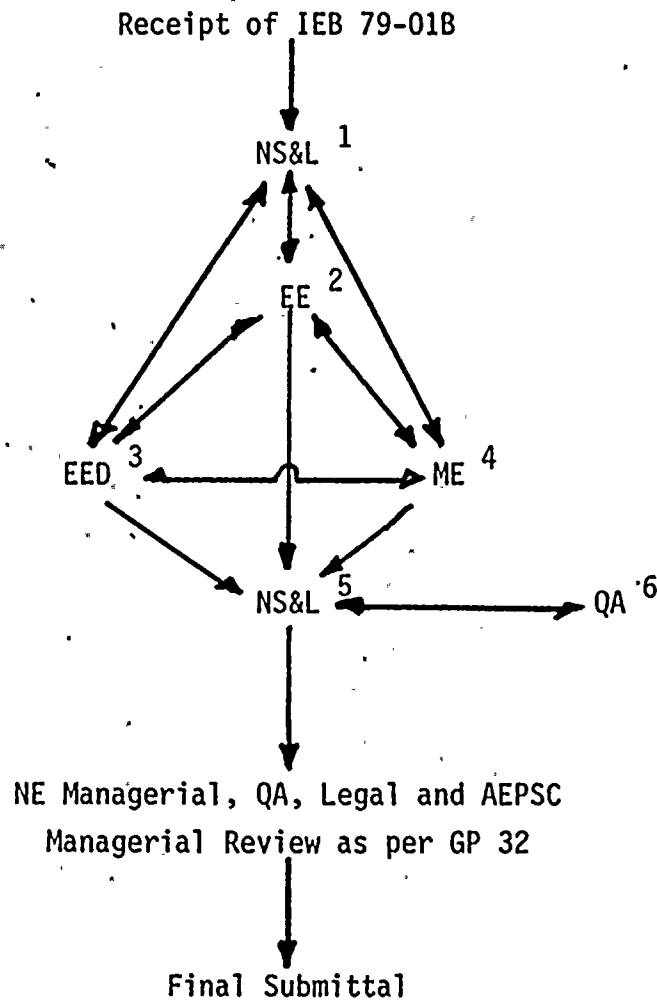
Seismic Test 8/20/79

Horizontal Force, 5.3 G at 35 Hz
Vertical force 5.3 G at 35 Hz
No resonance freq from 5 to 35 Hz

ATTACHMENT NO. 6 TO AEP:NRC:00578
DONALD C. COOK NUCLEAR PLANT UNIT NOS. 1 AND 2
RESPONSE TO NRC SER ON IE BULLETIN 79-01B
QUALITY ASSURANCE PROCEDURE

It was indicated in the July, 1981 Washington meeting with the NRC that any quality Assurance Procedure used in the preparation of the IEB 79-01B response should be submitted to the staff for review. This attachment summarizes the process and the QA procedures employed.

AEP's response to IEB 79-01B was prepared in accordance with AEPSC General Procedure No. 32 and QA Procedure QAP 27I. Copies of these procedures are available for inspection at D. C. Cook Plant as well as in our central file. Information which was developed to be used as input to the submittal was assembled and reviewed according to the approach depicted in Figure 6.1. A brief outline of the coordination and review function performed in preparation of our response to presented in Table 6.1.



1. Nuclear Safety & Licensing involvement and interaction.
2. Electrical Engineering involvement and interaction.
3. Electrical Engineering Design involvement and interaction.
4. Mechanical Engineering involvement and interaction.
5. After receipt of final submittal section from cognizant groups, NS&L prepared the draft submittal package with the review and guidance of NE Management and QA.
6. QA involvement.

FIGURE 6.1

TABLE 6.1

ACTIONS IN PREPARATION OF RESPONSE TO IEB 79-01B

1. Upon receipt, NS&L Section Head and cognizant engineers reviewed Bulletin for overall safety and licensing implications.
2. Preliminary assignment and copies of the Bulletin were issued.
3. The FSAR, IEB 79-01 and IEB-01B submittals, IEC 78-08 response and other relevant documents were reviewed for pertinent information.
4. A list of potentially affected equipment was compiled and distributed to the other engineering groups for their review, comments and use. The primary sources of information in this list preparation were Chapter 14, Appendices O (HELB Study) and Q of the FSAR, Cook Plant Emergency Operating Procedures and past licensing submittals.
5. Additional guidance was developed to define potentially affected areas at the Cook Plant and the postulated post accident environment at various locations including pressure, temperature, and radiation levels.
6. Specific radiation dose calculations were performed for particular equipment exposures.
7. Attendance of NRC Region III meetings on the topic of IEB 79-01B.

