January 30, 1981

FILE: NG-3513 (R) SERIAL: NO-81-121

Mr. James P. O'Reilly, Director
United States Nuclear Regulatory Commission
Region II
101 Marietta Street, Suite 3100
Atlanta, GA 30303

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261
LICENSE NO. DPR-23
REVISION 3 TO IE BULLETIN 79-01B NINETY-DAY REPORT

Dear Mr. O'Reilly:

Attached you will find our response to the additional data requests of Supplement 3 to the subject IE Bulletin. Qualification data is provided for installed equipment resulting from TMI Action Plan requirements and a listing of equipment used to achieve a cold shutdown condition is also supplied. Cold shutdown equipment which is safety related and therefore has already been reported upon in previous submittals is indicated in the attached list.

We were pleased to note the additional guidance provided by Mr. Eisenhut's letter of January 19, 1981, "Information Regarding the Program for Environmental Qualification of Safety-Related Electrical Equipment (Generic Letter 51-05)".

In accordance with the guidance provided in that letter, CP&L has supplied that qualification data for non-safety grade cold shutdown equipment which is readily available. Since this equipment is non-safety grade and has no qualification requirements, CP&L has no plans at this time to test or replace any of the non-safety grade equipment.

If you have any questions, please do not hesitate to contact my staff.

Yours very truly,

B. J. Furr
Vice President
Nuclear Operations

MARILYN V. PEASE NOTARY *** PUBLIC WAKE COUNTY, N.C.

Attachment

Sworn to and subscribed before me this 30th day of January, 1980.

Marilyn V. Pease
Notary Public

My commission expires 10/19/85.

cc: Mr. Don Neighbors (ONRR)
Mr. Zoltan Rosztoczy (ONRR)

SYSTEM: AUTOMATIC DEPRESSURIZATION

COMPONENTS			
PLANT IDENTIFICATION NUMBER	GENERIC NAME	PRIMARY CONTAINMENT LOCATION	
		INSIDE	OUTSIDE
B21-FT-4157	Sensor	X	
B21-FT-4158	Sensor	X	
B21-FT-4159	Sensor	X	
B21-FT-4160	Sensor	X	
B21-FT-4161	Sensor	X	
B21-FT-4162	Sensor	X	
B21-FT-4163	Sensor	X	
B21-FT-4164	Sensor	X	
B21-FT-4165	Sensor	X	
B21-FT-4166	Sensor	X	
B21-FT-4167	Sensor	X	
B21-FAT-4157	Preamplifier		X
B21-FAT-4158	Preamplifier		X
B21-FAT-4159	Preamplifier		X
B21-FAT-4160	Preamplifier		X
B21-FAT-4161	Preamplifier		X
B21-FAT-4162	Preamplifier		X
B21-FAT-4163	Preamplifier		X
B21-FAT-4164	Preamplifier		X
B21-FAT-4165	Preamplifier		X
B21-FAT-4166	Preamplifier		X
B21-FAT-4167	Preamplifier		X
Amphenol	Coaxial Connector	X	

SYSTEM: COMMON COMPONENTS

COMPONENTS			
PLANT IDENTIFICATION NUMBER	GENERIC NAME	PRIMARY CONTAINMENT LOCATION	
		INSIDE	OUTSIDE
X-100E	Electrical Penetration	X	X
X-100H	Electrical Penetration	X	X
YL20	Instrument Cable		X

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REFERENCE		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPECIFICATION	QUALIFICATION	SPECIFICATION	QUALIFICATION		
SYSTEM: Automatic Depressurization PLANT ID. NO. B21-FT-4157, 4158, 4159, 4160, 4161, 4162, 4163, 4164, 4165, 4167 COMPONENT: Sensor MANUFACTURE: NDT International MODEL NO. ries 700 FUNCTION: Flow Detection ACCURACY: N/A SPEC: DEMON: SERVICE: Automatic Depressurization Valve LOCATION: Inside Containment	OPERATING TIME	Short					*
	TEMPERATURE (^{o}F)	Profile A (Attach.1)		FSAR			*
	PRESSURE (PSIA)	Profile B (Attach.1)		FSAR			*
	RELATIVE HUMIDITY (%)	100		FSAR			*
	CHEMICAL SPRAY	No	–	–	–	–	*
	RADIATION (RADS)	(See Attach.1) 1.1×10^{8}		FSAR			*
	AGING						*
FLOOD LEVEL ELEV.: N/A ABOVE FLOOD LEVEL: YES NO	SUBMERG.	N/A		N/A			None

SAFETY CATEGORY: Essential Active

* See Equipment Status Sheet Attached

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REFERENCE		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPECIFICATION	QUALIFICATION	SPECIFICATION	QUALIFICATION		
SYSTEM: Automatic Depressurization PLANT ID NO. B21-FAT-4157, 4158, 4159, 4160, 4161, 4162, 4163, 4164, 4165, 4166, 4167 COMPONENT: Preamplifier MANUFACTURE: NDT International, Inc. MODEL NO. 400A FUNCTION: Signal Amplification ACCURACY: N/A SPEC: DEMON: SERVICE: Safety Relief Valve Monitoring System LOCATION: Outside Containment RX 20 SCEN	OPERATING TIME	Short					*
	TEMPERATURE (^{o}F)	Profile E (Attach. 1)					*
	PRESSURE (PSIA)	14.9					*
	RELATIVE HUMIDITY (%)	100					*
	CHEMICAL SPRAY	No	–	–	–	–	*
	RADIATION (RADS)	(See Attach. 1) 1.1×10^8					*
	AGING						
FLOOD LEVEL ELEV.: N/A ABOVE FLOOD LEVEL: YES NO	SUBMERG.	N/A		N/A			None

SAFETY CATEGORY: Essential Active

* See Equipment Status Sheet Attached

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REFERENCE		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPECIFICATION	QUALIFICATION	SPECIFICATION	QUALIFICATION		
SYSTEM: Common Component PLANT ID. NO. X-100E X-100H COMPONENT: Electrical Penetration Assembly MANUFACTURE: Westinghouse MODEL NO. Class E Penetration FUNCTION: Containment Building ACCURACY: N/A SPEC: DEMON: SERVICE: SRV Monitoring LOCATION: Inside/Outside Containment	OPERATING TIME	Short	30 Days		▲ 54,13	Analysis Simul. Test	None
	TEMPERATURE (^{o}F)	A Attach.1	▲ WW	FSAR	▲ 13	Simul. Test	None
	PRESSURE (PSIA)	B Attach.1	▲ XX	FSAR	▲ 13	Simul. Test	None
	RELATIVE HUMIDITY (%)	100	100	FSAR	▲ 13	Simul. Test	None
	CHEMICAL SPRAY						None
	RADIATION (RADS)	1.1×10^8	1.256×10^8	FSAR	▲ 2		None
	AGING						
FLOOD LEVEL ELEV.: N/A ABOVE FLOOD LEVEL: YES NO	SUBMERG.	N/A		N/A			None

SAFETY CATEGORY: Essential Passive

▲ Submitted with 90-Day Report, Rev. 1, dated 10/31/80

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REFERENCE		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPECIFICATION	QUALIFICATION	SPECIFICATION	QUALIFICATION		
SYSTEM: Common Components PLANT ID. NO. General COMPONENT: Connector MANUFACTURE: Amphenol MODEL NO. 36500 (Jack) 34500 (Plug) FUNCTION: Cable Connection ACCURACY: N/A SPEC: DEMON: SERVICE: SRV Monitoring LOCATION: Inside/ Outside	OPERATING TIME	Short					*
	TEMPERATURE (^{o}F)	A Attach.1		FSAR			*
	PRESSURE (PSIA)	B Attach.1		FSAR			*
	RELATIVE HUMIDITY (%)	100		FSAR			*
	CHEMICAL SPRAY						*
	RADIATION (RADS)	1.1×10^{8}		FSAR			*
	AGING						None
FLOOD LEVEL ELEV.: N/A ABOVE FLOOD LEVEL: YES NO	SUBMERG.	N/A		N/A			None

SAFETY CATEGORY: Essential Passive

* See Equipment Status Sheet Attached

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REFERENCE		QUALIFICATION METHOD	OUTSTANDING ITEMS
	PARAMETER	SPECIFICATION	QUALIFICATION	SPECIFICATION	QUALIFICATION		
SYSTEM: Common Components PLANT ID. NO. YL 20 COMPONENT: 12 Pair #20 MANUFACTURE: Boston Insulated Wire & Cable Co MODEL NO. FUNCTION: Instrument Cable ACCURACY: N/A SPEC: DEMON: SERVICE: Instrumentation LOCATION: Outside Containment	OPERATING TIME	Long	30 DAYS		▲ 51	ANALYSIS	NONE
	TEMPERATURE (°F)	Profile E (Attach.1)	▲ Y	▲ 41	▲ 22	SIMUL. TEST	NONE
	PRESSURE (PSIA)	14,9	▲ Z	▲ 41	▲ 22	SIMUL. TEST	NONE
	RELATIVE HUMIDITY (%)	100	100	▲ 41	▲ 22	SIMUL. TEST	NONE
	CHEMICAL SPRAY	NO	BORIC ACID	-	▲ 22	SIMUL. TEST	NONE
	RADIATION (RADS)	1×10^7	1×10^8	▲ 40	▲ 22	SEQUEN. TEST	NONE
	AGING						VII-A
FLOOD LEVEL ELEV.: N/A ABOVE FLOOD LEVEL: YES NO	SUBMERG.	N/A		N/A			NONE

Safety Category: Essential Passive

▲ Submitted with 90-Day Report, Rev. 1, dated 10/31/80

EQUIPMENT STATUS

The components of the Safety Relief Valve (SRV) Monitoring System as installed per NUREG 0578 is currently undergoing an environmental qualification test (per IEEE 323-1974 standards). The test is being performed at Wyle Laboratories, Huntsville, Alabama (Wyle's Job No. 54098) and is expected to be completed by August 1981. If any components are found not to be qualified, the NRC will be informed by the appropriate reporting mechanism.

We have not been able to find qualification data for the Amphenol connector. They will be replaced by connectors manufactured by Gulton Industries which are included in the ongoing test at Wyle Laboratories.

ATTACHMENT 1

DETERMINATION OF ENVIRONMENTAL SERVICE CONDITIONS

1. GENERAL

Chemical sprays are not part of the BSEP design basis. Demineralized water sprays are used inside Containment and have been considered.

In the design of the BSEP pressure suppression containment (i.e. drywell-torus) flooding is not considered to be a credible accident environment, due to the high volume, low hydraulic resistance flow paths from the drywell to the torus which immediately direct LOCA blowdown flow away from the drywell.

2. INSIDE PRIMARY CONTAINMENT

HELB does not affect environmental conditions inside the Containment and therefore is not considered for in-containment primary components.

The drywell and torus environmental conditions following a postulated LOCA are discussed in FSAR Section M7.9 and Design Report 12. Temperature and pressure response curves are labeled Profiles A and B respectively and are attached.

FSAR Figure M7.9 also provides values for post accident integrated radiation dose to equipment in the Primary Containment and these have been used in our evaluation.

3. INSIDE SECONDARY CONTAINMENT

a. Radiation

Post-LOCA radiation levels in various regions of the Reactor Building are due to leakages from the drywell and due to fluids which are re-circulated from inside the Primary Containment to accomplish long-term cooling following a LOCA. The LOCA-induced radiation environment, and the subsequent transport process, is evaluated in accordance with the guidelines in NUREG-0588 as follows:

1) 100-percent of the noble gases, 25-percent of the halogens and 1-percent of the solid fission products are assumed to be airborne in the drywell.

2) 50-percent of the halogens and 1-percent of the solid fission products are assumed to be in the suppression pool water.

3) Drywell leakage is assumed to be 0.635-percent per day for the duration of the accident.

4) For conservatism, all leakages from drywell are assumed to be leaking into any one compartment adjacent to drywell. The leakage outflow from that compartment is then assumed to be uniformly mixed in the remainder of the Reactor Building. The conservatism of this method lies in the conservatively high computed values for the concentrations of fission products in each of the ESF compartments.

The resultant peak activities in various regions of the Reactor Building are presented in Table IV-1; the time-integrated doses for the ESF components in Reactor Building are presented in Table IV-2, and as referenced in BSEP Design Report No. 12 of March 1972.

b. Temperature

Our continuing evaluation of the Reactor Building post-LOCA environment disclosed that for elevations 20-feet and above the curve used in the 45-Day Report did not consider all heat sources.

The temperature profiles for the Reactor Building post-LOCA and post-HELB are attached for El. 20' to 117' as Profile E.

Detailed qualification data has not been established as yet for the SRV position indicating equipment, however we expect type testing now underway will provide this data.

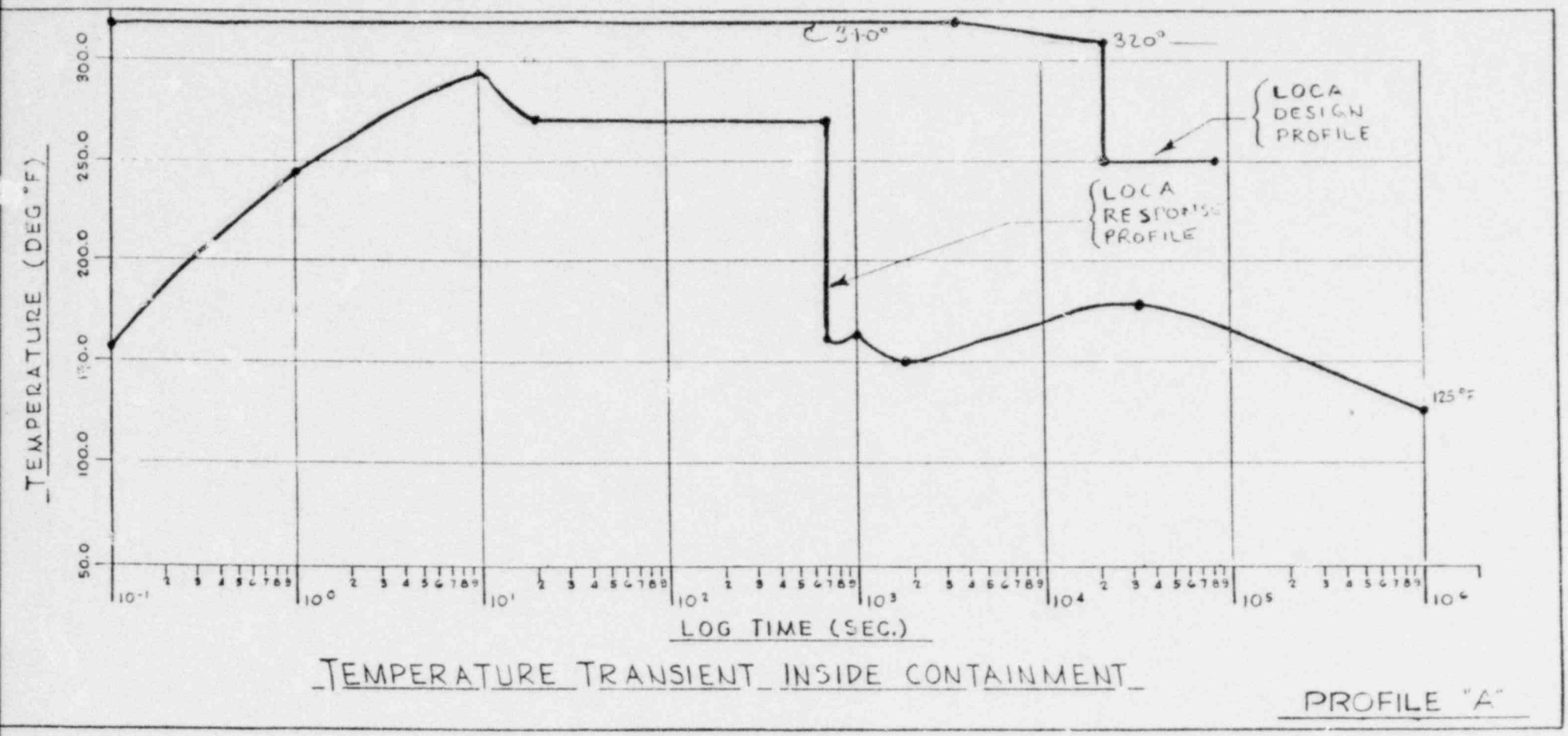
c. Pressure

Reactor Building peak pressure data is included as an Accident Pressure Peak of 14.9 PSIA for El. 20' and above. This peak is applicable only during the HELB and is of such short duration that the effect upon essential equipment is considered to be negligible, and does not affect its operability. For post-LOCA conditions there is no significant pressure increase in the Reactor Building.

d. Humidity

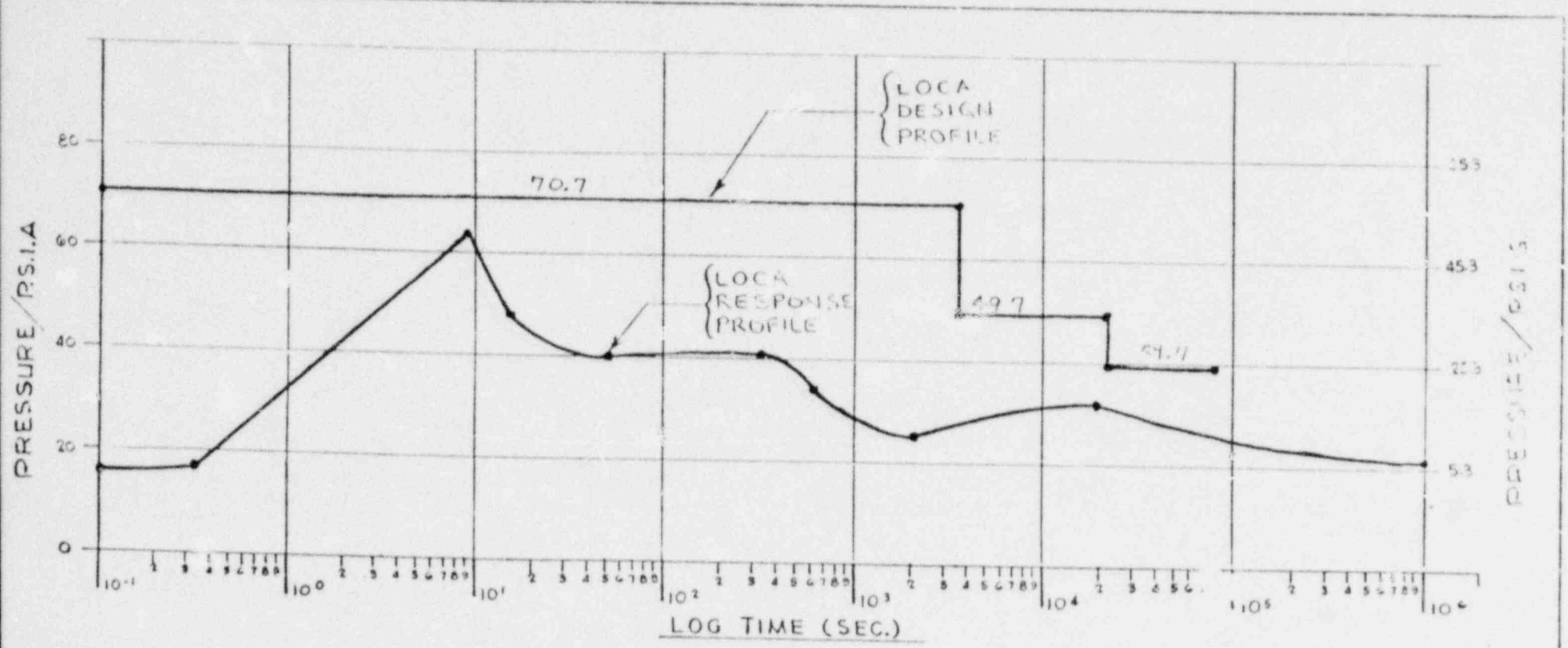
The bounding post-accident humidity in the Reactor Building is considered to be 100% (HELB).

Significant flooding does not occur outside the drywell as a result of the postulated HELBs.



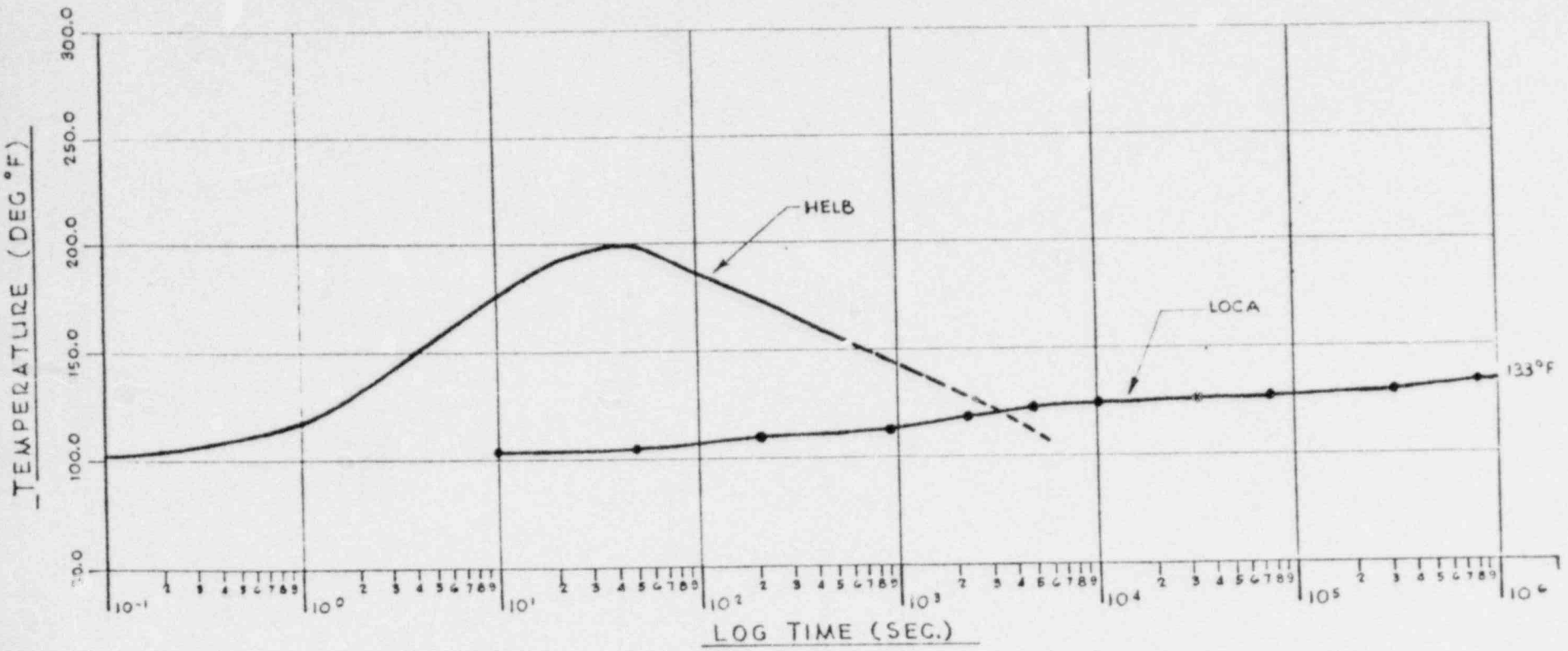
TEMPERATURE TRANSIENT INSIDE CONTAINMENT

PROFILE "A"



PRESSURE TRANSIENT INSIDE CONTAINMENT

PROFILE "B"



TEMPERATURE TRANSIENT IN R.B EL. 20'-0" TO 117'-0"

PROFILE "E"

TABLE IV-1

LOCATION OF SUBSTANTIAL FISSION PRODUCT INVENTORY

SOURCE LOCATION	APPROXIMATE PEAK INVENTORY, Ci	
Reactor Building (Uniform Dispersal)	Total:	8.1×10^6
	N.G.:	5.6×10^6
	Iodine:	2.5×10^6
SGTS Filters in Reactor Building	Iodine:	4.2×10^5
Drywell	Total:	5.5×10^8
	N.G.:	4.0×10^8
	Iodine:	1.5×10^8
Pressure Suppression Chamber	Iodine:	3.0×10^8
Typical Small Compartment (Adjacent to drywell in Reactor Building)	Total:	10^5
Typical Large Compartment (Adjacent to drywell in Reactor Building)	Total:	10^6

TABLE IV-2

EXPECTED DOSES FOR RADIATION SENSITIVE ESF COMPONENTS

Component	Location	Threshold (Rads)	Normal Operating Dose (Rads) 40 Years	Maximum Accident Dose (Rads) First Hour	Maximum Accident Dose (Rads) 30 Days	Comments
Limitorque Valve Operators	Inside Drywell	5×10^7	6×10^7 (Maximum)	---	4×10^7	Threshold dose applies to lubrication seals, made of Viton. These seals can be periodically replaced to keep the normal operating dose substantially below the threshold. The listed normal operating dose is the maximum drywell dose, i.e., at the outside surface of the sacrificial shield at core mid-plane. Leakage from the seals does not imply failure of the operators to function.
Solenoid Valves	Reactor Building Below 20' El.	6×10^7	2×10^3	1×10^5	9×10^6	Accident dose based on conservative assumption of non-uniform mixing of fission products in Reactor Building. Dose given is maximum for any compartment adjacent to the drywell. Normal operating dose based on 5 mr/hr for 40-years.
Pressure Switches/ Transmitters	Reactor Building below 20' El.	2×10^8	2×10^3	1×10^5	9×10^6	Same comment as for solenoid valves.
Pump Motors:	RHR Room CS Room					
• Lube		1×10^8	2×10^3	1×10^5	9×10^6	
• Insulation		5×10^7	2×10^3	1×10^5	9×10^6	
• Seals		5×10^6	2×10^3	1×10^5	9×10^6	Failure of seals leads to leakage, which does not render pump inoperable.

TABLE IV-2
(Cont'd.)

Component	Location	Threshold (Rads)	Normal Operating Dose (Rads) 40 Years	Maximum Accident Dose (Rads) First Hour	Maximum Accident Dose (Rads) 30 Days	Comments
Electronics:	Reactor					
• Semiconductors	Building	1×10^8	2×10^3	1×10^5	9×10^6	
• Capacitors	Below 20' El.	3×10^8	2×10^3	1×10^5	9×10^6	
• Inductors		2×10^9	2×10^3	1×10^5	9×10^6	
• Insulators (Organic)		5×10^7	2×10^3	1×10^5	9×10^6	
Solenoid Valves	Reactor Bldg. Above 20' El.	6×10^7	2×10^3	1×10^3	1×10^5	
Pressure Switches/ Transmitters	Reactor Bldg. Above 20' El.	2.1×10^8	2×10^3	1×10^3	1×10^5	
Pump Motors:	Reactor Bldg.					
• Lube	Above 20' El.	1×10^8	2×10^3	1×10^3	1×10^5	
• Insulation		5×10^7	2×10^3	1×10^3	1×10^5	
• Seals		5×10^6	2×10^3	1×10^3	1×10^5	
Electronics:	Reactor Bldg.					
• Semiconductors	Above 20' El.	1×10^8	2×10^3	1×10^3	1×10^5	
• Capacitors		3×10^8	2×10^3	1×10^3	1×10^5	
• Inductors		2×10^9	2×10^3	1×10^3	1×10^5	
• Insulators (Organic)		5×10^7	2×10^3	1×10^3	1×10^5	

REFERENCES:

(1) "The Effects of Nuclear Radiation on Electronic Components, Including Semiconductors," REIC Report No. 36. Battelle Memorial Institute, Columbus, Ohio, October 1, 1964.

(2) "Space Materials Handbook," Second Edition, Document No. ML-TDR-64-40, AF Materials Laboratory, Wright-Patterson Air Force Base, Ohio (Prepared by Lockheed Missiles and Space Company, Sunnyvale, Calif.), January 1965.