Met-Ed GPU

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Writer's Direct Dial Number

November 13, 1981
L1L 311

Office of Nuclear Reactor Regulation
Attn: John F. Stolz, Chief
Division of Licensing
Operating Reactor Branch #4
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
Reactor Building Air Temperature Detector Test

In order to supplement our response of June 3, 1981 (L1L 168) in response to your letter of April 10, 1981 concerning the location of the subject detectors enclosed please find a report of the results of the subject test performed on September 2, 1981 during Hot Functional Testing (HFT).

The HFT data indicated that the arithmetic average temperature of the Reactor Building air temperature detectors at the locations described in TSCR 92 dated April 11, 1980 adequately represent the existing temperature and of particular interest the RB temperature above the 320 foot elevation. Additionally, the existing Reactor Building Ventilation system (40,000 CFM cool air at 375 ft. elevation) in the upper portion of the Reactor Building is effective, and the air temperature in the dome area is uniform and stable which is approximately 10°F less than the temperature of the upbound hot air stream exiting from the secondary shield compartment. This substantiates, by test, that the existing RTD locations are adequate and that none need to be changed.

The arithmetic average temperature of the 14 available RTD's in the TSCR 92 locations above elevation 320 feet during the HFT was 116°F (outside ambient 68°-72°F) while the calculated bulk air temperature was 118.12°F (based on an average dome temperature of 119.15°F). During normal unit operation on a selected summer day, the arithmetic average of 15 RTD's above elevation 320 feet was 129.1°F (one industrial cooler in 1977 - now 2 industrial coolers) while the calculated bulk air temperature in the same zone was 130.7°F. Based on this information the arithmetic average temperature of the RTD's above 320 feet at the TSCR 92 locations will be within 2°F biasing from the true bulk temperature at low power and within 1°F full power.

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Since the primary purpose of installing the temperature detectors in the containment building is to monitor the air ambient temperature, the proper operating environment for safety equipment, components and the Reactor Building structure is assured. Additionally, the limitation on Reactor Building air temperature assures that the containment design temperature/pressure is not exceeded in the event of a design basis LOCA.

Sincerely,

H. D. Hukill
Director, TMI-1

HDH:LWH:jrg
Attachment

cc: R. C. Haynes
L. Barrett
R. Jacobs

TABLE I

Containment Temperature Data Summary

HFT 9/2/81 Temp. Plateau 532°F

RDT No.	RTD TE-655	ACTUAL LOCATION	Time 02:55	06:51	11:00	15:30	19:00	23:20	24 hrs. Avg.
	R	NE Wall - 287'	90.5	90	90	90.5	91	90	90.33
	S	S Wall - 287'	91.5	91.5	91.5	92.5	93	92.5	92.08
	T	NW Wall - 287'	86	86	86	87	88	86.5	86.58
	V	NW Sec. Sh - 287'	87	87	86.5	86.5	87.5	86	86.75
	M	NE Wall - 314'	126	125	126	126	125	126	125.67
	N	S Wall - 314'	123	121	122	124	123.5	124	122.92
	A	SE Wall - 352'	123	119	120	123.5	123	124	122.08
	B	NW SH - 352'	118.5	107	109	117.5	118	122	115.33
	C	NW SH - 352'	110	110.5	111	111	110.5	110	110.50
	E	NW SH - 352'	109	109	109	109	109	109	109
	H	NW SH - 352'	112	112	113	112	112	112	112.16
	I	NW SH - 352'	114.5	115	115	114.5	113	115	114.50
	K	S SH - 352'	113.5	114	114	114	114	113.5	113.83
	L	NW SH - 352'	112	112.5	113	112.5	113	113	112.67
	U	E Sh - 352'	116.5	107	107.5	111.5	111	111.5	110.83
	P	E Inside Shield-352'	110	110	110.5	110.5	111	110.5	110.67
	W	NE In-Shield - 364'	122	122	123.5	122.5	123	121.5	122.67
	X	N In-Shield - 364'	129	128	130	129	129.5	129.	129.08
	J	E Wall - 400'	117	117.5	118	117	117.5	117	117.33
	D	F Wall - 382'	124	124	123	123.5	123.5	124	123.66
1		NE Dome - 454'	119.5	119.5	119.5	119.5	119.5	119.5	119.5
2		SW Dome - 454'	119.4	119.2	119.7	119.5	119.7	119.5	119.4
3		E Wall - 437'	119.1	119	119.6	119.2	119.0	119.4	119.2
4		SW Wall - 437'	118	117.6	119.0	118.6	118.9	118.2	118.4
5		Crane - 437'	119.5	119.1	119.6	119.6	119.7	119.5	119.5
6		Crane - 437'	118.7	118.7	118.8	118.9	119.1	118.8	118.75
7		Crane - 437'	119.6	119.4	119.5	119.6	119.7	119.6	119.6
8		Crane - 437'	118.9	118.5	118.7	119.2	119.2	118.9	118.4
9		Center - 410'	115.5	115.2	116	115.7	114.9	115.3	115.8
10		Center - 388'	115.2	114.7	114.7	113.9	114.5	113.9	114.3
11		S/G 1B - 366'	118.1	119.1	119.7	118.5	118.8	118.2	118.7
12		Pressurizer - 366'	118	117.2	117.3	119.5	119.6	118.3	118.3
			TIME 02:20	TIME 06-22	TIME 10:30	TIME 15:00	TIME 18:15	TIME 22:45	

TABLE II

Containment Temperature Data Sheet (°F)

Elev. RTD.	PT#	Inst # TE-655	Actual Location (Normal)	70 DB 68 WB April 1979	73 DB 64 WB 9/14/77	7/9/75
287'	18	R	NE Wall-287'	95	105	119
	19	S	S Wall-287'	99	105	101
	20	T	NW Wall-287'	96	104	102
	22	V	NW Sec Sh 287'	95	102	100
314'	13	M	NE Wall 314'	106	114	106
	14	N	S Wall 314'	113	114	112
	15	O	NW Wall 314'	104	112	101
Below 320°	Any 3 average			107.66 95.33°	103.6 113.3°F	100.6 107.6°F
	Any 4 average			105.50 96.50	104 111.2	101 110
	Total 7 average			101.14	108	105.8
Below 305'	Any 3 average			95.33 96.66	102.6 104.6	101 107.3
Above 305'	Average temperature of any 15 RTDs			120/124	128/129	129.8/12
352'	1	A	SE Wall-352'	121	125	127
	2	B	NW Sh-352'	126	131	131
	3	C	NE Sh-352'	120	124	125
	5	E	NE Sh-352'	120	125	126
	7	G	NE Sh-352'	117	124	123
	8	H	NW Sh-352'	126	130	130
	9	I	NW Wall-352'	125	130	130
	11	K	S Sh-352'	124	128	130
	12	L	NW Sh-352'	126	132	131
	16	P	E Sh-352'	123	127	127
	21	U	E Sh-352'	126	130	131
352'	Average		Avg.	(123)	(127.8)	(128.2)
364'	23	W	NE Sh-364'	125/	131/	132.5
	24	X	N Sh-364'	126	131	
400'	10	J	E Wall 400'	129	130	135
382'	4	D	E Wall-382'	131	136	137
Above 320'	Average of 15 RTD's			124.26	129.2	129.8

SUBJECT Containment Air Temperature Study (TMI-1)

N-S Section & Zoning — TMI-1 Containment

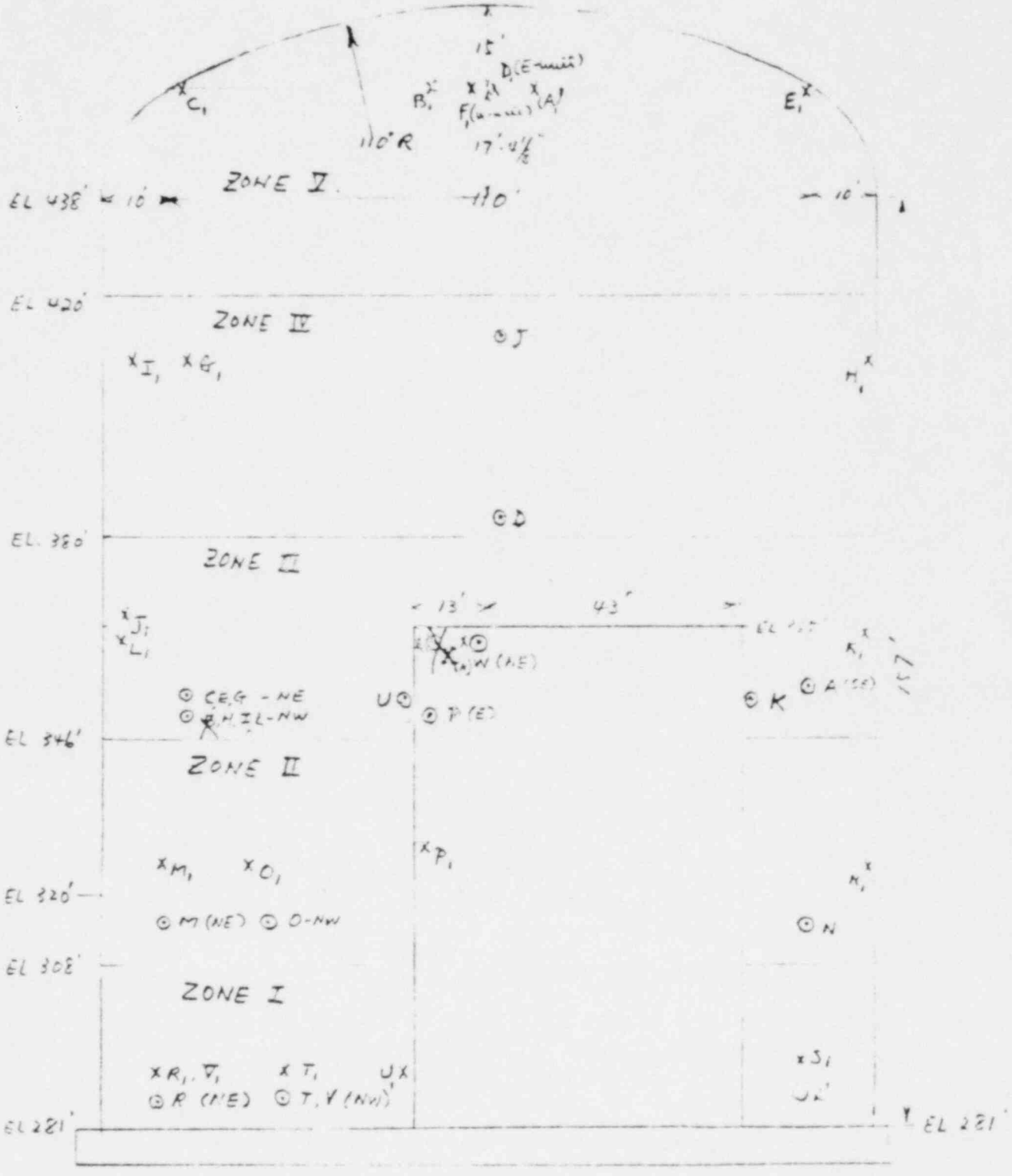

Fig 1 RTD Locations

Note: ⊙ Existing RTD Locations
x Test Spec RTD Locations

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SUBJECT TMI 1 - CALCULATION OF THE AVE AIR TEMP IN THE DOME AREA OF THE CONTAINMENT BUILDING DURING NORMAL OPERATION

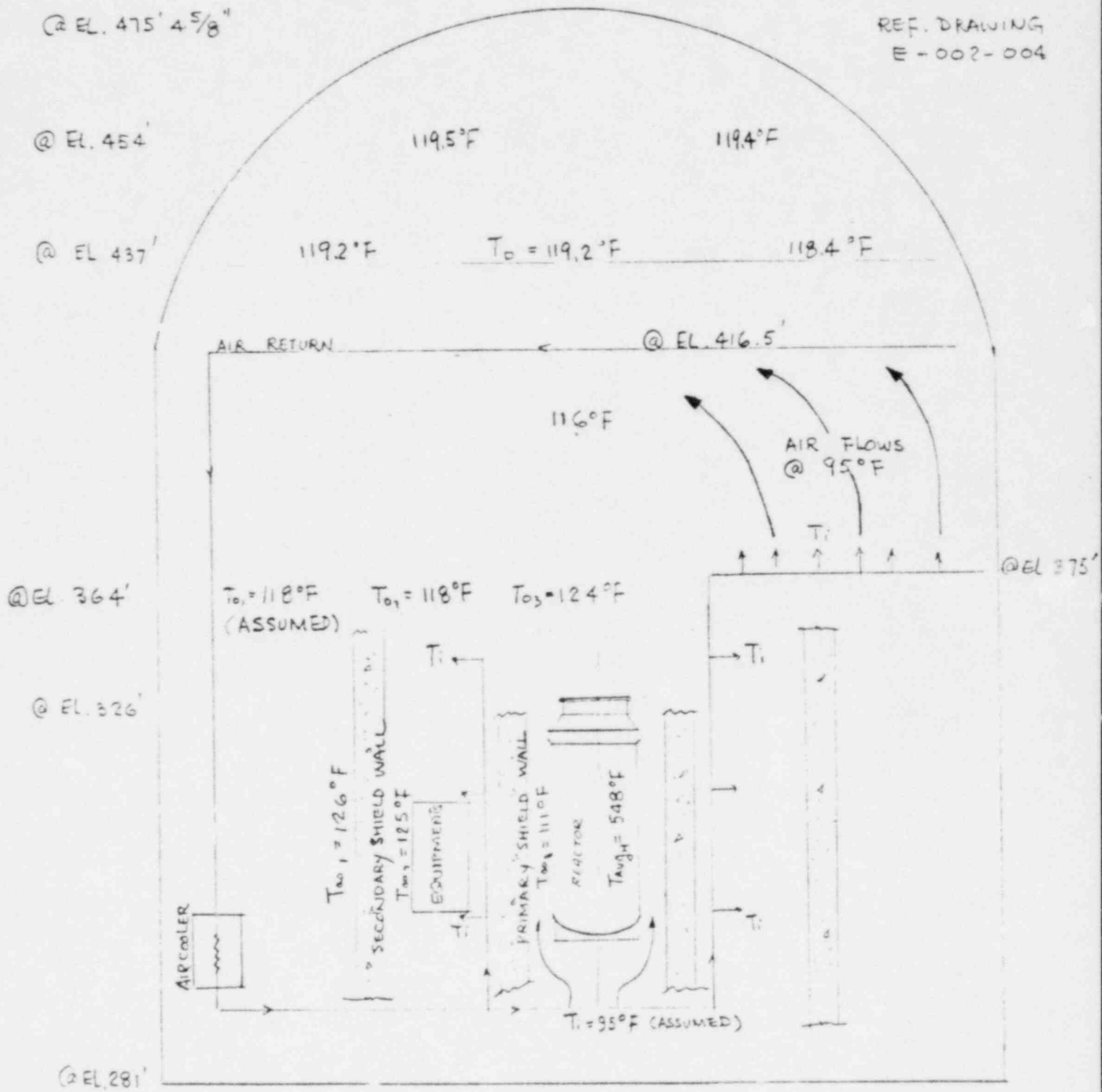

FIG 2 HOT FUNTIONAL TEST - TEMPERATURE DISTRIBUTION