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April 29, 1986

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

Subject: Dresden Station Units 2 and 3
Supplemental Response to
Generic Letter 83-28 Item 1.2
NRC Dockets 50-237/249

Reference (a): November 4, 1985 JA Zwolinski letter
to DL Farrar transmitting draft TER
on Item 1.2

Dear Mr. Denton:

The purpose of this letter is to document a teleconference between Greg Alexander and Jesse Williams of Commonwealth Edison and Robert Gilbert and Joel Kramer of the NRC pertaining to reference (a).

Dresden has replaced the General Electric 4020 process computer with two Honeywell 4500 process computers. One computer is operated on-line with the other computer selected as a redundant system in the event of failure of the on-line system. The computer system power is supplied from a Cibrex uninterruptible power system which consists of a dedicated 250 volt battery and a normal alternating current power supply from 480 volt bus 36 or an alternate power supply from 480 volt bus 25.

The review criteria requested by the Review of Licensee and Applicant Response to NRC Generic Letter 83-28 were divided into five categories, which are:

1. the parameters monitored by the sequence of events and the time history recorders,
2. the performance characteristic of the sequence of events recorder,
3. the performance of the time history recorders,
4. the data output format, and
5. the long-term data retention capability for post-trip review material.

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The parameters that were recommended to be recorded for post-trip review are:

1. Safety injection
2. Containment isolation
3. Control rod position
4. Containment (drywell) radiation
5. Suppression pool temperature
6. Turbine bypass valve position
7. Scram discharge level
8. AC and DC status (bus voltage)

Safety injection, containment isolation, containment (drywell) radiation, suppression pool temperature, turbine bypass valve position, scram discharge level, and AC bus voltage are monitored by the computer alarm system. Safety injection, containment isolation, turbine bypass valve position, and scram discharge level are all digital inputs to the process computer. Whenever any digital contact changes position the time of this change is recorded by the process computer to the nearest second. Containment (drywell) radiation and suppression pool temperature are analog inputs which are sampled on a 5 second interval. The alarm typer does not directly monitor the DC bus voltage, but does monitor related digital inputs such as battery charger and output breaker status. The format fo the Unit 2 alarm system output, which is recorded on the Unit 2 alarm typer, is attached. Significant alarms that are recorded on the alarm typer are retained for the life of the plant.

Dresden's Station's process computer is equipped with an Event Recall Log which scans selected inputs every 5 seconds and stores the data. Whenever any one of 14 digitals for reactor scram, generator trip or turbine trip become set this data is output 10 minutes later. The computer also has a Scram Results Log program which after a cram, gathers selected plant data every second for the first minute and every 15 seconds for the next 30 minutes. Once all the data is collected this edit is automatically output. Both of these logs are saved for the life of the plant. Attached are the inputs which these two programs gather data.

In addition to the requested recorded inputs, all Group I, II, and III isolation valves' positions are monitored by digital inputs. Also the main steam line radiation and the suppression pool temperatures as well as low pressure coolant injection flows are recorded on time history recorders. The power supply for these recorders is from the instrument bus.

All data scanned by the process computer system is stored in a Point History. The Point History data is stored for 7 days and can be recalled any time within the 7 day period.

Generic Letter 83-28 recommended that the computer program have a digital input to determine when rods are fully inserted following a reactor trip. This program is not available on the process computer nor easily implemented. However, Dresden General Procedures (DGP) 2-3, Unit 2/3 Reactor Scram, immediate operator actions require a verification of all rods inserted to or beyond position 04, and the insertion of any rod not at position 00.

The rods that did not fully insert are required to be recorded and the Shift Supervisor notified. Any rod that is manually inserted or withdrawn will activate a digital input and result in the initial and final positions being recorded on the alarm typer.

The parameters monitored by the Honeywell 4500 process computer, the sample frequency, and the output format comply with Generic Letter 83-28. The computer is provided by an uninterruptible power supply for increased reliability. Along with the computer system, pertinent data is recorded on time history recorders located in the control room. All records used to determine the root cause of unplanned reactor trips are retained for the life of the plant. Therefore, Dresden Station believes the present computer system conforms to the criteria expressed in Generic Letter 83-28.

Sincerely,



G. L. Alexander
Nuclear Licensing Administrator

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EVENT RECALL Log POINT I.D.

14:11:54	PRINT	GOOD	B364	APRM CHANNEL 01	-0.12	%POWER	H	L
14:12:05	PRINT	GOOD	B365	APRM CHANNEL 02	0.32	%POWER	H	L
14:12:15	PRINT	GOOD	B366	APRM CHANNEL 03	0.29	%POWER	H	L
14:12:24	PRINT	GOOD	B367	APRM CHANNEL 04	0.14	%POWER	H	L
14:12:33	PRINT	GOOD	B368	APRM CHANNEL 05	0.12	%POWER	H	L
14:12:43	PRINT	GOOD	B369	APRM CHANNEL 06	-0.18	%POWER	H	L
14:13:13	PRINT	NORM	G300	MAIN GENERATOR VOLTAGE	0.00	KV	18.50	H L
14:13:23	PRINT	NORM	G301	STATOR CURRENT	0	AMPS	30000	H L
14:13:32	PRINT	NORM	G330	STATOR WATER IN CONDUCT.	1.2	MMHO	9.5	H L
14:13:41	PRINT	NORM	G328	GENERATOR GROSS LOAD	-0.1	MW	9999.9	H L
14:13:52	PRINT	GOOD	G329	GENERATOR LOAD REACTIVE	-0.0	MVAR		H L
14:14:05	PRINT	LRL	G302	EXCITATION VOLTAGE	N	VOLTS	400.0	H L
14:14:14	PRINT	LRL	G303	EXCITATION CURRENT	N	AMPS	3400	H L
14:14:24	PRINT	NORM	E300	MAIN XFRMR CURRENT 345KV	0	AMPS	1500	H L
14:14:34	PRINT	NORM	E330	MAIN XFRMR WINDING TEMP.	64	DEG. C	90	H L
14:14:46	PRINT	NORM	G304	GENERATOR HYDROGEN PRESS	-0.0	PSI	60.0	H L
14:14:56	PRINT	LRL	C309	RX WTR LVL B NARROW GMAC	N	IN WTR	40.00	H 20.00 L
14:15:09	PRINT	LRL	C300	REACTOR PRESSURE A	N	PSIG	1030	H L
14:15:16	PRINT	LRL	C301	REACTOR CORE DIFF PRESS	N	PSI	18.00	H L
14:15:27	PRINT	LRL	C303	TOTAL RECIRC. FLOW	N	MW/HR	35.000	H L
14:15:39	PRINT	GOOD	C302	TOTAL JET PUMP FLOW	107.02	MW/HR		H L
14:15:48	PRINT	OVFL	F379	FEEDWATER TEMP LOOP A	N	DEG. F	350.00	H L
14:16:00	PRINT	OVFL	F380	FEEDWATER TEMP LOOP B	N	DEG. F	350.00	H L
14:16:10	PRINT	LRL	F322	REACTOR FEEDWATER FLOW A	N	MW/HR	5.200	H L
14:16:20	PRINT	LRL	F323	REACTOR FEEDWATER FLOW B	N	MW/HR	5.200	H L
14:16:31	PRINT	LRL	F324	REACTOR FEEDWATER FLOW C	N	MW/HR	5.200	H L
14:16:42	PRINT	LRL	C322	REACTOR OUTPUT STEAM FLO	N	MW/HR	10.00	H L
14:17:18	PRINT	NORM	T300	TURB THROTTLE STEAM PRES	-3.0	PSIG	1050.0	H L
14:17:29	PRINT	NORM	T301	TURB STEAM CHEST PRESS	5	PSIG	1050	H L
14:17:39	PRINT	NORM	T314	TURB STEAM CHEST INNER	65	DEG. F	550	H L
14:17:49	PRINT	NORM	T315	TURB STEAM CHEST OUTER	66	DEG. F	550	H L
14:18:00	PRINT	NORM	T306	TURB 1ST STAGE PRESSURE	2	PSIG	900	H L
14:18:26	PRINT	NORM	T316	TURBINE 1ST STAGE INNER	75	DEG. F	550	H L
14:18:36	PRINT	NORM	T317	TURBINE 1ST STAGE OUTER	75	DEG. F	550	H L
14:18:49	PRINT	NORM	T302	HP TURBINE EXHAUST PRESS	-1	PSIG	230	H L
14:19:00	PRINT	NORM	T303	LP TURBINE INLET PRESS	-0	PSIG	220	H L
14:19:09	PRINT	OVFL	F318	CONDENSER 3A PRESSURE	N	IN HGA	4.95	H L
14:19:19	PRINT	OVFL	F319	CONDENSER 3B PRESSURE	N	IN HGA	4.95	H L
14:19:30	PRINT	OVFL	F320	CONDENSER 3C PRESSURE	N	IN HGA	4.95	H L
14:19:41	PRINT	GOOD	F393	RX BLDG VENT STACK FLOW	190.1	KCFM		H L
14:19:54	PRINT	NORM	T320	TURB BRG TR1 FRONT PLATE	75	DEG. F	175	H L
14:20:03	PRINT	NORM	T321	TURB BRG TR1 REAR PLATE	75	DEG. F	175	H L
14:20:14	PRINT	NORM	T332	TURB BRG OIL TEMP PT. 9	71	DEG. F	160	H L
14:20:43	PRINT	NORM	T323	TURB BRG TR2 REAR PLATE	75	DEG. F	175	H L
14:20:53	PRINT	NORM	T311	TURB EXHAUST HOOD A PT.1	71	DEG. F	175	H L
14:21:04	PRINT	NORM	T312	TURB EXHAUST HOOD B PT.2	71	DEG. F	175	H L

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14:21:22	PRINT	NORM	T313	TURB EXHAUST HOOD C PT.3	72	DEG. F	175	H L
14:21:34	PRINT	LRL	T308	GLAND STEAM HEADER PRESS	N	PSIG	6.5	H 2.5 L
14:21:45	PRINT	NORM	T346	TURBINE SPEED	420	RPM	1980	H L
14:21:55	PRINT	DEL	T304	TURB BRG LUBE OIL PRESS	N	PSIG	50.0	H 20.0 L
14:22:06	PRINT	NORM	T336	TURB VIBRATION JOURNAL 1	-0.2	MILS	8.0	H L
14:22:15	PRINT	LRL	T337	TURB VIBRATION JOURNAL 2	N	MILS	8.0	H L
14:22:27	PRINT	LRL	T338	TURB VIBRATION JOURNAL 3	N	MILS	8.0	H L
14:22:36	PRINT	LRL	T339	TURB VIBRATION JOURNAL 4	N	MILS	8.0	H L
14:22:47	PRINT	LRL	T340	TURB VIBRATION JOURNAL 5	N	MILS	8.0	H L
14:23:00	PRINT	NORM	T341	TURB VIBRATION JOURNAL 6	-0.2	MILS	8.0	H L
14:23:09	PRINT	NORM	T342	TURB VIBRATION JOURNAL 7	-0.2	MILS	8.0	H L
14:23:19	PRINT	LRL	T343	TURB VIBRATION JOURNAL 8	N	MILS	8.0	H L
14:23:28	PRINT	LRL	T344	TURB VIBRATION JOURNAL 9	N	MILS	8.0	H L
14:23:38	PRINT	LRL	T345	TURB VIBRATION JOURNAL 10	N	MILS	8.0	H L

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CATALOG SEARCH AND DISPLAY

POINT ID	COMPUTER DESCRIPTION	RESET STATUS OR ENGINEERING UNITS	SET STATUS	POINT ID TYPE
6001	AUTO BLOWDOWN SIGNAL	CLEAR	INIT	D

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CATALOG SEARCH AND DISPLAY

POINT ID	COMPUTER DESCRIPTION	RESET STATUS OR ENGINEERING UNITS	SET STATUS	POINT ID TYPE
T257	TORUS WATER TEMP A	DEG. F		A0
T258	TORUS WATER TEMP B	DEG. F		A0

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CATALOG SEARCH AND DISPLAY

POINT ID	COMPUTER DESCRIPTION	RESET STATUS OR ENGINEERING UNITS	SET STATUS	POINT ID TYPE
R207	TORUS POST-LOCA HI RAD D	R/HR		A1
R231	TORUS POST-LOCA HI RAD C	R/HR		A0

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CATALOG SEARCH AND DISPLAY

POINT ID	COMPUTER DESCRIPTION	RESET STATUS OR ENGINEERING UNITS	SET STATUS	POINT ID TYPE
R205	DRYWELL RAD HIGH RANGE B	R/HR		A1
R224	DRYWELL RAD HIGH RANGE A	R/HR		A

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POINT ID	COMPUTER DESCRIPTION	RESET STATUS OR ENGINEERING UNITS	SET STATUS	POINT ID TYPE
R204	TORUS AREA RADIATION	MR/HR		A0
R207	TORUS POST-LOCA HI RAD D	R/HR		A1
R291	TORUS POST-LOCA HI RAD C	R/HR		A0

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CATALOG SEARCH AND DISPLAY

POINT ID	COMPUTER DESCRIPTION	RESET STATUS OR ENGINEERING UNITS	SET STATUS	POINT ID TYPE
E023	125V BATTERY CHARGER 2	RESET	TRIP	D
E024	125V BATTERY CHARGER 2A	RESET	TRIP	D
E026	250V BATTERY CHARGER 2	RESET	TRIP	D
E027	250V BATTERY CHARGER 2/3	RESET	TRIP	D

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POINT ID	COMPUTER DESCRIPTION	RESET STATUS OR ENGINEERING UNITS	SET STATUS	POINT ID TYPE
C054	ISO PHASE BUS A TEMP	NORMAL	HIGH	D
C055	ISO PHASE BUS B TEMP	NORMAL	HIGH	D
C056	ISO PHASE BUS C TEMP	NORMAL	HIGH	D
E001	BUS 21/22 4 KV VOLTAGE	NORMAL	LOW	D
E002	BUS 23/24 4 KV VOLTAGE	NORMAL	LOW	D
E003	BUS 21/22 DC POWER FEED	NORMAL	FAILED	D
E004	BUS 23/24 DC POWER FEED	NORMAL	FAILED	D
E006	BUS 23-1/24-1 4KV VOLT	NORMAL	LOW	D
E007	BUS 23-1/24-1 DC POWER	NORMAL	FAILED	D
E008	TRANSFORMER 28-BUS 28	RESET	TRIP	D
E009	TRANSFORMER 29-BUS 29	RESET	TRIP	D
E012	BUS 25 THRU 29 DC POWER	OKAY	FAILED	D
E015	ESS BUS 120/240 VOLTAGE	NORMAL	LOW	D
E016	INST BUS 120VAC VOLTAGE	NORMAL	LOW	D
E201	TR 21 FEED TO BUS 21/22	MW		A2
E202	TR 21 FEED TO BUS 21/22	AMPS		A0
E203	TR 21 FEED TO BUS 23/24	MW		A2
E204	TR 21 FEED TO BUS 23/24	AMPS		A0
E205	TR 22 FEED TO BUS 21/22	MW		A2
E206	TR 22 FEED TO BUS 21/22	AMPS		A0
E207	TR 22 FEED TO BUS 23/24	MW		A2
E208	TR 22 FEED TO BUS 23/24	AMPS		A0
E211	BUS 23-1 VOLTAGE	VOLTS		A0
E212	BUS 24-1 VOLTAGE	VOLTS		A0
W074	BUS 21 FEED TRANSFRMR 21	RESET	TRIP	D
W075	BUS 22 FEED TRANSFRMR 21	RESET	TRIP	D
W076	BUS 23 FEED TRANSFRMR 21	RESET	TRIP	D
W077	BUS 24 FEED TRANSFRMR 21	RESET	TRIP	D
W078	BUS 21 FEED TRANSFRMR 22	RESET	TRIP	D
W079	BUS 22 FEED TRANSFRMR 22	RESET	TRIP	D
W080	BUS 23 FEED TRANSFRMR 22	RESET	TRIP	D
W081	BUS 24 FEED TRANSFRMR 22	RESET	TRIP	D
W082	BUS 21 FEED TRANSFRMR 21	OPEN	CLOSED	D
W083	BUS 22 FEED TRANSFRMR 21	OPEN	CLOSED	D
W084	BUS 23 FEED TRANSFRMR 21	OPEN	CLOSED	D
W085	BUS 24 FEED TRANSFRMR 21	OPEN	CLOSED	D
W086	BUS 21 FEED TRANSFRMR 22	OPEN	CLOSED	D
W087	BUS 22 FEED TRANSFRMR 22	OPEN	CLOSED	D
W088	BUS 23 FEED TRANSFRMR 22	OPEN	CLOSED	D
W089	BUS 24 FEED TRANSFRMR 22	OPEN	CLOSED	D
W090	BUS 23 -- BUS 23-1	RESET	TRIP	D
W091	BUS 24 -- BUS 24-1	RESET	TRIP	D
W092	BUS 24-1 -- BUS 34-1	RESET	TRIP	D
W093	DIESEL GEN 2/3 BUS 23-1	OPEN	CLOSED	D
W094	DIESEL GEN 2 BUS 24-1	OPEN	CLOSED	D

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CATALOG SEARCH AND DISPLAY

POINT ID	COMPUTER DESCRIPTION	RESET STATUS OR ENGINEERING UNITS	SET STATUS	POINT ID TYPE
C048	CORE SPRAY SYSTEM A	OFF	ON	D
C049	CORE SPRAY SYSTEM B	OFF	ON	D
C061	CORE SPRAY PUMPS	OFF	ON	D
C240	CORE SPRAY PUMP A DISCH	PSIG		A
C241	CORE SPRAY PUMP B DISCH	PSIG		A
C252	CORE SPRAY FLOW LOOP A	GPM		A0
C253	CORE SPRAY FLOW LOOP B	GPM		A0
E005	CORE SPRAY PUMP B	OFF	ON	D
E060	CORE SPRAY PUMP A	OFF	ON	D

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CATALOG SEARCH AND DISPLAY

POINT ID	COMPUTER DESCRIPTION	RESET STATUS OR ENGINEERING UNITS	SET STATUS	POINT ID TYPE
C060	LPCI PUMPS	OFF	ON	D
C073	LPCI PUMP	RESET	TRIP	D
C218	LPCI PUMP C DISCH PRESS	PSIG		A0
C219	LPCI PUMP D DISCH PRESS	PSIG		A0
C238	LPCI PUMP A DISCH PRESS	PSIG		A
C239	LPCI PUMP B DISCH PRESS	PSIG		A
C243	LPCI HEAT EXCH OUTLET A	DEG. F		A
C244	LPCI HEAT EXCH OUTLET B	DEG. F		A
C245	LPCI HEAT EXCH INLET A	DEG. F		A
C246	LPCI HEAT EXCH INLET B	DEG. F		A
C247	LPCI FLOW LOOP A	KGPM		A1
C248	LPCI FLOW LOOP B	KGPM		A1
C254	LPCI FLOW A TO REACTOR	KGPM		A1
C255	LPCI FLOW B TO REACTOR	KGPM		A1
F000	LPCI PUMP A	OFF	ON	D
R202	EAST LPCI PUMP AREA RAD	MR/HR		A1
R203	WEST LPCI PUMP AREA RAD	MR/HR		A1
T001	LPCI PUMP D	OFF	ON	D
T006	LPCI PUMP C	OFF	ON	D
T007	LPCI PUMP B	OFF	ON	D

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POINT ID	COMPUTER DESCRIPTION	RESET STATUS OR ENGINEERING UNITS	SET STATUS	POINT ID TYPE
C090	CCSW PUMP B	OFF	ON	D
C091	CCSW PUMP A	OFF	ON	D
C234	CCSW PUMP A DISCH PRESS	PSIG		A
C235	CCSW PUMP B DISCH PRESS	PSIG		A
C236	CCSW PUMP C DISCH PRESS	PSIG		A
C237	CCSW PUMP D DISCH PRESS	PSIG		A
E061	CCSW PUMP D	OFF	ON	D
E062	CCSW PUMP C	OFF	ON	D

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POINT ID	COMPUTER DESCRIPTION	RESET STATUS OR ENGINEERING UNITS	SET STATUS	POINT ID TYPE
C093	CONT ISO SIGNAL GRP III	INIT	CLEAR	D
C096	CONT ISO SIGNAL GROUP II	INIT	CLEAR	D
T000	CONT ISO SIGNAL GROUP I	INIT	CLEAR	D

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POINT ID	COMPUTER DESCRIPTION	RESET STATUS OR ENGINEERING UNITS	SET STATUS	POINT ID TYPE
D275 T008	BOP TURBINE BYPASS FLOW TURBINE BYPASS VALVE	M#/HR CLOSED	OPEN	C3 D

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CATALOG SEARCH AND DISPLAY

POINT ID	COMPUTER DESCRIPTION	RESET STATUS OR ENGINEERING UNITS	SET STATUS	POINT ID TYPE
C012	SDV HI LVL ROD BLOCK	RESET	TRIP	D
M000	SDV WEST BANK LS-302-82A	HI-HI	NORMAL	D
M001	SDV EAST BANK LS-302-82G	HI-HI	NORMAL	D
M002	SDV WEST DRAIN 302-158A	OPEN	CLOSED	D
M003	SDV EAST DRAIN 302-158B	OPEN	CLOSED	D
M004	SDV WEST DRAIN 302-157A	OPEN	CLOSED	D
M005	SDV EAST DRAIN 302-157B	OPEN	CLOSED	D
M006	SDV WEST VENT 302-160A	OPEN	CLOSED	D
M007	SDV EAST VENT 302-160B	OPEN	CLOSED	D
M008	SDV WEST VENT 302-161A	OPEN	CLOSED	D
M009	SDV EAST VENT 302-161B	OPEN	CLOSED	D
M023	SDV WEST BANK LS-302-82C	HI-HI	NORMAL	D
M024	SDV EAST BANK LS 302-82J	HI-HI	NORMAL	D
M025	SDV WEST BANK LS 302-82B	HI-HI	NORMAL	D
M026	SDV WEST BANK LS 302-82D	HI-HI	NORMAL	D
M027	SDV EAST BANK LS 302-82H	HI-HI	NORMAL	D
M028	SDV EAST BANK LS 302-82K	HI-HI	NORMAL	D

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POINT ID	COMPUTER DESCRIPTION	RESET STATUS OR ENGINEERING UNITS	SET STATUS	POINT ID TYPE
C229	HPCI PUMP DISCHARGE PRES	PSIG		A
C227	HPCI CUBICAL RADIATION	MR/HR		A
8009	HPCI PUMP INJECT SIGNAL	CLEAR	INIT	D
W235	HPCI DISCHARGE FLOW	X FLOW		A