

TEXAS UTILITIES GENERATING COMPANY
SKYWAY TOWER • 400 NORTH OLIVE STREET, L.B. 81 • DALLAS, TEXAS 75201

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June 26, 1984

Director of Nuclear Reactor Regulation
Attention: Mr. B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION
DOCKET NOS. 50-445 AND 50-446
ACCIDENT MONITORING INSTRUMENTATION

REF: (1) TXX-4068 of 10-24-83
(2) TXX-4086 of 01-03-84

Dear Sir:

Reference (1) provided a response to a request for additional information on the design of the Accident Monitoring Instrumentation at Comanche Peak Steam Electric Station (CPSES). This information was also provided in the CPSES FSAR via Amendment 45. The response stated that the instrumentation for Reactor Vessel Water Level was scheduled to be installed by the end of the third refueling outage and that the non-Class 1E instrumentation for several "D2" variables was scheduled to be upgraded for environmental qualification requirements by the end of the first refueling outage. The purpose of this letter is to report the revised schedules for these items.

The instrumentation for Reactor Vessel Water Level will be installed prior to the end of the first refueling outage as noted in reference (2). The non-Class 1E instrumentation of concern has been replaced with environmentally qualified hardware. The CPSES FSAR response will be revised by Amendment 50 to reflect these changes. Advance copies of these revisions are attached.

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A PDR

DRW:tl
Attachments
Original + 40 copies

Sincerely,

H. C. Schmidt for

H. C. Schmidt

Boo!

TABLE 032.110-1

Requested Information for Variables in
Table 2 of Reg. Guide 1.97 Rev. 2
(Sheet 1 of 10)

Variable	Type/ Category	Quantity Tag Numbers	Redundance and Sensor Location (15)	Instrument Range	QA and Qualification	Power Supply	Location of Display CR TSC/EOF Display Location	Schedule of Installation or Upgrade
Neutron Flux	B1	2 IR & 2 SR NM-35B, NM-36B NI-31B NI-32B	Yes Figure 7.1-3 Sh. 1	10 ⁻⁸ - 50% 1 - 10 ⁶ cps	Note 4	1E	SPDS Recorder Indication (All)	YES INST
Control Rod Position	B3	1 per control rod group RB1 RB2	N/A At vessel	0 to 228 steps	Note 5	Non 1E Has 2 Power Sources	LED Display Rod Step Counters (1 per Group)	NO INST
RCS Soluable Boron Concentration	B3	1 per unit XI-MEBS	N/A Figure 9.3-10, Sh. 2	0-5000 ppm	None	Non 1E Battery Backed	Indication	NO INST
T(HOT) RCS (WR)	A1, B2 C2	1 per loop TE-413A TE-423A TE-433A TE-443A	Yes Figure 7.1-3 Sh. 2	0-700°F	EQ, SQ, QA	1E	SPDS Recorder (All) Indicator (Loops 1 & 2)	YES INST
T(COLD) RCS (WR)	A1, B2	1 per loop TE-413B TE-423B TE-433B TE-443B	Yes Figure 7.1-3, Sh. 2	0-700°F	EQ, SQ, QA	1E	SPDS Recorder (All) Indicator (Loops 1 & 2)	YES INST
RCS Pressure (WR)	A1, B1, B2, C1, D2	2 per unit PT-403 PT-405	Yes Figure 7.1-3, Sh. 3	0-3000 psig	EQ, SQ, QA	1E	SPDS Recorder Indicator (All)	YES INST
Core exit temperature	A1, B1, C1	25 per train TE-001 to TE-050	YES *	0-2300°F	EQ, SQ, QA	1E	SPDS Indicator (1 per Train for highest temp.)	Same As SPDS *See description in FSAR Section II.F.2.3
Reactor Vessel Water Level	B2, C2	2 per unit LY-3613A LY-3613B	N/A In Vessel	Top of Vessel to Top of Core	EQ, SQ, QA	1E	SPDS LED Display (All)	YES Scheduled to be installed by end of third refueling outage. Note 17.2

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TABLE 032.110-1

Requested Information for Variables in
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(Sheet 2 of 10)

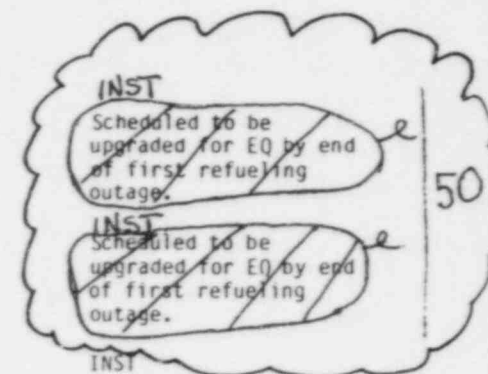
Variable	Type/ Category	Quantity Tag Numbers	Redundance and Sensor Location (15)	Instrument Range	QA and Qualification	Power Supply	Location of Display CR YSC/EOF Display Location		Schedule of Installation or Upgrade
RCS Subcooling	A2, B2	2 per unit TD-3611A TD-3611B	N/A*	-300 to 300°F	EQ, SQ, QA	1E	SPDS-All Indication (1 per Train for highest temp.)	YES	INST *See description in FSAR Section II.F.2.1.
Containment Water Level	A1, B1 B2, C2, D2	2 per unit LT-4779 (WR) LT-4781 (WR)	Yes Figure 7.1-3, Sh. 3	808'-817'-6"	EQ, SQ, QA See Note 13	1E	SPDS Indication (All)	YES	INST
Containment Pressure (NR)	A1, B1 B2, C2, D2	4 per unit PT-934 to 937	Yes Figure 7.1-3, Sh. 2	(-5)-60 psig	EQ, SQ, QA	1E	SPDS Indication (All)	YES	INST
Containment Isolation Valve Status (Active)	C2	1 per active valve See FSAR Table 6.2.4-2	N/A At valves	Closed- Not Closed	EQ, SQ, QA	1E	SPDS Indication (All)	YES	INST
Radiation Level In Circulating Primary Coolant	C3	1 per unit RE-406	N/A Table 11.5-1 Sh. 3	1 - 10 ⁵ μ Ci/cc	QA, Note 16	Non 1E See Note 7	SPDS Rad. Mon.	YES	INST
Analysis of Primary Coolant (Gamma spectrum)	C3	1 per unit PASS	N/A *	Grab Sample Gross Activity 10 Ci/ml to 10 Ci/ml Gamma Spectrum (Isotopic Analysis)	EQ, SQ, QA on Electric isolation valves None for rest	1E for valves Non 1E for rest See Note 7	Chem Lab	NO	INST *See description in FSAR Section II.B.3.
Containment Rad Level (High Range)	A1, B1, B2, C2 E2	2 per unit RE-6290 A&B	Yes Figure II.F-1	1-10 ⁷ R/hr.	EQ, SQ, QA	1E	SPDS Rad Monitor (All)	YES	INST
Condenser Off-gas Radiation	A2, B2, C2	1 per unit RE-2959	N/A Table 11.5-1, Sh. 3	10 ⁻⁵ -10 ⁻¹ μ Ci/cc	EQ, QA Note 3 & 16	Non 1E See Note 7	SPDS Rad. Mon. (All)	YES	INST
Containment Hydrogen Concentration	B1	4 per unit AE-5506A thru D	Yes *	0-10%	EQ, SQ, QA	1E	SPDS Indication (1 per Train)	Same As SPDS	INST *See description in FSAR Section 6.2.5.2.3.
Containment Pressure (WR)	C1, D2	2 per unit PT-938 PT-939	Yes Figure* 7.1-3, Sh. 2	0-150 psig	EQ, SQ, QA	1E	SPDS Indication (All)	YES	INST *Previously designated as PT-5408 and PT-5412

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TABLE 032.110-1

Requested Information for Variables in
Table 2 of Reg. Guide 1.97 Rev. 2
(Sheet 3 of 10)

Variable	Type/ Category	Quantity Tag Numbers	Redundance and Sensor Location (15)	Instrument Range	QA and Qualification	Power Supply	Location of Display		Schedule of Installation or Upgrade
							CR Display	TSC/LOF Location	
Containment Effluent Radioactivity Noble Gases from Identified Release Points	C2, E2	1 per vent stack X-RE-5570 A&B	N/A Table 11.5-1, Sh. 1	10^{-7} - 10^5 $\mu\text{Ci/cc}$	EQ, QA Note 16	Non 1E See Note 7	SPDS Rad. Mon. (All)	YES	INST
Area Rad. Levels Adjacent Containment	C2	13 per unit RE-6259 A&B RE-6291 A&B RE-6292 to RE-6299 RE-5637 2 (shared) XRE-6273 XRE-6275	N/A Tables 12.3-8 & 11.5-1, Sh. 1	10^{-1} - 10^4 R/hr 10^{-4} - $10\mu\text{Ci/cc}$ 10^{-1} - 10^4 mR/hr	EQ, QA Note 16	Non 1E See Note 7	SPDS Rad. Mon. (All)	YES	INST
Effluent Radioactivity Noble Gases- Areas Adjacent Containment	C2, E2	1 per vent stack X-RE-5570 A&B	N/A Table 11.5-1 Sh. 1	10^{-7} - 10^5 $\mu\text{Ci/cc}$	EQ, QA Note 16	Non 1E See Note 7	SPDS Rad. Mon. (All)	YES	INST
RHR Flow	D2	1 per train FT-618A FT-619A	N/A Figure 5.4-6	0-5500 gpm	EQ, QA* Note 16	Non 1E Battery Backed	SPDS Indication (All)	YES	INST Scheduled to be upgraded for EQ by end of first refueling outage.
RHR Heat Exchanger Discharge Temperature	D2	1 per train TE-604 TE-605	N/A Figure 5.4-6	50-400°F	EQ, QA* Note 16	Non 1E Battery Backed	SPDS Recorder (All)	YES	INST Scheduled to be upgraded for EQ by end of first refueling outage.
SI Accumulator Tank Level	D3	2 per tank LT-950 to 957	N/A Figure 6.3-1, Sh. 2	0-100% of useable volume	None	Non 1E Battery Backed	SPDS Indication (All)	YES	INST
SI Accumulator Tank Pressure	D3	2 per tank PT-960 to 967	N/A Figure 6.3-1, Sh. 2	0-700 psig	None	Non 1E Battery Backed	SPDS Indication (All)	YES	INST
SI Accumulator Isolation Valve Status	D2	1 per valve 8808A, R, C, & D	N/A At valve	Fully open/ Not fully open	EQ, SQ, QA	1E	SPDS Indication (All)	YES	INST



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TABLE 032.110-1

Requested Information for Variables in
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Variable	Type/ Category	Quantity Tag Numbers	Redundance and Sensor Location (15)	Instrument Range	QA and Qualification	Power Supply	Location of Display CR Display	TSC/EOF Location	Schedule of Installation or Upgrade
Boric Acid Charging Flow	None See Note 14	0	N/A	N/A	N/A	NO	NO	NO	N/A
Centrifugal Charging Pump Flow	D2	1 per unit FT-917	N/A Figure 6.3-1, Sh. 1	0-1000 gpm	EQ, QA Note 16	Non 1E Battery Backed	Indication	No	INST Scheduled to be upgraded for EQ by end of first refueling outage.
Safety Injection Flow (HPI System)	D2	1 per train FT-918A FT-922A	N/A Figure 6.3-1, Sh. 3	0-800 gpm	EQ, QA Note 16	Non 1E Battery Backed	SPDS Indication (All)	YES	INST Scheduled to be upgraded for EQ by end of first refueling outage.
Flow in LPI System	D2	1 per train FT-618A FT-619A	N/A Figure 5.4-6	0-5500 gpm	EQ, QA Note 16	Non 1E Battery Backed	SPDS Indication (All)	YES	INST Scheduled to be upgraded for EQ by end of first refueling outage.
RWST Level	A1, D2	4 per unit LT-930 to 933	Yes Figure 7.1-3, Sh. 16	0-100%	EQ, SQ, QA	1E	SPDS Indication (All)	YES	INST
Reactor Coolant Pump Status (Motor Current)	D2	1 per motor 1PCPX1 1PCPX2 1PCPX3 1PCPX4	N/A At Switchgear	0-800 amp	None	Non 1E	Indication (All)	NO	INST
Pressurizer PORV Status	D2	1 per valve PCV-455A PCV-456	N/A At valve	Closed/ Not Closed	EQ, SQ, QA	1E	SPDS Indication (All)	YES	INST
RCS Safety Valve Status	D2	1 per valve 8010A 8010B 8010C	N/A At valve	Closed/ Not Closed	EQ, SQ, QA	1E	SPDS Indication (All)	YES	INST
Pressurizer Level	A1, B1, D2	3 per unit LT-459 LT-460 LT-461	Yes Figure 7.1-3, Sh. 3	0-100%	EQ, SQ, QA	1E	SPDS Recorder Indication (All)	YES	INST

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TABLE 032.110-1

Requested Information for Variables in
Table 2 of Reg. Guide 1.97 Rev. 2
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Variable	Type/ Category	Quantity Tag Numbers	Redundance and Sensor Location (15)	Instrument Range	QA and Qualification	Power Supply	Location of Display CR Display	YSC/EOF Location	Schedule of Installation or Upgrade
Pressurizer Heater Breaker Position	D3 See Note 8	1 per heater bank PCPR1 PCPR2 PCPR3 PCPR4	N/A At Breaker	Breaker Closed/ Tripped	EQ, SQ, QA	1E	SPDS Indication (All)	YES	INST
Pressurizer Relief Tank Level	C3, D3	1 per unit LT-470	N/A Figure 5.1-1, Sh. 2	0-100% of useable volume	None	Non 1E Battery Backed	SPDS Indication (All)	YES	INST
Pressurizer Relief Tank Temperature	C3, D3	1 per unit TE-468	N/A Figure 5.1-1, Sh. 2	0-400 ^{OF}	None	Non 1E Battery Backed	SPDS Indication (All)	YES	INST
Pressurizer Relief Tank Pressure	C3, D3	1 per unit PT-469	N/A Figure 5.1-1, Sh. 2	0-100 psig	None	Non 1E Battery Backed	SPDS Indication (All)	YES	INST
Steam Generator Water Level (WR)	A1, B1, D2, B2	1 per Steam Generator LT-501 LT-502 LT-503 LT-504	Yes Figure 7.1-3, Sh. 3	0-100%	EQ, SQ, QA Note 6	1E	SPDS Recorder Indicator (All)	YES	INST
Steamline Pressure (Steam Generator Pressure)	A1, B1, D2	3 per loop PT-514 to 516 PT-524 to 526 PT-534 to 536 PT-544 to 546	Yes Figure 7.1-3, Sh. 7	0-1300 psig	EQ, SQ, QA	1E	SPDS Indication (All)	YES	INST
Steam Gen. Safety Valve Status	D2, E2	1 per valve PV-2444A to E PV-2445A to E PV-2446A to E PV-2447A to E	N/A At valve	Closed/ Not Closed	EQ, SQ, QA Note 16	Non 1E Battery Backed	SPDS (All)	YES	Scheduled to be installed by end of first refueling outage.
Steam Gen. PORV Status	D2, E2	1 per valve PV-2325 thru PV-2328	N/A At valve	Closed/ Not Closed	EQ, SQ, QA	1E	SPDS Indication (All)	YES	INST

TABLE 032.110-1

Requested Information for Variables in
Table 2 of Reg. Guide 1.97 Rev. 2
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Variable	Type/ Category	Quantity Tag Numbers	Redundance and Sensor Location (15)	Instrument Range	QA and Qualification	Power Supply	Location of Display		Schedule of Installation or Upgrade
							CR Display	TSC/EOF Location	
Main Feedwater Flow	D3	1 per Steam Generator FT-511 FT-521 FT-531 FT-541	N/A Figure 10.4-9, Sh. 2	0-5x10 ⁶ lb/hr	None	Non 1E Battery Backed	SPDS Indication Recorder (All)	YES	INST
Aux. Feedwater Flow	A1, B1 D2	2 per Steam Generator FT-2463 A&B FT-2464 A&B FT-2465 A&B FT-2466 A&B	Yes Figure 7.1-3, Sh. 4	0-550 gpm	EQ, SQ, QA	1E	SPDS Indication (All)	YES	INST
CST Water Level	A1, D2	2 per unit LT-2478 LT-2479	Yes Figure 7.1-3, Sh. 16	0-100%	EQ, SQ, QA	1E	SPDS Indication (All)	YES	INST
Containment Spray Flow	D2	1 per pump FT-4772-1&2 FT-4773-1&2	N/A Figure 7.1-3, Sh. 6	0-4000 gpm	EQ, SQ, QA	1E	SPDS Indication (All)	YES	INST
Heat Removal by Containment Fan Heat Removal System	None See Note 10	0	N/A	N/A	N/A	N/A	No	NO	N/A
Containment Atmosphere Temperature	D2	5 per unit TE-5400 to TE-5404	N/A Figure 7.1-3 Sh. 2, 4 & 5	0-300°F	EQ, SQ, QA	1E	SPDS Recorder (All) Average Indication for Temperature	YES	INST
Containment Sump Water Temperature	NO See Note 11	0	N/A	N/A	NO	NO	NO	NO	N/A
CVCS Makeup Flow	D2	1 per unit FT-121	N/A Figure 9.3-10, Sh. 3	0-200 gpm	EQ, QA Note 16	Non 1E Battery Backed	SPDS Indication (All)	YES	INST

INST
Scheduled to be
upgraded for EQ by end
of first refueling
outage.

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TABLE 032.110-1

Requested Information for Variables in
Table 2 of Reg. Guide 1.97 Rev. 2
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Variable	Type/ Category	Quantity Tag Numbers	Redundance and Sensor Location (15)	Instrument Range	QA and Qualification	Power Supply	Location of Display CR Display	TSC/EOF Location	Schedule of Installation or Upgrade
CVCS Letdown Flow	D2	1 per unit FT-132	N/A Figure 9.3-10, Sh. 2	0-200 gpm	EQ, QA Note 16	Non IE Battery Backed	SPDS Indication (All)	YES	INST Scheduled to be upgraded for EQ by end of first refueling outage.
Volume Control Tank Level	D2	1 per unit LT-112	N/A Figure 9.3-10, Sh. 3	0-100% of useable volume	None	Non IE Battery Backed	SPDS Indication (All)	YES	INST
CCW Header Temperature	D2	1 per header TE-4530 TE-4534	N/A Figure 9.2-3, Sh. 1	0-200°F	EQ, SQ, QA	IE	SPDS Indication (All)	YES	INST
CCW Flow	D2	1 per train FT-4536A FT-4537A	N/A Figure 7.1-3, Sh. 8	0-20000 gpm	EQ, SQ, QA	IE	SPDS Indication Recorder (All)	YES	INST
High Level Radioactive Liquid Tank Level	D3	1 per tank X-LT-1001 LT-1003	N/A Figure 11.2-2 & 11.2-3	0-100% of useable volume	None	Non IE	See Note 12	NO	INST
Radioactive Gas Holdup Tank Pressure	D3	1 per tank X-PT-1036 to 1039 X-PT-1052 to 1057	N/A Figure 11.3-1	0-150 psig	None	Non IE	See Note 12	NO	INST
CR Vent Damper Position (Emergency Ventilation Damper Position)	D2	1 per damper X-MV-5826, 5829, 5837, 5838, 5839, 5840, HV-5847, 5848, 5851, 5853, PV-5855, PV-5856	N/A At damper	Closed/ Not Closed	EQ, SQ, QA	IE	SPDS Indication (All)	YES	INST

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TABLE 032.110-1

Requested Information for Variables in
Table 2 of Reg. Guide 1.97 Rev. 2
(Sheet 8 of 10)

Variable	Type/ Category	Quantity Tag Numbers	Redundance and Sensor Location (15)	Instrument Range	QA and Qualification	Power Supply	Location of Display CR YSC/EOF Display Location		Schedule of Installation or Upgrade
AC & DC Bus Availability	D2	1 per bus 1EA1, 1EA2, 1EB1, 1EB2, 1EB3, 1EB4, 1PC1, 1PC2, 1PC3, 1PC4, 1EC1, 1EC2, 1EC3, 1EC4, 1EC5, 1EC6 1ED1, 1ED2, 1ED3, 1ED4	N/A At local switchgear & MCC's	0-9000 VAC 0-600 VAC 110-130 VAC 100-150 VDC	EQ, SQ, QA	1E	SPDS-All Indication 1EA1 Voltage 0-9000V & Current 0-2000A 1EA2 Frequency 55-65HZ 1ED1 Voltage 100-150 VDC 1ED2 Current -200 to 1ED3 +600A 1ED4 Indication Lights for 1EB1, 1EB2, 1EB3, 1EB4	YES	INST
CR (Area Radiation)	E2	2 per plant XRE-6281 XRE-6282	N/A Table 12.3-8 Sh. 6	$10^{-1} - 10^4$ mR/hr	QA Note 16	Non 1E See Note 7	SPDS Rad. Mon. (All)	YES	INST
RHR Pump Room (Area Radiation)	E2	1 per room RE-6260A RE-6260B	N/A Table 12.3-8, Sh. 2	$10^{-1} - 10^4$ mR/hr	EQ, QA Note 16	Non 1E See Note 7	SPDS Rad. Mon. (All)	YES	INST
PASS Room (Area Radiation)	E2	1 per room RE-6261	N/A Table 12.3-8, Sh. 3	$10^{-1} - 10^4$ mR/hr	EQ, QA Note 16	Non 1E See Note 7	SPDS Rad. Mon. (All)	YES	INST
Plant Vent Stack Sample (Area Radiation)	E2	1 per area RE-6259	N/A Table 11.5-1, Sh. 1 (Same location as X-RE-5770 A&B)	$10^{-1} - 10^4$ mR/hr	EQ, QA Note 16	Non 1E See Note 7	SPDS Rad. Mon. (All)	YES	INST
Hot Lab (Area Radiation)	E2	1 per plant X-RE-6283	N/A Table 12.3-8, Sh. 5	$10^{-1} - 10^4$ mR/hr	EQ, QA Note 16	Non 1E See Note 7	SPDS Rad. Mon. (All)	YES	INST
Common Plant Vent including Containment Purge, Auxiliary Building and other areas Noble Gases, Vent Flow, Particulates, & Haolgens	C2, E2	1 per vent stack X-RE-5570 A&B	N/A Table 11.5-1, Sh. 1	$10^{-7} - 10^5$ μ Ci/cc 0-140,000 CFM	EQ, QA Note 16	Non 1E See Note 7	SPDS Rad. Mon. (All)	YES	INST

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TABLE 032.110-1

Requested Information for Variables in
Table 2 of Reg. Guide 1.97 Rev. 2
(Sheet 9 of 10)

Variable	Type/ Category	Quantity Tag Numbers	Redundance and Sensor Location (15)	Instrument Range	QA and Qualification	Power Supply	Location of Display		Schedule of Installation or Upgrade
							CR Display	TSC/EOF Location	
Reactor Shield Building Annulus	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not in design
Main Steamline Radiation	A2, B2, C2, E2	1 per steamline RE-2325 RE-2326 RE-2327 RE-2328	N/A Table 11.5-1, Sh. 3	10^{-1} - 10^3 μ Ci/cc	EQ, QA Note 3 & 16	Non 1E See Note 7	SPDS Rad. Mon. (All)	YES	INST
Radiation Exposure Meters	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Environs Radiation	E2	As Required N/A Portable	N/A *	As Required	None	Self Contained Battery	NO	NO	*See CPSES Emergency Plan
Wind Direction See Note 9	E2	3 per plant X-ZY-4115 X-ZY-4116 X-ZY-4126	N/A Meterological Towers	0-540 degrees	None	Non 1E Battery Backed	SPDS Rad. Mon. Recorder (All)	YES	INST
Wind Speed See Note 9	E2	3 per plant X-SY-4117 X-SY-4118 X-SY-4128	N/A Meterological Towers	0-100 mph	None	Non 1E Battery Backed	SPDS Rad. Mon. Recorder (All)	YES	INST
Atmospheric Stability See Note 9	E2	3 per plant X-TY-4119 X-TY-4120 X-TY-4130	N/A Meterological Towers	-20 to 20 ⁰ F 0-100 DEG	None	Non 1E Battery Backed	SPDS Rad. Mon. Recorder (All)	YES	INST
Post Accident Sampling System	E3	1 per unit PASS	N/A *		EQ, SQ, QA on Electric isolation valves None for rest	1E for valves Non 1E for rest See Note 7	Chem Lab	NO	INST *See description in FSAR Section II.B.3.

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TABLE 032.110-1

Requested Information for Variables in
Table 2 of Reg. Guide 1.97 Rev. 2
(Sheet 10 of 10)

<u>Variable</u>	<u>Type/ Category</u>	<u>Quantity Tag Numbers</u>	<u>Redundance and Sensor Location (15)</u>	<u>Instrument Range</u>	<u>QA and Qualification</u>	<u>Power Supply</u>	<u>Location of Display</u>		<u>Schedule of Installation or Upgrade</u>
							<u>CR Display</u>	<u>TSC/EOF Location</u>	
Primary Coolant and Sump				Grab Sample					
Gross Activity				10 μ Ci/ml to 10 Ci/ml					
Gamma Spectrum				(Isotopic Analysis)					
Boron Content				0.5 to 6000 ppm					
Chloride Content				0.05 to 20 ppm					
Dissolved Hydrogen or Total Gas				0.5 to 2000 cc(STP)/kg					
Dissolved Oxygen									
ph				0.5 to 20 ppm					
				1 to 14					
Containment Air				Grab Sample					
Hydrogen Content				0.1 to 10%					
Oxygen Content				0.1 to 30%					
Gamma Spectrum				(Isotopic analysis)					

CPSES/FSAR

TABLE 032.110-3

Notes for Tables 032.110-1 and 032.110-2
(Sheet 1 of 3)

Instrumentation Summary Data

1. Instrumentation ranges may vary from Regulatory Guide 1.97 Revision 2. These ranges are in compliance with General Design Criteria 13.
2. This is an additional variable, not required by Regulatory Guide 1.97 Revision 2, that CPSES plans to use in assessing plant and environs conditions during and following an accident.
3. Main Steamline Radiation, Condenser Off-Gas Radiation, and Steam Generator Blowdown Radiation are only required for (and qualified for) steam generator tube rupture detection.
4. The Source Range and Intermediate Range Neutron Flux detectors are not qualified for the accident environment inside containment. The instrumentation in the main control room is non-1E with data supplied through isolation devices.
5. Control Rod Position signals do not exist for input to the ERF Computer. Control Rod Position Indication is available on the Main Control Boards and Plant Process Computer.
6. Steam generator water level (WR) is utilized in conjunction with AFW flow for determining when to terminate SI for secondary breaks outside containment. Steam generator water level (WR) is only used for secondary breaks outside containment (the hostile environment that results from secondary breaks inside containment induces unacceptable errors). SI termination for secondary breaks inside containment is based on AFW flow.
7. Powered from 1E bus through isolation transformer.
8. Breaker position and bus voltage are used to monitor operation.
9. Telephone conversation with National Weather Service will be used as a backup.
10. CPSES does not take credit for this system during an accident.
11. Containment air temperature and RHR heat exchanger temperature provide equivalent information.
12. These instruments provide indication at the local waste processing panels and annunciation from the panels is provided in the control room to alarm when there is a potential for over filling the tanks.

CPSES/FSAR

TABLE 032.110-3

Notes for Tables 032.110-1 and 032.110-2
(Sheet 2 of 3)

Instrumentation Summary Data

13. The Containment Water Level (WR) covers the entire range of expected water level in the Containment for post accident conditions. Therefore, Containment Water Level (NR) is not considered as required for accident monitoring.
14. Boric acid charging flow at CPSES same as High Head Safety Injection Flow. Safety Injection Flow is provided by Centrifugal Pump Flow, Safety Injection Flow, and RHR Flow.
15. Redundancy is listed as N/A for all Category 2 and 3 instrument channels since it is not required (although redundancy may, in fact, exist). A response of "Yes" means that separate safety-related trains are used and the redundant channels, including sensors, have the required separation and independence.
16. The CPSES QA Program has been applied during initial procurement only.

17. Per B. J. Youngblood's letter of 10-7-83, the schedule for the Reactor Vessel Water Level is being re-evaluated. An updated schedule and a justification for that schedule will be submitted in response to Mr. Youngblood's letter.

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