CATEGORY 1

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RECIP.NAME RECIPIENT AFFILIATION
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SUBJECT: Provides info to support resolution of NRC open issue of licensee's proposed Improved Tech Specs.Info provides basis for listed note re instrumentation in SR 3.5.1.13.

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SUSQUEHANNA STEAM ELECTRIC STATION
SUBMITTAL OF INFORMATION
TO SUPPORT CLOSURE OF ITS OPEN ITEM
PLA-4901

Docket Nos. 50-387
and 50-388

Reference: (1) NRC Letter to PP&L, "Susquehanna Steam Electric Station, Units 1 and 2 (TAC Nos. M98331 and M98332)," dated December 8, 1997.

(2) BWR Owner's Group Licensing Topical Report NEDO-32291, "System Analyses for Elimination of Selected Response Time Testing Requirements," dated January 1994.

(3) PP&L Letter PLA-4639, "Third Submittal of Additional Information Supporting Proposed Amendment Nos. 205 and 168 : Clarification of the Scope of Response Time Testing," dated September 2, 1997.

This letter provides information to support resolution of an NRC open issue on PP&L's proposed Improved Technical Specifications. This information provides the basis for the note regarding instrumentation in SR 3.5.1.13, as included in our proposed Improved Technical Specifications submittal. This note states:

"Instrumentation response time is based on historical response time data."

Background

Amendments Nos. 171 and 144 for Units 1 and 2, respectively provided for exemption of response time testing of ECCS instrumentation channels consistent with Reference No. 2. Although testing is not required for the instrumentation for ECCS functions, the non-instrumentation portion still requires response time testing. To determine the total response time, an assumed administrative value for the exempted instrumentation is added to the measured response time of the remainder of the system to obtain a total response time. Administrative values assumed for ECCS instrumentation were derived from historical data because manufacturer's test data is not available. Thus, for all ECCS instrumentation, the ITS statement is accurate.

A001

Enclosed Information

The enclosed test data demonstrates that the administrative values for ECCS instrumentation are conservative relative to the historical test results. There is no instance in which historical response time data has exceeded the administrative value.

Furthermore, instrumentation response times are on the order of hundredths of the total system response time limits defined for the ECCS functions (see Reference No. 3 for a summary table of these functions and limits). This is relevant because the remaining components of the ECCS response time calculation can be timed via individuals with stopwatches (diesel start, pump start, etc.) such that the accuracy of these times is subject to stopwatch accuracy and human performance. The accuracy of these times are much less than equipment used to time sensor and relay RTT due to stopwatch accuracy and human accuracy.

For each of the ECCS functions, Attachment 1 lists the instrument manufacturer, model number, tag number, administrative value and a specific reference to the detailed historical test data continued in Attachment 2. Separate tables are provided for the Core Spray, LPCI and HPCI functions of interest, consistent with the ECCS summary data provided in the attachment to Reference No. 3.

The historical test data is provided in Attachment 2. Separate tables are provided for the Unit 1 and Unit 2 Core Spray, LPCI and HPCI functions of interest, consistent with the ECCS summary data provided in the attachment to Reference No. 3.

Note that this information is a final version of the preliminary information provided to you on May 7th. Based on our discussion on May 21, 1998, we understand that this preliminary data appears satisfactory to resolve the open item. At your request, the information has been reformatted to facilitate your final review.

We are anxious to expedite resolution of this issue, in order to minimize any possible impacts on the ITS approval schedule. Refer any additional questions to Ms. K.R. Leone at (610) 774-4023.

Sincerely,

G.T. Jones

Attachments

copy: NRC Region I
Mr. K. Jenison, NRC Sr. Resident Inspector - SSES
Mr. V. Nerses, NRC Sr. Project Manager - Rockville
Mr. K. Kerns, PA DEP/BRP

ATTACHMENT 1 TO PLA-4901

Manufacturer and Model Numbers for ECCS Sensors and Relays

Core Spray System (1 of 1)

Function	Instrumentation Identification		Response Time Data	
	Manufacturer/ Model No.	Tag Nos.	Administrative Value	Comparison to Historical Response Time Values in Attachment 2
[1a] Core Spray - Reactor Vessel Water Level - Low Low Low Level 1	GE HFA Barton 288A (range -150 - 0 - +60" wc)	E21A1K7A/B E21A1K8A/B E21A2K7A/B E21A2K8A/B LIS-B21-1N031A/B/C/D LIS-B21-2N031A/B/C/D	500 ms is assumed for the core spray reactor vessel water level instrument channel	Refer to item 1.1 in U1 and U2 Core Spray tables for historical response time test data for channels A through D Refer to item 1.3 in U1 and U2 tables for a comparison of the longest level/pressure value for each channel to the 500 ms administrative value.
[1b] Core Spray - Drywell Pressure High	GE HFA Static Inc. 12N-AA4-X10TT	E21A1K5A/B E21A1K6A/B E21A2K5A/B E21A2K6A/B PS-E11-1N011A/B/C/D PS-E11-2N011A/B/C/D	500 ms is assumed for the core spray drywell pressure - high instrument channel	Refer to item 1.2 in U1 and U2 Core Spray tables for historical response time test data for channels A through D. Refer to item 1.3 in U1 and U2 tables for a comparison of the longest level/pressure value for each channel to the 500 ms administrative value.
[1c] Core Spray - Reactor Vessel Steam Dome Pressure Low	GE HFA GE HMA Barton 288A (range 0-500psi) Barksdale B1T-M12SS-GE	E21A1K19A/B E21A1K9A/B E21A2K19A/B E21A2K9A/B E21A1K32A/B E21A1K33A/B E21A2K32A/B E21A2K33A/B PIS-B21-1N021B/D PIS-B21-2N021B/D PS-B21-1N021A/C PS-B21-2N021A/C	500 ms is assumed for the core spray reactor vessel steam dome pressure - low instrument channel	Refer to item 2 in U1 and U2 Core Spray tables for historical response time test data for channels A through D. Refer to item 2.1 in U1 and U2 Core Spray tables for a comparison of the longest division 1/division 2 value for each channel compared to the to the 500 ms + 500 ms administrative value.

Low Pressure Coolant Injection Mode of RHR System (1 of 3)

Function	Instrumentation Identification		Response Time Data	
	Manufacturer/ Model No.	Tag Nos.	Administrative Value	Comparison to Historical Response Time Values in Attachment 2
[2a] LPCI - Reactor Vessel Water Level - Low Low Low Level 1	GE HFA Barton 288A (range -150 - 0 - +60" wc)	E11A1K7A/B E11A1K8A/B E11A2K7A/B E11A2K8A/B E21A1K7A/B E21A1K8A/B E21A2K7A/B E21A2K8A/B LIS-B21-1N031A/B/C/D LIS-B21-2N031A/B/C/D	500 ms is assumed for the LPCI reactor vessel water level instrument channel	Refer to item 1.1 in U1 and U2 RHR tables for historical response time test data for channels A through D. Refer to item 1.3 in U1 and U2 tables for a comparison of the longest level/pressure value for each channel to the 500 ms administrative value.
[2b] LPCI - Drywell Pressure High	GE HFA Static Inc. 12N-AA4-X10TT	E11A1K5A/B E11A1K6A/B E11A2K5A/B E11A2K6A/B PS-E11-1N011A/B/C/D PS-E11-2N011A/B/C/D	500 ms is assumed for the LPCI drywell pressure - high instrument channel	Refer to item 1.2 in U1 and U2 RHR tables for historical response time test data for channels A through D. Refer to item 1.3 in U1 and U2 tables for a comparison of the longest level/pressure value for each channel to the 500 ms administrative value.

Low Pressure Coolant Injection Mode of RHR System (2 of 3)

Function	Instrumentation Identification		Response Time Data	
	Manufacturer/ Model No.	Tag Nos.	Administrative Value	Comparison to Historical Response Time Values in Attachment 2
[2c(1)] LPCI - Reactor Vessel Steam Dome Pressure Low	GE HFA	E11A1K105A/B E11A1K44A/B E11A1K47A/B E11A1K90A/B E11A1K91A/B E11A2K105A/B E11A2K44A/B E11A2K90A/B E21A1K19A/B E21A1K9A/B E21A2K19A/B E21A2K9A/B	500 ms is assumed for the LPCI vessel steam dome pressure - low instrument channel	Refer to item 2 in U1 and U2 RHR tables for historical response time test data for channels A through D. Refer to item 2.1 in U1 and U2 RHR tables for a comparison of the longest division 1/division 2 value for each channel compared to the to the 500 ms + 500 ms administrative value.
	GE HMA	E11A2K47A/B E11A2K91A/B		
	Barton 288A (range 0-500 psi)	PIS-B21-1N021B/D PIS-B21-2N021B/D		
	Barksdale B1T-M12SS-GE	PS-B21-1N021A/C PS-B21-2N021A/C		

Low Pressure Coolant Injection Mode of RHR System (3 of 3)

Function	Instrumentation Identification		Response Time Data	
	Manufacturer/ Model No.	Tag Nos.	Administrative Value	Comparison to Historical Response Time Values in Attachment 2
[2c(2)] LPCI - Reactor Vessel Steam Dome Pressure Low; Recirculation Valve Closure	GE HFA	E11A1K35A/B	500 ms is assumed for the LPCI vessel steam dome pressure - low instrument channel	Refer to the subsection of U1 and U2 RHR tables entitled "LPCI Low Pressure Permissive Discharge Valve Closure" for historical response time test data for channels A through D.
	GE HMA	E11A1K31A/B E11A1K32A/B E11A1K36A/B E11A2K31A/B E11A2K32A/B E11A2K35A/B E11A2K36A/B		
	Barton 288A (range 0-500 psi)	PIS-B21-1N021B/D PIS-B21-2N021B/D		
	Barksdale B1T-M12SS-GE	PS-B21-1N021E/G PS-B21-2N021E/G		

High Pressure Coolant Injection (1 of 1)

Function	Instrumentation Identification		Response Time Data	
	Manufacturer/ Model No.	Tag Nos.	Administrative Value	Comparison to Historical Response Time Values in Attachment 2
[3a] HPCI - Reactor Vessel Water Level - Low Low Level 2	GE HFA	E41A1K41 E41A1K42 E41A2K41 E41A2K42	500 ms is assumed for the HPCI reactor vessel water level instrument channel	Refer to item 1.1 in U1 and U2 HPCI tables for historical response time test data for channels A through D.. Refer to item 1.3 in U1 and U2 tables for a comparison of the longest level/pressure value for each channel to the 500 ms administrative value.
	GE HMA	E21A1K34A E21A1K35A E21A2K34A E21A2K35A E41A1K4 E41A2K4		
	Barton 288A (range -150 - 0 - +60" wc))	LIS-B21-1N031A/B/C/D LIS-B21-2N031A/B/C/D		
[3b] HPCI - Drywell Pressure - High	GE HFA	E21A1K5A/B E21A1K6A/B E21A2K5A/B E21A2K6A/B	500 ms is assumed for the HPCI drywell pressure - high instrument channel	Refer to item 1.2 in U1 and U2 HPCI tables for historical response time test data for channels A through D. Refer to item 1.3 in U1 and U2 HPCI tables for a comparison of the longest level/pressure value for each channel to the 500 ms administrative value.
	GE HMA	E41A1K5 E41A1K55 E41A2K5 E41A2K55		
	Static Inc. 12N-AA4-X10TT	PS-E11-1N011A/B/C/D PS-E11-2N011A/B/C/D		

ATTACHMENT 2 TO PLA-4901

Historical Response Time Test Data

CORE SPRAY UNIT 1
(1 of 2)

	A51785 6/28/95	A34303 4/7/94	A21043 6/5/92	A04497 12/27/90	A91457 6/30/89
1.1 RX VESSEL WATER LEVEL LOW LEVEL 1 (mSec)					
a LIS-B21-1N031A	0	230	290	130	55
b E21A1K7A	57	65	60	60.5	65
CH A (a+b)	57	295	350	190.5	120
c LIS-B21-1N031B	65	75	154	139	60
d E21A1K7B	49	60	45	44	52
CH B (c+d)	114	135	199	183	112
c LIS-B21-1N031C	5	110	231	20	257
f E21A1K8A	50	55	53	51.5	55.5
CH C (c+f)	55	165	284	71.5	312.5
g LIS-B21-1N031D	0	130	160	43	194
h E21A1K8B	48	62.5	50	49	59
CH D (g+h)	48	192.5	210	92	253
1.2 DRYWELL PRESSURE HIGH (mSec)					
a PS-E11-1N011A	95	80	90	59	55
b E21A1K5A	48	62.5	58	55.5	60
CH A (a+b)	143	142.5	148	114.5	115
c PS-E11-1N011B	50	45	40	59	345
d E21A1K5B	45	47.5	42	43	39
CH B (c+d)	95	92.5	82	102	384
e PS-E11-1N011C	38	40	52	31	55
f E21A1K6A	55	57.5	57	57	61
CH C (e+f)	93	97.5	109	88	116
g PS-E11-1N011D	55	50	40	63	10
h E21A1K6B	48	55	49	50	53
CH D (g+h)	103	105	89	113	63
1.3 THE LONGEST LEVEL/PRESSURE READINGS ARE THEN DETERMINED (sec)					
CH A	0.143	0.295	0.35	0.191	0.12
CH B	0.114	0.135	0.199	0.183	0.384
CH C	0.093	0.165	0.284	0.088	0.313
CHD	0.103	0.193	0.21	0.113	0.253
ADMIN VALUE	0.5	0.5	0.5	0.5	0.5

CORE SPRAY UNIT 1
(2 of 2)

2. REACTOR STEAM DOME PRESSURE LOW (mSec)

a PS-B21-1N021A	3	27.5	13	24	38
b E21A1K9A	54	55	53	55	56
c E21A1K32A	30	35	32	43	33
d CH A (longer time of (b or c) + a	57	82.5	66	79	94
e PIS-B21-1N021B	22	22.5	48	28	49
f E21A1K9B	66	67.5	64	67	63
g E21A1K32A	30	32.5	33	34	33
h CH B (longer time of (f or g) + e	88	90	112	95	112
i PS-B21-1N021C	15	20	18	28	25
j E21A1K19A	52	50	56	57	60
k E21A1K33A	30	37.5	29	29	32
l CH C (longer time of (j or k) + i	67	70	74	85	85
m PIS-B21-1N021D	3	165	8	8	28
n E21A1K19B	60	72.5	64	65	64
o E21A1K33B	30	30	30	35	31
p CH D (longer time of (n or o) + m	63	237.5	72	73	92

2.1 DETERMINATION OF LONGEST DIV I AND DIV 2 CHANNELS (sec)

1.3	A/C	0.143	0.295	0.35	0.191	0.313
2.d or 2.l	A/C	0.067	0.083	0.074	0.085	0.094
	TOTAL	0.21	0.378	0.424	0.276	0.407
	ADMIN VALUE--TOTAL	1	1	1	1	1
1.3	B/D	0.114	0.193	0.21	0.183	0.384
2.h or 2p	B/D	0.088	0.238	0.112	0.095	0.112
	TOTAL	0.202	0.431	0.322	0.278	0.496
	ADMIN VALUE--TOTAL	1	1	1	1	1

RHR UNIT 1 (1 of 3)

	A51785	A34303	A21043	A04497	A91457
	6/28/95	4/7/94	6/5/92	12/27/90	6/30/89
1.1 RX VESSEL WATER LEVEL LOW LEVEL 1 (mSec)					
a LIS-B21-1N031A	0	230	290	130	55
b E21A1K7A	57	65	60	60.5	65
c E11A1K7A	55	55	56	54.5	58
CH A (a+b+c)	112	350	406	245	178
d LIS-B21-1N031B	65	75	154	139	60
e E21A1K7B	49	60	45	44	52
f E11A1K7B	60	60	60	59	55
CH B (d+e+f)	174	195	259	242	167
g LIS-B21-1N031C	5	110	231	20	257
h E21A1K8A	50	55	53	51.5	55.5
i E11A1K8A	55	60	60	59	61
CH C (g+h+i)	110	225	344	130.5	373.5
j LIS-B21-1N031D	0	130	160	43	194
k E21A1K8B	48	62.5	53	49	59
l E11A1K8B	70	60	62	57.5	57
CH D (j+k+l)	118	252.5	275	149.5	310
1.2 DRYWELL PRESSURE HIGH (mSec)					
a PS-E11-1N011A	72	60	90	49.5	42
b E11A1K5A	60	55	56	57	57
CH A (a+b)	132	115	146	106.5	99
c PS-E11-1N011B	35	30	40	62	348
d E11A1K5B	50	57.5	56	52	55
CH B (c+d)	85	87.5	96	114	403
e PS-E11-1N011C	5	10	52	20	55
f E11A1K6A	55	55	57.25	57.5	56
CH C (e+f)	60	65	109.25	77.5	111
g PS-E11-1N011D	70	30	40	67	10
h E11A1K6B	55	55	54	53	50
CH D (g+h)	125	85	94	120.5	60
1.3 THE LONGEST LEVEL/PRESSURE READINGS ARE THEN DETERMINED (sec)					
CH A	0.132	0.35	0.41	0.245	0.178
CH B	0.174	0.195	0.26	0.242	0.403
CH C	0.11	0.225	0.34	0.131	0.374
CHD	0.125	0.253	0.28	0.15	0.31
ADMIN VALUE	0.5	0.5	0.5	0.5	0.5

RHR UNIT 1
(1 of 3)

2. REACTOR STEAM DOME PRESSURE LOW(mSec)

2.1 CH A					
a PS-B21-1N021A	3	27.5	13	24	38
b E21A1K9A	54	55	53	55	56
c E11A1K90A	50	55	55	57.5	54.5
d E11A1K91A	39	35	39	42	38.5
e Longer time of c or d	50	55	55	57.5	54.5
f E11A1K44A	55	55	54	56	49
CH A (a+b+e+f)	162	192.5	175	192.5	197.5
2.2 CH B					
a PIS-B21-1N021B	22	22.5	48	28	49
b E21A1K9B	66	67.5	64	67	63
c E11A1K90B	62	70	65	66	53
d E11A1K91B	40	37.5	37	43	26
e Longer time of c or d	62	70	65	66	53
f E11A1K44B	53	58	57	54	52
CH A (a+b+e+f)	203	218	234	215	217
2.3 CH C					
a PS-B21-1N021C	15	20	18	28	25
b E21A1K19A	52	50	56	57	60
c E11A1K47A	29	35	44	42	65
d E11A1K105A	49	57.5	58	60.5	63
e Longer time of c or d	49	57.5	58	60.5	65
f E11A1K44A	55	55	54	56	49
CH A (a+b+e+f)	171	182.5	186	201.5	199
2.4 CH D					
a PIS-B21-1N021D	3	165	8	8	28
b E21A1K19B	60	72.5	64	65	64
c E11A1K47B	35	45	48	48	79
d E11A1K105B	50	55	56	58	42
e Longer time of c or d	50	55	56	58	79
f E11A1K44B	53	58	57	54	52
CH A (a+b+e+f)	166	350.5	185	185	223

2.1 DETERMINATION OF LONGEST DIV I AND DIV 2 CHANNELS (sec)

1.3 A/C	0.132	0.35	0.41	0.245	0.374
2 A/C	0.171	0.193	0.19	0.202	0.199
TOTAL	0.303	0.543	0.6	0.447	0.573
ADMIN VALUE--TOTAL	1	1	1	1	1
1.3 B/D	0.174	0.253	0.28	0.242	0.403
2 B/D	0.203	0.351	0.23	0.215	0.223
TOTAL	0.377	0.604	0.51	0.457	0.626
ADMIN VALUE--TOTAL	1	1	1	1	1

RHR UNIT 1
(3 of 3)

LPCI LOW PRESSURE PERMISSIVES DISCHARGE VALVE CLOSURE (msec)

	95	93	92	90	89
SI-180-430	A42510	A32117	A14108	A00459	A91277
	5/5/95	9/16/93	4/30/92	11/2/90	5/26/89
SI-180-421	A42501	A33985	A14097	A00449	A91256/ A91899
	4/12/95	10/19/93	4/9/92	10/10/90	4/27/89/ /6/14/89
SI-180-411	A42500	A32103	A14096	A00448	A91898/ A91255
	3/29/95	10/4/93	3/28/92	10/3/90	6/10/89/ /4/26/89
a PS-B21-1N021E	40	15	25	20	15.5
b E11A1K31A	25	27	27	28	28
c E11A1K35A	37	41	36	40	33
d Longer time of b or c	37	41	36	40	33
e CH E (a+d)	77	56	61	60	48.5
a PS-B21-1N021G	45	20	28	16	16
b E11A1K32A	25	26	27	28	23
c E11A1K36A	29	26	33	29	30
d Longer time of b or c	29	26	33	29	30
e CH G(a+d)	74	46	61	45	46
a PS-B21-1N021B	15	35	18	28	44
b E11A1K31B	30	27	31	30	30
c E11A1K35B	30	33	31	30	30
d Longer time of b or c	30	33	31	30	30
e CH B (a+d)	45	68	49	58	74
a PS-B21-1N021D	3	15	27	2	-1
b E11A1K32B	30	29	29	31	29
c E11A1K36B	31	32	34	31	28
d Longer time of b or c	31	32	34	31	29
e CH D (a+d)	34	47	61	33	28

HPCI UNIT 1 (1 of 1)

	A51785	A34043	A21043	A04497	A91457
	6/28/95	4/7/94	6/5/92	12/27/90	6/30/89
1.1 RX VESSEL WATER LEVEL LOW LEVEL 1 (mSec)					
a LIS-B21-1N031A (SW 2A)	90	250	180	173	138.5
b E21A1K34A	25	30	26	19	22
c E41A1K4	20	30	21	30	31
CH A (a+b+c)	135	310	227	222	191.5
d LIS-B21-1N031B (SW 2B)	0	95	154	85	288
e E21A1K41	60	57	52	47	46
f E41A1K4	20	30	21	30	31
CH B (d+e+f)	80	182	227	162	365
g LIS-B21-1N031C (SW 2A)	220	62.5	205	120	100
h E21A1K35A	25	33	33	21	23
i E41A1K4	20	30	21	30	31
CH C (g+h+i)	265	125.5	259	171	154
j LIS-B21-1N031D (SW 2B)	20	65	160	25	138
k E41A1K42	53	65	57	49	56
l E41A1K4	20	30	21	30	31
CH D (j+k+l)	93	160	238	104	225
1.2 DRYWELL PRESSURE HIGH (mSec)					
a PS-E11-1N011A (SW2)	95	80	90	59	55
b E21A1K5A	48	62.5	58	55.5	60
CH A (a+b)	143	142.5	148	114.5	115
c PS-E11-1N011B (SW 2)	50	45	40	59	345
d E21A1K5B	45	47.5	42	43	39
e E41A1K5	36	33	33	39	31
CH B (c+d+e)	131	125.5	115	141	415
f PS-E11-1N011C (SW 2)	38	40	52	31	55
g E21A1K6A	55	57.5	57	57	61
CH C (f+g)	93	97.5	109	88	116
h PS-E11-1N011D (SW 2)	55	50	40	63	10
i E11A1K6B	48	55	49	50	53
J E41A1K55	33	34	31	30	32
CH D (h+i+j)	136	139	120	143	95
1.3 THE LONGEST LEVEL/PRESSURE READINGS ARE THEN DETERMINED (sec)					
CH A	0.143	0.31	0.23	0.222	0.192
CH B	0.131	0.182	0.23	0.162	0.415
CH C	0.265	0.126	0.26	0.171	0.154
CHD	0.136	0.16	0.24	0.143	0.225
ADMIN VALUE	0.5	0.5	0.5	0.5	0.5

CORE SPRAY UNIT 2 (1 of 2)

	A41288	A22826	A10962	A93646
	7/13/94	11/30/92	5/31/91	11/30/89
1.1 RX VESSEL WATER LEVEL LOW LEVEL 1 (mSec)				
a LIS-B21-2N031A	80	78	248	69
b E21A2K7A	57.5	56	62	63
CH A (a+b)	137.5	134	310	132
c LIS-B21-2N031B	143	115	320	138
d E21A2K7B	48	58	52	55
CH B (c+d)	191	173	372	193
e LIS-B21-2N031C	90	110	47	50
f E21A2K8A	50	49	54	69
CH C (e+f)	140	159	101	119
g LIS-B21-2N031D	55	258	144	135
h E21A2K8B	44	57	58	56
CH D (g+h)	99	315	202	191
1.2 DRYWELL PRESSURE HIGH (mSec)				
a PS-E11-2N011A	60	66	58	48
b E21A2K5A	52.5	51	59	57
CH A (a+b)	112.5	117	117	105
c PS-E11-2N011B	42	28	42	95
d E21A2K5B	50	26	58	51
CH B (c+d)	92	84	100	146
e PS-E11-2N011C	45	53	40	56
f E21A2K6A	55	51	57	58
CH C (e+f)	100	104	97	114
g PS-E11-2N011D	60	51	62	50
h E21A2K6B	52	64	66	61
CH D (g+h)	112	115	128	111
1.3 THE LONGEST LEVEL/PRESSURE READINGS ARE THEN DETERMINED (sec)				
CH A	0.138	0.134	0.31	0.132
CH B	0.191	0.173	0.372	0.193
CH C	0.14	0.159	0.101	0.119
CHD	0.112	0.315	0.202	0.191
ADMIN VALUE	0.5	0.5	0.5	0.5

CORE SPRAY UNIT 2
(2 of 2)

2. REACTOR STEAM DOME PRESSURE LOW (mSec)

a PS-B21-2N021A	12.5	17	34	15
b E21A2K9A	52.5	53	56	55.5
c E21A2K32A	30	28	30	29.5
d CH A (longer time of (b or c) + a	65	70	90	70.5
e PIS-B21-2N021B	46	18	11	8
f E21A2K9B	64	64	59	59
g E21A2K32A	28	28	27	27
h CH B (longer time of (f or g) + e	110	82	70	67
i PS-B21-2N021C	15	17	18	5
j E21A2K19A	52.5	55	58	55.5
k E21A2K33A	25	29	29	32.5
l CH C (longer time of (j or k) + i	67.5	72	76	60.5
m PIS-B21-2N021D	11	43	38	9
n E21A2K19B	56	59	24	58
o E21A2K33B	28	27	60	28
p CH D (longer time of (n or o) + m	67	102	98	67

2.1 DETERMINATION OF LONGEST DIV I AND DIV 2 CHANNELS (sec)

1.3	A/C	0.14	0.159	0.31	0.132
2.d or 2.l	A/C	0.068	0.072	0.09	0.071
	TOTAL	0.208	0.231	0.4	0.203
	ADMIN VALUE--TOTAL	1	1	1	1
1.3	B/D	0.191	0.315	0.372	0.193
2.h or 2p	B/D	0.11	0.102	0.098	0.067
	TOTAL	0.301	0.417	0.47	0.26
	ADMIN VALUE--TOTAL	1	1	1	1

RHR UNIT 2 (1 of 3)

	A41288	A22826	A10962	A93646
	7/13/94	11/30/92	5/31/91	11/30/89
1.1 RX VESSEL WATER LEVEL LOW LEVEL 1 (mSec)				
a LIS-B21-2N031A	80	78	248	69
b E21A2K7A	57.5	56	62	63
c E11A2K7A	60	60	60	66
CH A (a+b+c)	197.5	194	370	198
d LIS-B21-2N031B	143	115	320	138
e E21A2K7B	48	58	52	55
f E11A2K7B	50	57	62	56
CH B (d+e+f)	241	230	434	249
g LIS-B21-2N031C	90	110	47	50
h E21A2K8A	50	49	54	69
i E11A2K8A	50	51	49	54
CH C (g+h+i)	190	210	150	173
j LIS-B21-2N031D	55	258	144	135
k E21A2K8B	44	57	58	56
l E11A2K8B	52	64	63	64
CH D (j+k+l)	151	379	265	255
1.2 DRYWELL PRESSURE HIGH (mSec)				
a PS-E11-2N011A	50	59	52	42
b E11A2K5A	50	49	50	56
CH A (a+b)	100	108	102	98
c PS-E11-2N011B	40	22	34	91
d E11A2K5B	57	66	67	63
CH B (c+d)	97	88	101	154
e PS-E11-2N011C	40	40	25	46
f E11A2K6A	57.5	57	50	69
CH C (e+f)	97.5	97	75	115
g PS-E11-2N011D	44	34	42	31
h E11A1K6B	55	58	63	61
CH D (g+h)	99	92	105	92
1.3 THE LONGEST LEVEL/PRESSURE READINGS ARE THEN DETERMINED (sec)				
CH A	0.198	0.194	0.37	0.198
CH B	0.241	0.23	0.434	0.249
CH C	0.19	0.21	0.15	0.173
CHD	0.151	0.379	0.265	0.255
ADMIN VALUE	0.5	0.5	0.5	0.5

RHR UNIT 2
(2 of 3)

2. REACTOR STEAM DOME PRESSURE LOW(mSec)

2.1 CH A				
a PS-B21-2N021A	12.5	17	34	15
b E21A2K9A	52.5	53	56	55.5
c E11A2K90A	42.5	63	59	65.5
d E11A2K91A	62.5	39	31	12
e Longer time of c or d	62.5	63	59	65.5
f E11A2K44A	60	58	58	56
CH A (a+b+e+f)	187.5	191	207	192
2.2 CH B				
a PIS-B21-2N021B	46	18	11	8
b E21A2K9B	64	64	59	59
c E11A2K90B	38	38	30	40
d E11A2K91B	40	44	35	45
e Longer time of c or d	40	44	35	45
f E11A2K44B	42	38	40	38
CH A (a+b+e+f)	192	164	145	150
2.3 CH C				
a PS-B21-2N021C	15	17	18	5
b E21A2K19A	52.5	55	58	55.5
c E11A2K47A	37.5	38	21	36
d E11A2K105A	65	62	49	63
e Longer time of c or d	65	62	49	63
f E11A2K44A	60	58	58	56
CH A (a+b+e+f)	192.5	192	183	179.5
2.4 CH D				
a PIS-B21-2N021D	11	43	38	9
b E21A2K19B	56	59	24	58
c E11A2K47B	34	35	57	35
d E11A2K105B	78	72	94	67
e Longer time of c or d	78	72	94	67
f E11A2K44B	42	38	40	38
CH A (a+b+e+f)	187	212	196	172

2.1 DETERMINATION OF LONGEST DIV I AND DIV 2 CHANNELS (sec)

1.3 A/C	0.198	0.21	0.37	0.198
2 A/C	0.193	0.192	0.207	0.192
TOTAL	0.391	0.402	0.577	0.39
ADMIN VALUE--TOTAL	1	1	1	1
1.3 B/D	0.241	0.379	0.434	0.255
2 B/D	0.192	0.212	0.196	0.172
TOTAL	0.433	0.591	0.63	0.427
ADMIN VALUE--TOTAL	1	1	1	1

RHR UNIT 2
(3 of 3)

LPCI LOW PRESSURE PERMISSIVES DISCHARGE VALVE CLOSURE
(msec)

SI-280-430	A34030	A20821	A02929	A92871
	6/29/94	11/18/92	4/27/91	10/31/89
SI-280-421	A34018	A20825	A02936	A92882
	4/17/94	10/6/92	4/1/91	10/3/89
SI-280-411	A34017	A20798	A02935	A92881
	3/27/94	9/19/92	3/13/91	10/2/89
a PS-B21-2N021E	7.5	21	25	17
b E11A2K31A	31	33	30	29
c E11A2K35A	27	28	26	26
d Longer time of b or c	31	33	30	29
e CH E (a+d)	38.5	54	55	46
a PS-B21-2N021G	25	18	32	24
b E11A2K32A	25	28	25	27
c E11A2K36A	29	26	27	27
d Longer time of b or c	29	28	27	27
e CH G(a+d)	54	46	59	51
a PS-B21-2N021B	27	40	4	2
b E11A2K31B	15	27	31	28
c E11A2K35B	29	29	27	31
d Longer time of b or c	29	29	31	31
e CH B (a+d)	56	69	35	33
a PS-B21-2N021D	14	11	25	3
b E11A2K32B	32	27	31	29
c E11A2K36B	31	32	30	29
d Longer time of b or c	32	32	31	29
e CH D (a+d)	46	43	56	32

HPCI UNIT 2 (1 of 1)

	A41288	A22826	A10962	A93646
	7/13/94	11/30/92	5/31/91	11/30/89
1.1 RX VESSEL WATER LEVEL LOW LEVEL 1 (mSec)				
a LIS-B21-2N031A (SW 2A)	85	0	20	178
b E21A2K34A	22.5	23	34	36
c E41A2K4	20	19	19	24
CH A (a+b+c)	127.5	42	73	238
d LIS-B21-2N031B (SW 2B)	0	13	288	45
c E21A2K41	55	52	52	68
f E41A2K4	20	19	19	24
CH B (d+c+f)	75	84	359	137
g LIS-B21-2N031C (SW 2A)	65	0	40	223
h E21A2K35A	30	25	45	41
i E41A2K4	20	19	19	24
CH C (g+h+i)	115	44	104	288
j LIS-B21-2N031D (SW 2B)	130	74	118	239
k E41A2K42	55	51	58	66
l E41A2K4	20	19	19	24
CH D (j+k+l)	205	144	195	329
1.2 DRYWELL PRESSURE HIGH (mSec)				
a PS-E11-2N011A (SW2)	60	66	58	48
b E21A2K5A	52.5	51	59	57
CH A (a+b)	112.5	117	117	105
c PS-E11-2N011B (SW 2)	42	28	42	95
d E21A2K5B	50	56	58	51
e E41A2K5	30	30	31	31
CH B (c+d+e)	122	114	131	177
f PS-E11-2N011C (SW 2)	45	53	40	56
g E21A2K6A	55	51	57	58
CH C (f+g)	100	104	97	114
h PS-E11-2N011D (SW 2)	60	51	62	50
i E11A2K6B	52	64	66	61
J E41A2K55	25	28	26	25
CH D (h+i+j)	137	143	154	136
1.3 THE LONGEST LEVEL/PRESSURE READINGS ARE THEN DETERMINED (sec)				
CH A	0.128	0.117	0.117	0.238
CH B	0.122	0.114	0.359	0.177
CH C	0.115	0.104	0.104	0.288
CH D	0.205	0.144	0.195	0.329
ADMIN VALUE	0.5	0.5	0.5	0.5