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SUBJECT: Provides supplemental info re instrument drift in response to NRC request on 930416 TS interval extensions for Cycle 9 to avoid unnecessary shutdown.

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INDIANA MICHIGAN POWER

AEP:NRC:1181C

Donald C. Cook Nuclear Plant Unit 2
Docket No. 50-316
License No. DPR-74
SUPPLEMENTAL INFORMATION CONCERNING
SURVEILLANCE INTERVAL EXTENSION FOR UNIT 2 CYCLE 9

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Attn: T. E. Murley

December 3, 1993

Dear Dr. Murley:

In our April 16, 1993, AEP:NRC:1181 letter we requested certain technical specification interval extensions for the Donald C. Cook Nuclear Plant Unit 2 Cycle 9 to avoid an unnecessary shutdown. The purpose of this letter is to provide supplemental information regarding instrument drift, as requested by your staff. The instrument drift data is contained in Attachment 1. We are also providing an update of the technical specifications that require an extension. This information is contained in Attachments 2 through 4.

We believe that the proposed changes will not result in 1) a significant change in the types of effluents or a significant increase in the amount of any effluents that may be released offsite, or 2) a significant increase in individual or cumulative occupational radiation exposure.

These proposed changes have been reviewed and approved by the Plant Nuclear Safety Review Committee and will be reviewed by the Nuclear Safety Design Review Committee at the next scheduled meeting.

In compliance with the requirements of 10 CFR 50.91(b)(1), copies of this letter and its attachments have been transmitted to Mr. J. R. Padgett of the Michigan Public Service Commission and to the Michigan Department of Public Health.

070035

A001
1/1

This letter is submitted pursuant to 10 CFR 50.30(b), and, as such, an oath statement is attached.

Sincerely,

E. E. Fitzpatrick
Vice President

dr

Attachments

cc: A. A. Blind
G. Charnoff
J. B. Martin - Region III
NFEM Section Chief
NRC Resident Inspector
J. R. Padgett

bc: S. J. Brewer
D. H. Malin/K. J. Toth/M. I. Terry
M. L. Horvath - Bridgman - w/o attachments
J. B. Shinnock - w/o attachments
W. G. Smith, Jr./S. H. Steinhart/R. C. Carruth
J. B. Hickman, NRC - Washington, D.C.
B. A. Wetzel, NRC - Washington, D.C.
AEP:NRC:1181C
DC-N-6015.1 w/o attachments

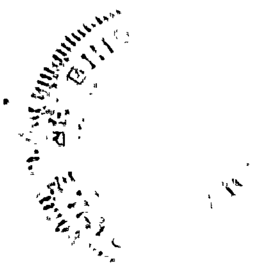
STATE OF OHIO)
COUNTY OF FRANKLIN)

E. E. Fitzpatrick, being duly sworn, deposes and says that he is the Vice President of licensee Indiana Michigan Power Company, that he has read the forgoing REQUEST FOR ADDITIONAL INFORMATION CONCERNING SURVEILLANCE INTERVAL EXTENSION FOR UNIT 2 CYCLE 9 and knows the contents thereof; and that said contents are true to the best of his knowledge and belief.

E E Fitzpatrick

Subscribed and sworn to before me this 3rd day of December, 19 93.

Rita D. Hill
NOTARY PUBLIC
RITA D. HILL
NOTARY PUBLIC, STATE OF OHIO
MY COMMISSION EXPIRES 6-28-94



Attachment 1 to AEP:NRC:1181C

Supplemental Information on Instrument Drift
for Donald C. Cook Nuclear Plant Unit 2

The data in Tables 1 (Pressurizer Water Level Drift), 2 (Pressurizer Pressure Drift) and 3 (RTD Drift) clearly indicate that instrument drift will be within acceptable limits while operating in the requested surveillance extension period.

PRESSURIZER WATER LEVEL CHANNEL CALIBRATION

For the Pressurizer Water Level channel calibration, we are only seeking a surveillance extension for one of the three channels, NLP-153, as described in AEP:NRC:1181 (April 16, 1993). NLP-151 and NLP-152 can be calibrated at power without placing the unit in jeopardy. However, we have provided data for all three sets of instruments since the "as found" data for NLP-153 for the last surveillance was unusable for this analysis. Discussion concerning this data appears at the end of this attachment.

Table 1 provides information on the maximum allowed percent span error (+5.27%, -3.27%), trip setpoint (92% of span), drift extrapolation methodology, and margin to trip setpoint calculation methodology. Table 1A contains the measured "as found" and "as left" data for the past three surveillances. Table 1B lists the results of the drift extrapolation calculations and comparisons to the protective trip setpoints.

As can be seen by examining the extrapolated percent span error results in Table 1B and comparing them to the maximum allowed percent span error at the pressurizer water level high reactor trip setpoint, excess margin exists. The smallest amount of margin (extrapolated to August 13, 1994) at the trip setpoint is +0.06% on NLP-153 based on the August 24, 1990, calibration data. All other extrapolations yielded excess margin of at least 1.35% to the trip setpoint. Based on the results of this analysis, we believe that the drift associated with NLP-153 will be within the required margin to the trip setpoint and will not adversely impact the safe operation of the plant.

PRESSURIZER PRESSURE CHANNEL CALIBRATION

For the Pressurizer Pressure channel calibration, we are only seeking a surveillance extension for two of the four channels, NPP-153 and NPS-153, as described in AEP:NRC:1181. NPP-151 and NPP-152 can be calibrated at power without placing the unit in jeopardy.

Table 2 provides information on the maximum allowed percent span error (±3.25%), trip setpoint (low setpoint = 1950 psi or 31.25% of span; high setpoint = 2385 psi or 85.625% of span), drift extrapolation methodology, and margin to trip setpoint calculation methodology. Table 2A contains the measured "as found" and "as left" data for the past three surveillances. Table 2B lists the results of the drift extrapolation calculations and comparisons to the protective trip setpoints.

As can be seen by examining the extrapolated percent span error results in Table 2B and comparing them to the maximum allowed percent span error at the pressurizer pressure low and high reactor trip setpoint, excess margin exists.

The smallest amount of margin (extrapolated to August 13, 1994) at the low trip setpoint is +0.71% on NPS-153 based on the July 25, 1988, calibration data. The smallest amount of margin (extrapolated to August 13, 1994) at the high trip setpoint is +0.50%, also on NPS-153 based on the July 25, 1988, calibration data. All other extrapolations yielded excess margin of at least 1.61% to the trip setpoints. Based on the results of this analysis, we believe that the drift associated with NPP-153 and NPS-153 will be within our maximum allowed percent span error, be within the required margin to the trip setpoints, and will not adversely impact the safe operation of the plant.

RTD CHANNEL CALIBRATION

As described in AEP:NRC:1181, we are seeking relief from all T/S surveillances which are dependent on the RTD channel calibration.

Table 3 provides information on the maximum allowed temperature deviation (Narrow Range [NR]: ±1.2°F and Wide Range [WR]: ±8.4°F) and on the drift extrapolation methodology. Tables 3A and 3B contain the measured data for the past three surveillance intervals on the Narrow Range RTDs and Wide Range RTDs, respectively. Tables 3C and 3D list the results of the drift extrapolation calculations for Narrow Range RTDs and Wide Range RTDs, respectively.

The data presented in the March 5, 1989, column in Tables 3C and 3D show that all temperature deviations for the NR and WR RTDs are within the maximum allowed deviation. This is significant since the time period between surveillances was approximately 33 months, or seven months greater than the current extension that we are requesting. In the other two surveillance intervals, there are a few extrapolated drift data points with values outside our maximum allowed deviation. We believe these data points to be insignificant because the RTDs are inherently stable and our application of linear extrapolation to estimate drift is conservative, as follows. As mentioned before, the drift measured over the 33 month interval had no temperature deviations exceeding our maximum allowed deviations. Since that interval was greater than the interval we are requesting (26 months), we did not have to extrapolate any data to estimate the drift. Also, comparison of the measured data from June 1986 to June 1992 shows that over the six year interval the maximum "drift" for the NR RTDs was 1.08°F (RTD 2-TE-421B at 250°F) and for the WR RTDs was 5.60°F (RTD 2-TE-413B at 527°F), which is well within the maximum allowed deviation. This is an acceptable comparison since the data that is being compared is directly off the RTDs and cannot be adjusted from one cycle to the next. Thus, based on the 33 month interval and a six year interval we show that the RTDs are stable and linear extrapolation of the data is conservative.

Another factor which we believe contributed to the few extrapolated drift data points exceeding the maximum allowed deviations was differences in the individual loop temperatures. This is very apparent upon examination of the WR RTDs at 350°F and 250°F during October 1990, where the individual loops have deviations of similar magnitudes but in opposite directions. All of the extrapolated drift data points which were outside the maximum allowed deviation were affected by the October 1990 data. Note that the measured deviations were all within the maximum allowed deviation for that surveillance.

Finally, the stability of the RTDs is evident in that over the three surveillance intervals, all of the RTDs at 527°F (closest to operating temperature) had an extrapolated drift less than the maximum allowed deviation. Based on the results of this analysis, we believe that the drift associated with the Narrow Range and Wide Range RTDs will remain within our maximum allowed deviation and will not adversely impact the safe operation of the plant.

RVLIS Calibration

We cannot provide any drift data on RVLIS since the transmitters were replaced during the most recent refueling outage as part of its 10 year recommended replacement frequency. Even without the drift data, we believe that we would be aware of excessive drift through the T/S required monthly channel checks performed on the two independent trains of indication.

Table 1

PRESSURIZER WATER LEVEL DRIFT

Seeking an Extension only for NLP-153 (Set III)

Maximum Allowed % Span Error and Technical Specificaton Trip Setpoint

Based on WCAP 13801, Table 3-8
Maximum Allowed % Span Error = +5.27%, - 3.27%
Technical Specification Trip Setpoint = 92% of Instrument Span

Surveillance Interval Extrapolation Factor (SIEF)

Instr #	Calibration Date				Extension	SIEF		
	(N-4)	(N-3)	(N-2)	(N-1)	Date (N)	(N-3)	(N-2)	(N-1)
NLP-151	07/01/86	09/03/88	08/24/90	04/21/92	08/13/94	1.0616	1.1722	1.3927
NLP-152	07/01/86	09/03/88	08/24/90	04/21/92	08/13/94	1.0616	1.1722	1.3927
NLP-153	07/01/86	09/01/88	08/22/90	04/20/92	08/13/94	1.0656	1.1736	1.3921

Example: SIEF calculation for NLP-153 in April 92

SIEF(N-1) = [N - (N-1)] / [(N-1) - (N-2)]
= [08/13/94 - 04/20/92] / [04/20/92 - 8/22/90]
= 1.3921

Calculation of Extrapolated % Span Error [E]:

E = (Sensor Drift) x (SIEF) + Rack Error ± 0.515

where: Sensor Drift = (As Found - As Left) / (Span)
Span = 0.4 VDC
Rack Error = Measured Rack Error
± 0.515 = ± [0.5 (Max Allowed Sensor M&TE) + 0.015 (Actual Rack M&TE)]
± 0.515 M&TE error is added in "like-sign" direction for each extrapolation

Measured Rack Errors

Instr. #	09/88	08/90	04/92
NLP-151	-0.125	-0.100	-0.050
NLP-152	-0.050	-0.050	0.000
NLP-153	-0.250	-0.275	-0.225

Note: At power monthly channel functional testing performed on Racks as assumed by WCAP 13801. The above data is treated in accordance with the WCAP in a conservative fashion.

Calculation of Margin to TS Trip Setpoint [M]:

E(92) = [E(100) - E(75)] x [92 - 75] / [100 - 75] + E(75)
Excess Margin to -3.27%: M = E(92) - (-3.27%)
Excess Margin to +5.27%: M = 5.27% - E(92)
where: E(P) = % Span Error at % Span (P)

Table 1A

Pressurizer Water Level Measured Data

NLP-151

Nominal			09/03/88		08/24/90		04/21/92	
Scale	Input H2O	VDC	As Found	As Left	As Found	As Left	As Found	As Left
0%	235	0.1000	0.1131	0.1010	0.0980	0.1012	0.0953	0.1012
25%	312	0.2203	0.2322	0.2200	0.2158	0.2191	0.2153	0.2199
50%	389	0.3406	0.3519	0.3395	0.3350	0.3392	0.3356	0.3399
75%	468	0.4640	0.4760	0.4636	0.4588	0.4635	0.4594	0.4639
100%	491	0.5000	0.5123	0.4999	0.4956	0.4997	0.4954	0.5002
100%	491	0.5000	0.5125	0.5000	0.4950	0.4997	0.4950	0.4998
75%	468	0.4640	0.4759	0.4636	0.4588	0.4636	0.4582	0.4631
50%	389	0.3406	0.3519	0.3399	0.3350	0.3395	0.3345	0.3392
25%	312	0.2203	0.2321	0.2201	0.2158	0.2190	0.2144	0.2194
0%	235	0.1000	0.1131	0.1009	0.0980	0.1012	0.0954	0.1006

NLP-152

Nominal			09/03/88		08/24/90		04/21/92	
Scale	Input H2O	VDC	As Found	As Left*	As Found	As Left	As Found	As Left
0%	244	0.1000	0.1091	0.1010	0.1044	0.1001	0.3012	0.1000
25%	308	0.2000	0.2076	0.2202	0.2222	0.2195	0.4188	0.2193
50%	372	0.3000	0.3060	0.3403	0.3413	0.3396	0.5381	0.3401
75%	436	0.4000	0.4058	0.4647	0.4637	0.4637	0.6626	0.4648
100%	500	0.5000	0.5060	0.5010	0.5007	0.4994	0.6988	0.5018
100%	500	0.5000	0.5060	0.5013	0.5007	0.4997	0.6988	0.5018
75%	436	0.4000	0.4059	0.4646	0.4638	0.4638	0.6624	0.4651
50%	372	0.3000	0.3063	0.3400	0.3413	0.3396	0.5382	0.3401
25%	308	0.2000	0.2077	0.2202	0.2222	0.2194	0.4188	0.2193
0%	244	0.1000	0.1090	0.1012	0.1044	0.1001	0.3011	0.1000

NLP-153

Nominal			09/01/88		08/22/90		04/20/92	
Scale	Input H2O	VDC	As Found	As Left	As Found	As Left	As Found	As Left
0%	235	0.1000	0.1069	0.1003	0.0858	0.1002	0.0341	0.1002
25%	312	0.2203	0.2210	0.2198	0.2068	0.2190	0.1371	0.2201
50%	389	0.3406	0.3409	0.3403	0.3290	0.3391	0.2559	0.3402
75%	468	0.4640	0.4664	0.4648	0.4558	0.4630	0.3793	0.4649
100%	491	0.5000	0.5033	0.5006	0.4927	0.5003	0.4153	0.5013
100%	491	0.5000	0.5034	0.5010	0.4927	0.5008	0.4154	0.5008
75%	468	0.4640	0.4677	0.4649	0.4558	0.4640	0.3790	0.4642
50%	389	0.3406	0.3540	0.3405	0.3290	0.3342	0.2550	0.3401
25%	312	0.2203	0.2313	0.2198	0.2068	0.2190	0.1358	0.2190
0%	235	0.1000	0.1059	0.1004	0.0858	0.1002	0.0341	0.1009

* See following page for comments

Table 1A
(continued)

Pressurizer Water Level Measured Data

NLP-152 Calibration Data Change

09/03/88 Original Calibration Data					09/03/88 Calibration Data Change			
Scale	Input H2O	VDC	As Found	As Left	Scale	Input H2O	VDC	As Left
0%	244	0.1000	0.1091	0.1010	0%	244	0.1000	0.1010
25%	308	0.2000	0.2076	0.2000	30%	321	0.2203	0.2202
50%	372	0.3000	0.3060	0.2994	60%	398	0.3406	0.3403
75%	436	0.4000	0.4058	0.4001	91%	477	0.4640	0.4647
100%	500	0.5000	0.5060	0.5010	100%	500	0.5000	0.5010
100%	500	0.5000	0.5060	0.5013	100%	500	0.5000	0.5013
75%	436	0.4000	0.4059	0.4002	91%	477	0.4640	0.4646
50%	372	0.3000	0.3063	0.2996	60%	398	0.3406	0.3400
25%	308	0.2000	0.2077	0.2001	30%	321	0.2203	0.2202
0%	244	0.1000	0.1090	0.1012	0%	244	0.1000	0.1012

After the Sep 88 calibration, the nominal VDC calibration point for NLP-152 was changed to match that of NLP-151 and NLP-153 for human factors reasons. Thus, the "as left" data from the Sep 88 calibration, which was measured at the original input water levels, needed to be adjusted to the new input water levels to make it comparable to the Aug 90 calibration data. This was accomplished by linearly interpolating on the "as left" data from Sep 88 for the new calibration input water levels. This provided "as left" data from Sep 88 which could be compared to the "as found" data from Aug 90.

Table 1B

Pressurizer Water Level Extrapolated % Span Error

NLP-151

	Sensor Drift			Extrapolated % Span Error		
Scale	09/03/88	08/24/90	04/21/92	09/03/88	08/24/90	04/21/92
0%	3.28%	-0.75%	-1.48%	3.87%	-1.49%	-2.62%
25%	2.98%	-1.05%	-0.95%	3.55%	-1.85%	-1.89%
50%	2.82%	-1.13%	-0.90%	3.39%	-1.93%	-1.82%
75%	3.00%	-1.20%	-1.03%	3.57%	-2.02%	-1.99%
100%	3.07%	-1.08%	-1.07%	3.65%	-1.88%	-2.06%
100%	3.12%	-1.25%	-1.18%	3.71%	-2.08%	-2.20%
75%	2.97%	-1.20%	-1.35%	3.55%	-2.02%	-2.45%
50%	2.82%	-1.22%	-1.25%	3.39%	-2.05%	-2.31%
25%	2.95%	-1.08%	-1.15%	3.52%	-1.88%	-2.17%
0%	3.28%	-0.73%	-1.45%	3.87%	-1.46%	-2.58%
% Span Error @ 92% Trip Setpoint				3.63%	-1.92%	-2.04%
Margin to - 3.27% @ 92% Trip Setpoint				6.90%	1.35%	1.23%
Margin to +5.27% @ 92% Trip Setpoint				1.64%	7.19%	7.31%

NLP-152

	Sensor Drift			Extrapolated % Span Error		
Scale	09/03/88	08/24/90	04/21/92	09/03/88	08/24/90	04/21/92
0%	2.28%	0.85%	50.28%	2.88%	1.46%	xxx
25%	1.90%	0.50%	49.83%	2.48%	1.05%	xxx
50%	1.50%	0.25%	49.63%	2.06%	0.76%	xxx
75%	1.45%	-0.26%	49.73%	2.00%	-0.87%	xxx
100%	1.50%	-0.07%	49.85%	2.06%	-0.65%	xxx
100%	1.50%	-0.15%	49.78%	2.06%	-0.74%	xxx
75%	1.47%	-0.21%	49.65%	2.03%	-0.81%	xxx
50%	1.58%	0.32%	49.65%	2.14%	0.84%	xxx
25%	1.93%	0.50%	49.85%	2.51%	1.05%	xxx
0%	2.25%	0.80%	50.25%	2.85%	1.40%	xxx
% Span Error @ 92% Trip Setpoint				2.04%	-0.72%	xxx
Margin to - 3.27% @ 92% Trip Setpoint				5.31%	2.55%	xxx
Margin to +5.27% @ 92% Trip Setpoint				3.23%	5.99%	xxx

xxx = Results not considered for analysis. Discussion at end of attachment.

Table 1B
(continued)

Pressurizer Water Level Extrapolated % Span Error

NLP-153

	Sensor Drift			Extrapolated % Span Error		
Scale	09/01/88	08/22/90	04/20/92	09/01/88	08/22/90	04/20/92
0%	1.73%	-3.63%	-16.53%	2.10%	-5.04%	xxx
25%	0.18%	-3.25%	-20.48%	-0.58%	-4.60%	xxx
50%	0.07%	-2.82%	-20.80%	-0.69%	-4.11%	xxx
75%	0.60%	-2.25%	-20.93%	0.90%	-3.43%	xxx
100%	0.82%	-1.98%	-21.25%	1.14%	-3.11%	xxx
100%	0.85%	-2.07%	-21.35%	1.17%	-3.23%	xxx
75%	0.92%	-2.28%	-21.25%	1.25%	-3.46%	xxx
50%	3.35%	-2.88%	-19.80%	3.83%	-4.16%	xxx
25%	2.75%	-3.25%	-20.80%	3.20%	-4.60%	xxx
0%	1.48%	-3.65%	-16.53%	1.84%	-5.07%	xxx
% Span Error @ 92% Trip Setpoint				1.07%	-3.21%	xxx
Margin to -3.27% @ 92% Trip Setpoint				4.34%	0.06%	xxx
Margin to +5.27% @ 92% Trip Setpoint				4.20%	8.48%	xxx

xxx = Results not considered for analysis. Discussion at end of attachment.

Table 2

PRESSURIZER PRESSURE DRIFT

Seeking an Extension only for NPP-153 (Set III) and NPS-153 (Set IV)

Maximum Allowed % Span Error and Technical Specification Trip Setpoints

Based on WCAP 13801, Table 3-7
Maximum Allowed % Span Error = ±3.25%
Technical Specification Trip Setpoint (High) = 2385 psi = 85.625% of Instrument Span
Technical Specification Trip Setpoints (Low) = 1950 psi = 31.25% of Instrument Span

Surveillance Interval Extrapolation Factor (SIEF)

Instr #	Calibration Date				Extension	SIEF		
	(N-4)	(N-3)	(N-2)	(N-1)	Date (N)	(N-3)	(N-2)	(N-1)
NPP-153	07/01/86	07/26/88	08/23/90	04/22/92	08/13/94	1.1151	1.1121	1.3865
NPS-153	07/01/86	07/25/88	08/23/90	04/23/92	08/13/94	1.1152	1.1094	1.3826

Example: SIEF calculation for NPP-153 in April 92

SIEF(N-1) = [N - (N-1)] / [(N-1) - (N-2)]
= [08/13/94 - 04/22/92] / [04/22/92 - 08/23/90]
= 1.3865

Calculation of Extrapolated % Span Error [E]:

E = (Sensor Drift) x (SIEF) + Rack Error ± 0.25%
where: Sensor Drift = (As Found - As Left) / (Span)
Span = 0.4 VDC
Rack Error = Measured Rack Error
± 0.25 = (Max Allowed Sensor & Rack M&TE By Procedure)
± 0.25 M&TE error is added in conservative direction for each extrapolation

Measured Rack Errors

Instr #	07/88	08/90	04/92
NPP-153	-0.475	-0.250	-0.250
NPS-153	0.075	0.200	0.150

Note: At power monthly channel functional testing performed on Racks as assumed by WCAP 13801. The above data is treated in accordance with the WCAP in a conservative fashion.

Calculation of Margin to TS Trip Setpoint [M]:

E(85.625) = [E(100) - E(75)] x [85.625 - 75] / [100 - 75] + E(75)
E(31.25) = [E(25) - E(50)] x [25 - 31.25] / [25 - 50] + E(50)
Margin to - 3.25%: M = E(P) - (-3.25%)
Margin to +3.25%: M = 3.25% - E(P)
where: E(P) = % Span Error at % Span (P)

Table 2A

Pressurizer Pressure Measured Data

NPP-153

Nominal			07/26/88		08/23/90		04/22/92
Scale	Input PSI	VDC	As Found	As Left	As Found	As Left	As Found
0%	1726	0.1	0.1053	0.0988	0.1012	0.0990	0.0999
25%	1926	0.2	0.2054	0.1988	0.2022	0.1995	0.2040
50%	2126	0.3	0.3056	0.2992	0.3028	0.3003	0.3039
75%	2326	0.4	0.4068	0.4000	0.4034	0.4009	0.4026
100%	2526	0.5	0.5065	0.5000	0.5038	0.5003	0.5018
100%	2526	0.5	0.5065	0.5003	0.5043	0.5015	0.5018
75%	2326	0.4	0.4068	0.4003	0.4034	0.4004	0.4022
50%	2126	0.3	0.3056	0.2994	0.3031	0.2996	0.3026
25%	1926	0.2	0.2054	0.1987	0.2020	0.1990	0.2023
0%	1726	0.1	0.1053	0.0984	0.1016	0.0989	0.1014

NPS-153

Nominal			07/25/88		08/23/90		04/23/92
Scale	Input PSI	VDC	As Found	As Left	As Found	As Left	As Found
0%	1726	0.1	0.1066	0.1005	0.1000	0.0998	0.0973
25%	1926	0.2	0.2068	0.2066	0.2004	0.2005	0.1980
50%	2126	0.3	0.3071	0.3005	0.3008	0.3011	0.2983
75%	2326	0.4	0.4086	0.4012	0.4018	0.4010	0.3994
100%	2526	0.5	0.5088	0.5010	0.5023	0.5010	0.4996
100%	2526	0.5	0.5092	0.5010	0.5025	0.5018	0.4996
75%	2326	0.4	0.4096	0.4010	0.4020	0.4010	0.3997
50%	2126	0.3	0.3084	0.3000	0.3010	0.2999	0.2990
25%	1926	0.2	0.2078	0.2003	0.2008	0.1999	0.1985
0%	1726	0.1	0.1081	0.0998	0.1009	0.1000	0.0983

Table 2B

Pressurizer Pressure Extrapolated % Span Error

NPP-153

	Sensor Drift			Extrapolated % Span Error		
Scale	07/26/88	08/23/90	04/22/92	07/26/88	08/23/90	04/22/92
0%	1.33%	0.60%	0.23%	1.25%	0.67%	0.31%
25%	1.35%	0.85%	1.12%	1.28%	0.95%	1.56%
50%	1.40%	0.90%	0.90%	1.34%	1.00%	1.25%
75%	1.70%	0.85%	0.43%	1.67%	0.95%	0.59%
100%	1.62%	0.95%	0.38%	1.59%	1.06%	0.52%
100%	1.62%	1.00%	0.08%	1.59%	1.11%	-0.40%
75%	1.70%	0.77%	0.45%	1.67%	0.86%	0.62%
50%	1.40%	0.92%	0.75%	1.34%	1.03%	1.04%
25%	1.35%	0.83%	0.82%	1.28%	0.92%	1.14%
0%	1.33%	0.80%	0.63%	1.25%	0.89%	0.87%
% Span Error @ 31.25% Trip Setpoint				1.29%	0.95%	1.12%
% Span Error @ 85.625% Trip Setpoint				1.64%	0.99%	0.56%
Margin to -3.25% @ 31.25% Trip Set.				4.54%	4.20%	4.37%
Margin to +3.25% @ 31.25% Trip Set.				1.96%	2.30%	2.13%
Margin to -3.25% @ 85.625% Trip Set.				4.89%	4.24%	3.81%
Margin to +3.25% @ 85.625% Trip Set.				1.61%	2.26%	2.69%

NPS-153

	Sensor Drift			Extrapolated % Span Error		
Scale	07/25/88	08/23/90	04/23/92	07/25/88	08/23/90	04/23/92
0%	1.65%	-0.13%	-0.63%	2.17%	0.31%	-0.96%
25%	1.70%	-1.55%	-0.63%	2.22%	-1.77%	-0.96%
50%	1.78%	0.08%	-0.70%	2.30%	0.53%	-1.07%
75%	2.15%	0.15%	-0.40%	2.72%	0.62%	-0.65%
100%	2.20%	0.32%	-0.35%	2.78%	0.81%	-0.58%
100%	2.30%	0.37%	-0.55%	2.89%	0.87%	-0.86%
75%	2.40%	0.25%	-0.33%	3.00%	0.73%	-0.55%
50%	2.10%	0.25%	-0.23%	2.67%	0.73%	-0.41%
25%	1.95%	0.13%	-0.35%	2.50%	0.59%	-0.58%
0%	2.03%	0.28%	-0.43%	2.58%	0.76%	-0.69%
% Span Error @ 31.25% Trip Setpoint				2.54%	0.62%	-0.54%
% Span Error @ 85.625% Trip Setpoint				2.75%	0.70%	-0.62%
Margin to -3.25% @ 31.25% Trip Set.				5.79%	3.87%	2.71%
Margin to +3.25% @ 31.25% Trip Set.				0.71%	2.63%	3.79%
Margin to -3.25% @ 85.625% Trip Set.				6.00%	3.95%	2.63%
Margin to +3.25% @ 85.625% Trip Set.				0.50%	2.55%	3.87%

Table 3

NARROW RANGE and WIDE RANGE RTD DRIFT

Maximum Allowed °F Deviation (Procedure Acceptance Criteria):

Narrow Range: ± 1.2 °F
Wide Range: ± 8.4 °F

Surveillance Interval Extrapolation Factor (SIEF)

Temp	Cal Int				Extension	SIEF		
	(N-4)	(N-3)	(N-2)	(N-1)	Date (N)	(N-3)	(N-2)	(N-1)
527°F	06/21/86	03/05/89	10/11/90	06/08/92	08/13/94	0.8057	1.3607	1.3135
450°F	06/20/86	03/05/89	10/09/90	06/08/92	08/13/94	0.8049	1.3654	1.3092
350°F	06/19/86	02/28/89	10/07/90	06/08/92	08/13/94	0.8081	1.3584	1.3049
250°F	06/18/86	02/28/89	10/06/90	06/06/92	08/13/94	0.8093	1.3641	1.3103

Example: SIEF calculation for 527°F in June 92

SIEF(N-1) = [N - (N-1)] / [(N-1) - (N-2)]
= [08/13/94 - 06/08/92] / [06/08/92 - 10/11/90]
= 1.3135

Exception to SIEF(N-3) [Jun 86 to Feb/Mar 89]:

Since SIEF(N-3) is approximately 0.8, a value of 1.0 was conservatively used in the drift extrapolations. In otherwords, the interval between the measured data (33 months) is greater than the extended interval being requested (26 months).

Calculation of Extrapolated Drift:

Extrapolated Drift = [RTD(n) - RTD(n-1)] x SIEF(n)
where: RTD(n) = measured deviation during surveillance (n)
RTD(n-1) = measured deviation during surveillance (n-1) [previous interval]

Table 3A

Narrow Range RTDs Measured Data

(°F Deviation from Average RCS Temperature)

	527 °F				450 °F			
RTD #	06/21/86	03/05/89	10/11/90	06/08/92	06/20/86	03/05/89	10/09/90	06/08/92
2-TE-410A	-0.04	0.24	-0.15	0.00	0.09	-0.16	-0.07	0.03
2-TE-410B	-0.01	0.23	0.04	-0.16	0.13	-0.23	1.05	-0.09
2-TE-411A	-0.02	0.13	-0.08	-0.14	0.07	-0.15	-0.02	-0.07
2-TE-411B	0.12	-0.40	-0.05	-0.04	-0.20	0.27	-0.96	-0.04
2-TE-420A	-0.12	0.04	0.03	0.39	0.01	0.06	0.03	0.41
2-TE-420B	-0.18	0.01	0.13	0.03	-0.06	0.01	0.11	0.08
2-TE-421A	0.15	0.03	-0.12	-0.07	-0.18	0.01	-0.10	-0.01
2-TE-421B	0.20	0.14	-0.01	-0.01	0.22	0.15	0.06	0.10
2-TE-430A	0.14	0.20	0.01	-0.11	-0.01	-0.14	0.01	-0.06
2-TE-430B	-0.12	0.00	0.05	-0.04	-0.14	-0.05	0.01	-0.13
2-TE-431A	-0.05	0.26	0.05	-0.16	0.05	-0.22	0.02	-0.18
2-TE-431B	-0.01	0.07	-0.10	0.00	-0.07	-0.07	-0.14	-0.02
2-TE-440A	0.00	-0.37	0.10	0.13	-0.01	0.27	0.04	0.06
2-TE-440B	-0.08	-0.01	-0.06	0.10	0.14	0.02	0.87	0.01
2-TE-441A	0.04	-0.26	0.04	0.12	-0.06	0.02	0.00	0.03
2-TE-441B	0.06	-0.38	0.05	-0.04	-0.04	0.33	-0.96	-0.14

	350 °F				250 °F			
RTD #	06/19/86	02/28/89	10/07/90	06/08/92	06/18/86	02/28/89	10/06/90	06/06/92
2-TE-410A	0.02	0.01	-0.03	0.08	0.11	0.09	0.00	0.14
2-TE-410B	0.18	-0.21	0.81	-0.06	-0.10	-0.27	0.84	-0.08
2-TE-411A	0.11	-0.11	0.02	0.02	0.25	-0.11	0.02	0.08
2-TE-411B	0.15	-0.01	-0.72	-0.04	0.10	-0.27	-0.44	-0.03
2-TE-420A	-0.11	0.20	0.07	0.40	-0.01	0.28	0.00	0.28
2-TE-420B	-0.03	0.07	0.06	0.08	-0.21	0.05	-0.04	0.03
2-TE-421A	-0.12	0.12	-0.04	0.05	0.08	0.13	-0.05	0.11
2-TE-421B	0.10	-0.09	0.05	0.09	-1.06	-0.03	-0.11	0.02
2-TE-430A	-0.11	-0.04	-0.01	0.01	0.10	0.24	-0.11	0.02
2-TE-430B	-0.11	-0.10	0.03	-0.18	-0.21	-0.10	-0.07	-0.31
2-TE-431A	-0.02	-0.09	0.00	-0.11	0.26	0.03	-0.08	-0.07
2-TE-431B	-0.09	0.09	-0.11	-0.22	-0.21	-0.11	-0.11	-0.28
2-TE-440A	-0.01	-0.07	0.01	0.04	0.37	0.04	-0.02	0.07
2-TE-440B	0.07	-0.02	0.63	-0.01	0.03	0.05	0.71	0.01
2-TE-441A	-0.06	0.04	-0.03	-0.01	0.28	0.09	-0.06	-0.01
2-TE-441B	-0.02	0.15	-0.67	-0.14	0.16	0.00	-0.52	0.01

Table 3B

Wide Range RTDs Measured Data
(°F Deviation from Average RCS Temperature)

	527 °F				450 °F			
RTD #	06/21/86	03/05/89	10/11/90	06/08/92	06/20/86	03/05/89	10/09/90	06/08/92
2-TE-413A	1.59	-1.75	0.72	4.87	-1.50	-2.01	0.75	1.32
2-TE-413B	-2.43	0.28	-0.19	3.17	3.44	3.40	-0.24	-0.13
2-TE-423A	0.94	-0.43	-0.19	-4.43	-1.10	-0.82	0.01	0.24
2-TE-423B	-0.58	0.82	-0.49	-3.97	0.07	0.03	-0.36	-0.42
2-TE-433A	-0.09	0.21	-0.12	3.43	-0.17	-0.31	-0.11	0.50
2-TE-433B	0.34	-0.03	-0.15	3.12	-0.63	-0.67	-0.25	-0.21
2-TE-443A	0.90	-0.05	0.66	-3.12	-0.81	-0.39	0.36	-0.35
2-TE-443B	-0.67	0.95	-0.21	-3.87	0.70	0.78	-0.17	-0.94

	350 °F				250 °F			
RTD #	06/19/86	02/28/89	10/07/90	06/08/92	06/18/86	02/28/89	10/06/90	06/06/92
2-TE-413A	1.25	-2.40	-4.70	0.05	0.98	-1.45	-4.39	1.64
2-TE-413B	-3.80	3.95	-6.34	-1.29	-4.13	3.27	-6.12	-0.39
2-TE-423A	0.90	-0.70	6.02	1.24	1.13	-0.53	5.88	0.07
2-TE-423B	0.34	0.06	6.04	0.61	0.38	-0.04	5.69	-0.51
2-TE-433A	0.33	-0.43	-6.32	-0.57	1.01	-0.81	-6.22	0.71
2-TE-433B	1.20	-1.12	-6.73	-1.34	1.15	-1.23	-6.55	-0.48
2-TE-443A	0.54	-0.28	6.09	0.88	0.61	-0.44	5.87	-0.26
2-TE-443B	-0.78	0.92	5.94	0.42	-1.14	1.22	5.86	-0.77

Table 3C

Narrow Range RTDs Extrapolated Drift

(°F Deviation from Average RCS Temperature)

	527 °F			450 °F		
RTD #	03/05/89	10/11/90	06/08/92	03/05/89	10/09/90	06/08/92
2-TE-410A	0.28	-0.53	0.20	-0.25	0.12	0.13
2-TE-410B	0.24	-0.26	-0.26	-0.36	1.75	-1.49
2-TE-411A	0.15	-0.29	-0.08	-0.22	0.18	-0.07
2-TE-411B	-0.52	0.48	0.01	0.47	-1.68	1.20
2-TE-420A	0.16	-0.01	0.47	0.05	-0.04	0.50
2-TE-420B	0.19	0.16	-0.13	0.07	0.14	-0.04
2-TE-421A	-0.12	-0.20	0.07	0.19	-0.15	0.12
2-TE-421B	-0.06	-0.20	0.00	-0.07	-0.12	0.05
2-TE-430A	0.06	-0.26	-0.16	-0.13	0.20	-0.09
2-TE-430B	0.12	0.07	-0.12	0.09	0.08	-0.18
2-TE-431A	0.31	-0.29	-0.28	-0.27	0.33	-0.26
2-TE-431B	0.08	-0.23	0.13	0.00	-0.10	0.16
2-TE-440A	-0.37	0.64	0.04	0.28	-0.31	0.03
2-TE-440B	0.07	-0.07	0.21	-0.12	1.16	-1.13
2-TE-441A	-0.30	0.41	0.11	0.08	-0.03	0.04
2-TE-441B	-0.44	0.59	-0.12	0.37	-1.76	1.07
Max Deviation	0.31	0.64	0.47	0.47	1.75	1.20
Min Deviation	-0.52	-0.53	-0.28	-0.36	-1.76	-1.49
Margin to +1.2°F	0.89	0.56	0.73	0.73	-0.55	0.00
Margin to -1.2°F	0.68	0.67	0.92	0.84	-0.56	-0.29

	350 °F			250 °F		
RTD #	02/28/89	10/07/90	06/08/92	02/28/89	10/06/90	06/06/92
2-TE-410A	-0.01	-0.05	0.14	-0.02	-0.12	0.18
2-TE-410B	-0.39	1.39	-1.14	-0.17	1.52	-1.20
2-TE-411A	-0.22	0.18	0.00	-0.36	0.18	0.08
2-TE-411B	-0.16	-0.97	0.89	-0.37	-0.23	0.54
2-TE-420A	0.31	-0.18	0.43	0.29	-0.38	0.37
2-TE-420B	0.10	-0.01	0.03	0.26	-0.12	0.09
2-TE-421A	0.24	-0.22	0.12	0.05	-0.25	0.21
2-TE-421B	-0.19	0.19	0.05	1.03	-0.11	0.17
2-TE-430A	0.07	0.04	0.03	0.14	-0.48	0.17
2-TE-430B	0.01	0.18	-0.28	0.11	0.04	-0.31
2-TE-431A	-0.07	0.12	-0.14	-0.23	-0.15	0.01
2-TE-431B	0.18	-0.27	-0.14	0.10	0.00	-0.22
2-TE-440A	-0.06	0.11	0.04	-0.33	-0.08	0.12
2-TE-440B	-0.09	0.88	-0.84	0.02	0.90	-0.92
2-TE-441A	0.10	-0.10	0.03	-0.19	-0.20	0.07
2-TE-441B	0.17	-1.12	0.70	-0.16	-0.71	0.69
Max Deviation	0.31	1.39	0.89	1.03	1.52	0.69
Min Deviation	-0.39	-1.12	-1.14	-0.37	-0.71	-1.20
Margin to +1.2°F	0.89	-0.19	0.31	0.17	-0.32	0.51
Margin to -1.2°F	0.81	0.08	0.06	0.83	0.49	0.00

Table 3D

Wide Range RTDs Extrapolated Drift

(°F Deviation from Average RCS Temperature)

	527 °F			450 °F		
RTD #	03/05/89	10/11/90	06/08/92	03/05/89	10/09/90	06/08/92
2-TE-413A	-3.34	3.36	5.45	-0.51	3.77	0.75
2-TE-413B	2.71	-0.64	4.41	-0.04	-4.97	0.14
2-TE-423A	-1.37	0.33	-5.57	0.28	1.13	0.30
2-TE-423B	1.40	-1.78	-4.57	-0.04	-0.53	-0.08
2-TE-433A	0.30	-0.45	4.66	-0.14	0.27	0.80
2-TE-433B	-0.37	-0.16	4.30	-0.04	0.57	0.05
2-TE-443A	-0.95	0.97	-4.97	0.42	1.02	-0.93
2-TE-443B	1.62	-1.58	-4.81	0.08	-1.30	-1.01
Max Deviation	2.71	3.36	5.45	0.42	3.77	0.80
Min Deviation	-3.34	-1.78	-5.57	-0.51	-4.97	-1.01
Margin to +8.4°F	5.69	5.04	2.95	7.98	4.63	7.60
Margin to -8.4°F	5.06	6.62	2.83	7.89	3.43	7.39

	350 °F			250 °F		
RTD #	02/28/89	10/07/90	06/08/92	02/28/89	10/06/90	06/06/92
2-TE-413A	-3.65	-3.12	6.20	-2.43	-4.01	7.90
2-TE-413B	7.75	-13.98	6.59	7.40	-12.81	7.51
2-TE-423A	-1.60	9.13	-6.24	-1.66	8.74	-7.61
2-TE-423B	-0.28	8.12	-7.09	-0.42	7.82	-8.12
2-TE-433A	-0.76	-8.00	7.50	-1.82	-7.38	9.08
2-TE-433B	-2.32	-7.62	7.03	-2.38	-7.26	7.95
2-TE-443A	-0.82	8.65	-6.80	-1.05	8.61	-8.03
2-TE-443B	1.70	6.82	-7.20	2.36	6.33	-8.69
Max Deviation	7.75	9.13	7.50	7.40	8.74	9.08
Min Deviation	-3.65	-13.98	-7.20	-2.43	-12.81	-8.69
Margin to +8.4°F	0.65	-0.73	0.90	1.00	-0.34	-0.68
Margin to -8.4°F	4.75	-5.58	1.20	5.97	-4.41	-0.29

Discussion of NLP-152 and NLP-153 April 1992 Surveillance Data

During the Unit 2 1992 refueling calibration, two pressurizer level transmitters, NLP-152 and NLP-153, were found with zero shifts. NLP-152, the protection set II transmitter exhibited a +50% span zero shift, and NLP-153, the protection set III transmitter showed an approximate -20% span zero shift. The reason for the large zero shifts on the transmitters was never determined. The transmitters were not damaged, and were calibrated to nominal values. It is postulated that only one side's root or instrument valves on the sensing lines to the transmitter were shut, or that leak-by of a root valve may have allowed RCS pressure on one side of the DP cell. This one-sided pressure effect, which could have been a spike or applied over weeks prior to the calibration is postulated to have caused the large zero shifts. The "as found" data and calculated shift are shown in Tables 1A and 1B.

This "as found" data does not reflect the last operational state of the transmitters. Past measured drift data indicates these transmitters normally deviate ±2% to ±3% of span from the "as left" values over a fuel cycle. In accordance with technical specifications, the channels are compared at the panel indicator every shift. Randomly selected shiftly surveillance data taken by Operations reveals no greater than a 1% deviation from September 1, 1991, to February 18, 1992, just before the Unit 2 shutdown. The Operations shiftly data is shown below for various dates.

		Shift		
Date	Instr.	1st	2nd	3rd
09/01/91	NLP-151	51%	51%	50%
	NLP-152	51%	51%	50%
	NLP-153	50%	50%	49%
11/01/91	NLP-151	52%	52%	52%
	NLP-152	52%	52%	52%
	NLP-153	51%	51%	51%
12/01/91	NLP-151	52%	52%	52%
	NLP-152	52%	52%	52%
	NLP-153	52%	51%	52%
01/01/92	NLP-151	52%	52%	52%
	NLP-152	52%	52%	52%
	NLP-153	51%	51%	51%
02/08/92	NLP-151	42%	42%	42%
	NLP-152	42%	42%	42%
	NLP-153	42%	42%	42%
02/15/92	NLP-151	42%	42%	42%
	NLP-152	42%	42%	42%
	NLP-153	42%	42%	42%
02/18/92	NLP-151	42%	42%	42%
	NLP-152	42%	42%	42%
	NLP-153	42%	42%	42%

The panel indication is an isolated current loop. The isolator and the indicator drift errors were compared over the last three cycles to discern the relative stability and magnitude of errors associated with these components. The errors are summed to provide worst-case values and are shown below.

All drift values in % Span for the values 25%, 50%, 75%, 75%, 50%, 25% are from the past calibrations.

NLP-151

	9/88 Calibration			8/90 Calibration			4/92 Calibration		
Scale	I/I	LI	Sum	I/I	LI	Sum	I/I	LI	Sum
25%	-0.100	+0.050	-0.050	-0.025	0.000	-0.025	-0.375	0.000	-0.375
50%	-0.075	-0.025	-0.100	-0.025	-0.025	-0.050	-0.425	0.000	-0.425
75%	-0.050	+0.100	+0.050	-0.025	-0.125	-0.150	-0.450	-0.400	-0.850
75%	-0.050	0.000	-0.050	-0.025	-0.125	-0.150	-0.450	-0.400	-0.850
50%	-0.075	-0.375	-0.425	-0.025	-0.125	-0.150	-0.425	0.000	-0.425
25%	-0.100	-0.100	-0.200	-0.020	0.000	-0.025	-0.375	0.000	-0.375

NLP-152

	9/88 Calibration			8/90 Calibration			4/92 Calibration		
Scale	I/I	LI	Sum	I/I	LI	Sum	I/I	LI	Sum
25%	+0.050	0.000	+0.050	+0.050	+0.625	+0.675	+0.075	0.000	+0.075
50%	+0.075	0.000	+0.075	0.000	+0.125	+0.125	+0.050	0.000	+0.050
75%	+0.050	0.000	+0.050	0.000	-0.150	-0.150	+0.050	0.000	+0.050
75%	+0.050	0.000	+0.050	0.000	-0.150	-0.150	+0.050	0.000	+0.050
50%	+0.075	0.000	+0.075	0.000	+0.125	+0.125	+0.050	0.000	+0.050
25%	+0.050	0.000	+0.050	+0.050	+0.625	+0.675	+0.075	0.000	+0.075

NLP-153

	9/88 Calibration			8/90 Calibration			4/92 Calibration		
Scale	I/I	LI	Sum	I/I	LI	Sum	I/I	LI	Sum
25%	+0.050	-0.225	-0.175	+0.100	-0.100	0.000	-0.175	+0.450	+0.275
50%	+0.075	-0.575	-0.500	+0.100	-0.325	-0.225	-0.150	+0.475	+0.325
75%	+0.050	-1.125	-1.075	+0.100	-0.850	-0.750	-0.150	-0.500	-0.650
75%	+0.050	-1.125	-1.075	+0.100	-0.850	-0.750	-0.150	-0.375	-0.525
50%	+0.075	-0.625	-0.550	+0.100	-0.325	-0.225	-0.150	+0.250	-0.400
25%	+0.050	-0.300	-0.250	+0.100	-0.250	-0.150	-0.175	+0.325	+0.150

Comparing the "as found" error data between the three panel indicators at the approximate level for normal operation, 50%, the greatest deviation was 0.75% which was between NLP-151 and NLP-153.. The indicator error for NLP-152 was virtually zero at +0.05%. Thus, the actual calibration difference between the three level transmitters must have been very small. To verify this statement, a realistic scenario was derived to determine the transmitter errors assuming:

NLP-151 = NLP-152 = NLP-153 = 42%

At the two 50% level (pressure applied in an increasing, then decreaseing fashion) readings, the errors are as follows:

NLP-151 transmitter errors:	-0.900%	-1.250%	(from Table 1B)
NLP-151 indicator errors:	-0.425%	-0.425%	(from above)
NLP-152 transmitter errors:	unknown	unknown	
NLP-152 indicator errors:	+0.050%	+0.050%	(from above)
NLP-153 transmitter errors:	unknown	unknown	
NLP-153 indicator errors:	+0.325%	-0.400%	(from above)
NLP-151 total loop errors to the indicator:	-1.325%	-1.675%	(transmitter + indicator)

Thus the transmitter errors for NLP-152 and NLP-153 can be solved as follows:

NLP-152 transmitter error = (NLP-151 total error) - (NLP-152 indicator error)
= -1.325% - (+0.050%) = -1.375%, and
= -1.675% - (+0.050%) = -1.725%

NLP-153 transmitter error = (NLP-151 total error) - (NLP-153 indicator error)
= -1.325% - (+0.325%) = -1.650%, and
= -1.675% - (-0.400%) = -1.275%.

Therefore, it is readily apparent that the measure transmitter errors of +50% on NLP-152 and -20% on NLP-153 are not attributable to drift and the data should be discarded for the drift analysis.

Attachment 2 to AEP:NRC:1181C

Update to AEP:NRC:1181

Reasons and 10 CFR 50.92 Significant Hazards
Evaluations for Changes to the Technical Specifications
for Donald C. Cook Nuclear Plant Unit 2

UPDATE TO AEP:NRC:1181

Surveillance extension requests which may be removed from AEP:NRC:1181

The extension for the intermediate range detector calibration and P-6 interlock functional testing (Group 11, T/Ss 4.3.1.1.1, Table 4.3-1, Item 5 and 4.3.1.1.2) is no longer needed since the surveillance was satisfactorily completed during the forced outage on August 10, 1993. (Replace T/S page 3/4 3-11 from AEP:NRC:1181 submittal with new proposed page 3/4 3-11.)

The extension for the reactor coolant flow calibration (Group 15, T/Ss 4.2.5.2 and 4.3.1.1.1, Table 4.3-1, Items 12 & 13) is not needed since the transmitters were calibrated during October and November 1992. The first transmitters calibration is due August 17, 1994, after the requested extension date. The remainder of the channel can be calibrated at power. (Replace T/S page 3/4 3-11 [same as above] and delete T/S pages 3/4 2-15 and 3/4 3-12 from AEP:NRC:1181 submittal.)

The extension for containment water level calibration (Group 14, T/S 4.3.3.6, Table 4.3-10, Item 18) is no longer needed. It has been determined that this calibration can be performed without entry into lower containment, therefore, we can perform it prior to the refueling outage. (Replace T/S page 3/4 3-47 from AEP:NRC:1181 submittal with new proposed page 3/4 3-47.)

Surveillance extension requests which need added to AEP:NRC:1181

It has recently been determined that three T/S surveillances were omitted from our original submittal (AEP:NRC:1181 dated April 16, 1993) concerning operation of Unit 2 longer than certain T/S surveillances allow. The surveillances which need interval extensions may be added to existing groups of T/Ss as set forth in AEP:NRC:1181 as follows:

Group	T/S Affected	Description of Change	Due Date
(4)	4.3.2.1.1, Table 4.3-2, Items 8.a & 8.b	Delay calibrations of time delay relays for 4 Kv bus loss of/degraded voltage	02/05/94 limiting due date
(5)	4.3.3.6, Table 4.3-10, Item 15	Delay calibrations of incore thermocouples in mode 3	04/28/94
(14)	4.4.6.1.b	Delay calibration of containment flow monitoring system	04/03/94

The remainder of this attachment contains the reasons the interval extensions are being requested, justifications for the extensions, and the significant hazards consideration.

(4) 4 Kv Loss of Voltage and Degraded Voltage Time Delay Relays

T/S 4.3.2.1.1, Table 4.3-2, Items 8.a and 8.b require that these time delay relays be calibrated every 18 months. This surveillance should not be performed at power because the components involved (agastats) cannot be isolated from their normal power supply. Performance of the surveillance could cause a power transfer which would result in a challenge to safety related components. Also, since the surveillance would be performed on "live" equipment, personnel safety is at risk. This extension is need from February 5, 1994, until the Unit 2 refueling outage. (Replace T/S page 3/4 3-32 from AEP:NRC:1181 submittal with new proposed page 3/4 3-32.)

The time delay relays involved in this surveillance are electronic and were installed in 1986. Electronic agastats are highly reliable, accurate and repeatable. The reliablity, accuracy and repeatablity of the time delay relays were demonstrated during the previous three channel calibration surveillances where no adjustments were required on the as found conditions. Based on the above, there is no reason to believe that during the extension period these time delay relays would not perform their intended safety function as required.

10 CFR 50.92 Criteria

Per 10 CFR 50.92, a proposed amendment will not involve a significant hazards consideration if the proposed amendment does not:

(1) involve a significant increase in the probability or consequences of an accident previously analyzed,

(2) create the possibility of a new or different kind of accident from any accident previously analyzed or evaluated, or

(3) involve a significant reduction in a margin of safety.

Our evaluation of the proposed change with respect to these criteria is provided below.

Criterion 1

Our last three sets of surveillance data on the time delay relays show that they are very reliable, accurate and repeatable. Since they are electronic relays, there is no reason to believe that they would drift outside their acceptable setpoints. Thus, we believe that they would perform their intended function(s) during the extension period. For these reasons, we believe the extension we are requesting will not result in a significant increase in the probability or consequences of a previously evaluated accident, nor will it result in a significant reduction in a margin of safety.

Criterion 2

This extension will not result in a change in plant configuration or operation. Therefore, the extension should not create the possibility of a new or different kind of accident from any previously evaluated or analyzed.

Criterion 3

See Criterion 1, above.

Lastly, we note that the Commission has provided guidance concerning the determination of significant hazards by providing certain examples (48 FR 14870) of amendments considered not likely to involve significant hazards consideration. The sixth of these examples refers to changes which may result in some increase to the probability or consequences of a previously evaluated accident, but the results of which are within limits established as acceptable. We believe this change falls within the scope of this example, for the reasons cited above. Thus, we believe this change does not involve a significant hazards consideration as defined in 10 CFR 50.92.

(5) Incore Thermocouples (Core Exit Thermocouples)

T/S 4.3.3.6, Table 4.3-10, Item 15 requires that a channel calibration be performed every 18 months. Footnote (1) to this T/S requires that a partial range channel calibration for the sensor be performed below P-12 in mode 3. This surveillance cannot be performed during reactor operation since it requires the unit to be in mode 3. This extension is needed from April 28, 1994, until the Unit 2 refueling outage. (Replace T/S page 3/4 3-47 from AEP:NRC:1181 submittal with new proposed page 3/4 3-47. Same page replacement as the one removing the extension request for containment water level surveillance.)

T/S 3.3.3.6, Post-Accident Instrumentation, requires a minimum of 2 core exit thermocouples per core quadrant. Data from 58 incore thermocouples, which are distributed throughout the core in various core locations (13 in Quadrant I, 16 in Quadrant II, 17 in Quadrant III and 12 in Quadrant IV), were reviewed for this analysis.

During reactor operation the core exit thermocouples are required to be channel checked on a monthly bases. We administratively perform the channel check weekly. This surveillance confirms that core exit thermocouples have not changed significantly from the average reading and verifies T/S compliance. If a significant change is noted the associated thermocouple is declared inoperable. This surveillance would continue to be performed during the extension period and if necessary, appropriate T/S actions taken based on the results of the surveillance.

A review has been performed on this cycle's and the previous two cycle's core exit thermocouple data. The purpose of the review was to determine if a significant drift characteristic was inherent to the core exit therocouples which could lead to several core exit thermocouples becoming inoperable prior to the scheduled refueling outage. Essentialy, no thermocouple drift was observed, thus we expect that compliance with T/S 3.3.3.6 (2 thermocouples/core quadrant) will be assured throughout the rest of the scheduled cycle operation. Based on the above, we believe extension of the core exit thermocouple channel calibration will not adversely impact the ability of this equipment to perform its safety function.

10 CFR 50.92 Criteria

Per 10 CFR 50.92, a proposed amendment will not involve a significant hazards consideration if the proposed amendment does not:

(1) involve a significant increase in the probability or consequences of an accident previously analyzed,

(2) create the possibility of a new or different kind of accident from any accident previously analyzed or evaluated, or

(3) involve a significant reduction in a margin of safety.

Our evaluation of the proposed change with respect to these criteria is provided below.

Criterion 1

Review of our last three cycle's surveillance data indicated that drift of the thermocouples is not extpected. Also, we administratively perform the T/S required monthly channel check on a weekly basis. This channel check would provide adequate indication if a significant number of thermocouples needed to be declared inoperable, thus allowing us to take the corrective actions necessary to ensure T/S compliance. Therefore, we believe that the incore thermocouples will be capable of performing their intended function during the extension period. For these reasons, we believe the extension we are requesting will not result in a significant increase in the probability or consequences of a previously evaluated accident, nor will it result in a significant reduction in a margin of safety.

Criterion 2

This extension will not result in a change in plant configuration or operation. Therefore, the extension should not create the possibility of a new or different kind of accident from any previously evaluated or analyzed.

Criterion 3

See Criterion 1, above.

Lastly, we note that the Commission has provided guidance concerning the determination of significant hazards by providing certain examples (48 FR 14870) of amendments considered not likely to involve significant hazards consideration. The sixth of these examples refers to changes which may result in some increase to the probability or consequences of a previously evaluated accident, but the results of which are within limits established as acceptable. We believe this change falls within the scope of this example, for the reasons cited above. Thus, we believe this change does not involve a significant hazards consideration as defined in 10 CFR 50.92.

(14) Containment Flow Monitoring System

T/S 4.4.6.1.b requires that the containment sump flow monitoring system be calibrated every 18 months. This surveillance cannot be performed during reactor operation since it requires entry into the lower volume of containment. This extension is needed from April 3, 1994, until the Unit 2 refueling outage. (Add new proposed T/S page 3/4 4-14 to AEP:NRC:1181 submittal.)

The containment flow monitoring system is used to monitor and detect RCS leakage. By knowing the sump pump capacities (flow rates) and how long a pump runs, the leakage rate can be monitored and estimated. The past two surveillances show that the measured pump flow rates have been well above their acceptance criteria as displayed below:

	Flow Rate (GPM)		
Pump	1992 Surveillance	1990 Surveillance	Acceptance Criteria
Reactor Cavity 2-PP-059 3A	56.21	53.7	> 22
Reactor Cavity 2-PP-059 3B	50.98	48.7	> 22
Lower Containment 2-PP-038 2A	140.75	167.3	> 45
Lower Containment 2-PP-038 2B	166.21	164.0	> 45
Pipe Tunnel 2-PP-061 2A	56.36	53.2	> 45
Pipe Tunnel 2-PP-061 2B	57.22	43.6 57.3 (retest)	> 45

The retest on the pipe tunnel pump (2-PP-061 2B) was successful following removal of foriegn material which entered the sump and pump inlet strainers during the outage.

If a pump were to degrade, the flow rate would decrease; thus increasing the run time for the pump to deliver a given amount of water. This would lead to an over estimation of RCS leakage, which is conservative in respect to the T/Ss. The pipe tunnel sump pump typically runs a minute per day, and the reactor cavity and lower containment pumps run less frequently.

Based on the excellent surveillance history of the pumps and the minimal amount of run time accumulated on the pumps, there is no reason to believe that continued operation during the extension period would cause the pumps to become inoperable.

10 CFR 50.92 Criteria

Per 10 CFR 50.92, a proposed amendment will not involve a significant hazards consideration if the proposed amendment does not:

(1) involve a significant increase in the probability or consequences of an accident previously analyzed,

(2) create the possibility of a new or different kind of accident from any accident previously analyzed or evaluated, or

(3) involve a significant reduction in a margin of safety.

Our evaluation of the proposed change with respect to these criteria is provided below.

Criterion 1

Our past surveillance history on the containment flow monitoring system has shown the pumps to have capacities well above our acceptance criteria. During the current cycle, the reactor cavity, lower containment, and pipe tunnel sump pumps have run for a minimal amount of time. Thus, the potential for pump degradation is small. Therefore, there is no reason to believe that the containment flow monitoring system would not perform its intended function during the extension period. For these reasons, we believe the extension we are requesting will not result in a significant increase in the probability or consequences of a previously evaluated accident, nor will it result in a significant reduction in a margin of safety.

Criterion 2

This extension will not result in a change in plant configuration or operation. Therefore, the extension should not create the possibility of a new or different kind of accident from any previously evaluated or analyzed.

Criterion 3

See Criterion 1, above.

Lastly, we note that the Commission has provided guidance concerning the determination of significant hazards by providing certain examples (48 FR 14870) of amendments considered not likely to involve significant hazards consideration. The sixth of these examples refers to changes which may result in some increase to the probability or consequences of a previously evaluated accident, but the results of which are within limits established as acceptable. We believe this change falls within the scope of this example, for the reasons cited above. Thus, we believe this change does not involve a significant hazards consideration as defined in 10 CFR 50.92.

Attachment 3 to AEP:NRC:1181C

Existing Technical Specifications
for Donald C. Cook Nuclear Plant Unit 2
Marked to Reflect the Proposed Changes