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10CFR50.59(d)(2)

November 7, 2001

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U. S. Nuclear Regulatory Commission
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Subject: Arkansas Nuclear One - Units 1 and 2
Docket Nos. 50-313 and 50-368
License Nos. DPR-51 and NPF-6
ANO-1 10CFR50.59 Summary Report For 2001

Gentlemen:

In accordance with 10CFR50.59(d)(2), enclosed is the Arkansas Nuclear One, Unit 1 (ANO-1) 10CFR50.59 report for the time period ending April 10, 2001. This report contains a brief description of changes in procedures and in the facility as described in the Safety Analysis Report (SAR). The report also contains a description of changes to tests and experiments conducted which were not described in the SAR, and other changes to the SAR for which a safety analysis was conducted. A copy of the completed safety evaluation for each change is also included. This summary report also includes evaluations that were common to both ANO-1 and ANO-2.

Should you have any questions regarding this submittal, please contact me.

Very truly yours,

Glenn R. Ashley
Manager, Licensing

GRA/fpv
Enclosure

IE47

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ARKANSAS NUCLEAR ONE – UNIT 1 AND COMMON
DOCKET Nos. 50-313 AND 50-368
LICENSE Nos. DPR-51 and NPF-6

10CFR50.59 REPORT FOR 2001

This report contains a brief description of changes in procedures and in the facility as described in the Safety Analysis Report (SAR), tests and experiments conducted which were not described in the SAR, and other changes to the SAR for which a safety analysis was conducted. This report also contains the safety evaluation for each change. Included with this summary report are evaluations that were common to both ANO-1 and ANO-2. This report is applicable for the period from October 10, 1999 to April 10, 2001.

The safety evaluations included in this report were performed in accordance with 10CFR50.59 and determined that none of the changes involved an unreviewed safety question.

#	<u>Initiating Doc.</u>	<u>Description</u>
1	PC 974196P201	Chlorination Booster Pump 2P111 Removal
2	ER 991329E102	Connect Nitrogen to Condenser E11A and E11B
3	ER 991642N101	ANO-1 Emergency Feedwater Steam Supply Check Valve Replacement
4	PROC 1104.022	Revise SAR Figure to Depict Gas Collection Header Valve GCH-5 as normally closed
5	ER 975018N101	Changes to Improve Reactor Coolant System Makeup Flow Control
6	CR 2-97-0474	Addition of High Pressure Safety Injection Related Components to Safe Shutdown Components of Interest List
7	NCP 981275N102	Unit 1 Travelling Water Screen Upgrades
8	ER 973922A302	ANO Switchyard Transmission Line Designation Change
9	FHA	Fire Hazards Analysis Revision to Incorporate Time Critical Actions
10	ER 991847N101	ANO-1 P-59A & B Hydrazine Pump Replacement
11	PROC 1000.042	Unit 1 Steam Generator Water Chemistry Monitoring Procedure Update
12	ER 002334E101	Evaluate Throttling Service Water Flow to Decay Heat Pump Bearing Coolers
13	DCP 980642D201	Installation of Facilities to Support ANO-2 Steam Generator Replacement Project
14	TAP 00-1-007	Installation of Throttling Valves in Decay Heat Pump P34A & P34B Inboard Bearing Service Water Piping
15	NCP 002337N101	Add Isolation Valve for Vacuum Degasifier Seal Water Pump P99
16	ER002371N101	Leak Repair of Steam Generator Hot Leg Level Tap Nozzles

#	<u>Initiating Doc.</u>	<u>Description</u>
17	ER 002371N101	Leak Repair of the Steam Generator Hot Leg Level Tap Nozzles
18	ER 002376N101	Addition of Reactor Coolant Pumps P32A, P32C, & P32D Backstop Lube Oil Flow Computer Points
19	ER 002334N102	Decay Heat Pumps P34A & P34B Bearing Housing Replacement and Cooling Water Modification
20	PROC 1000.152	Application of Compensatory Measures for Elevator Doors that are part of a Fire Area Boundary
21	CALC 89E004402	Changes to Unit 1 SAR Section 9.3.2.1 "Service Water and Intermediate Cooling Water Systems" & Table 9-15 "Service Water Summary"
22	NCP 963568N101	Installation of MGP N-16 Radiation Monitoring System
23	DRN 00-01020	Normal Positions for Dirty Waste Drain Pumps P52A & P52B Discharge Valves (DZ-14A & B) Changed to Closed
24	DRN 00-01126	Normal Position for Aux. Building Drain Transfer Pump P46 Discharge Valve (CZ-15) Changed to Closed
25	PROC 1015.017	Evaluation of Spent Fuel Pool Purification Suction Valves not in Design Position due to Flow Restriction
26	PROC 1015.017	Evaluation of Domestic Water Valves Maintained out of Normal Position
27	NCP 992133N101	Electro-Hydraulic Fluid System Improvement Modification
28	ER 002565E301	Evaluation of Deferral of Unit 1 ILRT
29	ER 002636N101	Addition of Purge Air and Buffering Water Systems to the Instrument Air Compressors
30	PROC 1012.027	Revision to ALARA Committee Review Criteria
31	ER 002559E101	Replacement of Fire Protection System Valve FS-5622B

#	<u>Initiating Doc.</u>	<u>Description</u>
32	CR 1-98-0704	Revise Unit 1 SAR Section 14.3 "Additional Analysis – Emergency Feedwater System Sizing" to Include Reference to SBLOCA Analysis
33	ANO-1 TRM ANO-2 TRM ANO-1 SAR ANO-2 SAR	Removal of the Auto-Actuation Function of the Chlorine Detection System for Control Room Ventilation Fans VSF-9 & 2VSF-9
34	ER 991603E101	Evaluation of Alternate Cooling Water Supply to Circulating Water Pumps
35	ER 992137E101	Replacement of Fire Protection System Valve FS-5615D
36	PROC 1107.003	Extension of Inverter Y-28 Alternate Power Time Clock
37	CALC 87E005902	ANO-1 Loss of Feed Water Event Analysis
38	TAP 01-0-001	Installation of Temporary Fire Pump
39	NCP 991682N101	Vacuum Pump Reliability & Monitoring Improvements
40	ER 992205E101	Evaluation of the Removal of Various Walls Inside CA-1 for the Unit 2 Steam Generator Replacement Project
41	ER 002814E101	Equivalency Evaluation for Decay Heat System Valve DH-1405
42	TAP 01-1-001	Evaluation of Temporary Cooling Water to Intermediate Cooling Water Cooler E-28C
43	VSC SAR	Evaluation of Surface Area Contact Between VCC and the Concrete Storage Pad
44	ER 002875N101	Reactor Building Temperature Monitoring Removal
45	PROC 1305.034	Temporary Isolation of Makeup Tank Relief Path
46	ER 002475N101	Installation of Moisture Separator Reheater Tie-ins for a Future Demineralizer System
47	NCP 974078N101	Repair of Retention Element for Spent Resin Tank T13

#	<u>Initiating Doc.</u>	<u>Description</u>
48	ER 002612N101	ANO-1 Generic Letter 96-06 Phase II Modifications
49	ER 010182E101	Equivalency Evaluation for Decay Heat System Valve DH-1016
50	CALC 00R100103	Cycle 17 Reload Report
51	ER 010220E101	Evaluation of the Use of the Spent Fuel Handling Bridge (H-3)
52	ER 010118E101	Provide Temporary Power to Electrical Distribution Panels D-11 & D-21 in Support of Maintenance on Transfer Switches 43-D01 & 43-D02
53	TAP 01-1-002	Evaluation of Operation with Valve MU-45A ("A" HPI Nozzle Isolation Valve) Internals Removed
54	PROC 1628.014	Added Instructions for Contingency Biocide Treatment of the Unit 1 Circulating Water System
55	DRN 01-644	Evaluation of Instrument Air Valve IA-611 as a Normally Closed Valve
56	ER 002545E101	Incorporates SQUG/GIP/USI A-46 Seismic Qualification Methods into the ANO-1 SAR
57	PROC 1015.017	Evaluation of Bypassing the Cyclone Separators for the Circulating Water Pump Bearing Lubrication System
58	PROC 1015.017	Evaluation of the Turbine Building Drain Radiation Monitor Out of Service
59	ER 974259N101	Relocation of Containment Isolation Boundary for Penetration P41

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FORM TITLE:

10CFR50.59 DETERMINATION

FORM NO.

1000.131A

REV.

2 PC-2,3

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Document No. PC 974196P201

Rev./Change No. 0

Title Chlorination Booster Pump 2P111 Removal

Will the proposed Activity:

1. Require a change to the Operating License including:

Technical Specifications (excluding the bases)? Yes ☐ No ☒Operating License? Yes ☐ No ☒Confirmatory Orders? Yes ☐ No ☒

2. Result in information in the following SAR documents (including drawings and text) being (a) no longer true or accurate, or (b) violate a requirement stated in the document:

Core Operating Limits Report Yes ☐ No ☒SAR (multi-volume set for each unit)? Yes ☒ No ☐QAMO?* Yes ☐ No ☒E-Plan?* Yes ☐ No ☒FHA Yes ☐ No ☒Bases of the Technical Specifications? Yes ☐ No ☒NRC Safety Evaluation Reports? Yes ☐ No ☒

3. Involve a test or experiment not described in the SAR? Yes
- ☐
- No
- ☒

4. Result in a potential impact to the environment? (Complete Environmental Impact Checklist of this form.) Yes
- ☐
- No
- ☒

5. Result in the need for a Radiological Safety Evaluation per section 6.2.4.A? Yes
- ☐
- No
- ☒

6. Result in any potential impact to the equipment or facilities utilized for Ventilated Storage Cask activities per Section 6.2.4.B? Yes
- ☐
- No
- ☒

Basis for Determination:

This modification package removes chlorination booster pump 2P111, including all mechanical, electrical and interlock interfaces with other intake structure systems. The booster pump has been inactive since early 1991; its removal will not have any affect on other adjacent systems in the sodium bromide/sodium hypochlorite building. The chlorination booster pump is not discussed in the operating license, confirmatory orders, technical specifications or in any of the SAR documents. SAR Figures 8.3-54 & 10.4-1 denote the booster pump and will be revised to denote changes made per this modification; a 10CFR50.59 evaluation is required. No empirical testing will be performed. This modification does not pertain to a radiological system. The chlorination booster was associated with the now defunct chlorination system and is now inactive; its removal will not have an impact on the environment. This modification is not related to the VSC system and can not impact equipment or facilities utilized for VSC.

* Changes to these documents require an evaluation in accordance with 10CFR50.54.
See Section 6.2.1.B.

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References: List sections reviewed in the Licensing Basis Documents, specified in questions 1, 2 and 3. If a keyword search was done on LRS, "all" may be entered under "Section" with the keyword(s) used in parentheses. Controlled hard copies of the documents shall be reviewed as computer-based searches such as LRS are not controlled and search text only, not figures or drawings. Attach a completed LDCR if LBD changes are required.

<u>Document</u>	<u>Section</u>
U1&U2 Op. License	All (keyword: 2P-111, "chlorination booster pump", chlorination,
U1&U2 Tech. Specs.	All booster, bromine, bromination, hypochlorite)
U1&U2 Conf. Orders	All
U1&U2 SAR	All U2 SAR Fig. 8.3-54, 10.4-1, U1 SAR Fig. 9-14
U1&U2 COLR	All
FHA	All
QAMO	All
E-Plan	All
U1&U2 TS Bases	All


Certified Reviewer's Signature

Timothy J. Morse
Printed Name

5/25/97
Date

Reviewer's certification expiration date: **8/21/98**

Assistance provided by:

Printed Name

Scope of Assistance

Date

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ENVIRONMENTAL IMPACT CHECKLIST (UNIT 1 and UNIT 2)

Document No. PC 974196P201

Rev./Change No. 0

Complete the following checklist. If the answer to any checklist item is "Yes", an Environmental Evaluation is required. See Section 6.2.1.E for additional guidance.

Will the Activity being evaluated:

<u>Yes</u>	<u>No</u>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Disturb land that is beyond that initially disturbed during construction (i.e., new construction of buildings, creation or removal of ponds, or other terrestrial impact)? See Unit 2 SAR Figure 2.5-17. This applies only to areas outside the protected area.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Increase thermal discharges to lake or atmosphere?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Modify the design or operation of cooling tower which will change drift characteristics?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Install any new transmission lines leading offsite?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Change the design or operation of the intake or discharge structures?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Discharges any chemicals new or different from that previously discharged?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Involve incineration or disposal of any potentially hazardous materials on the ANO site?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Result in a change to nonradiological effluents or licensed reactor power level?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Potentially change the type or increase the amount of non-radiological air emissions from the ANO site.

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FORM TITLE: 10CFR50.59 EVALUATION	FORM NO. 1000.131B	REV. <u>Page 13</u> 2

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10CFR50.59 Eval. No. FFN-97-112
(Assigned by PSC)

Document No. PC 974196P201

Rev./Change No. 0

Title Chlorination Booster Pump 2P111 Removal

A WRITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO EACH QUESTION MUST BE ATTACHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A SIMPLE STATEMENT OF CONCLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDANCE FOR RESPONSE.

If the answer to any question on this form is "Yes," then an unreviewed safety question is involved. If the answer to all questions is "No," then the proposed change does not involve an unreviewed safety question.

1. Will the probability of an accident previously evaluated in the SAR be increased?

Yes ☐ No ☒

The purpose of the chlorination booster pump (2P111) was to provide additional pressure to overcome Unit 2 circulating water pressure for feeding chlorinated water to treat Unit 2 CW system. The pump was subsequently abandoned when chlorination treatment was replaced with sodium bromide and sodium hypochlorite (Unit 1 CW/SW bays and Unit 2 SW bays) and acid addition (Unit 2 CW bays) for biofouling. The booster pump has been electrically and mechanically isolated from all adjacent systems at the sodium bromide/sodium hypochlorite building.

This modification will remove the inactive chlorination booster pump and all related components and control instrumentation. The booster pump is not affiliated with any active system and is not considered to be an accident initiator; its removal can not increase the probability of an accident previously evaluated in the SAR.

2. Will the consequences of an accident previously evaluated in the SAR be increased?

Yes ☐ No ☒

The chlorination booster pump is inactive and is not relied upon for accident mitigation. Its removal will not affect any other systems utilized for accident mitigation, and therefore can not increase the consequences of an accident previously evaluated in the SAR.

3. Will the probability of a malfunction of equipment important to safety be increased?

Yes ☐ No ☒

The chlorination booster pump is inactive and will be completely removed from all adjacent chemical injection systems, none of which have equipment important to safety. Other means for treating the Unit 2 CW bays are established to control biofouling and maintain efficient system function. Therefore the probability of a malfunction to equipment important to safety will not be increased.

4. Will the consequences of a malfunction of equipment important to safety be increased?

Yes ☐ No ☒

The removal of the chlorination booster pump will not increase the consequences of a malfunction of equipment important to safety because it is not relied upon for accident mitigation, is inactive and does not interface with any equipment important to safety.

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5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created?

Yes ☐ No ☒

The chlorination booster pump is inactive and will be removed from all adjacent chemical injection systems so that it can not, directly or indirectly, affect another system such as to create the possibility of an accident of a different type than previously evaluated in the SAR.

6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created?

Yes ☐ No ☒

No equipment important to safety will be adversely affected by this modification. There is no safety equipment related to or interfacing with the chlorination booster pump. No new failure modes are added by this modification as to create the possibility of a malfunction of equipment important to safety of a different type than previously evaluated in the SAR.

7. Will the margin of safety as defined in the bases for any technical specification be reduced?

Yes ☐ No ☒

There are no margins of safety in the Tech. Spec. bases concerning or influenced by the chlorination booster pump. Therefore, the margin of safety will not be reduced by this modification.

T-J Morse
Certified Reviewer's Signature

Timothy J. Morse
Printed Name

5/25/97
Date

Reviewer's certification expiration date: 8/21/98

Assistance provided by:

Printed Name

Scope of Assistance

Date

PSC review by: J. P. [Signature]

Date: 6/19/97

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This Document contains 4 Pages.

Document No. TAP-89-1-002/ER 991329E02 Rev./Change No. 0

Title: CONNECT NITROGEN TO CONDENSER E11A AND E11B

Brief description of proposed change:

This Temporary Alteration connects the Low Pressure Nitrogen Supply Header to the Unit 1 condenser hotwells to suppress the dissolved oxygen content in the condensate system.

The maximum available pressure will be limited by the low-pressure nitrogen relief valve PSV-8332. This will require valve N2-118 to be maintained in the open position to insure that the hose is protected by this relief valve. The permanent pressure regulator(s) will be utilized to control normal operating pressure. A flow indicator will be used to measure flow. Isolation valves will be provided to allow securing a nitrogen or vacuum leak. The effects of nitrogen on condenser vacuum will be self-limiting since the volumetric capacity of the vacuum pump(s) increases with decreasing vacuum.

Will the proposed Activity:

1. Require a change to the Operating License including:

Technical Specifications (excluding the bases)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Operating License?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Confirmatory Orders?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
2. Result in information in the following SAR documents (including drawings and text) being (a) no longer true or accurate, or (b) violate a requirement stated in the document:

SAR (multi-volume set for each unit)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Core Operating Limits Report?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Fire Hazards Analysis?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Bases of the Technical Specifications?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Technical Requirements Manual?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
NRC Safety Evaluation Reports?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
3. Involve a test or experiment not described in the SAR?
(See Attachment 2 for guidance)

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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4. Result in a potential impact to the environment? (Complete Environmental Impact Determination of this form.)

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
5. Result in the need for a Radiological Safety Evaluation per section 6.1.5?

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
6. Result in any potential impact to the equipment or facilities utilized for Ventilated Storage Cask activities per Section 6.1.6?

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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7. Involve a change under 10CFR50.54 for the following SAR documents per Section 6.1.7?

QAMO?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
E-Plan?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

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ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Document No. TAP-99-1-002 / ER 99/329 E102 Rev./Change No. 0

Complete the following Determination. If the answer to any item below is "Yes", an Environmental Evaluation is required. See Section 6.1.4 for additional guidance.

Will the Activity being evaluated:

Yes No

- | | | |
|--------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Disturb land that is beyond that initially disturbed during construction (i.e., new construction of buildings, creation or removal of ponds, or other terrestrial impact)? See Unit 2 SAR Figure 2.5-17. This applies only to areas outside the protected area. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase thermal discharges to lake or atmosphere? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Modify the design or operation of cooling tower which will change drift characteristics? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Install any new transmission lines leading offsite? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Change the design or operation of the intake or discharge structures? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Discharges any chemicals new or different from that previously discharged? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve incineration or disposal of any potentially hazardous materials on the ANO site? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Result in a change to nonradiological effluents or licensed reactor power level? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially change the type or increase the amount of non-radiological air emissions from the ANO site. |

FORM TITLE:

10CFR50.59 SAFETY EVALUATION

FORM NO.

1000.131B

REV.

3 PC-2

Document No. TAP-99-1-002/~~E2991329~~
E102

Rev./Change No. 0

10CFR50.59 Eval. No.

(Assigned by PSC)

FFN 99-013

Title CONNECT NITROGEN TO CONDENSER E11A AND E11B

A WRITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO EACH QUESTION MUST BE ATTACHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A SIMPLE STATEMENT OF CONCLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDANCE FOR RESPONSE.

If the answer to any question on this form is "Yes," then an unreviewed safety question is involved. If the answer to all questions is "No," then the proposed change does not involve an unreviewed safety question.

1. Will the probability of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒
2. Will the consequences of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒
3. Will the probability of a malfunction of equipment important to safety be increased? Yes ☐ No ☒
4. Will the consequences of a malfunction of equipment important to safety be increased? Yes ☐ No ☒
5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created? Yes ☐ No ☒
6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created? Yes ☐ No ☒
7. Will the margin of safety as defined in the basis for any technical specification be reduced? Yes ☐ No ☒



Certified Reviewer's Signature

David N. McKenney

Printed Name

1/19/99

Date

Reviewer's certification expiration date: 6/6/99

Assistance provided by:

Printed Name	Scope of Assistance	Date

PSC review by:



Date:

1/19/99

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FORM TITLE: 10CFR50.59 REVIEW CONTINUATION PAGE	FORM NO. 1000.131C	REV. 3

Document No. TAP-99-1-002 / EL 99/329E102 Rev./Change No. 0

10CFR50.59 Review Continuation Page

The addition of an additional temporary nitrogen supply to the Unit 1 condensers has the possibility to affect the nitrogen system and the condenser for each unit.

The nitrogen system supplies high pressure nitrogen to maintain the proper pressure on the Unit 1 Core Flood Tanks and the Unit 2 Safety Injection Tanks. The nitrogen system also supplies nitrogen over pressure blankets for many of the tanks in the radioactive waste systems on both units.

The condenser will be the recipient of the nitrogen supplied through the installation of this temporary alteration. The addition of nitrogen to the condenser for each unit will reduce the amount of dissolved oxygen in the condensate/feedwater. Vacuum in the condenser is normally maintained by condensing steam and the vacuum pumps. The vacuum pumps and associated air ejectors also remove non-condensables from the condenser. Addition of the nitrogen supply to the condenser will require the vacuum pumps to extract more non-condensables.

1. The accidents evaluated in the SAR, which are even remotely related to the installation of this alteration, are Loss of Vacuum, Steam Generator Tube Rupture, and Waste Gas Tank leakage or Rupture.

The addition of the relatively small amount of nitrogen to the condenser will not result in the failure of the condenser vacuum system's ability to maintain sufficient vacuum on each unit. The ability of the condenser to maintain the proper vacuum will not be changed, since the condenser vacuum pumps have adequate capacity to overcome the small amount of nitrogen introduced by this alteration.

The nitrogen system will be required to supply a continuous supply of nitrogen to both the Unit 1 and Unit 2 Condensers as well as maintain the pressure in the Core Flood Tanks, SIT Tanks, and various Radioactive Waste tanks. The Core Flood and SIT tanks are maintained at a certain pressure by batch feeding nitrogen and then bottling up the tanks. The Radioactive Waste tanks are maintained at a relatively low pressure. The Nitrogen system has sufficient capacity to supply both units' condensers as well as the other design loads. The additional load to the nitrogen system will not initiate any of the accidents evaluated in the SAR, therefore the probability of the steam generator tube rupture, or waste gas tank rupture, is not changed.

2. The nitrogen system is not used to mitigate any of the accidents described in the SAR. The addition of nitrogen to the condensers will not change the consequences of a loss of vacuum accident. The steam generator tube rupture event is mitigated to some extent by the ability to maintain condenser vacuum, but since the condenser vacuum system has sufficient capacity to maintain vacuum with the additional nitrogen input, the consequences of a steam generator tube rupture is not changed. The ability of the nitrogen system to maintain a blanket on certain waste tanks will not mitigate the consequences of a tank rupture. Based on this information, the consequences of an accident previously evaluated will not change and dose rates associated with these accidents will not change.
3. The temporary alteration being installed has no direct interface with safety related equipment. The loss of the condenser's ability to maintain vacuum will result in a turbine trip. The piping system, connecting the nitrogen system to equipment important to safety, has not been affected by this alteration. Adequate isolation valves and the proper selection of hose/tubing size would minimize any impact a nitrogen line rupture would have on the overall system. The Core Flood and SIT tanks are batch fed and then isolated from the nitrogen system during normal operations, therefore none of these tanks will be adversely affected by this alteration. The safe shutdown capabilities of both Unit 1 and Unit 2 will not be changed. The probability of a malfunction of equipment important to safety is not changed by the installation of this temporary alteration.
4. Continued on the next page

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4. The additional supply of nitrogen to the condenser will not change the consequences of the malfunction of any equipment important to safety. The addition of nitrogen to the condenser will not change the consequences of a waste gas tank rupture or the loss of the condenser. Although a steam generator tube rupture would result in increased activity in the secondary, the condenser vacuum system has adequate capacity to maintain vacuum even with the addition of nitrogen. Since the core flood tanks and the SIT tanks are filled one at a time and then isolated, the ability of the tanks to mitigate the consequences of a loss of coolant event will not change. No new release path(s) will be created by the installation of this temporary alteration.
5. Any accidents associated with the installation of the temporary nitrogen feed to the condenser, are bounded by the existing accident analysis in the Unit 1 and Unit 2 SAR. The only failures which could occur, are a failure of the nitrogen system, or a loss of condenser vacuum due to excessive nitrogen introduction. Since the SIT and Core Flood tanks are filled and then isolated and the other critical nitrogen loads have accumulators, failure of the nitrogen system will not create an accident of a different type than that analyzed in the SAR(s). The loss of condenser vacuum has been analyzed.
6. The equipment installed by this alteration performs no function important to safety. The installation of this temporary equipment cannot result in a new type of malfunction of existing equipment. The system parameters associated with the nitrogen system will not be changed by this alteration. No new failure mode(s) will be created as a result of this alteration.
7. The ability of the condenser to maintain vacuum conditions is discussed in the bases of the technical specifications. The ability of the condenser to maintain the proper vacuum will not be changed, since the condenser vacuum pumps have adequate capacity to overcome the small amount of nitrogen introduced by this alteration. The nitrogen system's ability to supply nitrogen to the core flood and SIT tanks will not be degraded by this alteration. The margin of safety as defined in the bases for any technical specification is not changed.

Based on the responses presented above, an Unreviewed Safety Question will not be created by the installation of this Temporary Alteration.

3

FORM TITLE:

10CFR50.59 DETERMINATION

FORM NO.

1000.131A

REV.

3 PC-1

This Document contains 3 Pages.

Document No. ER991642N101Rev./Change No. 0

Title

ANO-1 EFW STEAM SUPPLY CHECK VALVE REPLACEMENT

Brief description of proposed change:

This change replaces existing EFW steam supply check valves MS-271 and MS-272 with check valves of a new design. The existing valves are 4" 600 lb ASME III Class 3 normally closed lift checks. The replacement valves are 4" 600 lb ASME III Class 3 normally open nozzle checks. The new design was developed by Enertech specifically for this application in order to eliminate valve chatter that exists when the EFW system is in the standby mode. The existing lift check valves (and previous swing check valves installed in this location) experience significant degradation due to chatter. This is a common industry problem that has been successfully resolved by Enertech's new design at three other sites.

Will the proposed Activity:

1. Require a change to the Operating License including:
 - Technical Specifications (excluding the bases)? Yes ☐ No ☒
 - Operating License? Yes ☐ No ☒
 - Confirmatory Orders? Yes ☐ No ☒
2. Result in information in the following SAR documents (including drawings and text) being (a) no longer true or accurate, or (b) violate a requirement stated in the document:
 - SAR (multi-volume set for each unit)? Yes ☒ No ☐
 - Core Operating Limits Report? Yes ☐ No ☒
 - Fire Hazards Analysis? Yes ☐ No ☒
 - Bases of the Technical Specifications? Yes ☐ No ☒
 - Technical Requirements Manual? Yes ☐ No ☒
 - NRC Safety Evaluation Reports? Yes ☐ No ☒
3. Involve a test or experiment not described in the SAR?
(See Attachment 2 for guidance) Yes ☐ No ☒
4. Result in a potential impact to the environment? (Complete Environmental Impact Determination of this form.) Yes ☐ No ☒
5. Result in the need for a Radiological Safety Evaluation per section 6.1.5? Yes ☐ No ☒
6. Result in any potential impact to the equipment or facilities utilized for Ventilated Storage Cask activities per Section 6.1.6? Yes ☐ No ☒
7. Involve a change under 10CFR50.54 for the following SAR documents per Section 6.1.7?
 - QAMO? Yes ☐ No ☒
 - E-Plan? Yes ☐ No ☒

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Document No. ER991642N101

Rev./Change No. 0

Basis for Determination (Questions 1, 2, & 3):

Q1. The proposed activity is limited to the replacement of an existing SR component with a different type that satisfies the existing basic SR function. This activity is on a level of detail that is not discussed in the operating license.

Q2. This change affects information depicted on M-204 Sheet 6 which is also SAR Figure 10-2. The new check valves receive the annotation "N.O." for normally open.

Q3. The change does not affect the system's function or operating characteristics or create what would constitute a test or experiment.

☐ Proposed change does not require 10CFR50.59 Evaluation per Attachment 1, Item # _____. (If checked, note appropriate item #, send LDCR to Licensing).

Search Scope:

List sections reviewed in the Licensing Basis Documents specified in questions 1, 2 and 3. If search was performed on LRS, the LRS search index should be entered under "Section" with the search statement(s) used in parentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified and searches only text, not figures or drawings). **Attach and distribute a completed LDCR per Section 6.1.2 if LBD changes are required.**

Document Section

LRS: Unit 1 - 50.59: EFW and check valve; MS-271; MS-272; EFW and HELB

MANUAL SECTIONS: 10.4.8, A.7, Table 10-1, Table A-6

FIGURES: 10-2



Edward Blackard

Certified Reviewer's Signature

Printed Name

7/8/99

Date

Reviewer's certification expiration date: 3/22/01

Assistance provided by:

Printed Name

Scope of Assistance

Date

Search Scope Review Acceptability (NA, if performed by Technical Reviewer per 1000.006)



Bill Rowlett

Certified Reviewer's Signature

Printed Name

7/14/99

Date

PAGE 4 REV. 0

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ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Document No. ER991642N101

Rev./Change No. 0

Complete the following Determination. If the answer to any item below is "Yes", an Environmental Evaluation is required. See Section 6.1.4 for additional guidance.

Will the Activity being evaluated:

Yes No

- | | | |
|--------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Disturb land that is beyond that initially disturbed during construction (i.e., new construction of buildings, creation or removal of ponds, or other terrestrial impact)? See Unit 2 SAR Figure 2.5-17. This applies only to areas outside the protected area. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase thermal discharges to lake or atmosphere? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Modify the design or operation of cooling tower which will change drift characteristics? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Install any new transmission lines leading offsite? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Change the design or operation of the intake or discharge structures? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Discharges any chemicals new or different from that previously discharged? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve incineration or disposal of any potentially hazardous materials on the ANO site? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Result in a change to nonradiological effluents or licensed reactor power level? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially change the type or increase the amount of non-radiological air emissions from the ANO site. |

FORM TITLE:

10CFR50.59 SAFETY EVALUATION

FORM NO.

1000.131B

REV.

3 PC-2

This Document contains 1 Page.

Document No. ER991642N101Rev./Change No. 010CFR50.59 Eval. No. FFN 99-057

(Assigned by PSC)

Title ANO-1 EFW Steam Supply Check Valve Replacement

A WRITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO EACH QUESTION MUST BE ATTACHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A SIMPLE STATEMENT OF CONCLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDANCE FOR RESPONSE.

If the answer to any question on this form is "Yes," then an unreviewed safety question is involved. If the answer to all questions is "No," then the proposed change does not involve an unreviewed safety question.

1. Will the probability of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒

The proposed activity replaces an existing SR component with another having similar fit and function and equivalent design standards. As such, the activity does not represent a change to any accident initiators; therefore the probability of an accident previously evaluated in the SAR is not increased.

2. Will the consequences of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒

The replacement valves fulfill the same safety related functions required of the existing valves; therefore, the activity does not prevent the affected equipment from fulfilling credited mitigating actions nor does it affect fission product barriers or introduce new pathways for offsite release of radioactive material. Furthermore, the activity does not create new or aggravate existing onsite dose consequences that might restrict access to vital areas or otherwise impede mitigating actions.

3. Will the probability of a malfunction of equipment important to safety be increased? Yes ☐ No ☒

The replacement check valve design eliminates an existing check valve degradation mechanism thereby reducing the probability of check valve failure. The new valve's normally open design also reduces the probability of an EFW turbine failure due to a check valve failing to open upon EFW turbine actuation. Thus, the change actually reduces the probability of a malfunction of equipment important to safety.

4. Will the consequences of a malfunction of equipment important to safety be increased? Yes ☐ No ☒

The activity does not complicate or worsen the consequences of malfunctions of existing equipment important to safety, nor does it introduce new equipment whose failure would create new dose consequences. The fundamental design functions and existing interactions are unaffected by the change.

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3 PC-2

5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created?

Yes ☐ No ☒

The change does not adversely affect the nature and extent of existing potential interactions between essential systems, structures, and components. The possibility of an accident of a different type is therefore not created.

6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created?

Yes ☐ No ☒

The proposed activity does not change the basic functions required of the affected equipment nor does it introduce new or different interactions between essential systems, structures, and components not previously evaluated. The potential valve failure modes remain the same, fail-to-open or fail-to-shut. These modes are addressed adequately in SAR Table 10-1 under the category "steam supply failures". The possibility of creating a different type of malfunction than previously evaluated therefore does not exist.

7. Will the margin of safety as defined in the basis for any technical specification be reduced?

Yes ☐ No ☒

No technical specification bases are affected by this change.


Certified Reviewer's Signature

Edward Blackard
Printed Name

7/9/99
Date

Reviewer's certification expiration date: 3/22/01

Assistance provided by:

Printed Name

Scope of Assistance

Date

PSC review by: 

Date: 8/5/99

4

ARKANSAS NUCLEAR ONE		
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Page 1 of 5

Document No. **1104.022**

Rev./Change No. **031-00-0**

Title **GASEOUS RADWASTE SYSTEM**

Brief description of proposed change: See attached continuation sheet.

Will the proposed Activity:

1. Require a change to the Operating License including:
 - Technical Specifications (excluding the bases)? Yes ☐ No ☒
 - Operating License? Yes ☐ No ☒
 - Confirmatory Orders? Yes ☐ No ☒
2. Result in information in the following SAR documents (including drawings and text) being (a) no longer true or accurate, or (b) violate a requirement stated in the document:
 - SAR (multi-volume set for each unit)? Yes ☒ No ☐
 - Core Operating Limits Report Yes ☐ No ☒
 - Fire Hazards Analysis? Yes ☐ No ☒
 - Bases of the Technical Specifications? Yes ☐ No ☒
 - Technical Requirements Manual? Yes ☐ No ☒
 - NRC Safety Evaluation Reports? Yes ☐ No ☒
3. Involve a test or experiment not described in the SAR?
(See Attachment 2 for guidance) Yes ☐ No ☒
4. Result in a potential impact to the environment? (Complete the Environmental Impact Determination of this form.) Yes ☐ No ☒
5. Result in the need for a Radiological Safety Evaluation per section 6.1.5? Yes ☐ No ☒
6. Result in any potential impact to the equipment or facilities utilized for Ventilated Storage Cask activities per Section 6.1.6? Yes ☐ No ☒
7. Involve a change under 10CFR50.54 for the following SAR documents per Section 6.1.7:
 - QAMO? Yes ☐ No ☒
 - E-Plan? Yes ☐ No ☒

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Page 2 of 5

Document No. **1104.022**

Rev./Change No. **031-00-0**

Basis for Determination (Questions 1, 2 & 3):
See attached continuation sheet.

☐ Proposed change does not require 10 CFR 50.59 Evaluation per Attachment 1, Item #_____, (If checked, note appropriate item #, send LDCR to Licensing).

Search Scope:

List sections reviewed in the Licensing Basis Documents specified in Question 1, 2 and 3. If a search was performed on LRS, the LRS search index should be entered under "Section" with the search statement(s) used in parentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified and searches only text, not figures or drawings). Attach and distribute a completed LDCR per Section 6.1.2 if LBD changes are required.

Document

Section

LRS:

Unit 1 50.59

All (holdup time, decay time, gas* radwaste, dwd, spent resin)

MANUAL SECTIONS:

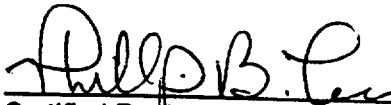
Unit 1 SAR

11.1.3.2, Table 11-6

FIGURES:

Unit 1 SAR

Figure 11-1


Certified Reviewer's Signature

Phillip B. Lea
Printed Name

8/31/99
Date

Reviewer's certification expiration date: 2/11/2001

Assistance provided by:

Printed Name

Scope of Assistance

Date

Search Scope Review Acceptability (NA, if performed by Technical Review per 1000.006)

N/A
Certified Reviewer's Signature

Printed Name

Date

ARKANSAS NUCLEAR ONE		
FORM TITLE: 10CFR50.59 DETERMINATION	FORM NO. 1000.131A	REV. 3

ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Document No. 1104.022

Rev./Change No. 031-00-0

Complete the following Determination. If the answer to any checklist item is "Yes", an Environmental Evaluation is required. See Section 6.1.4 for additional guidance.

Will the Activity being evaluated:

- | <u>Yes</u> | <u>No</u> | |
|--------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Disturb land that is beyond that initially disturbed during construction (i.e., new construction of buildings, creation or removal of ponds, or other terrestrial impact)? See Unit 2 SAR Figure 2.5-17. This applies only to areas outside the protected area. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase thermal discharges to lake or atmosphere? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Modify the design or operation of cooling tower which will change drift characteristics? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Install any new transmission lines leading offsite? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Change the design or operation of the intake or discharge structures? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Discharges any chemicals new or different from that previously discharged? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve incineration or disposal of any potentially hazardous materials on the ANO site? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Result in a change to nonradiological effluents or licensed reactor power level? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially change the type or increase the amount of non-radiological air emissions from the ANO site. |

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10CFR50.59 Review Continuation Page

Steps 8.1.2 and 9.1 Added step to contact Nuclear Chemistry prior to compressing and storing high activity gases so that they can prepare to monitor T-18 total activity. At the request of Licensing and Nuclear Chemistry.

This is a non-technical administrative change made so that Nuclear Chemistry can prepare to monitor the T-18 activity so that ODCM limits will not be exceeded.

Steps 8.12 and 9.11.6 Added a step to inform Nuclear Chemistry and Health Physics that venting and compressing operations were complete.

This is a non-technical administrative change.

Step 10.4 Added a conditional statement to the requirement for holding a minimum of 30 days. It reads, *If the isolated T-18 contains short-lived activity, and if plant and tank conditions permit, then* hold tank contents for a minimum of 30 days to allow for decay.

See comments regarding Attachment C, step 1.4 below.

Step 12.1 and 13.1 Added 14" H₂O where 0.5 psid was written.

Attachments A and B Changed the format of the footnotes.

These two items are non-technical editorial changes.

Attachment B1 Pages 6 and 7 of 8 -- For DWD-30A, DWD-30B and DWD-27, applied the footnote that allows avoiding aligning certain valves if particular conditions apply, such as if the check would cause unneeded personnel radiation exposure.

This change applies a note used elsewhere in Operation's procedures where alignments can cause excessive or unneeded radiation exposure -- this is an approved method of configuration management. LBDs do not contain administrative details for aligning these valves.

Attachment B1 Page 7 of 8 -- Changed normal position of GCH-5 from open to closed.

This change is in conflict with SAR figure 11-1 (M-214 sheet 3). No other LBD has a conflict with this change. DRN 99-01900 and an LDCR have been submitted. The 50.59 Evaluation is attached.

Attachment C Page 1 of 8 -- Edited step 1.4 and related note to add a conditional statement, that in the case of *short-lived gaseous activity* the T-18 should be held for 30 days to allow for decay.

This change in Attachment C and the change to step 10.4 of the procedure, clarifies holdup requirements. This wording more accurately reflects the intent of having holdup time -- that is, holdup time is not warranted for a gaseous radwaste tank that does not contain short-lived activity. This change is similar to the method Unit 2 already employs.

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10CFR50.59 Review Continuation Page

- Attachment C Page 6 of 8 – Added a note at step 4.4 that states the following step would cause an expected alarm.
- Attachment C Page 6 of 8 – Added a continuous action arrow to step 4.9.
- Throughout Eliminated the use of "decrease" and "increase". Wrote-out various abbreviated words. Changed hold card to danger tag, and changed temporary lift to partial clearance. Underlined various logic terms, e.g. if and when.

These three items are non-technical editorial changes.

This procedure change will not require a change to the Facility Operating License, Tech Spec or any Confirmatory Order. Except for the change to the SAR drawing as described above, no information in the SAR will be made inaccurate. There is no violation of any requirement in any SAR document. This procedure change does not involve a test or experiment not described in the SAR.

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FORM TITLE: 10CFR50.59 EVALUATION	FORM NO. 1000.131B	REV. 3 PC-2

Page 1 of 2

FFN-
10CFR50.59 Eval. No. 99-062
(Assigned by PSC)

Document No. 1104.022

Rev./Change No. 031-00-0

Title GASEOUS RADWASTE SYSTEM

This evaluation is addressing the case of having a gas collection header valve, T-13 Vent to GCH YT-80 Inlet Isolation (GCH-5) remain in the normally closed position, contrary to that currently shown on SAR figure 11-1 (M-214 sheet 3). Please note that the vent path is not changing from normally open to normally closed, because this valve is in series with GCH-36, which has been, and will remain, normally closed. Therefore, there is no functional change to the T-13's vent path and there is no functional change to any part of the system, other than to GCH-5 itself. This change only serves to help keep resin from clogging the vent's strainer (YT-80) during certain resin transfer operations. The vent path will continue to be opened as needed and as directed by various operating procedures, such as, the transfer of resin, depressurizing the T-13, or other normal operations.

A WRITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO EACH QUESTION MUST BE ATTACHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A SIMPLE STATEMENT OF CONCLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDANCE FOR RESPONSE.

If the answer to any question on this form is "Yes," then an unreviewed safety question is involved. If the answer to all questions is "No," then the proposed change does not involve an unreviewed safety question.

1. Will the probability of an accident previously evaluated in the SAR be increased?

Yes ☐ No ☒

The probability of an accident previously evaluated in the SAR will not rise since there is no functional change to any plant system.

2. Will the consequences of an accident previously evaluated in the SAR be increased?

Yes ☐ No ☒

This change to GCH-5 will not inhibit any actions to mitigate any release to the public nor does this change open up any new pathway to the environment, nor breach any barrier to the environment. Therefore, there is no increase in the consequences of any accident previously evaluated in the SAR.

3. Will the probability of a malfunction of equipment important to safety be increased?

Yes ☐ No ☒

This change has no affect on equipment important to safety. GCH-5 is performing its design function, i.e. isolating the vent line. No other system function is affected.

4. Will the consequences of a malfunction of equipment important to safety be increased?

Yes ☐ No ☒

This change will not inhibit any action to mitigate any release to the public. This valve position change does not affect the function of any system in any way.

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Pg 2 of 2

5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created?

Yes ☐ No ☒

It is inconceivable that closing GCH-5 could cause any new type of accident, because this changes no function of any system.

6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created?

Yes ☐ No ☒

This change does not alter the function of the gas collection header or the T-13, or any system or equipment important to safety. Therefore, there is no creation of a possibility of malfunction of equipment important to safety of a different type than those previously evaluated in the SAR.

7. Will the margin of safety as defined in the basis for any technical specification be reduced?

Yes ☐ No ☒

Neither the gas collection header, nor the Spent Resin Tank is mentioned in any Tech Spec bases.

Phillip B. Lea
Certified Reviewer's Signature

Phillip B. Lea
Printed Name

8-31-99
Date

Reviewer's certification expiration date: 2/11/2001

Assistance provided by:

Printed Name

Scope of Assistance

Date

PSC review by: VB

Date: 9/2/99

5

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This Document contains 5 Pages.

Document No. ER975018N101 Rev./Change No. 01

Title CV-1235 AND FI-1235 MODIFICATIONS

Brief description of proposed change:


As a result of Nuclear Industry problems with thermal fatigue cracking of HPI/Makeup nozzle, attached piping, and thermal sleeves, ANO-1 has initiated efforts to minimize flow variations through the "D" HPI nozzle. ER975018N101 will implement various changes to improve makeup flow control and to establish a controllable continuous bypass flow. The changes are summarized below.

This Nuclear Change package removes FI-1235 (continuous Makeup bypass flow), MU-33 (isolation for continuous MU bypass), and support MU-244H2. MU-32 will be removed and replaced with an improved control valve for continuous MU bypass flow. The internals of CV-1235 will also be replaced to improve flow control during all plant conditions. This is accomplished by changing the characterization of the valve internals and increasing the stroke from 1.5" to 2".

To obtain sufficient closure thrust for the new internals, a new piston actuator will also be installed in place of the existing diaphragm type. This component will be procured as L4, non-safety related. The new actuator will fail as-is upon a loss of IA and will have manual adjustment capability. In addition, the existing obsolete positioner will be replaced.

To further improve CV-1235 response, the Pressurizer level/makeup flow control loop in NNI-X will be modified to add a function generator module. This module will minimize flow variations when PZR level is near setpoint and apply the same controller response when setpoint varies more than 1%. NNI-X adjustments to fine tune the new valve response are also included.

Installation instructions, reference documentation, and other design/evaluation information are also included in the package.

 Manual isolation valves MU-32-1 and MU-32-2 will be added to provide isolation of valve MU-32 for packing replacement and disc stack cleaning.

ER975018 N101

PAGE 6 REV. 01

FORM TITLE:

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REV.

3 PC-1, 2

Will the proposed Activity:

1. Require a change to the Operating License including:

Technical Specifications (excluding the bases)?

Yes ☐ No ☒

Operating License?

Yes ☐ No ☒

Confirmatory Orders?

Yes ☐ No ☒

2. Result in information in the following SAR documents (including drawings and text) being
-
- (a) no longer true or accurate, or (b) violate a requirement stated in the document:

SAR (multi-volume set for each unit)?

Yes ☒ No ☐

Core Operating Limits Report?

Yes ☐ No ☒

Fire Hazards Analysis?

Yes ☐ No ☒

Bases of the Technical Specifications?

Yes ☐ No ☒

Technical Requirements Manual?

Yes ☐ No ☒

NRC Safety Evaluation Reports?

Yes ☐ No ☒

3. Involve a test or experiment not described in the SAR?
-
- (See Attachment 2 for guidance)

Yes ☐ No ☒

4. Result in a potential impact to the environment? (Complete Environmental
-
- Impact Determination of this form.)

Yes ☐ No ☒

5. Result in the need for a Radiological Safety Evaluation per section 6.1.5?

Yes ☐ No ☒

6. Result in any potential impact to the equipment or facilities
-
- utilized for Ventilated Storage Cask activities per Section 6.1.6?

Yes ☐ No ☒

7. Involve a change under 10CFR50.54 for the following SAR documents
-
- per Section 6.1.7?

QAMO?

Yes ☐ No ☒

E-Plan?

Yes ☐ No ☒

ER975018 N101

PAGE 1 REV. 0

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FORM TITLE:	FORM NO.	REV.	
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Document No. ER975018N101

Rev./Change No. 81

Basis for Determination (Questions 1, 2, & 3):

Question 1: The activities noted in this ER do not functionally alter any MU&P system feature or requirement. Pressurizer level controls makeup flow, continuous bypass flow remains, and there is still a method to identify the continuous bypass flow rate. As such, there are no TS, OL, or CO affected and Question 1 is answered NO.

⚠ Question 2: As a result of MU-33 and FI-1235 removal and the addition of MU-32-1 and MU-32-2, SAR figure 9-3 will be required to be changed. As such, an Evaluation and LDCR is required for this Nuclear Change package. Otherwise, no SAR information is made untrue or inaccurate as this change affects equipment to a level of detail beyond that included in the SAR.

Question 3: The activities noted in this change are all well within the skill level of the craft as valve, actuator, and positioner maintenance is frequently performed at ANO via existing information. Some equipment was chosen based on craft input to minimize any learning curve associated with calibration or adjustments. The noted NNI tuning is nothing more than potentiometer or switch adjustments and followup monitoring of plant parameters to determine valve response. The NNI-X function generator module addition is intended to improve flow control during stable power operation. Other similar devices are installed in NNI-X. Since there is every expectation that equipment will function properly as a result of these changes and that all work is well within the skill level of the craft and considered typical, these changes and adjustments do not involve a test or experiment not described in the SAR.

☐ Proposed change does not require 10CFR50.59 Evaluation per Attachment 1, Item # ____ (If checked, note appropriate item #, send LDCR to Licensing).

Search Scope:

List sections reviewed in the Licensing Basis Documents specified in questions 1, 2 and 3. If search was performed on LRS, the LRS search index should be entered under "Section" with the search statement(s) used in parentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified and searches only text, not figures or drawings). **Attach and distribute a completed LDCR per Section 6.1.2 if LBD changes are required.**

Document Section

LRS: Version 3 (CV-123*, LTOP, 10 w/10 minute*, Makeup flow, MU-3*, continuous bypass, manual bypass, FI-12*, low temperature over*, piston actuator, fail w/10 as*is, fail closed, loss w/5 instrument air, pneumatical*, level control w/5 pressur*, NNI, NNI w/10 calibrat*, NNI w/10 adjust*, safe shutdown w/50 makeup, makeup w/2 purification, Non-Nuclear Instrumentation, NNI w/10 pressur*, reactivity control)

MANUAL SECTIONS: SAR 9.1, 9.1.1, 9.1.2, 9.9, 6.1, 6.1.2.1.1, 6.1.3.1, 4.2.3.5, 7.3.2.2.3, Tables 6-4, 9-25, 9-26

FIGURES: 6-1, 6-2, 9-3

⚠ James J. Souto
Certified Reviewer's Signature

James J. Souto
Printed Name

5/27/99
Date

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Assistance provided by:

Printed Name	Scope of Assistance	Date
_____	_____	_____
_____	_____	_____
_____	_____	_____

Search Scope Review Acceptability (NA, if performed by Technical Reviewer per 1000.006)

<u>Stephen J. Lynn</u>	<u>Stephen J. Lynn</u>	<u>6-16-99</u>
Certified Reviewer's Signature	Printed Name	Date

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ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Document No. ER975018N101

Rev./Change No. 0

Complete the following Determination. If the answer to any item below is "Yes", an Environmental Evaluation is required. See Section 6.1.4 for additional guidance.

Will the Activity being evaluated:

Yes No

- | | | |
|--------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Disturb land that is beyond that initially disturbed during construction (i.e., new construction of buildings, creation or removal of ponds, or other terrestrial impact)? See Unit 2 SAR Figure 2.5-17. This applies only to areas outside the protected area. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase thermal discharges to lake or atmosphere? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Modify the design or operation of cooling tower which will change drift characteristics? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Install any new transmission lines leading offsite? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Change the design or operation of the intake or discharge structures? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Discharges any chemicals new or different from that previously discharged? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve incineration or disposal of any potentially hazardous materials on the ANO site? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Result in a change to nonradiological effluents or licensed reactor power level? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially change the type or increase the amount of non-radiological air emissions from the ANO site. |

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This Document contains 1 Page.

Document No. ER975018N101 Rev./Change No. 0 10CFR50.59 Eval. No. FFN-99-057
(Assigned by PSC) Δ 99-079

Title CV-1235 and FI-1235 Modifications

A WRITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO EACH QUESTION MUST BE ATTACHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A SIMPLE STATEMENT OF CONCLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDANCE FOR RESPONSE.

If the answer to any question on this form is "Yes," then an unreviewed safety question is involved. If the answer to all questions is "No," then the proposed change does not involve an unreviewed safety question.

1. Will the probability of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒

With the noted equipment changes and adjustments, there are no HPI or MU&P system safety related features being adversely affected. While one can argue that the fail as-is actuator position represents a "change", there are now two (2) independently powered downstream isolation valves to limit or isolate flow through this path when required. The original ANO design had only one motor operated valve for isolation in this path and a downstream check valve inside containment. Document reviews indicate that the ANO-1 fail closed position was selected to prevent high inflow to the RCS and high outflow from the MUT due to a loss of IA. Conversely, Davis Besse-1 fails open on a loss of IA to maintain a flow path. Isolation is achieved by closing an in-series motor operated valve, exactly like the original ANO-1 design.

In the event of a loss of power to the original ANO-1 MOV, the only isolation valve besides the downstream check was from closure of CV-1235. The existing CV-1235 downstream isolation valves automatically close during an ES actuation or by the operator as required. When coupled with the new manual control capability of CV-1235, OPS now has exceptionally improved flexibility in mitigating transient conditions such as a loss of IA or other potential control signal or possible actuator tubing/equalizing valve/casing equipment problems.

LTOP issues were investigated in that a fail open position of CV-1235 is the basis for this condition. In combination with the maximum continuous bypass flow, the LTOP analysis still bounds these new conditions. In addition, over pressure protection is provided via the ERV.

The only accident possibly affected by these changes is the nominal or maximum moderator dilution event. With the available redundant design provisions to isolate MU flow and the new internals and bypass valve will not exceed the analysis results of 500 gpm at high differential pressure, there is NO increase in the probability of a moderator dilution accident as a result of these changes and adjustments.

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2. Will the consequences of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒

As noted in question 1, the only logical accident associated with these changes is the nominal or maximum moderator dilution event. Since the flows will be below the assumed maximum of 500 gpm, these changes are enveloped by the dilution event, which is subsequently enveloped within the maximum hypothetical accident doses. As such, there is no increase in the expected offsite radiation dose as a result of these change and adjustment activities.

3. Will the probability of a malfunction of equipment important to safety be increased? Yes ☐ No ☒



The important to safety equipment associated with this package are CV-1235, MU-32, MU-32-1, MU-32-2 and associated piping in terms of their maintaining pressure boundary. None of this equipment is needed for safe shutdown conditions as HPI flows are credited for this purpose. Use of an L4 (commercial grade) actuator on CV-1235 does not reduce its pressure retaining capability as this equipment is mounted and connected to the valve stem outside the pressure boundary area. To minimize fit up issues, the new actuator is manufactured and designed for the existing valve body by the original manufacturer. With the use of appropriate materials & equipment for the pressure boundary parts in this specific application (i.e. ASME code material certifications), functional checks of equipment prior to turnover, and approved installation techniques/procedures, there is no perceived increase in the probability of a malfunction of equipment important to safety.

It should be pointed out that an assumed complete loss of the actuator function would not prevent reactivity control as a manual bypass line is available to obtain makeup flow. Any partial loss of CV-1235 control could be mitigated by manual control, a feature not presently available to the operators. ES response of the MU&P system is not affected by this change as this flow path is isolated post LOCA via CV-1233 or CV-1234.

4. Will the consequences of a malfunction of equipment important to safety be increased? Yes ☐ No ☒

With the improved continuous bypass flow adjustment capability, added operator flexibility for manual control of CV-1235, and decreased valve stem motion due to normal Pressurizer level variations, there is an expected improvement in the reliability of CV-1235. More importantly, the life of the "D" cold HPI nozzle/thermal sleeve is expected to be increased due to the higher bypass flow and improved MU flow response.

The fail as-is actuator position actually improves conditions during a loss of IA as it maintains this path open (assuming a slow loss of IA pressure). With dual and redundant downstream isolation valves or manual control of CV-1235, the operator can still control MU flow or isolate this path and utilize HPI as required.

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Based on these improvements, we can conclude there will be no reduction in the plant response to any accident and, as such, no increase in expected off site dose or the consequences of a malfunction of equipment important to safety.

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5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created?

Yes ☐ No ☒

By virtue of the materials specified, code/seismic qualification analysis, and approved installation techniques, there are no expected mechanical pressure boundary failures of this new MU&P system equipment. Other mechanical equipment failures such as positioner or actuator failures are no more likely to happen than with the existing equipment. The new actuator is being supplied with a hand wheel to overcome some failures by allowing an operator to manually control MU flow. The operator has never had this option before except by using the manual bypass line globe valves and these are not suited for the full range of operating conditions expected.

Besides a pressure boundary failure, there are no specific SAR evaluated accidents or failures associated with this equipment. Based on system knowledge, LTOP is affected by CV-1235 flows but the SAR does not go into this level of detail. It does note that LTOP is mitigated by virtue of ERV operation. In the event an NNI-X failure occurs due to burn in or other electrical component failure, CV-1235 can be manually controlled faster and finer than before.

Based on the above, there are no accidents of a different type than any previously evaluated in the SAR that will be created as a result of this package.

6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created?

Yes ☐ No ☒

In consideration of the independent and redundant downstream isolation valves, manual control of CV-1235 when needed, and throttled flow capability through an HPI path, there is no reasonable malfunction of equipment important to safety that cannot be mitigated through those mechanisms previously noted. Other failures that result in valve lock up would have to be mitigated by using the manual bypass line, i.e. MU-1235-3, which is the identical response for the existing equipment to any type of failure including a loss of IA. Based on this, there is no reasonable malfunction of equipment important to safety created as a result of these changes.

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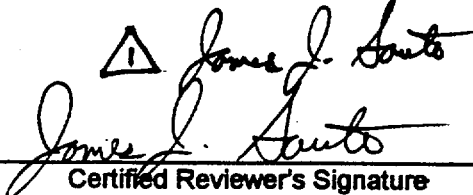
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7. Will the margin of safety as defined in the basis for any technical specification be reduced?

Yes ☐ No ☒

There were no TS bases found that reference margins for makeup flow or continuous bypass flow for the keyword and hardcopy searches performed. While HPI flows are referenced, the values noted are unchanged as the flow path is different for injection. As such, there will be no reductions in any TS bases for the changes and adjustments noted in this package.

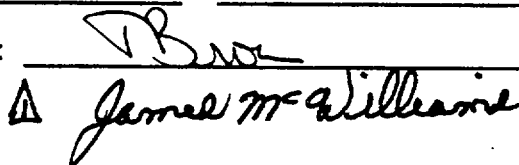
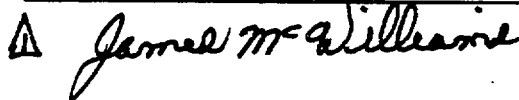

9/2/99
 Certified Reviewer's Signature
 James J. Souto
5/27/99
Printed Name
Date

Reviewer's certification expiration date: 2/6/01

Assistance provided by:

Printed Name	Scope of Assistance	Date
_____	_____	_____
_____	_____	_____
_____	_____	_____

PSC review by:

Date: 8/12/99
9-13-99

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FORM TITLE: 10CFR50.59 DETERMINATION	FORM NO. 1000.131A	REV. 3 PC-1

This Document contains 3 Pages.

Document No. CR-2-97-0474 CA #16 Rev./Change No. 0

Title ADDITION OF HPSI PUMP AND RELATED COMPONENTS TO SAFE SHUTDOWN "COMPONENTS OF INTEREST" LIST.

Brief description of proposed change:

AI # 02 of the referenced CR specified that 2P89B should be considered as a component necessary to achieve safe shutdown during certain fire scenarios. In addition to the pump, the minimum recirculation path should be isolated (i.e. prevents a flow diversion). Manual valve 2BS-26 is readily accessible for isolating all recirculation paths to the RWT. Manual valves 2SI-11A and 2SI-11B are accessible for establishing a flow path for the B HPSI pump. Local RWT level indication will be utilized to verify the status of the RWT. This equipment will be included in the Components of Interest list (Note : Typically, manual valves are not listed in the COI. Therefore, although a discussion is included in the Basis section, 2BS-26, 2SI-11A and 2SI-11B are not listed in the actual COI list).

Will the proposed Activity:

- Require a change to the Operating License including:

Technical Specifications (excluding the bases)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Operating License?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Confirmatory Orders?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
- Result in information in the following SAR documents (including drawings and text) being (a) no longer true or accurate, or (b) violate a requirement stated in the document:

SAR (multi-volume set for each unit)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Core Operating Limits Report?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Fire Hazards Analysis?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Bases of the Technical Specifications?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Technical Requirements Manual?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
NRC Safety Evaluation Reports?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
- Involve a test or experiment not described in the SAR?
(See Attachment 2 for guidance)

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
- Result in a potential impact to the environment? (Complete Environmental Impact Determination of this form.)

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
- Result in the need for a Radiological Safety Evaluation per section 6.1.5?

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
- Result in any potential impact to the equipment or facilities utilized for Ventilated Storage Cask activities per Section 6.1.6?

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
- Involve a change under 10CFR50.54 for the following SAR documents per Section 6.1.7?

QAMO?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
E-Plan?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

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Document No. CR-2-97-0474 CA #16

Rev./Change No. 0
Basis for Determination (Questions 1, 2, & 3):

1. The details of the components necessary to achieve and maintain safe shutdown as a result of a fire are not captured in any Licensing Basis documents related to the Operating License. The use of 2BS-26 to isolate the return paths to the RWT will not be performed until RCS pressure is below HPSI shutoff head, which is well below the pressure for TS 3.5.2 applicability (i.e. 1700 psia).
2. The details of the components necessary to achieve and maintain safe shutdown as a result of a fire are not captured in any of the SAR documents with the exception of the Fire Hazards Analysis. Table 6.3-22 does list the position of 2BS-26, 2SI-11A and 2SI-11B for normal, shutdown cooling and ECCS operation. The portion of time that these valves will be utilized (i.e. in order to provide RCS inventory control) during a fire scenario does not fall into one of these categories.
3. No test/experiment is required to enact the revision to the Components of Interest list.
4. This administrative change does not impact the environment (see attached).
5. This administrative change does not involve the handling of radioactive material or fluids.
6. This administrative change does not involve the handling of spent fuel or the dry fuel storage casks.
7. Neither the QAMO nor the E-plan addresses components necessary to achieve safe shutdown in a fire scenario.

☐ Proposed change does not require 10CFR50.59 Evaluation per Attachment 1, Item # _____. (If checked, note appropriate item #, send LDCR to Licensing).

Search Scope:

List sections reviewed in the Licensing Basis Documents specified in questions 1, 2 and 3. If search was performed on LRS, the LRS search index should be entered under "Section" with the search statement(s) used in parentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified and searches only text, not figures or drawings). **Attach and distribute a completed LDCR per Section 6.1.2 if LBD changes are required.**

Document Section

LRS: 50.59 – Unit 2 (2P89*B, 2BS*26, 2LIS*5643A, 2SI*11*, HPSI pump*, High Pressure Safety Injection, mini w/5 recirc*)

MANUAL SECTIONS: SAR Tables 6.3-3, 6.3-16, 6.3-22; FHA Sections 9.5 (for Area B, AA, DD, HH, JJ, SS and TT) 10.6 and 10.8 (for Zones 2006-LL, 2007-LL, 2040-JJ, 2068-DD, 2073-DD, 2097-X, 2100-Z, 2108-S, 2109-U and 2200-MM).

FIGURES: None

Certified Reviewer's Signature	<u>Woody Walker</u> Printed Name	<u>9/20/99</u> Date
--------------------------------	-------------------------------------	------------------------

Reviewer's certification expiration date: 5/14/01

Assistance provided by:

<u>Printed Name</u> <u>Thomas D. Robinson</u>	<u>Scope of Assistance</u> <u>IDE</u>	<u>Date</u> <u>9-28-99</u>
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Search Scope Review Acceptability (NA, if performed by Technical Reviewer per 1000.006)

<u>Thomas D. Robinson</u> Certified Reviewer's Signature	<u>THOM ROBINSON</u> Printed Name	<u>9-28-99</u> Date
---	--------------------------------------	------------------------

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ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Document No. CR-2-97-0474 CA #16

Rev./Change No. 0

Complete the following Determination. If the answer to any item below is "Yes", an Environmental Evaluation is required. See Section 6.1.4 for additional guidance.

Will the Activity being evaluated:

Yes No

- | | | |
|--------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Disturb land that is beyond that initially disturbed during construction (i.e., new construction of buildings, creation or removal of ponds, or other terrestrial impact)? See Unit 2 SAR Figure 2.5-17. This applies only to areas outside the protected area. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase thermal discharges to lake or atmosphere? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Modify the design or operation of cooling tower which will change drift characteristics? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Install any new transmission lines leading offsite? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Change the design or operation of the intake or discharge structures? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Discharges any chemicals new or different from that previously discharged? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve incineration or disposal of any potentially hazardous materials on the ANO site? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Result in a change to nonradiological effluents or licensed reactor power level? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially change the type or increase the amount of non-radiological air emissions from the ANO site. |

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 10CFR50.59 Eval. No. 99-085
 (Assigned by PSC)

Document No. **CR-2-1997-0474 AI # 16**

Rev./Change No. **0**

Title **Addition of HPSI related component to Unit 2 Components of Interest List**

Background:

CR-2-1997-0474 determined that a fire in the control room/cable spreading room could cause the spurious operation of the outboard Reactor Building Sump isolation valves. Due to the lack of assured Safe Shutdown indication for Refueling Water Tank (RWT) level and the inability to promptly correct a mispositioned valve, the spurious opening of either isolation valve (i.e. 2CV5649-1 or 2CV5650-2) could cause the borated water in the RWT (2T3) to drain to the Reactor Building (RB) sump. The charging pumps are incapable of taking suction from the RB sump. Thus, the previously credited method for maintaining RCS level control would be jeopardized. This scenario could also occur in specific zones outside of the control room/cable spreading room.

The High Pressure Safety Injection pumps can be aligned to take suction from the RB Sump and inject into the RCS. 2P89B was selected as the preferred HPSI pump since the cabling necessary for local operation is independent of the fire areas in which a spurious operation of the sump isolation valves could occur. Currently, the only HPSI injection valves that are credited are those associated with the # 1 HPSI header. Therefore, crossover valves 2SI-11A and 2SI-11B will be manually opened to allow flow from the "B" pump through HPSI header # 1. Aligning the HPSI to take suction from the RB sump is similar to the system response upon receiving a Recirculation Actuation Signal (RAS). When a RAS is generated, the mini-recirculation path to the RWT is automatically isolated. In lieu of depending on the motor operated mini-recirc isolation valve(s), isolation of the path will be accomplished by closing normally-open valve 2BS-26. The need to access this valve will not be necessary until after a sufficient quantity of water has been added from the Boric Acid Makeup tanks. Therefore, while access to the valve may be through the fire area of concern, sufficient time will have elapsed to ensure that the fire has been extinguished. Local indication will be utilized to determine RWT level. Note: Only the B HPSI pump is noted as a Component of Interest. However, any of the HPSI pumps should be available for manual operation in an Alternate Shutdown scenario and is capable of providing the required RCS inventory control. Therefore, the associated procedure 2203.014 is written accordingly.

A WRITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO EACH QUESTION MUST BE ATTACHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A SIMPLE STATEMENT OF CONCLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDANCE FOR RESPONSE.

If the answer to any question on this form is "Yes," then an unreviewed safety question is involved. If the answer to all questions is "No," then the proposed change does not involve an unreviewed safety question.

1. Will the probability of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒

After reviewing the accident initiators listed in Chapter 15 of the SAR, it was determined that the inclusion of these components in the Fire Hazards Analysis (FHA) does not increase the probability of occurrence for any of the analyzed accidents. In addition, it does not increase the probability of the occurrence of a fire.

* Although fire is not specified as an accident in the SAR, Generic Letter 86-10 specifies that the determination of an unreviewed safety question would be based on a fire being the "accident ... previously evaluated". However, at ANO, a fire is classified as an event. Regardless of the classification, crediting these components in the strategy for mitigating the effects of a fire does not present an unreviewed safety question.

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2. Will the consequences of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒

The HPSI pump will be utilized in a similar manner as during receipt of a Recirculation Actuation Signal (RAS) (i.e. the recirculation flow path to the RWT will be isolated). Therefore, the inclusion of these components in the FHA will have no effect on the off-site dose release rates of any of the analyzed accidents listed in the SAR.

3. Will the probability of a malfunction of equipment important to safety be increased? Yes ☐ No ☒

Classifying this equipment as components necessary to achieve safe shutdown as a result of a fire, does not physically alter any equipment important to safety nor does it change the existing operating characteristics of any associated equipment. While aligning the "B" pump discharge to the HPSI #1 header (during a fire scenario) is not a common practice, it will not affect the performance of any of the associated components. Therefore, it will not increase the probability of a malfunction of equipment important to safety.

4. Will the consequences of a malfunction of equipment important to safety be increased? Yes ☐ No ☒

No physical changes are being made to these components (i.e. the equipment will function or fail in the same manner as they did before being classified as Components of Interest). Furthermore, the equipment is being utilized in a manner consistent with the receipt of a RAS. As a result, malfunctions of equipment important to safety are unaffected by this change. Therefore, the off-site dose release rates are not impacted by administratively classifying these components as necessary to achieve safe shutdown (in the event of a fire).

5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created? Yes ☐ No ☒

The administrative change of classifying these components as necessary to achieve safe shutdown in the event of a fire will not create the possibility of any accident. The utilization of these components is consistent with approved operational practices. Therefore, the change cannot cause a different type of accident.

6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created? Yes ☐ No ☒

No physical changes are being made to these components (i.e. the valves will function or fail in the same manner as they did before being classified as Components of Interest). The relationship these components have to equipment important to safety is unchanged. Therefore, a different type malfunction will not be introduced by this change.

7. Will the margin of safety as defined in the basis for any technical specification be reduced? Yes ☐ No ☒

Neither the Components of Interest list nor the response of components in a fire scenario is addressed in the technical specifications. The function of the existing components is unchanged. Therefore, this change will not affect any margin of safety related to the basis for any technical specification.

Woody Walker _____
 Certified Reviewer's Signature Printed Name Date

Reviewer's certification expiration date: 05/14/2001

Assistance provided by: _____
 Printed Name Scope of Assistance Date

PSC review by: [Signature] Date: 9/30/99

7

FORM TITLE:

10CFR50.59 DETERMINATION

FORM NO.

1000.131A

REV.

3 PC-1

This Document contains 3 Pages.

Document No. NCP 981275N102Rev./Change No. 00Title Unit 1 Traveling Water Screen Upgrades

Brief description of proposed change:

PAGE 3 REV. # 0

NCP 981275N102 will install new controls including variable frequency drives for the Unit 1 traveling water screens. The new controls will automatically increase screen speed whenever a high or high-high screen differential is met. A manual bypass will still be available for operation of the screens at maximum speed. The differential level indication will be changed from 0-40" H₂O to 0-80" H₂O. The existing 5 HP screen motors will be upgraded to 7.5 HP inverter duty motors with space heaters. New gearboxes rated for 10 HP motors at increased speeds will be installed. The traveling water screen frames will be upgraded and screen backup beams installed to allow operation at increased speeds and up to a 15 ft static differential. Post mod testing will also be included in this package.

Will the proposed Activity:

1. Require a change to the Operating License including:

Technical Specifications (excluding the bases)?

Yes ☐ No ☒

Operating License?

Yes ☐ No ☒

Confirmatory Orders?

Yes ☐ No ☒

2. Result in information in the following SAR documents (including drawings and text) being (a) no longer true or accurate, or (b) violate a requirement stated in the document:

SAR (multi-volume set for each unit)?

Yes ☒ No ☐

Core Operating Limits Report?

Yes ☐ No ☒

Fire Hazards Analysis?

Yes ☐ No ☒

Bases of the Technical Specifications?

Yes ☐ No ☒

Technical Requirements Manual?

Yes ☐ No ☒

NRC Safety Evaluation Reports?

Yes ☐ No ☒

3. Involve a test or experiment not described in the SAR?
-
- (See Attachment 2 for guidance)

Yes ☐ No ☒

4. Result in a potential impact to the environment? (Complete Environmental Impact Determination of this form.)

Yes ☒ No ☐

5. Result in the need for a Radiological Safety Evaluation per section 6.1.5?

Yes ☐ No ☒

6. Result in any potential impact to the equipment or facilities utilized for Ventilated Storage Cask activities per Section 6.1.6?

Yes ☐ No ☒

7. Involve a change under 10CFR50.54 for the following SAR documents per Section 6.1.7?

QAMO?

Yes ☐ No ☒

E-Plan?

Yes ☐ No ☒

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Document No. NCP 981275N102

Rev./Change No. 00

Basis for Determination (Questions 1, 2, & 3):

See attached.

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☐ Proposed change does not require 10CFR50.59 Evaluation per Attachment 1, Item # _____. (If checked, note appropriate item #, send LDCR to Licensing).

Search Scope:

List sections reviewed in the Licensing Basis Documents specified in questions 1, 2 and 3. If search was performed on LRS, the LRS search index should be entered under "Section" with the search statement(s) used in parentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified and searches only text, not figures or drawings). **Attach and distribute a completed LDCR per Section 6.1.2 if LBD changes are required.**

Document

Section

LRS: 50.59 common (intake and bay, traveling and screen*, intake* and screen*, C160, F7*, F-7*, B13, B23, PDIS36*, PDIS-36*, CW and bay)

MANUAL SECTIONS: U1 SAR Sect. 9.3.2.3, 9.3.2.1, 5.3.4 U2 SAR Sect. 9.2.1, 3.8.4.1.2
U2 Table(s) 9.2-2

FIGURES: U1 SAR Fig(s) 9-33, 9-35, 9-10, 5-9 U2 SAR Fig(s) 3.8-22, 3.5-7, 9.2-8, 9.2-3, 10.4-1

Robert J. Buser
Certified Reviewer's Signature

Robert Buser

Printed Name

9-27-99

Date

Reviewer's certification expiration date: 04-07-2001

Assistance provided by:

Printed Name

Scope of Assistance

Date

Search Scope Review Acceptability (NA, if performed by Technical Reviewer per 1000.006)

Douglas A. Bruce
Certified Reviewer's Signature

DOUGLAS A. BRUCE
Printed Name

9-28-99
Date

ARKANSAS NUCLEAR ONE			Page 3
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**ENVIRONMENTAL IMPACT DETERMINATION
(UNIT 1 and UNIT 2)**

PAGE 5 REV. 0

Document No. NCP 981275N102 Rev./Change No. 00

Complete the following Determination. If the answer to any item below is "Yes", an Environmental Evaluation is required. See Section 6.1.4 for additional guidance.

Will the Activity being evaluated:

- | <u>Yes</u> | <u>No</u> | |
|-------------------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Disturb land that is beyond that initially disturbed during construction (i.e., new construction of buildings, creation or removal of ponds, or other terrestrial impact)? See Unit 2 SAR Figure 2.5-17. This applies only to areas outside the protected area. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase thermal discharges to lake or atmosphere? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Modify the design or operation of cooling tower which will change drift characteristics? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Install any new transmission lines leading offsite? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Change the design or operation of the intake or discharge structures? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Discharges any chemicals new or different from that previously discharged? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve incineration or disposal of any potentially hazardous materials on the ANO site? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Result in a change to nonradiological effluents or licensed reactor power level? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially change the type or increase the amount of non-radiological air emissions from the ANO site. |

DATE _____ 1973

Doc #: NC P98127SN102 Rev #: 00Title Unit 1 TRAVELING WATER SCREEN UPGRADES

NONRADIOLOGICAL ENVIRONMENTAL EVALUATION

If the answer to any question is "Yes", then an Unreviewed Environmental Question is involved. If the answer to all questions is "No", then the proposed change does not involve an Unreviewed Environmental Question. A written response providing the basis for the answer of each question must be provided. Attach additional pages as necessary. A simple statement of conclusion is not sufficient.

- 2.1 Does the proposed activity result in a significant increase in any adverse environmental impact previously evaluated by the NRC in References 3.2.3-3.2.9?

Yes
No ✓

Discussion: See ATTACHED

- 2.2 Does the proposed activity result in a significant adverse environmental impact not previously evaluated in References 3.2.3-3.2.9?

Yes
No ✓

Discussion: See ATTACHED

- 2.3 Does the proposed activity result in a significant change in nonradiological effluents or licensed reactor power level?

Yes
No ✓

Discussion: See ATTACHED

Evaluator: Dennis Calloway

Date: 9-28-99

Supt., Chem.: ReNae Partridge

Date: 9-28-99

PSC Review:

Date:

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FORM TITLE	FORM NO.	REV.
NONRADIOLOGICAL ENVIRONMENTAL EVALUATION FORM	1052.034A	0

Doc #: NCP 981275N102Determination/Evaluation Continuation Page

Question 2.1: The changes in the "Unit 1 TRAVELING WATER SCREEN UPGRADES" ARE BEYOND THE LEVEL OF DETAIL IN THE U-2 FINAL ENVIRONMENTAL STATEMENT (FES). THESE CHANGES ARE ALSO BEYOND THE LEVEL OF DETAIL IN THE U-1 FES EXCEPT FOR SECTION 3.3.1. THIS SECTION SAYS THE TRAVELING SCREENS WILL TRAVEL AT A SPEED ABOUT 10 FPM. THE TRAVELING SCREEN UPGRADE WILL INCREASE THE SPEED TO 35 FPM. THE U-1 FES IS A HISTORICAL DOCUMENT PRESENTING DESIGN CRITERIA AT THE TIME OF CONSTRUCTION. THE RATE AT WHICH TRAVELING SCREENS TRAVEL DOES NOT HAVE AN IMPACT ON THE ENVIRONMENT.

Question 2.2: THE TRAVELING SCREENS ARE A FISH AND DEBRIS MECHANISM FOR FISH AND DEBRIS IN THE INTAKE CANAL. BY INCREASING THE EFFICIENCY OF THE REMOVAL PROCESS, YOU DO NOT INCREASE THE AMOUNT OF FISH AND DEBRIS TO BE REMOVED. NO ADVERSE ENVIRONMENTAL IMPACT WILL OCCUR.

Question 2.3: INCREASED EFFICIENCY OF THE TRAVELING SCREENS DOES NOT PRESENT A SIGNIFICANT CHANGE TO ANY UNRADIOLOGICAL EFFLUENT. THIS PROCESS CHANGE WILL ALLOW AND TO REMOVE FISH AND DEBRIS AT A FASTER RATE. THE OPERATION OF THE TRAVELING SCREENS IS NOT A FUNCTION REACTOR POWER.

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FORM TITLE. NON-RADIOLOGICAL ENVIRONMENTAL EVALUATION FORM	FORM NO. 1052.034A	REV. 0
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FORM TITLE: 10CFR50.59 SAFETY EVALUATION	FORM NO. 1000.131B	REV. 3 PC-2	

This Document contains 1 Page.

Document No. NCP 981275N102 Rev./Change No. 00 10CFR50.59 Eval. No. 99-096
(Assigned by PSC)

Title Unit 1 Traveling Water Screen Upgrades

A WRITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO EACH QUESTION MUST BE ATTACHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A SIMPLE STATEMENT OF CONCLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDANCE FOR RESPONSE.

If the answer to any question on this form is "Yes," then an unreviewed safety question is involved. If the answer to all questions is "No," then the proposed change does not involve an unreviewed safety question.

1. Will the probability of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒
2. Will the consequences of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒
3. Will the probability of a malfunction of equipment important to safety be increased? Yes ☐ No ☒
4. Will the consequences of a malfunction of equipment important to safety be increased? Yes ☐ No ☒
5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created? Yes ☐ No ☒
6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created? Yes ☐ No ☒
7. Will the margin of safety as defined in the basis for any technical specification be reduced? Yes ☐ No ☒

Robert J. Buser Robert Buser 9-27-99
Certified Reviewer's Signature Printed Name Date

Reviewer's certification expiration date: 04-07-2001

Assistance provided by:

Printed Name	Scope of Assistance	Date
<u>Michael J. Haines</u>		<u>10-15-99</u>

PSC review by: Michael J. Haines Date: 10-15-99

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ARKANSAS NUCLEAR ONE			Page 1
FORM TITLE: 10CFR50.59 REVIEW CONTINUATION PAGE	FORM NO. 1000.131C	REV. 3	

Document No. NCP 981275N102

Rev./Change No. 00

10CFR50.59 Review Continuation Page
Evaluation Continuation

NCP 981275N102 will install new controls including variable frequency drives for the Unit 1 traveling water screens. The new controls will automatically increase screen speed whenever a high or high-high screen differential is met. A manual bypass will still be available for operation of the screens at maximum speed. The differential level indication will be changed from 0-40" H₂O to 0-80" H₂O. The existing 5 HP screen motors will be upgraded to 7.5 HP inverter duty motors with space heaters. New gearboxes rated for 10 HP motors at increased speeds will be installed. The traveling water screen frames will be upgraded and screen backup beams installed to allow operation at increased speeds and up to a 15 ft static differential. Post mod testing will also be included in this package.

1. Will the probability of an accident previously evaluated in the SAR be increased?

The components/systems impacted by this modification have been reviewed against all of the accidents in the Unit 1 and Unit 2 SAR. Chapter 15 of the Unit 2 SAR did not list any accidents, which could be affected by this modification. Chapter 14 of the Unit 1 SAR also did not list any accidents, which could be affected by this modification. This modification is designed to improve circulating water availability and reduce the number of unplanned outages. A reduction of unplanned shutdown cycles should reduce the challenges to equipment and result in a reduced probability of accidents.

2. Will the consequences of an accident previously evaluated in the SAR be increased?

This modification will not alter the offsite dose consequences of any accident previously analyzed in the Unit 1 or Unit 2 SAR. This modification will not create any new pathways for release of radioactive material. This modification will not affect dose to the public from any previously analyzed event. This modification is designed to improve circulating water availability and reduce the number of unplanned outages.

3. Will the probability of a malfunction of equipment important to safety be increased?

This modification does not affect any safety related components. All components affected by this modification are noted as non-safety related per the ANO CDB. ANO Civil Design Engineering reviewed the arrangement and mounting of equipment installed under this modification to ensure it will not affect any equipment important to safety. Protective devices such as fuses and circuit breakers are all selected sized appropriately for the application. This modification is designed to improve circulating water and service water availability and reduce the number of unplanned outages. A reduction in the number of challenges to plant equipment due to cycling should result in a reduced probability of malfunction of equipment important to safety. Improvements in the structure of the traveling water screens should decrease the probability of a screen failure and resulting service water and circulating water fouling.

4. Will the consequences of a malfunction of equipment important to safety be increased?

This modification will not affect the offsite dose consequences due to malfunctions of equipment important to safety. This modification does not change or prevent actions assumed to occur in response to a malfunction of equipment important to safety nor does it alter any assumptions used in evaluating the consequences of equipment failures. No equipment classified as important to safety will be relocated. This modification cannot increase the consequences of failure of equipment important to safety.

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5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created?

The accident types in chapter 15 of the Unit 2 SAR and chapter 14 of the Unit 1 SAR were reviewed. No new accidents could be postulated due to installation of this modification. The traveling water screen modifications and related control system modifications will increase the reliability of the circulating water system. A bypass mode will be installed which will allow Operations to operate the traveling water screens manually as they are currently. The traveling water screens and frames themselves will be braced and modified to withstand higher static differential pressure. The Emergency Cooling Pond (ECP) is provided to supply loads of both units in the event of a loss of water from Lake Dardanelle. This modification will not affect the supply of water from the ECP.

6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created?

This modification does not involve the installation or modification of equipment important to safety. The components installed under this modification have been evaluated by the ANO Civil Design Engineering department. These components are arranged and mounted such that they will not affect any equipment important to safety. Protective devices such as fuses and circuit breakers are all selected sized appropriately for the application. No safety related (1E) electrical systems are affected by this modification. This equipment and its installation cannot create the possibility of a malfunction of equipment important to safety of a different type than previously evaluated in either the Unit 1 or Unit 2 SAR.

7. Will the margin of safety as defined in the basis for any technical specification be reduced?

Neither the Unit 1 nor Unit 2 Technical Specifications provide sufficient detail such that they address the Unit 1 travelling water screens or related controls. No Technical Specification margins will be affected by this modification.

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FORM TITLE: 10CFR50.59 DETERMINATION	FORM NO. 1000.131A	REV. 003-04-0

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Document No. ER 973922A302

Rev./Change No. 0

Title Improvements for ANO Offsite Power Source ST# 2

Brief description of proposed change: Entergy Arkansas has completed the 161 KV portion of the Pleasant Hill substation north of Morrilton. The existing ANO-Morrilton East 161 KV line will be renamed the ANO-Pleasant Hill 161 KV line.

Will the proposed Activity:

1. Require a change to the Operating License including:

Technical Specifications (excluding the bases)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Operating License?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Confirmatory Orders?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
2. Result in information in the following SAR documents (including drawings and text) being (a) no longer true or accurate, or (b) violate a requirement stated in the document:

SAR (multi-volume set for each unit)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Core Operating Limits Report	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Fire Hazards Analysis?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Bases of the Technical Specifications?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Technical Requirements Manual?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
NRC Safety Evaluation Reports?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
3. Involve a test or experiment not described in the SAR?
(See Attachment 2 for guidance)

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
4. Result in a potential impact to the environment? (Complete the Environmental Impact Determination of this form.)

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
5. Result in the need for a Radiological Safety Evaluation per section 6.1.5?

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
6. Result in any potential impact to the equipment or facilities utilized for Ventilated Storage Cask activities per Section 6.1.6?

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
7. Involve a change under 10CFR50.54 for the following SAR documents per Section 6.1.7:

QAMO?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
E-Plan?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
8. Does this review depend on future NRC approval of other actions (NRC SER, Relief, etc)? (forward change to PSC per 6.3.8 or 6.3.9)

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---

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Document No. ER 973922A302

Rev./Change No. 0

Basis for Determination (Questions 1, 2 & 3):
See Attached C form.

☐ Proposed change does not require 10 CFR 50.59 Evaluation per Attachment 1, Item #__, (If checked, note appropriate item #, send LDCR to Licensing).

Search Scope:

List sections reviewed in the Licensing Basis Documents specified in Question 1, 2 and 3. If a search was performed on LRS, the LRS search index should be entered under "Section" with the search statement(s) used in parentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified and searches only text, not figures or drawings). **Attach and distribute a completed LDCR per Section 6.1.2 if LBD changes are required.**

DocumentSection

LRS:

50.59 - Common

"Morrilton East", 161 w/10 KV, transmission w/10 line

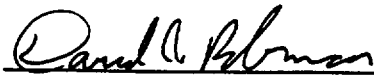
MANUAL SECTIONS:

U-1 SAR 1.4.13, 8.2.1, 8.2.1.2D,
 8.2.1.2, 8.2.1.2.1.B, D, & F,
 8.2.1.2.2.C, 8.2.1.3, 8.2.1.4.G & H

U-2 SAR 2.4.14, 8.1.2, 8.2.1, 8.2.1.2.D, 8.2.1.2, 8.2.1.2.1.B,D & F,
 8.2.1.2.2.C, 8.2.1.3, 8.2.1.4.G

FIGURES:

U-1 SAR Figure 8-1, U-2 SAR
 Figures 8.2-1, 8.2-4, 8.3-1, 8.3-21



Certified Reviewer's Signature

David A. Robinson

Printed Name

05/15/00

Date

Reviewer's certification expiration date: 03/01/01

Assistance provided by:

Printed Name

Scope of Assistance

Date

Search Scope Review Acceptability (NA, if performed by Technical Review per 1000.006)



Certified Reviewer's Signature

Jennings G. Dobb

Printed Name

5/17/00

Date

FORM TITLE:		ARKANSAS NUCLEAR ONE	FORM NO.	REV.
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ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Document No. ER 973922A302

Rev./Change No. 0

Complete the following Determination. If the answer to any checklist item is "Yes", an Environmental Evaluation is required. See Section 6.1.4 for additional guidance.

Will the Activity being evaluated:

- | <u>Yes</u> | <u>No</u> | |
|--------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Disturb land that is beyond that initially disturbed during construction (i.e., new construction of buildings, creation or removal of ponds, or other terrestrial impact)? See Unit 2 SAR Figure 2.5-17. This applies only to areas outside the protected area. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase thermal discharges to lake or atmosphere? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Modify the design or operation of cooling tower which will change drift characteristics? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Install any new transmission lines leading offsite? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Change the design or operation of the intake or discharge structures? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Discharges any chemicals new or different from that previously discharged? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve incineration or disposal of any potentially hazardous materials on the ANO site? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Result in a change to nonradiological effluents or licensed reactor power level? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially change the type or increase the amount of non-radiological air emissions from the ANO site. |

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Document No. ER 973922A302

Rev./Change No. 0

10CFR50.59 Review Continuation Page

ER 973922A302 covers the 161 KV portion of the Pleasant Hill substation work. Entergy Arkansas has completed the 161 KV portion of the Pleasant Hill substation north of Morrilton. The existing ANO-Morrilton East 161 KV line will be renamed the ANO-Pleasant Hill 161 KV line. This will require the ANO switchyard mimic bus in the Unit 1 (C10) and the Unit 2 (2C10) control rooms to be relabeled to show the ANO- Pleasant Hill 161 KV line designation. The control room simulator mimic buses will also be relabeled. Several ANO drawings will also be revised to change the 161 KV line designation.

Basis for Determination:

1. Will the proposed modification require a change to the Operating License, including

Technical Specification (excluding the bases)?	NO
Operating License?	NO
Confirmatory Orders?	NO

Discussion:

The Technical Specifications, Operating Licenses, and the Confirmatory Orders for both Units were reviewed to see if this ER made any changes to these documents. No documents were found that would require any changes.

2. Result in information in the following SAR documents (including drawings and text) being (a) no longer true or accurate, of (b) violate a requirement stated in the document:

SAR (multi-volume set for each unit)?	YES
Core Operating Limits Reports?	NO
Fire Hazard Analysis?	NO
Bases of the Technical Specifications?	NO
Technical Requirement Manual?	NO
NRC Safety Evaluation Reports?	NO

Discussion:

The reason for the YES answer is that the ER will require revisions to both Unit 1 and Unit 2 SARs. The Unit 1 SAR Sections being changed are 1.4.13, 8.2.1, 8.2.1.2.D, 8.2.1.2, 8.2.1.2.1.B, D & F, 8.2.1.2.2.C, 8.2.1.3, 8.2.1.4.G & H and Figure 8-1. The Unit 2 SAR Sections being changed are 2.4.14, 8.1.2, 8.2.1, 8.2.1.2.D, 8.2.1.2, 8.2.1.2.1.B, D & F, 8.2.1.2.2.C, 8.2.1.3, 8.2.1.4.G and Figures 8.2-1, 8.2-4, 8.3-1, 8.3-21. These SAR Sections are being changed to address the 161 KV line name change from ANO-Morrilton to ANO-Pleasant Hill and the description of the line. LDCRs have been issued for these changes. None of the other SAR document required any changes. A 50.59 Determination and Evaluation were completed for (ER 973922A301) the 500 KV portion of the Pleasant Hill substation work. The Evaluation performed by ER 973922A301 (attached) covers the changes made under this ER and provides assurance that there are no unreviewed safety questions associated

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with this change. Therefore, a 50.59 Evaluation will not be performed for this ER. This approach has been discussed with Licensing and approved by them.

3. Involve a test or experiment not described in the SAR?

NO

Discussion:

This ER does not perform any test or experiment.

FORM TITLE: 10CFR50.59 DETERMINATION	FORM NO. 1000.131A	Page 1 REV. 3 PC-1
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This Document contains 3 Pages.

Document No. ER 973922A301Rev./Change No. 0Title ANO SWITCHYARD TRANSMISSION LINE DESIGNATION CHANGE.

Brief description of proposed change:

Entergy is constructing a 500/161 KV substation that will be tied into the ANO-Mayflower 500KV transmission line. The substation will be called the Pleasant Hill Station and is located north of Morrilton, Arkansas. The substation will provide additional capacity for the ANO 161 KV offsite power source SU # 2. The transmission line (ANO-Mayflower) will now be called the ANO-Pleasant Hill line and the Pleasant Hill-Mayflower line. Several Unit 1 and Unit 2 SAR Section and Figures will have to be changed to address this change.

Will the proposed Activity:

1. Require a change to the Operating License including:
 - Technical Specifications (excluding the bases)? Yes ☐ No ☒
 - Operating License? Yes ☐ No ☒
 - Confirmatory Orders? Yes ☐ No ☒
2. Result in information in the following SAR documents (including drawings and text) being (a) no longer true or accurate, or (b) violate a requirement stated in the document:
 - SAR (multi-volume set for each unit)? Yes ☒ No ☐
 - Core Operating Limits Report? Yes ☐ No ☒
 - Fire Hazards Analysis? Yes ☐ No ☒
 - Bases of the Technical Specifications? Yes ☐ No ☒
 - Technical Requirements Manual? Yes ☐ No ☒
 - NRC Safety Evaluation Reports? Yes ☐ No ☒
3. Involve a test or experiment not described in the SAR?
(See Attachment 2 for guidance) Yes ☐ No ☒
4. Result in a potential impact to the environment? (Complete Environmental Impact Determination of this form.) Yes ☐ No ☒
5. Result in the need for a Radiological Safety Evaluation per section 6.1.5? Yes ☐ No ☒
6. Result in any potential impact to the equipment or facilities utilized for Ventilated Storage Cask activities per Section 6.1.6? Yes ☐ No ☒
7. Involve a change under 10CFR50.54 for the following SAR documents per Section 6.1.7?
 - QAMO? Yes ☐ No ☒
 - E-Plan? Yes ☐ No ☒

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REV.

3 PC-1, 2

Document No. ER 973922A301

Rev./Change No. 0

Basis for Determination (Questions 1, 2, & 3):

See attached.

- ☐ Proposed change does not require 10CFR50.59 Evaluation per Attachment 1, Item # ____ (If checked, note appropriate item #, send LDCR to Licensing).

Search Scope:

List sections reviewed in the Licensing Basis Documents specified in questions 1, 2 and 3. If search was performed on LRS, the LRS search index should be entered under "Section" with the search statement(s) used in parentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified and searches only text, not figures or drawings). Attach and distribute a completed LDCR per Section 6.1.2 if LBD changes are required.

DocumentSection

LRS: 50.59 - Common "Mayflower", "switchyard w/10 relaying"

MANUAL SECTIONS: U 1 SAR 1.4.13, U 2 SAR 3.1.2, All of U 1 SAR 8.1, 8.2, and U 2 SAR 8.1, 8.2

FIGURES: U 1 SAR Figure 8-1, U 2 SAR Figures 8.3-1, 8.3-21



David A. Robinson

Certified Reviewer's Signature

Printed Name

11/23/99

Date

Reviewer's certification expiration date: 03/01/01

Assistance provided by:

Printed Name

John Hotz

Scope of Assistance

Determination writeup

Date

11/23/99

Search Scope Review Acceptability (NA, if performed by Technical Reviewer per 1000.006)

Certified Reviewer's Signature

J. Glenn Dobbs

Printed Name

11/23/99

Date

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ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Document No. ER 973922A301Rev./Change No. 0

Complete the following Determination. If the answer to any item below is "Yes", an Environmental Evaluation is required. See Section 6.1.4 for additional guidance.

Will the Activity being evaluated:

- | <u>Yes</u> | <u>No</u> | |
|--------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Disturb land that is beyond that initially disturbed during construction (i.e., new construction of buildings, creation or removal of ponds, or other terrestrial impact)? See Unit 2 SAR Figure 2.5-17. This applies only to areas outside the protected area. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase thermal discharges to lake or atmosphere? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Modify the design or operation of cooling tower which will change drift characteristics? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Install any new transmission lines leading offsite? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Change the design or operation of the intake or discharge structures? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Discharges any chemicals new or different from that previously discharged? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve incineration or disposal of any potentially hazardous materials on the ANO site? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Result in a change to nonradiological effluents or licensed reactor power level? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially change the type or increase the amount of non-radiological air emissions from the ANO site. |

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This Document contains 1 Page.

Document No. ER 973922A301 Rev./Change No. 0 10CFR50.59 Eval. No. FFN-99-108
(Assigned by PSC)

Title ANO Switchyard transmission line designation.

A WRITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO EACH QUESTION MUST BE ATTACHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A SIMPLE STATEMENT OF CONCLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDANCE FOR RESPONSE.

If the answer to any question on this form is "Yes," then an unreviewed safety question is involved. If the answer to all questions is "No," then the proposed change does not involve an unreviewed safety question.

1. Will the probability of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒
2. Will the consequences of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒
3. Will the probability of a malfunction of equipment important to safety be increased? Yes ☐ No ☒
4. Will the consequences of a malfunction of equipment important to safety be increased? Yes ☐ No ☒
5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created? Yes ☐ No ☒
6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created? Yes ☐ No ☒
7. Will the margin of safety as defined in the basis for any technical specification be reduced? Yes ☐ No ☒

David A. Robinson David A. Robinson 11/23/99
Certified Reviewer's Signature Printed Name Date

Reviewer's certification expiration date: 3/1/01

Assistance provided by:

Printed Name	Scope of Assistance	Date
_____	_____	_____
_____	_____	_____

PSC review by: Micki D. Hume Date: 12/2/99

FORM TITLE:	ARKANSAS NUCLEAR ONE	FORM NO.	Page 1
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Document No. ER 973922A301Rev./Change No. 010CFR50.59 Review Continuation Page**Background Description:**

This 50.59 Determination and Evaluation address the portion of ER 973922A301 that changes the existing 500KV transmission line designation, between the ANO switchyard and the Mayflower substation, from the ANO-Mayflower Line to the ANO-Pleasant Hill Line.

This is being done because Entergy Arkansas is presently constructing a 500/161 KV substation at Pleasant Hill, just north of Morrilton, Arkansas. This \$22,500,000 substation and transmission project is being constructed as a joint effort between Entergy Transmission and ANO. The project will provide necessary capacity for the ANO 161 KV offsite power source (SU #2) and will also improve the Western Arkansas 161 KV transmission system. The project will have no impact, now or when completed, on the availability of the 500 KV offsite power, but will significantly improve the availability of the 161 KV offsite power especially for the single contingency event of loss of the ANO 500/161 KV Autotransformer. The in-service date for the Pleasant Hill substation is the summer of 2000.

The Pleasant Hill Station will be installed along the existing ANO-Mayflower 500 KV Line (61 miles) approximately 33 miles from ANO. The ANO-Mayflower Line designation will be changed into two segments, the ANO-Pleasant Hill Line and the Pleasant Hill-Mayflower Line. In order to tie into the 500 KV side of the substation an outage will be required on the 500 KV line between ANO and Mayflower. Since an outage of the 500KV line requires ANO to reduce its total generation to approximately 1300MW, it is preferred to make the Pleasant Hill Station connections to the ANO-Mayflower Line during ANO outages (1R15 and 2P99). During these line outages, the line will be cut and then a large transmission dead-end structure and 500 KV buss-work will be constructed under the existing line location. The 500 KV will then be reconnected to the Pleasant Hill Station and necessary relaying shall be installed at ANO, Mayflower, and Pleasant Hill.

The 500 KV portion of the Pleasant Hill Station work is scheduled to be completed during 2P99 or shortly thereafter. Since ANO generation will be limited to 1300 MW until the 500 KV line is restored, every effort will be made to complete this line work to avoid curtailing ANO power post 2P99.

The physical work being performed at ANO will be changing the switchyard mimic bus labels in the Unit 1 and Unit 2 control rooms (C10 and 2C10) and also in both Unit's simulators to show the ANO-Pleasant Hill 500KV Line designation. Relaying will also be upgraded in the ANO switchyard to protect the new 500 KV line design.

The 161 KV portion of the Pleasant Hill Station is scheduled to be completed in the spring of 2000. At this time, no additional ANO 500 KV line work is presently planned for this project. The ANO-Morrilton-East 161 KV Line will require an outage to complete the substation work.

Basis for Determination:

- 1.) Will the proposed modification require a change to the Operating License, including
- | | |
|--|----|
| Technical Specification (excluding the bases)? | NO |
| Operating License? | NO |
| Confirmatory Orders? | NO |

Discussion:

The Technical Specifications, Operating Licenses, and the Confirmatory Orders for both Units were reviewed to see if this ER made any changes to these documents. No documents were found that would required any changes.

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- 1.) Result in information in the following SAR documents (including drawings and text) being (a) no longer true or accurate, of (b) violate a requirement stated in the document:

SAR (multi-volume set for each unit)?	YES
Core Operating Limits Reports?	NO
Fire Hazard Analysis?	NO
Bases of the Technical Specifications?	NO
Technical Requirement Manual?	NO
NRC Safety Evaluation Reports?	NO

Discussion:

The reason for the YES answer is that the ER will require revisions to both Unit 1 and Unit 2 SARs. The Unit 1 SAR Sections being changed are 1.4.13, 8.2.1, 8.2.2 and Figure 8-1. The Unit 2 SAR Sections being changed are 3.1.2, 8.1.2, 8.2.1, 8.2.2 and Figures 8.3-1, 8.3-21. These SAR Sections are being changed to address the 500 KV line name change from ANO-Mayflower to ANO-Pleasant Hill and the description of the line. A LDCR has been issued for these changes. None of the other SAR document required any changes.

- 3.) Involve a test or experiment not described in the SAR? NO

Discussion:

This ER does not perform any test or experiment.

Evaluation Questions:

- 1.) Will the probability of an accident previously evaluated in the SAR be increased? NO

The only SAR accident identified that could possibly be affected by this change is the Loss of Offsite Power accident. Reconnecting of the ANO 500 KV line from the Mayflower substation to the Pleasant Hill substation will have no impact on the availability of the 500 KV offsite power, nor will it impact the Loss of Offsite Power accident. It should be noted that when the 161 KV portion of the Pleasant Hill Station is completed the availability of the 161 KV offsite power will be significantly improved, especially for the single contingency event of loss of the ANO 500/161 KV Autotransformer.

- 2.) Will the consequences of an accident previously evaluated in the SAR be increased? NO

No accident could be identified that would be affected by reconnecting the ANO 500 KV line from the Mayflower substation to the Pleasant Hill substation. Therefore, this change will not affect the offsite dose consequences of any accidents previously evaluated in SAR.

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- 3.) Will the probability of a malfunction of equipment important to safety be increased? NO

No equipment important to safety could be affected by reconnecting the ANO 500 KV line from the Mayflower substation to the Pleasant Hill substation. As previously noted, this change does not affect the availability of the 500 KV offsite power and will not cause an increase in the probability of degraded voltage on the 500 KV system. As noted in Question 1 above, the reliability of the 161 KV power will be improved after the substation is completed.

- 4.) Will the consequences of a malfunction of equipment important to safety be increased? NO

The offsite dose consequences are not affected by reconnecting the ANO 500 KV line from the Mayflower substation to the Pleasant Hill substation.

- 5.) Will the possibility of an accident of a different type than any previously evaluated in the SAR be created? NO

SAR 12-2-99
The Loss of Offsite Power has been previously evaluated in the SAR. As stated in Question 1, this accident will not be impacted. No new types of accidents could be identified that would be caused by the reconnection of the Mayflower 500 KV transmission line to the Pleasant Hill Station.

- 6.) Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created? NO

No new types of malfunctions of equipment important to safety could be identified.

- 7.) Will the margin of safety as defined in the Bases of any technical specification be reduced? NO

No margin of safety was identified for the 500 KV offsite power. Also, the reconnection of the Mayflower 500 KV transmission line to the Pleasant Hill Station does not affect the number of offsite sources to Units 1 and 2.

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This Document contains 3 Pages.

Document No. FHARev./Change No. 5Title Fire Hazards Analysis

Brief description of proposed change:

This change will incorporate time critical actions needed to safely shutdown the unit in an alternate shutdown scenario where it is hypothesized that the control room must be evacuated and cabling associated with redundant safe shutdown components is subject to fire damage.

Will the proposed Activity:

1. Require a change to the Operating License including:

Technical Specifications (excluding the bases)?

Yes ☐ No ☒

Operating License?

Yes ☐ No ☒

Confirmatory Orders?

Yes ☐ No ☒

2. Result in information in the following SAR documents (including drawings and text) being (a) no longer true or accurate, or (b) violate a requirement stated in the document:

SAR (multi-volume set for each unit)?

Yes ☐ No ☒

Core Operating Limits Report?

Yes ☐ No ☒

Fire Hazards Analysis?

Yes ☒ No ☐

Bases of the Technical Specifications?

Yes ☐ No ☒

Technical Requirements Manual?

Yes ☐ No ☒

NRC Safety Evaluation Reports?

Yes ☐ No ☒3. Involve a test or experiment not described in the SAR?
(See Attachment 2 for guidance)Yes ☐ No ☒

4. Result in a potential impact to the environment? (Complete Environmental Impact Determination of this form.)

Yes ☐ No ☒

5. Result in the need for a Radiological Safety Evaluation per section 6.1.5?

Yes ☐ No ☒

6. Result in any potential impact to the equipment or facilities utilized for Ventilated Storage Cask activities per Section 6.1.6?

Yes ☐ No ☒

7. Involve a change under 10CFR50.54 for the following SAR documents per Section 6.1.7?

QAMO?

Yes ☐ No ☒

E-Plan?

Yes ☐ No ☒

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FORM TITLE: <div style="text-align: center; margin-top: 10px;">10CFR50.59 DETERMINATION</div>	FORM NO. <div style="text-align: center; margin-top: 10px;">1000.131A</div>	REV. <div style="text-align: center; margin-top: 10px;">3 PC-1, 2</div>	

Document No. FHA Rev./Change No. 5

Basis for Determination (Questions 1, 2, & 3):

1. The time critical actions do not appear in the Tech Spec, OL or confirmatory orders and are only being added to the FHA.
2. The only place that the time critical actions appear will be in the FHA.
3. This change does not affect any test or experiments not described in the SAR.

☐ Proposed change does not require 10CFR50.59 Evaluation per Attachment 1, Item # _____. (If checked, note appropriate item #, send LDCR to Licensing).

Search Scope:

List sections reviewed in the Licensing Basis Documents specified in questions 1, 2 and 3. If search was performed on LRS, the LRS search index should be entered under "Section" with the search statement(s) used in parentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified and searches only text, not figures or drawings). Attach and distribute a completed LDCR per Section 6.1.2 if LBD changes are required.

Document Section

LRS: 50.59-Common All ("time critical actions")

MANUAL SECTIONS: 9.8 and 9.5

FIGURES: N/A

<i>Thom Robinson</i>	Thom Robinson	10/26/99
Certified Reviewer's Signature	Printed Name	Date

Reviewer's certification expiration date: 3/23/2001

Assistance provided by:

Printed Name	Scope of Assistance	Date

Search Scope Review Acceptability (NA, if performed by Technical Reviewer per 1000.006)

<i>Woody Walker</i>	Woody Walker	12/3/99
Certified Reviewer's Signature	Printed Name	Date

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FORM TITLE:	10CFR50.59 DETERMINATION	FORM NO. 1000.131A	REV. 3

ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Document No. FHA Rev./Change No. 5

Complete the following Determination. If the answer to any item below is "Yes", an Environmental Evaluation is required. See Section 6.1.4 for additional guidance.

Will the Activity being evaluated:

- | <u>Yes</u> | <u>No</u> | |
|--------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Disturb land that is beyond that initially disturbed during construction (i.e., new construction of buildings, creation or removal of ponds, or other terrestrial impact)? See Unit 2 SAR Figure 2.5-17. This applies only to areas outside the protected area. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase thermal discharges to lake or atmosphere? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Modify the design or operation of cooling tower which will change drift characteristics? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Install any new transmission lines leading offsite? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Change the design or operation of the intake or discharge structures? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Discharges any chemicals new or different from that previously discharged? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve incineration or disposal of any potentially hazardous materials on the ANO site? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Result in a change to nonradiological effluents or licensed reactor power level? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially change the type or increase the amount of non-radiological air emissions from the ANO site. |

FORM TITLE:

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REV.

3

This Document contains 3 Pages.

Document No. FHARev./Change No. 510CFR50.59 Eval. No. FFX-99-113
(Assigned by PSC)Title Fire Hazards Analysis

A WRITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO EACH QUESTION MUST BE ATTACHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A SIMPLE STATEMENT OF CONCLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDANCE FOR RESPONSE.

If the answer to any question on this form is "Yes," then an unreviewed safety question is involved. If the answer to all questions is "No," then the proposed change does not involve an unreviewed safety question.

1. Will the probability of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒
2. Will the consequences of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒
3. Will the probability of a malfunction of equipment important to safety be increased? Yes ☐ No ☒
4. Will the consequences of a malfunction of equipment important to safety be increased? Yes ☐ No ☒
5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created? Yes ☐ No ☒
6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created? Yes ☐ No ☒
7. Will the margin of safety as defined in the basis for any technical specification be reduced? Yes ☐ No ☒

Thom Robinson

Certified Reviewer's Signature

Thom Robinson

Printed Name

10/26/99

Date

Reviewer's certification expiration date: 3/23/2001

Assistance provided by:

Printed Name

Scope of Assistance

Date

PSC review by: DBDate: 12/16/99

FORM TITLE:**ARKANSAS NUCLEAR ONE****10CFR50.59 REVIEW CONTINUATION PAGE****FORM NO.****1000.131C**

Page 2

REV.**3**Document No. FHARev./Change No. 5**10CFR50.59 Review Continuation Page****BACKGROUND:**

CR-2-98-0436 was generated as a result of a revision that was made to the Unit 2 Alternate Shutdown Procedure 2203.014 which did not include an adequate review of the alternate shutdown timeline. The timeline is a list of operator actions that are performed for a fire in the control room when alternate shutdown is entered. The timeline is currently contained in the Alternate Shutdown Technical Guidelines however, since this is not a controlled document, it was not reviewed as part of a safety related procedure revision. If the critical actions were in a LBD, they would be reviewed under the 50.59 process.

It has been determined that the only actions that will be incorporated into the FHA will be the time critical actions as determined by NED under action item #04 of this CR ("Ensure that time critical actions are identified and accurately reflected in the timeline."). Attached are the time critical actions identified in AI #04 and their bases. There will be one additional critical action added at a later for (Emergency Diesel Generator Rooms cooling) which is being tracked under AI #9 of CR-2-98-0436.

This CR action will address the inclusion into the FHA and will cover both units 1 and 2. The Unit 1 alternate shutdown procedure bases and the Unit 2 alternate shutdown technical guidelines will still contain the timeline. Action items # 10 and # 11 have been issued to Ops Standards to ensure that these timelines agree with the time critical actions.

1. Will the probability of an accident previously evaluated in the SAR be increased?

A fire is not a design bases accident that has been evaluated in the SAR. This revision will merely add time critical actions that operators will perform in the event they enter the alternate shutdown procedure. The probability of an accident to be increased from one category to the next higher category or a significant movement within a category will not be increased. Thus, the probability of an accident previously evaluated in the SAR will not be increased.

2. Will the consequences of an accident previously evaluated in the SAR be increased?

As stated, a fire is not a design bases accident. This revision is merely adding time critical actions for alternate shutdown. The offsite dose consequences of a previously evaluated accident will not be increased beyond the licensed limit. Thus, the consequences of an accident previously evaluated in the SAR will not be increased.

3. Will the probability of a malfunction of equipment important to safety be increased?

There is no equipment important to safety associated with this revision to the FHA. This revision will not affect any equipment important to safety but merely identify time critical actions to be performed. Thus, the probability of a malfunction of equipment important to safety will not be increased.

4. Will the consequences of a malfunction of equipment important to safety be increased?

As stated, this revision will not affect any equipment important to safety since it is only adding information to the FHA. The offsite dose consequences will not be increased beyond the acceptance limit due to this revision. Thus, the consequences of a malfunction of equipment important to safety will not be increased.

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5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created?

As stated, a fire is not an accident that has been evaluated in the SAR. This revision will only add information to the FHA that will not affect any equipment operation nor introduce any new accidents. Thus, the possibility of an accident of a different type than any previously evaluated in the SAR will not be created.

6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created?

The addition of time critical actions will not affect any equipment important to safety but only identify time critical actions to be performed during an alternate shutdown scenario. Thus, the possibility of a malfunction of equipment important to safety of a different type than previously evaluated in the SAR will not be created.

7. Will the margin of safety as defined in the basis for any technical specification be reduced?

The time critical actions are not mentioned in the basis of any technical specifications. Thus, the margin of safety as defined in the basis for any technical specifications will not be reduced.

The given minimum times are specified for an Alternate Shutdown (ASD) scenario, where it is hypothesized that the control room must be evacuated and cabling associated with redundant safe shutdown components is subject to fire damage. For fires originating in other Fire Areas, Operations personnel handle failures on a case by case basis and enter into Emergency Operating or Abnormal Operating procedures depending on the failures caused by the fire. In most cases, one train of safe shutdown equipment is not subject to fire damage. In certain cases, although the cabling may prevent remote operation, local operation of the component can be performed. For these cases, the availability and responsiveness of Operations personnel is greater than in an ASD scenario, since fewer components require local operation. Consequently, the ASD scenario is deemed to be the most severe case for performing time critical actions. This list does not address actions for which the required time is beyond about an hour.

Unit 1

Closure of Main Steam Isolation valves (MSIVs) – To prevent overcooling of the RCS, the timely isolation of the secondary system must be performed. B&W calculation 86-1117538-00 points out that the time to reach RCS low pressure ES setpoint is in excess of 3 minutes (assuming all turbine bypass valves fail open). Calculation 87-E-0003-01 evaluated the diverse methods for preventing an unmitigated secondary system blowdown and concluded that three minutes was a reasonable amount of time to perform mitigating actions to prevent voids from forming in the RCS. **Approximate critical time = 3 minutes after reactor trip.**

Trip Reactor Coolant Pumps (RCPs) – In order to prevent a loss of RCS inventory, the RCPs should be stopped prior to the seals overheating. Although the assumed loss of off-site power in an ASD scenario will cause the RCPs to stop, it is assumed that the pumps continue to run until manual actions are taken to ensure the pumps have tripped. The seal cooling/seal injection function is assumed to be lost during the initial moments of the event. Vendor manual B580.0130 states that the RCPs should be tripped if the elapsed time that seal cooling has been lost exceeds 2 minutes. This is a conservative number based on ensuring that extensive maintenance will not be required but should not be construed as the time for catastrophic seal failure. 89-E-0048-20 conservatively estimates the time to catastrophic failure at 40 minutes. **Approximate critical time = 40 minutes after loss of seal cooling.**

Isolation of Letdown flow / Initiation of RCS makeup – Isolation of Letdown will conserve the inventory of the RCS and extend the time available to initiate RCS inventory makeup. Calculation 85-E-0072-03, Scenario 2 presents a graph that illustrates the relationship between the isolation of Letdown and the need to initiate RCS makeup to prevent losing all pressurizer inventory. The scenario assumes that Letdown flow transforms from the normal flow rate to the maximum flow possible in the Letdown piping (i.e. 215 gpm) and that the Atmospheric Dump valves (ADV) are maloperating without the 100 psi post trip bias. With the isolation of Letdown occurring at 3 minutes, RCS makeup may be delayed until approximately 17 minutes. It should be noted that assuming a more realistic Letdown flow of 160 gpm (i.e. maximum flow rate of the control system) will extend the time for RCS makeup until approximately 29 minutes. Also, Calculation 85-E-0072-02 illustrates the impact of assuming that the ADVs automatically open versus the more credible scenario that the Main Steam Safety valves provide the initial pressure relief function. It should also be noted that the acceptance criteria used to develop this time is very conservative since losing all pressurizer inventory is not an immediate precursor to fuel damage and is readily reversible. **Approximate critical time = 3 minutes (isolate Letdown) and 17 minutes (initiate Makeup) after reactor trip.**

Establish Emergency Feedwater (EFW) flow – The establishment of one train of EFW flow to at least one steam generator will ensure adequate primary to secondary heat removal. Since reliance is placed on natural circulation, EFW flow should be initiated prior to saturation conditions (and the subsequent voids) occurring in the RCS. Calculation 85-E-0071-01 references B&W documentation to conclude that, with a loss of main feedwater, EFW initiation prior to 33 minutes will prevent a loss of subcooling. Calculation 89-E-0047-20 concludes that EFW must be initiated within 54 minutes (RCPs not running) and 36 minutes (RCPs running) to prevent core damage. **Approximate critical time = 36 minutes after loss of feedwater (RCPs fail to trip).**

Establish Service Water (SW) flow – SW flow is necessary to provide equipment cooling and as a back-up source for EFW. The minimum allowable volume of the QCST ensures that aligning SW to the suction of the EFW pumps will not be required for at least several hours. The minimum time necessary to establish equipment cooling is linked to the start time of the required component. SW flow must be established to the Emergency Diesel Generators (EDGs) within approximately 7 minutes of engine start. Due to the potential for loss of off-site power and manual or spurious start signals, the most limiting scenario is to assume that the EDGs start at approximately time zero. **Approximate critical time = 7 minutes after EDG start.**

Establish emergency AC power – The EDGs are not required to be started until either the Makeup pumps or motor driven EFW pump is required. From the above, it is seen that the most time limiting function would be the operation of the Makeup pumps (approximately 17 minutes). **Approximate critical time = 17 minutes after reactor trip.**

Establish room cooling – Current calculations indicate that the only areas requiring forced ventilation for room cooling is in the EDG rooms. The existing calculation (M-3600-37) indicates that one exhaust fan must be running to maintain the room temperature below 120°F. However, no minimum time related to the start of a fan is specified. The minimum time is expected to consist of diesel warmup time plus less than a minute. Although the circuits that power this ventilation are independent of the control room, there is a control circuit in the control room that can stop the fans. **This time will be addressed separately by Engineering Programs.**

Establish diesel fuel transfer – Each EDG is equipped with a day tank with a minimum maintained volume of 160 gallons. Calculation 91-E-0107-07 specifies that approximately 15 gallons are unusable and that the fuel consumption at rated load (i.e. 2750 kW) is approximately 204 gpm. Therefore, within 42 minutes of diesel start, the diesel fuel transfer pumps must be aligned to the proper EDG day tank. **Note : In an Appendix R scenario, the diesels are not fully loaded. Thus, the specified time is a conservative estimate. Approximate critical time = 42 minutes after EDG start.**

Unit 2

Closure of MSIVs – To prevent overcooling of the RCS, the timely isolation of the secondary system must be performed. Calculations indicate that an ADV could stay open for at least 4 minutes without creating any voids in the RCS loops. Calculation 87-E-0003-01 evaluated the diverse methods for preventing an unmitigated secondary system blowdown and concluded that three minutes was a reasonable amount of time to perform mitigating actions to prevent voids from forming in the RCS. **Approximate critical time = 3 minutes after reactor trip.**

Trip RCPs – In order to prevent a loss of RCS inventory, the RCPs should be stopped prior to the seals overheating. Although the assumed loss of off-site power in an ASD scenario will cause the RCPs to stop, it is assumed that the pumps continue to run until manual actions are taken to ensure the pumps have tripped. The seal cooling function is assumed to be lost during the initial moments of the event. Procedure 2203.025 states that the RCPs should be tripped if the elapsed time that seal cooling has been lost exceeds 10 minutes. This is a conservative number based on ensuring that extensive maintenance will not be required but should not be construed as the time for catastrophic seal failure. 89-E-0048-20 conservatively estimates the time to catastrophic failure at 40 minutes. **Approximate critical time = 40 minutes after loss of seal cooling.**

Isolation of Letdown flow / Initiation of RCS makeup – Isolation of Letdown will conserve the inventory of the RCS and extend the time available to initiate RCS inventory makeup. Calculation 85-E-0072-04, Scenario 2 presents a graph that illustrates the relationship between the isolation of Letdown and the need to initiate RCS makeup. The scenario assumes that the Letdown flow transforms from the normal flow rate to the maximum flow possible through the orifice in the Letdown piping (i.e. 150 gpm) and that the ADVs are operating. With the isolation of Letdown occurring at 10 minutes, RCS makeup may be delayed until approximately 30 minutes. It should be noted that assuming a more realistic Letdown flow of 128 gpm (i.e. maximum flow rate of the control system) will extend the time for RCS makeup. . It should also be noted

that the acceptance criteria used to develop this time is very conservative since losing all pressurizer inventory is not an immediate precursor to fuel damage and is readily reversible. Approximate critical time = 10 minutes (Isolate Letdown) and 30 minutes (Initiate Charging) after reactor trip.

Establish EFW flow -- The establishment of one train of EFW flow to at least one steam generator will ensure adequate primary to secondary heat removal. Since reliance is placed on natural circulation, EFW flow should be initiated prior to saturation conditions (and the subsequent voids) occurring in the RCS. Calculation 85-E-0071-02 concludes that, with a loss of main feedwater, EFW initiation prior to 50 minutes will prevent a loss of subcooling. 89-E-0048-20 estimates the time to initiate EFW at 70 minutes if starting from a normal operating steam generator level and a loss of feedwater occurs. Approximate critical time = 70 minutes after loss of feedwater.

Establish SW flow -- SW flow is necessary to provide equipment cooling and as a back-up source for EFW. The minimum allowable volume of the CST ensures that the unit can be cooled to and maintained (for several hours) in Hot Standby conditions. Additionally, prior to utilizing SW, EFW suction can be aligned to the (Unit 1) QCST. Consequently, the minimum time for establishing SW flow is linked to the requirement to provide equipment cooling, which is directly related to the start time of the required component. SW flow must be established to the Emergency Diesel Generators (EDGs) within approximately 3 minutes of engine start. Due to the potential for loss of off-site power and manual or spurious start signals, the most limiting scenario is to assume that the EDGs start at approximately time zero. Approximate critical time = 3 minutes after EDG start.

Establish emergency AC power -- The EDGs are not required to be started until either the Charging pumps or motor driven EFW pump is required. From the above, it is seen that the most time limiting function would be the operation of the Charging pumps (approximately 30 minutes). Approximate critical time = 30 minutes after reactor trip.

Establish room cooling -- Current calculations indicate that the only areas requiring forced ventilation for room cooling is in the EDG rooms and the SPDS room. The existing calculation (91-E-0090-02) indicates that one exhaust fan must be running to maintain room temperature below 120°F. However, no minimum time related to the start of a fan is specified. The minimum time is expected to consist of diesel warmup time plus less than a minute. Although the circuits that power this ventilation are independent of the control room, there is a control circuit in the control room that can stop the fans. This time will be addressed separately by Engineering Programs. EAR 85-566 determined that the SPDS can tolerate a loss of HVAC for approximately 1.5 hours prior to exceeding room temperatures that would effect the performance of the Alternate Shutdown display (i.e. the SPDS computer). Approximate critical time = 90 minutes.

Establish diesel fuel transfer -- Each EDG is equipped with a day tank with a minimum maintained volume of 280 gallons. Calculation 91-E-0107-04 specifies that approximately 30 gallons are unusable and that fuel consumption at full load is approximately 245 gph. Therefore, within 61 minutes of diesel start, the diesel fuel transfer pumps must be aligned to the proper EDG day tank. Note : In an Appendix R scenario, the diesels are not fully loaded. Thus, the specified time is a conservative estimate. Approximate critical time = 61 minutes after EDG start.

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10CFR50.59 Eval. No. 00-004
(Assigned by PSC)

Document No. ER 991847N101

Rev./Change No. 0

Title ANO-1 P-59A&B, Hydrazine Pump Replacement

A WRITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO EACH QUESTION MUST BE ATTACHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A SIMPLE STATEMENT OF CONCLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDANCE FOR RESPONSE.

If the answer to any question on this form is "Yes," then an unreviewed safety question is involved. If the answer to all questions is "No," then the proposed change does not involve an unreviewed safety question.

1. Will the probability of an accident previously evaluated in the SAR be increased?

Yes ☐ No ☒

The hydrazine pump (Chemical Addition system) replacements and IA system component deletions will not affect the evaluated accidents in the SAR. This equipment is not credited with accident initiation. Operation of the hydrazine and instrument air systems will remain essentially unchanged and the changes do not affect other components or plant conditions such that the probability of SAR evaluated accidents will be increased.

2. Will the consequences of an accident previously evaluated in the SAR be increased?

Yes ☐ No ☒

The off-site dose conditions will not be increased by the proposed changes to the hydrazine pumps or IA system. The Chemical Addition and Instrument Air systems are important for unit operation but are not safety related and are not required for accident mitigation purposes. The inputs and assumptions for the evaluated accidents will remain bounding relative to these proposed changes. The SG tube rupture event response includes use of the condenser as the steam dump. This requires IA in a support role for maintaining condenser vacuum, however, the availability and reliability of the IA system to perform this support role is not being degraded by this change.

3. Will the probability of a malfunction of equipment important to safety be increased?

Yes ☐ No ☒

The equipment being affected is not important to safety and is remote from equipment that is important to safety. Removing the IA support role to the hydrazine pump stroke control will not affect the reliability of the IA system. Equipment important to safety that is supplied by the IA system either fails to its safe position on loss of air or includes safety related accumulators to ensure proper operation. Thus, the probability of a malfunction of equipment important to safety will not be increased.

4. Will the consequences of a malfunction of equipment important to safety be increased?

Yes ☐ No ☒

Removing the IA support role to the hydrazine pump stroke control will not affect off-site dose consequences associated with a malfunction of equipment important to safety. The components being addressed are not important to safety. The plant conditions and accident analysis assumptions for evaluated accidents will remain bounding.

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5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created?

Yes ☐ No ☒

The changes proposed to SAR Figure 9-14 will not create the possibility of a different type accident than those evaluated in the SAR. The affected equipment is not important to safety and the reliability of the IA system will not be degraded by these proposed changes. The changes will not create conditions which could cause other equipment malfunctions or different plant responses than those previously evaluated in the SAR.

6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created?

Yes ☐ No ☒

The changes being evaluated are not equipment important to safety and the affected equipment is remote from equipment that is important to safety. Operating conditions and reliability of the IA system will remain essentially unchanged. No new plant conditions are being created that could cause a malfunction of equipment important to safety that is different from those malfunctions previously evaluated.

7. Will the margin of safety as defined in the basis for any technical specification be reduced?

Yes ☐ No ☒

The margins of safety in the technical specification bases are not affected by the changes to the IA and Chemical Addition systems. The bases do not specifically address and are not impacted by the IA system changes and hydrazine pump replacements.

Stephen J. Lynn
Certified Reviewer's Signature

Stephen J. Lynn

Printed Name

11/17/99

Date

Reviewer's certification expiration date: 5/26/01

Assistance provided by:

Printed Name

Scope of Assistance

Date

PSC review by:

T Brown

Date:

1/20/00

991847N101

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FORM TITLE:

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Document No. 1000.042

Rev./Change No. 011-06-0

Title STEAM GENERATOR WATER CHEMISTRY MONITORING - UNIT ONEBrief description of proposed change: Update procedure to increase feedwater hydrazine and implement feedwater/condensate oxygen controls.

Will the proposed Activity:

1. Require a change to the Operating License Including:
 - Technical Specifications (excluding the bases)? Yes ☐ No ☒
 - Operating License? Yes ☐ No ☒
 - Confirmatory Orders? Yes ☐ No ☒
2. Result in information in the following SAR documents (including drawings and text) being (a) no longer true or accurate, or (b) violate a requirement stated in the document:
 - SAR (multi-volume set for each unit)? Yes ☒ No ☐
 - Core Operating Limits Report Yes ☐ No ☒
 - Fire Hazards Analysis? Yes ☐ No ☒
 - Bases of the Technical Specifications? Yes ☐ No ☒
 - Technical Requirements Manual? Yes ☐ No ☒
 - NRC Safety Evaluation Reports? Yes ☐ No ☒
3. Involve a test or experiment not described in the SAR?
(See Attachment 2 for guidance) Yes ☐ No ☒
4. Result in a potential impact to the environment? (Complete the Environmental Impact Determination of this form.) Yes ☐ No ☒
5. Result in the need for a Radiological Safety Evaluation per section 6.1.5? Yes ☐ No ☒
6. Result in any potential impact to the equipment or facilities utilized for Ventilated Storage Cask activities per Section 6.1.6? Yes ☐ No ☒
7. Involve a change under 10CFR50.54 for the following SAR documents per Section 6.1.7:
 - QAMO? Yes ☐ No ☒
 - E-Plan? Yes ☐ No ☒

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Document No. 1000.042

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Basis for Determination (Questions 1, 2 & 3):
See Attached Page

☐ Proposed change does not require 10 CFR 50.59 Evaluation per Attachment 1, Item #_____, (If checked, note appropriate Item #, send LDCR to Licensing).

Search Scope:

List sections reviewed in the Licensing Basis Documents specified in Question 1, 2 and 3. If a search was performed on LRS, the LRS search index should be entered under "Section" with the search statement(s) used in parentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified and searches only text, not figures or drawings). Attach and distribute a completed LDCR per Section 6.1.2 if LBD changes are required.

Document

Section

LRS:

Unit 1 Documents

Unit 1 Documents, " feedwater w/10 oxygen", "feedwater w/10 hydrazine", "condensate w/10 oxygen", "feedwater w/10 sulfate"

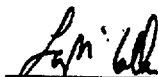
MANUAL SECTIONS:

Unit 1 SAR

Tables 4-11 and 9-3

FIGURES:

N/A



Certified Reviewer's Signature

Larry McCollum

Printed Name

12/13/99

Date

Reviewer's certification expiration date: 1/10/00

Assistance provided by:

Printed Name

Scope of Assistance

Date

Search Scope Review Acceptability (NA, If performed by Technical Review per 1000.006)

N/A

Certified Reviewer's Signature

Printed Name

Date

FORM TITLE:

ARKANSAS NUCLEAR ONE

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**ENVIRONMENTAL IMPACT DETERMINATION
(UNIT 1 and UNIT 2)**Document No. 1000.042Rev./Change No. 011-06-0

Complete the following Determination. If the answer to any checklist item is "Yes", an Environmental Evaluation is required. See Section 6.1.4 for additional guidance.

Will the Activity being evaluated:

YesNo

- | | | |
|--------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Disturb land that is beyond that initially disturbed during construction (i.e., new construction of buildings, creation or removal of ponds, or other terrestrial impact)? See Unit 2 SAR Figure 2.5-17. This applies only to areas outside the protected area. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase thermal discharges to lake or atmosphere? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Modify the design or operation of cooling tower which will change drift characteristics? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Install any new transmission lines leading offsite? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Change the design or operation of the intake or discharge structures? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Discharges any chemicals new or different from that previously discharged? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve incineration or disposal of any potentially hazardous materials on the ANO site? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Result in a change to nonradiological effluents or licensed reactor power level? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially change the type or increase the amount of non-radiological air emissions from the ANO site. |

Discussion

The procedure changes are: 1) increase feedwater hydrazine to ≥ 8 X condensate pump oxygen, 2) perform localized feedwater oxygen sampling instead of sampling of feedwater oxygen in the sample room and changing feedwater oxygen action limits, 3) make condensate pump oxygen a diagnostic parameter if localized feedwater oxygen is performed and 4) removes a note for sulfate as a feedwater parameter that can be calculated from MSR drain values.

Feedwater Hydrazine

Feedwater hydrazine is being increased from ≥ 3 X condensate pump oxygen to ≥ 8 X condensate pump oxygen to further reduce any remaining feedwater oxygen and to lower the electrochemical potential in the steam generators. Lowering electrochemical potential (ECP) can reduce some of the effects from corrosion mechanisms commonly found in OTSG's. This is referenced in EPRI Secondary Water Chemistry Guidelines, Rev 4. Recent studies have shown that by increasing feedwater hydrazine to condensate pump oxygen ratio, ECP can be significantly reduced. One study was done at the St. Lucie 2 plant and referenced in "Feedwater Oxygen Control", by S.G. Sawochka. This change has been accepted by the B&W Owners Group and will be in Rev 5 update of the guidelines. Operating with too high levels of hydrazine over extended periods of time can increase flow accelerated corrosion. EPRI Rev 4 guidelines state that feedwater hydrazine levels of less than 200 ppb should not significantly increase flow accelerated corrosion. Therefore, a condensate oxygen limit of 25 ppb is being implemented so feedwater hydrazine will not be in excess of 200 ppb, (8 X Condensate oxygen).

Feedwater Oxygen Parameter Changes

Performing localized feedwater oxygen sampling vs. sampling for oxygen in the secondary sample room is also addressed in the Rev 5 guidelines. Currently, almost all plants are sampling feedwater oxygen in a sample room located a considerable distance from the feedwater heaters. Due to the temperature of the sample and hydrazine concentration, most all of the oxygen that might be in the feedwater sample is consumed by the time the sample reaches the sample room. The study presented in "Feedwater Oxygen Control" shows that by the time the sample can reach the sample room, very little oxygen would be left in the sample. A plant modification has been made that will allow oxygen sampling near the feedwater heater that will give representative indication of oxygen values actually entering the steam generator.

The current limits listed in the EPRI Secondary Water Chemistry Guidelines Rev 4 at $>15\%$ power, list feedwater oxygen with a limit of 3 ppb and assumes to be sampled in the secondary sample room. The EPRI Secondary Water Chemistry Guidelines Rev 5 to be issued in 2000 will list feedwater oxygen limit of 5 ppb and 10 ppb action limits with localized feedwater sampling. These limits are being changed due to the current inaccuracies of measuring feedwater oxygen in the sample room.

A few plants, including ANO Unit 1, have measured feedwater oxygen near the feedwater heater with portable instruments and have found values of 2 - 3 ppb, while measuring oxygen in the sample room indicated less than 1 ppb. While the numerical value is increasing, the actual oxygen in the feedwater heater will be measured instead of measuring what is left in the sample line by the time it gets to the sample room and should increase the sensitivity to actual feedwater oxygen changes.

Changing Condensate Pump Oxygen from a Control Parameter to Diagnostic Parameter

The EPRI Secondary Water Chemistry Guidelines, Rev 4 state condensate pump oxygen to be a control parameter, with requirements to reduce power if an out of spec condition exists. The Rev 5 guideline to be issued in 2000, will list condensate pump oxygen as a diagnostic parameter if localized feedwater oxygen sampling is utilized and the plant does not have significant copper components in the secondary system. Many U.S. coal plants have shown that increased condensate pump oxygen does not increase feedwater corrosion products if copper is not present. The study "Feedwater Oxygen Control", shows that corrosion products should actually decrease with an increase in condensate pump oxygen up to 200 ppb.

While oxygen is a known detriment to OTSG's, by accurately measuring and controlling feedwater oxygen, condensate oxygen should not be a detriment. Based on the information from this study and the EPRI Rev 5 changes, condensate oxygen in plants without copper components can not be justified as a control parameter that would reduce plant power. ANO Unit 1 has replaced the copper containing condenser and has no copper feedwater heaters. This change is to make condensate pump oxygen a diagnostic parameter when localized feedwater oxygen is utilized.

Question 1.

None of the changes made to this procedure are mentioned in the documents of Question 1. This will not make untrue or require any changes to these documents.

Question 2.

Increasing feedwater hydrazine to $\geq 8 \times$ condensate pump oxygen and changing feedwater oxygen action limits requires a change to the SAR. SAR tables 4-11 and 9-3 list the normal feedwater hydrazine value as $\geq 3 \times$ condensate pump oxygen. The tables also list the feedwater oxygen action limit of 3 ppb and assumes to be measured in the secondary sample room. This change sets the limits at 5 and 10 ppb oxygen and assumes localized feedwater oxygen measurement. Also, Table 4-11 list condensate oxygen operating limit of 10 ppb. The limit is being made a diagnostic parameter and the limit changed to 25 ppb when localized feedwater oxygen analysis is used.

A LDCR was initiated to make these changes to tables 4-11 and 9-3 in the SAR.

Removing the note about feedwater sulfate as a parameter that can be calculated from MSR values is not discussed in the SAR.

Question 3.

This is not a test or experiment.

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10CFR50.59 Eval. No. FFN-80-006
(Assigned by PSC)

Document No. 1000.042

Rev./Change No. 011-6-0

Title STEAM GENERATOR WATER CHEMISTRY MONITORING - UNIT ONE

A WRITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO EACH QUESTION MUST BE ATTACHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A SIMPLE STATEMENT OF CONCLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDANCE FOR RESPONSE.

If the answer to any question on this form is "Yes," then an unreviewed safety question is involved. If the answer to all questions is "No," then the proposed change does not involve an unreviewed safety question.

See Attached.

1. Will the probability of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒
2. Will the consequences of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒
3. Will the probability of a malfunction of equipment important to safety be increased? Yes ☐ No ☒
4. Will the consequences of a malfunction of equipment important to safety be increased? Yes ☐ No ☒
5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created? Yes ☐ No ☒
6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created? Yes ☐ No ☒
7. Will the margin of safety as defined in the basis for any technical specification be reduced? Yes ☐ No ☒

ARKANSAS NUCLEAR ONE

FORM TITLE:

10CFR50.59 EVALUATION

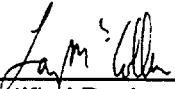
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Certified Reviewer's Signature

Larry McCollum
Printed Name

12/13/99
Date

Reviewer's certification expiration date: 1/10/00

Assistance provided by:

Printed Name

Scope of Assistance

Date

PSC review by: 

Date: 2/4/00

Discussion

This procedure change will require revision to the Unit 1 SAR. The procedure changes are: 1) increase feedwater hydrazine to ≥ 8 X condensate pump oxygen, 2) perform localized feedwater oxygen sampling instead of sampling of feedwater oxygen in the sample room and changing feedwater oxygen action limits, 3) make condensate pump oxygen a diagnostic parameter if localized feedwater oxygen is performed and 4) remove sulfate as a feedwater parameter that can be calculated from MSR drain values.

Required SAR Changes

Increasing feedwater hydrazine to ≥ 8 x condensate pump oxygen and changing feedwater oxygen action limits requires a change to the SAR. The change of making condensate pump oxygen as a diagnostic parameter with a limit of 25 ppb also requires a SAR change. A LDCR was initiated to make these changes to tables 4-11 and 9-3 in the SAR.

Removing feedwater sulfate as a parameter that can be calculated from MSR values is not discussed in the SAR and requires no changes.

Feedwater Hydrazine

Feedwater hydrazine is being increased from ≥ 3 X condensate pump oxygen to ≥ 8 X condensate pump oxygen to further reduce any remaining feedwater oxygen and to lower the electrochemical potential in the steam generators. Lowering electrochemical potential (ECP) can reduce some of the effects from corrosion mechanisms commonly found in OTSG's. This is referenced in EPRI Secondary Water Chemistry Guidelines, Rev 4. Recent studies have shown that by increasing feedwater hydrazine to condensate pump oxygen ratio, ECP can be significantly reduced. One study was done at the St. Lucie 2 plant and referenced in "Feedwater Oxygen Control", by S.G. Sawochka. This change has been accepted by the B&W Owners Group and will be in Rev 5 update of the guidelines. Operating with too high levels of hydrazine over extended periods of time can increase flow accelerated corrosion. EPRI Rev 4 guidelines state that feedwater hydrazine levels of less than 200 ppb should not significantly increase flow accelerated corrosion. Therefore, a condensate oxygen limit of 25 ppb is being implemented so feedwater hydrazine will not be in excess of 200 ppb, (8 X Condensate oxygen).

Feedwater Oxygen Parameter Changes

Performing localized feedwater oxygen sampling vs. sampling for oxygen in the secondary sample room is also addressed in the Rev 5 guidelines. Currently, almost all plants are sampling feedwater oxygen in a sample room located a considerable distance from the feedwater heaters. Due to the temperature of the sample and hydrazine concentration, most all of the oxygen that might be in the feedwater sample is consumed by the time the sample reaches the sample room. The study presented in "Feedwater Oxygen Control" shows that by the time the sample can reach the sample room, very little oxygen would be left in the sample. A plant modification has been made that will allow oxygen sampling near the feedwater heater that will give representative indication of oxygen values actually entering the steam generator.

The current limits listed in the EPRI Secondary Water Chemistry Guidelines Rev 4 at >15% power, list feedwater oxygen with a limit of 3 ppb and assumes to be sampled in the secondary sample room. The EPRI Secondary Water Chemistry Guidelines Rev 5 to be issued in 2000 will list feedwater oxygen limit of 5 ppb and 10 ppb action limits with localized feedwater sampling. These limits are being changed due to the current inaccuracies of measuring feedwater oxygen in the sample room.

A few plants, including ANO Unit 1, have measured feedwater oxygen near the feedwater heater with portable instruments and have found values of 2 - 3 ppb, while measuring oxygen in the sample room indicated less than 1 ppb. While the numerical value is increasing, the actual oxygen in the feedwater heater will be measured instead of measuring what is left in the sample line by the time it gets to the sample room and should increase the sensitivity to actual feedwater oxygen changes.

Changing Condensate Pump Oxygen from a Control Parameter to Diagnostic Parameter

The EPRI Secondary Water Chemistry Guidelines, Rev 4 state condensate pump oxygen to be a control parameter, with requirements to reduce power if an out of spec condition exists. The Rev 5 guideline to be issued in 2000, will list condensate pump oxygen as a diagnostic parameter if localized feedwater oxygen sampling is utilized and the plant does not have significant copper components in the secondary system. Many U.S. coal plants have shown that increased condensate pump oxygen does not increase feedwater corrosion products if copper is not present. The study "Feedwater Oxygen Control", shows that corrosion products should actually decrease with an increase in condensate pump oxygen up to 200 ppb.

While oxygen is a known detriment to OTSG's, by accurately measuring and controlling feedwater oxygen, condensate oxygen should not be a detriment. Based on the information from this study and the EPRI Rev 5 changes, condensate oxygen in plants without copper components can not be justified as a control parameter that would reduce plant power. ANO Unit 1 has replaced the copper containing condenser and has no copper feedwater heaters. This change is to make condensate pump oxygen a diagnostic parameter when localized feedwater oxygen is utilized.

Question 1.

No. Accidents evaluated in the SAR include Steam Generator tube failures and doses released to the environment. The increase in feedwater hydrazine concentration should help prevent steam generator tube failures since the increase in hydrazine decreases the effects of steam generator corrosion mechanisms. Changing the feedwater oxygen measurement from a sample room analysis to a localized analysis should increase the sensitivity to feedwater oxygen changes. When localized feedwater oxygen analysis is performed, the actual amount of dissolved oxygen entering the steam generator will be monitored with a control limit, thus eliminating the need for a control parameter for condensate pump oxygen. These changes will not increase the probability of a steam generator tube failure or will not increase the probability of dose release. This will not cause any systems to be operated outside the designed limit.

Question 2.

No. The consequences of an accident previously evaluated in the SAR will not be increased. The amount of feedwater hydrazine, measuring localized dissolved oxygen or making condensate oxygen a diagnostic parameter will not increase the dose released to the environment in the scenario of increased RCS activity and Steam Generator tube failure.

Question 3.

No. This procedure change will not increase the probability of a malfunction of equipment important to safety. By increasing feedwater hydrazine, measuring localized feedwater dissolved oxygen levels and making condensate pump oxygen a diagnostic parameter, the probability of an OTSG tube failure should decrease. Increasing feedwater hydrazine, measuring localized feedwater dissolved oxygen and making condensate pump oxygen a diagnostic parameter will not affect the safety function of the feedwater/condensate/emergency feedwater/steam generators for heat removal and safe shutdown of the plant. Feedwater hydrazine and localized feedwater dissolved oxygen and making condensate pump oxygen a diagnostic parameter does not affect the performance of equipment important to safety. In emergency situations, condensate storage or service water can be used for a water supply through emergency feedwater without regard to the amount of hydrazine or oxygen. This change will not increase the probability of a malfunction of equipment important for safe shutdown of the plant and heat removal from the reactor.

Question 4.

No. This procedure change will not increase the consequences of a malfunction of equipment important to safety. Feedwater hydrazine, localized feedwater dissolved oxygen analysis and making condensate pump oxygen a diagnostic parameter will not effect the amount of radiological material released to the environment.

Question 5.

No. This procedure change will not create an accident of a different type than previously evaluated in the SAR. No new corrosion mechanisms will be introduced by increasing feedwater hydrazine or localized feedwater dissolved oxygen analysis and making condensate pump oxygen a diagnostic parameter. Potential failures or malfunctions of steam generators or feedwater systems will not change.

Question 6.

No. Increasing feedwater hydrazine, localized feedwater dissolved oxygen analysis and making condensate pump oxygen a diagnostic parameter will not create a possibility of a malfunction of equipment important to safety of a different type previously evaluated. This change will provide a better quality feedwater oxygen analysis and increase feedwater hydrazine that will lower steam generator ECP and would not introduce a new type of mechanism for failures.

Question 7.

No. Feedwater hydrazine, localized feedwater dissolved oxygen analysis and making condensate pump oxygen a diagnostic parameter is not a parameter used in a margin of safety.

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Document No.

Rev./Change No. 0

ER-002334E101

Title

Evaluate Service Water Differential Pressures for E-50A and E-50B

Brief description of proposed change:

ER-002334E101 evaluates the throttling of P-34A and P-34B DH pump bearing cooler outlet valves (SW-38A and SW-38B) to a throttled position to reduce service water flow rate to bearing coolers E-50A and E-50B. This ER documents that throttling the Service Water to the bearing coolers is needed to reduce the heat transfer capability of the cooler due to the cool SW temperatures (reference CR-ANO-1-2000-68). Throttling service water will not affect the operation or function of either DH Train because the service water flow as set by the ER will continue to maintain the design basis requirements as delineated in the Service Water Performance Testing Methodology Report, CALC-91-R-2013-01 Rev 5. Throttling will be performed using approved processes and procedures. This change has no effect of the probability of any accident analyzed in the SAR.

Will the proposed Activity:

1. Require a change to the Operating License including:
 - Technical Specifications (excluding the bases)? Yes ☐ No ☒
 - Operating License? Yes ☐ No ☒
 - Confirmatory Orders? Yes ☐ No ☒
2. Result in information in the following SAR documents (including drawings and text) being (a) no longer true or accurate, or (b) violate a requirement stated in the document:
 - SAR (multi-volume set for each unit)? Yes ☒ No ☐
 - Core Operating Limits Report? Yes ☐ No ☒
 - Fire Hazards Analysis? Yes ☐ No ☒
 - Bases of the Technical Specifications? Yes ☐ No ☒
 - Technical Requirements Manual? Yes ☐ No ☒
 - NRC Safety Evaluation Reports? Yes ☐ No ☒
3. Involve a test or experiment not described in the SAR? (See Attachment 2 for guidance) Yes ☐ No ☒
4. Result in a potential impact to the environment? (Complete Environmental Impact Determination of this form.) Yes ☐ No ☒
5. Result in the need for a Radiological Safety Evaluation per section 6.1.5? Yes ☐ No ☒
6. Result in any potential impact to the equipment or facilities utilized for Ventilated Storage Cask activities per Section 6.1.6? Yes ☐ No ☒
7. Involve a change under 10CFR50.54 for the following SAR documents per Section 6.1.7?
 - QAMO? Yes ☐ No ☒
 - E-Plan? Yes ☐ No ☒

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Document No.

ER-002334E101

Rev./Change No. 0

Basis for Determination (Questions 1, 2, & 3):

1. This evaluation does not change any design basis limit or acceptance criteria. This is beyond the level of detail contained in the operating license documents and Technical Specifications.
2. The ER addresses changing the position of two valves, SW-38A and SW-38B which are included in Figures 9-6, 9-18 and 9-20. An LDCR will be submitted with this ER. The required design basis flow rate is not stated in the SAR.
3. The alignment of the affected SW valves will be accomplished in accordance with normal operating procedures. A change will be made to 1104.004 to accomplish this. The margins of safety during normal operation and anticipated transients are maintained as the design basis flow requirements are not changed. This procedure change does not constitute a test or experiment not described in the SAR.

☐ Proposed change does not require 10CFR50.59 Evaluation per Attachment 1, Item # _____. (If checked, note appropriate item #, send LDCR to Licensing).

Search Scope:

List sections reviewed in the Licensing Basis Documents specified in questions 1, 2 and 3. If search was performed on LRS, the LRS search index should be entered under "Section" with the search statement(s) used in parentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified and searches only text, not figures or drawings). **Attach and distribute a completed LDCR per Section 6.1.2 if LBD changes are required.**

DocumentSection

LRS:

50.59-Unit 1

All(DHR w/10 cooler, E-50, bearing cooler, service water w/10 bearing, service water w/10 cooler, decay heat w/ 10 flow, decay heat w/10 bearing, P-34* w/10 bearing)

MANUAL SECTIONS:

Unit 1 SAR

9.3, 9.5, 14

FIGURES:

Unit 1 SAR

9-6, 9-18, 9-20


Certified Reviewer's Signature

James Crabill

Printed Name

2/6/2000

Date

Reviewer's certification expiration date:

4/21/01

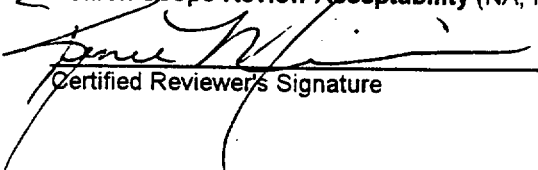
Assistance provided by:

Printed Name

Scope of Assistance

Date

Search Scope Review Acceptability (NA, if performed by Technical Reviewer per 1000.006)


Certified Reviewer's Signature

Renee Millison

Printed Name

2/6/00

Date

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**ENVIRONMENTAL IMPACT DETERMINATION
(UNIT 1 and UNIT 2)**

Document No.

ER-002334E101

Rev./Change No. 0

Complete the following Determination. If the answer to any item below is "Yes", an Environmental Evaluation is required. See Section 6.1.4 for additional guidance.

Will the Activity being evaluated:

- | <u>Yes</u> | <u>No</u> | |
|--------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Disturb land that is beyond that initially disturbed during construction (i.e., new construction of buildings, creation or removal of ponds, or other terrestrial impact)? See Unit 2 SAR Figure 2.5-17. This applies only to areas outside the protected area. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase thermal discharges to lake or atmosphere? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Modify the design or operation of cooling tower which will change drift characteristics? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Install any new transmission lines leading offsite? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Change the design or operation of the intake or discharge structures? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Discharges any chemicals new or different from that previously discharged? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve incineration or disposal of any potentially hazardous materials on the ANO site? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Result in a change to nonradiological effluents or licensed reactor power level? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially change the type or increase the amount of non-radiological air emissions from the ANO site |

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003-03-0

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10CFR50.59 Eval. No. FFN A 00-007
(Assigned by PSC)Document No. ER-002334E101

Rev./Change No. 0

Title Throttling of the Service Water Flow to the E-50 A/B Heat Exchangers

A WRITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO EACH QUESTION MUST BE ATTACHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A SIMPLE STATEMENT OF CONCLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDANCE FOR RESPONSE.

If the answer to any question on this form is "Yes," then an unreviewed safety question is involved. If the answer to all questions is "No," then the proposed change does not involve an unreviewed safety question.

1. Will the probability of an accident previously evaluated in the SAR be increased?

Yes ☐ No ☒

ER-002334E101 evaluates the throttling of P-34A and P-34B DH pump bearing cooler outlet valves (SW-38A and SW-38B) to a throttled position to reduce service water flow rate to bearing coolers E-50A and E-50B. This ER documents that throttling the Service Water to the bearing coolers is needed to reduce the heat transfer capability of the cooler due to the cooler SW temperatures. Throttling service water will not affect the operation or function of either DH Train because the service water flow as set by the ER will continue to maintain the design basis requirements as delineated in the Service Water Performance Testing Methodology Report, CALC-91-R-2013-01 Rev 5. Throttling will be performed using approved processes and procedures. This change has no affect of the probability of any accident analyzed in the SAR.

2. Will the consequences of an accident previously evaluated in the SAR be increased?

Yes ☐ No ☒

The offsite dose consequences of a previously analyzed accident will be unaffected because the design basis required Service Water flow to E-50A/B will be maintained. Therefore, the consequences of a accident previously evaluated in the SAR will not increase.

3. Will the probability of a malfunction of equipment important to safety be increased?

Yes ☐ No ☒

The probability of the failure of any equipment important to safety to perform its specified safety function described in the SAR will not be effected. The design basis assumed by the accident analysis is maintained with the throttling of the flow to the E-50A/B. Throttling service water will not affect the operation or function of either DH Train because the service water flow as set by the ER will continue to maintain the design basis requirements as delineated in the Service Water Performance Testing Methodology Report, CALC-91-R-2013-01 Rev 5.

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003-03-0

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4. Will the consequences of a malfunction of equipment important to safety be increased?

Yes ☐ No ☒

The consequences of a malfunction of any equipment important to safety will not be affected. The throttled SW flow through E-50A/B will not cause a rise in offsite dose rates because the service water flow as set by the ER will continue to maintain the design basis requirements as delineated in the Service Water Performance Testing Methodology Report, CALC-91-R-2013-01 Rev 5.

5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created?

Yes ☐ No ☒

The service water valves are globe valves, and they are performing a function for which they were designed – therefore there is no affect on the service water system. Throttling service water will not affect the operation or function of either DH/LPI Train because the service water flow will continue to maintain the design basis requirements as delineated in the Service Water Performance Testing Methodology Report, CALC-91-R-2013-01 Rev 5. The only systems that this change impacts are Service Water and DH/LPI. There is no significant change to either system function or operation, therefore there is no possibility of any new accident being created.

6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created?

Yes ☐ No ☒

Throttling the Service Water to the bearing coolers while still maintaining design basis flow does not cause the possibility of a malfunction of equipment important to safety of a different type than previously evaluated in the SAR because previous analysis is unaffected and still bounding. Throttling service water will not affect the operation or function of either DH Train because the service water flow as set by the ER will continue to maintain the design basis requirements as delineated in the Service Water Performance Testing Methodology Report, CALC-91-R-2013-01 Rev 5.

7. Will the margin of safety as defined in the basis for any technical specification be reduced?

Yes ☐ No ☒

There is no potential to reduce the margin of safety for any technical specification because the Service Water flow as set by the ER will continue to maintain the design basis requirements as delineated in the Service Water Performance Testing Methodology Report, CALC-91-R-2013-01 Rev 5.

James Crabill
Certified Reviewer's Signature

James Crabill
Printed Name

2/6/2000
Date

Reviewer's certification expiration date: 4/21/01

Assistance provided by:

Printed Name

Scope of Assistance

Date

PSC review by: [Signature]

Date: 2/7/2000

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FORM TITLE:

10CFR50.59 DETERMINATION

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1000.131A

REV.

3 PC-1,2

This Document Contains 3 Page(s).

Document No. DCP 980642D201Rev./Change No. 0Title: ANO-2 SGR Project - Facilities**Brief description of proposed change:**

See Form 1000.131C.

Will the proposed Activity:

1. Require a change to the Operating License including:

Technical Specifications (excluding the bases)?

Yes ☐ No ☒

Operating License?

Yes ☐ No ☒

Confirmatory Orders?

Yes ☐ No ☒

2. Result in information in the following SAR documents (including drawings and text) being (a) no longer true or accurate, or (b) violate a requirement stated in the document:

SAR (multi-volume set for each unit)?

Yes ☒ No ☐

Core Operating Limits Report?

Yes ☐ No ☒

Fire Hazards Analysis?

Yes ☐ No ☒

Bases of the Technical Specifications?

Yes ☐ No ☒

Technical Requirements Manual?

Yes ☐ No ☒

NRC Safety Evaluation Reports?

Yes ☐ No ☒

3. Involve a test or experiment not described in the SAR? (See Attachment 2 for guidance)

Yes ☐ No ☒

4. Result in a potential impact to the environment? (Complete the Environmental Impact Determination of this form.)

Yes ☐ No ☒

5. Result in the need for a Radiological Safety Evaluation per section 6.1.5?

Yes ☒ No ☐

6. Result in any potential impact to the equipment or facilities utilized for Ventilated Storage Cask activities per Section 6.1.6?

Yes ☐ No ☒

7. Involve a change under 10CFR50.54 for the following SAR documents per Section 6.1.7:

QAMO?

Yes ☐ No ☒

E-Plan?

Yes ☐ No ☒**Basis for Determination (Questions 1, 2 & 3):****Question 1:**

See Form 1000.131C, page 7.

Question 2:

See Form 1000.131C, page 8.

Question 3:

See Form 1000.131C, page 8.

- ☐
- Proposed change does not require 10 CFR 50.59 Evaluation per Attachment 1, Item #_____, (If checked, note appropriate item number and send LDCR to Licensing).

Search Scope:

List sections reviewed in the Licensing Basis Documents specified in Question 1, 2 and 3. If a search was performed on LRS, the LRS search index should be entered under "Section" with the search statement(s) used in parentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified and searches only

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This Document Contains 1 Page(s)
 10CFR50.59 Eval. No. EFN-00-009
 (Assigned by PSC)

Document No. DCP 980642D201

Rev./Change No. 0

Title: ANO-2 SGR Project - Facilities

A WRITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO EACH QUESTION MUST BE ATTACHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A SIMPLE STATEMENT OF CONCLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDANCE FOR RESPONSE.

If the answer to any question on this form is "Yes," then an unreviewed safety question is involved. If the answer to all questions is "No," then the proposed change does not involve an unreviewed safety question.

- Will the probability of an accident previously evaluated in the SAR be increased?
(See Form 1000.131C, page 8.) Yes ☐ No ☒
- Will the consequences of an accident previously evaluated in the SAR be increased?
(See Form 1000.131C, page 9.) Yes ☐ No ☒
- Will the probability of a malfunction of equipment important to safety be increased?
(See Form 1000.131C, page 11.) Yes ☐ No ☒
- Will the consequences of a malfunction of equipment important to safety be increased?
(See Form 1000.131C, page 11.) Yes ☐ No ☒
- Will the possibility of an accident of a different type than any previously evaluated in the SAR be created? (See Form 1000.131C, page 12.) Yes ☐ No ☒
- Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created? (See Form 1000.131C, page 13.) Yes ☐ No ☒
- Will the margin of safety as defined in the basis for any technical specification be reduced? (See Form 1000.131C, page 13.)^{E. Dietrich} Yes ☐ No ☒
14

Eric Dietrich
 Certified Reviewer's Signature

ERIC DIETRICH
 Printed Name

01/24/2000
 Date

Reviewer's certification expiration date: 01/19/2000

Assistance provided by:

Printed Name	Scope of Assistance	Date
<u>Steven W. Kline (Bechtel)</u>	<u>DCP research and preparation</u>	<u>12/20/99</u>
<u>Randall Kies (Bechtel)</u>	<u>DCP research and preparation</u>	<u>12/20/99</u>
<u>Aravind Gore (Bechtel)</u>	<u>DCP research and preparation</u>	<u>12/20/99</u>

PSC review by: T Brown

Date: 2/8/00

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10CFR50.59 Review Continuation Page

Continued from Form 1000.131A

Brief description of proposed change:

DCP 980642D201 provides for installation of **temporary** and **permanent** facilities to be located both inside and outside the Protected Area (PA) but within the Owner Controlled Area (OCA) at the ANO site as required for the Steam Generator Replacement Project (SGRP). As one of the temporary facilities provides improved Containment access for the large number of workers during the Steam Generator Replacement Outage (SGRO), this DCP also includes the temporary changes necessary to convert Unit 2 **decontamination room** 2140 (Hot Tool Room) into an enlarged disrobing (undress) area.

1. TEMPORARY FACILITIES

GENERAL

The temporary facilities described below will be primarily composed of modular pre-engineered units (trailers). These facilities are designed for wind loads per the Uniform Building Code (UBC). Site preparation will involve some minor grading to achieve a level area for setting of support cribbing (foundations). Soil bearing and underground utilities in the area of each facility has been evaluated (Reference Calculation 980642D201-10) and precautions taken as necessary. Some localized excavation will be required, in particular adjacent to the Toilet Trailers where a sewage collection tank will be buried and shallow trenches to each of the facilities for temporary power. Temporary utilities are addressed in DCP 980642D206.

The New Steam Generator Storage Area (NSGSA) and Containment Mock-Up will be located outside the Protected Area (PA); Laydown Areas will be inside and outside the PA; all other facilities will be located inside the PA. After replacement of the steam generators, the temporary facilities will be removed from the site. Also, all temporary construction will be dismantled and the site will be restored to a condition existing prior to start of the SGRP with the exception of the Original Steam Generator Storage Facility (OSGSF).

NEW STEAM GENERATOR STORAGE AREA

The NSGSA will be used to store the Replacement Steam Generators (RSGs) after their arrival on site until their installation during the SGRO. The NSGSA will be located east of the OSGSF and will be used as a temporary storage and preparation location for the RSGs prior to their movement into the Containment Building. A suitable temporary enclosure (e.g., a fire retardant and waterproof fabric over scaffolding) will be erected over portions of the RSGs to provide a weather-protected area. The temporary power required during RSG preparatory activities will be addressed in DCP 980642D206.

CONTAINMENT MOCK-UP

Containment Construction Opening mock-up training will be conducted in an area near the OSGSF to hone demolition processes and construction methods prior to the SGRO. This training program has been successfully utilized in lieu of a full scale Containment Wall Mock-up at the recent SGR performed at Braidwood and will include: Liner Plate Welding, Mechanical (Cadweld) Rebar Splice Installation, Tendon Removal and Installation, Concrete Demolition, and Form Work Erection. After the SGRO, any equipment or structures used for training will be removed from the site.

OFFICE FACILITY

The Office Facility will be approximately 7,500 sq. ft. of pre-engineered modular units (trailers) located inside the PA east of the Unit 2 Turbine Building and separated from permanent plant buildings and equipment by a minimum of 30 feet. It will house SGR personnel (engineering and construction) including Bechtel, Subcontractor(s), and ANO SGRP personnel. The facility will be erected in stages as staffing increases and

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will be completely removed from the site after the SGRO. A proposed floor plan for this temporary facility is included in DCP 980642D201, while detailed sketches will be provided by the vendor during procurement. Office space will be split into two areas, the main office area located just east of the Turbine Building and a supplemental area located with the Plan of the Day (POD) facility south of the Containment Access Facility (CAF). The main office area will house approximately 110 SGR engineering and construction personnel (including 20 ANO personnel) prior to and during the SGRO. In addition to personnel work areas, it is expected that the main area will contain six closed offices, one meeting room and a document control area. The location of the Office Facility has considered the nearby overhead power lines and their effect on computer monitors. The Office Facility will require temporary utilities such as power, lighting, potable water (bottled), communications, fire protection (hand extinguishers), etc. Temporary utilities requiring an interface with Entergy plant systems will be addressed in DCP 980642D206.

CONTAINMENT ACCESS FACILITY

The CAF will be approximately 10,000 sq. ft. of pre-engineered modular units (trailers) located inside the PA east of the Unit 2 Turbine Building. It will provide space for Radiation Protection (RP) personnel, the nurses station, and a craft break area. In addition, ERIMS (radiological access control monitor) stations and video surveillance equipment will be housed in this facility. A proposed floor plan for this temporary facility is included in DCP 980642D201, while detailed drawings will be provided by the vendor during procurement. The facility requires temporary utilities such as power, lighting, potable water (bottled), communications, fire protection (hand extinguishers), etc. Temporary utilities requiring an interface with Entergy plant systems will be addressed in DCP 980642D206.

SGRP WAREHOUSE

The SGRP Warehouse will be used to store construction materials required for the SGRO and will be in use well in advance of the SGRO. Entergy Warehouse No.2 (AP&L Warehouse), located inside the PA on the east side of the site, will serve as the SGRP Warehouse facility during this project. This will allow the utilization of existing services and will not affect existing plant systems.

FABRICATION SHOP/MOCK-UP BUILDING

The existing ANO Fabrication Shop, outside the PA, north of the plant will be used to house the fabrication shop and weld test facility.

PLAN OF THE DAY FACILITY

The POD facility will be used to conduct SGRP turnover meetings between shifts. Adjoining the POD facility will be a supplemental office area which will provide additional engineering/ construction office space. The combined facility will be comprised of pre-engineered modular units (trailers) located inside the PA east of the Unit 2 Turbine Building. The proposed floor plan for these temporary facilities is included in DCP 980642D201. Detailed sketches will be provided by the vendor during procurement. In addition to personnel work areas, it is expected that the supplemental office area will include an open area with meeting rooms. The facility requires temporary utilities such as power, lighting, communications, fire protection (portable hand extinguishers), etc. Temporary utilities requiring an interface with Entergy plant systems will be addressed in DCP 980642D206.

DECONTAMINATION (DECON) FACILITY

The decontamination facility will be used to decontaminate various tools and construction materials used during the SGRO. The Radwaste Storage Building (Old Radwaste Building) will be provided by Entergy for this SGRP activity.

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TOILET FACILITIES

A pre-engineered modular facility (trailer) will be brought in with toilets and sinks for both men and women. It will be located adjacent to the CAF inside the PA. Sewage generated from the toilet facilities will be collected in an adjacent tank which will be periodically pumped out. Temporary utilities requiring an interface with Entergy plant systems will be addressed in DCP 980642D206, in particular the plant potable water supply will be used, if available, otherwise a temporary storage tank will be used.

PARKING AREA

Additional parking may be required to accommodate the SGR project work force. If required, EOI is considering an area southwest of the cooling tower (between the current parking lot and the rifle range) that can be cleared and prepared by using well compacted crushed stone for a surface material.

LAYDOWN AREAS

Laydown areas will be required both inside and outside the PA to store SGR materials. Some of the areas outside the PA may require fencing to be erected--the need for fencing will be determined during DCP implementation.

CADWELD MATERIAL STORAGE

A sea-van will be used to store Cadweld materials. It will be located outside the PA near the Training Facility and at least 50 feet from the building.

2. PERMANENT FACILITY

ORIGINAL STEAM GENERATOR STORAGE FACILITY

The OSGSF will be a long-term storage facility for the original steam generators (OSGs) that are to be removed during the SGRO. This facility will be located on the OCA north of the PA and west of the North Access Road as shown on Sketch No. 23636-C-001, "SGR Site Arrangement". The OSGSF will be a new permanent reinforced concrete and steel structure of approximately 4000 sq. ft. with 30 inch thick walls and an 18 inch thick roof slab. The OSGSF is designed to the Uniform Building Code (UBC). The floor will be cast-in-place concrete. No ventilation is provided for in the design. Drainage of precipitation is provided for by the sloped roof, which is covered with a membrane system, and conveyed by means of guttering and downspouts. Grading around the OSGSF will direct storm water runoff away from the structure. A labyrinth type vestibule is provided at the personnel entrance to the OSGSF. The portions of the vestibule walls and the vestibule roof (relied on for direct shielding purposes), will be 30- and 9-inches thick, respectively. The south side of the building will have a construction opening which will provide access for placement of the OSGs. After the OSGs are placed inside the OSGSF, the opening will be closed by a wall composed of 30-inch thick, pre-cast, tongue-and-groove configuration, reinforced concrete blocks. After the opening is sealed, the OSGSF has no normally open penetrations. The two OSGs will be placed end to end with the channel head ends of the OSGs facing the northern side of the OSGSF.

A water collection sump will be provided in the OSGSF floor slab. The sump access/monitoring port will be located within the vestibule and is designed to accommodate checking the collection sump without entry into the facility (only entry into the vestibule is required) and to allow access for radiological survey of the facility sump. As the OSGs will be drained and the nozzle openings closed with welded steel cover plates or seal plugs prior to storage in the OSGSF, the normal source of water collected in the sumps, if any, will be condensation. In the unlikely event the sump fills with water and requires draining, it can be pumped by inserting a hose through the access port from the vestibule. DCP 980642D207 addresses the installation of the OSG nozzle cover plates.

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The OSGSF will be a stand-alone facility, having no interface with other permanent plant SSCs. There will be no interface with any on-site or off-site power supplies, as the OSGSF will not be equipped with lighting or electrical convenience outlets. Construction and use of the facility is permitted in any mode of plant operation and/or the defueled condition.

The OSGSF is classified as a non-safety-related, non-power generation structure and is designed as a seismic Category II structure. The OSGSF meets all applicable design, material, and construction standards for a facility storing contaminated equipment. The facility is designed for dead, live, wind, seismic, and flood loads which meet or exceed the Unit 2 SAR requirements for seismic Category II structures. The applicable recommendations from Regulatory Guide 1.69 have been used in the design and construction of the OSGSF.

As part of the effort to identify any regulatory requirements or guidance that might apply to the OSGSF, Regulatory Guide 1.143 and Generic Letter 81-38 were considered. However, this guidance applies to systems that handle and store radwaste generated through normal plant operation. Existing NRC correspondence make a clear distinction between radwaste and the storage of large, contaminated equipment removed in non-routine maintenance operations. It has been concluded that the guidance from Regulatory Guide 1.143 and Generic Letter 81-38 do not apply to the OSGSF. Therefore, for purposes of storage in the OSGSF, the OSG's are considered large contaminated equipment removed in non-routine maintenance operations.

The OSGSF is designed such that the dose rates at the exterior of the facility (walls and roof) are within the dose limits of 10CFR20 for a controlled area (area outside of a restricted area but inside the site boundary). The dose rates have been calculated (Reference Calculation 980642D201-02, "Original Steam Generator Storage Facility Dose Assessment") and are consistent with the radiation Zone I and Zone II dose rates defined in Unit 2 SAR Table 12.1-1. Even though the calculated dose rate for the OSGSF roof classifies it as a Zone I area, it will be designated as a radiation Zone II area since the roof will not be accessed by non-plant personnel or visitors to the site and will be accessed infrequently by plant personnel.

The dose rate on the outside of the OSGSF has been shown to be less than the design dose rate of 1.0 mrem/hr for the applicable Zone I designation. The annual dose from the OSGSF, conservatively based on an occupancy of 40 hr/week, 50 week/yr., has been calculated to be less than the 100 mrem annual limit of 10CFR20 Section 20.1301. It is expected that non-plant personnel or visitors to the site will receive considerably less than this limit because of the relatively small time interval that they will be on the site.

The dose rate for the OSGSF roof has been calculated to be less than the design dose rate of 2.5 mrem/hr for a Zone II designation. As stated above, the roof area will not be accessed by non-plant personnel or visitors to the site and the roof will be infrequently accessed by plant personnel. Even if an individual accessed the roof on a 40 hr/week, 50 week/yr. basis, the individual's annual dose will be less than the 10CFR20 occupational annual dose limit of 5 Rem. The OSGSF roof area will have radiological access control per station procedures for a Zone II area.

The OSGSF dose rates have been calculated to be within 10CFR20 for the immediate area surrounding the OSGSF and the nearest occupied building. These dose rates have been calculated based on an occupancy factor of 5% at the site boundary and a 100% occupancy factor at the nearest occupied building and nearest permanent residence. 40CFR190 requires that the maximum annual radiation dose to individual members of the public resulting from fuel cycle operations be limited to 25 mrem to the whole body and to all organs except the thyroid, which must be limited to 75 mrem. Although no effluent releases from the OSGSF are anticipated, one mrem/year of this whole body dose exposure (at the site boundary) will be allocated to the OSGSF for 40CFR190 compliance.

OSGSF interior and vestibule dose rates have been estimated based on radiological "rules-of-thumb" for radiation scattering through a labyrinth. The OSGSF interior maximum dose rate in the vicinity of the two OSGs has been calculated. Based on this calculation and radiation scattering principles, the dose rate in the vestibule has been determined. The appropriate zone designations have been assigned to the OSGSF

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interior and vestibule, and these areas will have radiological access control as required per station procedures.

3. DECONTAMINATION ROOM

Decontamination Room 2140, presently being used as a Hot Tool Room, will have the existing equipment removed and will be temporarily reconfigured for use as an enlarged undress area. During the SGRO, workers exiting the personnel lock will proceed directly across Hallway 2138 to Room 2140 instead of undressing in Electrical Penetration Room 2137. Decontamination Room 2140 and Hallway Room 2138 are both located in Fire Area G and Fire Zone 2137-I. The wall between the rooms 2138 and 2140 is fire rated but is not a regulatory-required boundary. Therefore, temporarily leaving Door 299 open will not require any compensatory measures. Given the suppression system on both sides of the wall and 24 hour occupancy, minimal potential exists for the spread of fire with the door open.

Basis for Determination (Questions 1, 2 & 3):

Consistent with previous SGR projects performed by Bechtel, the ANO-2 OSGs are considered contaminated equipment, not radioactive waste, and the OSGSF is designed accordingly. This following discussion provides a basis for this approach:

Background

The Low-Level Waste Policy Amendments Act (LLWPAA) of 1985 required that each state provide, either on its own or in cooperation with other states, for the disposal of low-level waste (LLW) generated within the state by December 31, 1992. The LLWPAA established an interim access period from January 1, 1986 to January 1, 1993, during which time states and compacts would be allowed continued access to the LLW disposal facilities at Barnwell, South Carolina; Hanford, Washington; and Beatty, Nevada. In accordance with the LLWPAA, after January 1, 1993, states must be able to store, manage, or dispose of all LLW.

On January 1, 1993, the Beatty land disposal facility closed. Also on January 1, 1993, the Hanford facility closed to all states but the Northwest and Rocky Mountain Compact states. The South Carolina Legislature had voted to keep the Barnwell facility open until June 30, 1994 for states that do not belong to the Southeast Compact and until January 1, 1996 for Southeast Compact states. However, on July 1, 1995 South Carolina left the Southeast Compact and opened Barnwell to waste generators in all states except North Carolina. As a result, waste generators in 31 states are no longer forced to store their waste onsite as they have been since July 1, 1994.

When it became apparent that most waste generators would be storing their LLW onsite after January 1993, the NRC Commission directed the NRC Staff to begin a rulemaking which would establish a regulatory framework containing the procedures and criteria that would apply to onsite storage of LLW beyond January 1, 1996. The NRC's intent was to support the goals that have been established by the LLWPAA; however, this proposed rule was subsequently withdrawn by the NRC.

Discussion

On February 3, 1993, the NRC issued a proposed change to the Federal Regulations (proposed rule) which would amend 10CFR Parts 30, 40, 50, 70, and 72 regarding onsite storage of low-level radioactive waste beyond January 1, 1996. The proposed rule would have established procedures and criteria, for onsite storage of LLW that would apply to all categories of LLW generators. Onsite storage of LLW would not be permitted after January 1, 1996 (other than reasonable short-term storage necessary for decay, or for collection or consolidation for shipment off-site, in the case where the licensee has access to an operating LLW disposal facility), unless the licensee could document that it had exhausted other reasonable waste management options.

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The proposed regulations would have required that the licensee attempt to contract, either directly or through the state in which the licensee's facility is located, for the disposal of the waste. The proposed regulations would make these requirements standard license conditions for reactor, materials, fuel cycle, and independent spent fuel storage licenses. Licensees would not be required to make a formal submittal to the NRC to show compliance; however, they would have to document steps which demonstrated compliance with the requirements of the regulation and make the documentation available to the NRC for inspection.

The proposed rule was not definitive on what constituted LLW. Therefore, it is not clear from the proposed rule whether or not it would apply to large pieces of equipment such as the original steam generators. Documentation is available, however, which would suggest that large contaminated equipment would not be subject to the proposed rule.

The contention that OSGs are not considered LLW, but rather contaminated pieces of equipment was suggested by the NRC Staff in SECY-81-383, a Policy Issue Paper, dated June 19, 1981. In late 1980, the NRC drafted a letter to licensees regarding the storage of low-level radioactive wastes at power reactor sites, based on a submittal from Tennessee Valley Authority to build a life-of-plant, onsite storage facility at Browns Ferry. As a result of the TVA submittal, the NRC Staff proposed a three-tier approach for the licensing of additional storage of low-level reactor wastes generated at reactor sites. The three tiers are: 1) short-term onsite contingency storage capacity which is an additional storage capability provided through modifications and additions that are closely related to existing handling and storage provisions for reactor operations; 2) intermediate onsite contingency storage facilities which are generally separate facilities that are proposed by a utility to provide several years of LLW storage capacity; and 3) life-of-plant onsite storage facilities which are major, separate facilities as exemplified by the Browns Ferry submittal. A package (SECY-80-511) containing the Staff's proposal, background on the Browns Ferry submittal, the proposed letter to licensees, and a memo on LLW storage at power reactor sites was forwarded to the Commissioners for approval.

Following the issuance of SECY-80-511, the NRC Staff briefed the Commission on the contents of the SECY paper. A number of questions were raised by the Commissioners during that briefing. In the course of developing answers and comments in response to the Commissioners, other issues arose which prompted a revision of the Staff's proposed letter to the licensees informing them of the Staff's plans. These matters were addressed in SECY-81-383. One of the questions asked by a Commissioner and the subsequent Staff response has been extracted from SECY-81-383 and is provided below:

Question: "What is the effect of this proposal on TMI-2 wastes of low-level classification? Does the EPICOR-2 resins fall in this category, and if so how are they to be treated under this proposal? It looks to me as though this proposal leaves Met Ed with a built-in violation, and precious little way to get out of it. Would it be reasonable to characterize this proposal as applying to LLW from normal operations and to exclude accident-recovery wastes?"

Response: "We have not considered this proposed licensing position to be applicable to the TMI-2 situation. It is our intent that the proposal apply to LLW generated from normal operations and to exclude accident-recovery wastes. Another circumstance that would be excluded is the storage of a steam generator that has been removed from service (e.g., Surry) or the storage of other large, contaminated pieces of equipment. We believe that this point can be clarified by modifying the proposed letter to the utilities to indicate that the policy applies to the LLW generated by normal reactor operation and maintenance that conventionally has been shipped to commercial LLW disposal sites."

The proposed letter to the licensees eventually became Generic Letter 81-38, "Storage of Low-Level Radioactive Wastes at Power Reactor Sites," which has been referenced in the proposed rule to 10CFR Parts 30, 40, 50, 70, and 72. The NRC Staff did make the following clarification as stated in SECY-81-383: "...for low-level waste generated by normal reactor operation and maintenance at power reactor site." However, the NRC did not provide the specific example that steam generators were excluded as was indicated in the response to a Commissioner's question in SECY-81-383. The Generic Letter states that, for proposed increases in storage capacity for LLW generated by normal reactor operation and maintenance at power

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reactor sites, the safety of the proposal must be evaluated by the licensee under the provisions of 10CFR 50.59. The licensee may provide the added capacity, document the 50.59 evaluation, report it to the Commission annually (or as specified in the license), and the five-year license can be renewed, if: (1) the existing license conditions or technical specifications do not prohibit increased storage, (2) no unreviewed safety question exists, and (3) the proposed increased storage capacity does not exceed the generated waste projected for five years.

A clarification on the NRC Staff's position as delineated in Generic Letter 81-38 was provided in an NRC Memorandum from L. J. Cunningham, Chief, Radiation Protection Branch, Office of Nuclear Reactor Regulation and P. Lohaus, Chief, Low-Level Waste Management Branch, Office of Nuclear Material Safety and Safeguards to the Directors of the Regions, dated January 31, 1991. Again, the Staff stated that "...radioactive components, such as replaced steam generators or heat exchangers, generated through non-routine maintenance, were not intended to be included within the scope of Generic Letter 81-38."

For previous steam generator replacement projects, the 5-year storage limit defined in Generic Letter 81-38 has not been directly applied to the OSGSF. The reason is, based on previous NRC documentation, the OSGs have not been considered radioactive waste but rather as stored, contaminated equipment to be retained onsite until the plant is decommissioned. This approach has been used by all of the plants that have opted for long-term storage of the OSGs onsite and has been accepted, at least implicitly, by the NRC.

During the proposed rule comment period, D.C. Cook 2, Indian Point 3, Point Beach and Palisades were contacted for their opinion of the proposed rule and how the rule might impact the future storage of the steam generators that are currently being stored onsite (typically the owner's controlled area). Since they were contacted shortly after the proposed rule was issued, most of the utilities had only begun to assess the potential impact of the proposed rule. However, the utilities did not believe the proposed rule applied to the stored steam generators because they did not consider the steam generators to be LLW, but rather contaminated pieces of equipment. On April 22, 1994, the NRC withdrew the proposed rule which would amend 10CFR Parts 30, 40, 50, 70, and 72.

Every domestic plant that has replaced its steam generators, with the exception of Millstone 2 and Salem, has stored the OSGs, onsite in a non-safety related storage facility. The intention for onsite storage has been clearly noted in various steam generator repair reports (SGRR). Surry 1 & 2, Turkey Point 3 & 4, H.B. Robinson 2, Point Beach 1, and D.C. Cook 2 stated in their SGRR that the steam generators would be stored onsite until the steam generators could be shipped off-site to a burial facility or until the plant was decommissioned. In the cases of Surry, Point Beach and H.B. Robinson, they stated that the steam generators would remain onsite until the plant was decommissioned. In each case, the NRC reiterated in its SER that the OSGs would be stored onsite and finally concluded that the SGRR was acceptable. Palisades, Indian Point 3, North Anna 1 & 2, Summer, Byron, and Braidwood also are storing the OSGs in an onsite storage facility. R.E. Ginna is storing the original steam generators with the insulation attached in an onsite storage facility. These plants did not submit a SGRR to the NRC for approval; however, the onsite storage facility was evaluated under a 10CFR 50.59 safety evaluation.

Conclusion

Based on the following, the OSGs and attached insulation (when applicable) are not categorized as LLW:

- Response to the Commissioner's comment in SECY-80-511.
- NRC memorandum from L. Cunningham/P. Lohaus to Directors of the Regions.
- Typical practice of storing original steam generators in OSGSFs for previous steam generator replacements.

Question 1:

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None of the temporary or permanent buildings resulting from this DCP are required to support operation of the plant. In addition, changing the function of the decontamination room will also not affect plant operation. This DCP will not, therefore, affect the technical specifications, operating license, or any confirmatory orders for Units 1 and 2.

Question 2:

Since the OSGSF is a permanent plant structure, it will be added to Figures 2.5-17 and 12.1-13 of the Unit 2 Safety Analysis Report (SAR) as shown on Drawing No. C-2002 being revised in this DCP (DRN 99-01568). New Unit 2 SAR Figure 12.1-6a will be added to indicate the radiation zone levels within the OSGSF. References to this new figure will be added in several locations in Unit 2 SAR Chapter 12. In addition, the OSGSF will be discussed in Unit 2 SAR Sections 11.5.6, 12.1.2.12 (new), and 12.1.3.4. The OSGSF acronym will be added to the listing of non-technical abbreviations listed in Unit 2 SAR Table 1.7-1. Computer programs used in the OSGSF shielding design will be added as references to Unit 2 SAR Section 12.5. References to the OSGSF will also be added to Sections 5.1.2.2.1 and 5.3.5.7 (new) of the Unit 1 SAR and will refer to the Unit 2 SAR for more details on the OSGSF.

Question 3:

None of the temporary or permanent buildings resulting from this DCP will affect any of the existing permanent plant systems, structures or components. In addition, temporary reconfiguration of Unit 2 decontamination room 2140 (Hot Tool Room) will also not affect any of the existing permanent plant systems, structures or components. No tests or experiments are required to support use of this room or buildings. Therefore, implementation of this DCP will not involve a test or experiment not described in the SAR.

Unreviewed Safety Questions from form 1000.131B (Cont.)

1. Will the probability of an accident previously evaluated in the SAR be increased?

Design for tornado effects is not part of the OSGSF design basis. However, for radiation shielding purposes, the walls of the OSGSF will be 30 inches of reinforced concrete, and the roof will be 18 inches thick. As noted in Unit 2 SAR Table 3.5-7, walls 18 inches thick will provide protection against penetration by the spectrum of tornado missiles listed in Unit 2 SAR subsection 3.3.2.1.C. In addition, as shown on Drawing No. M-2001-C6-1, Revision 8, "Steam Generator Equipment No. 2E24A and 2E24B", the OSG shell is at least 3.5 inches thick, providing additional protection against OSG rupture from missile effects.

The OSGSF, NSGSA, Containment Mock-up, Office Facility, CAF, POD Facility, and Toilet Facilities are stand-alone, non-safety related facilities that are not connected to, or immediately adjacent to, any existing structures. Any failure of these structures will not impact any nearby SSCs. These facilities may have an interface with existing plant utilities (power, water, etc.). Any interfaces and any impact on the probability of a previously evaluated accident is addressed in the 10CFR50.59 review for DCP 980642D206.

Entergy Warehouse No.2 already has an interface with existing plant utilities. This interface and its impact on the probability of a previously evaluated accident is addressed in the 10CFR50.59 review for DCP 980642D206. There will be no change in the probability for a previously evaluated accident.

The existing ANO Fabrication Shop north of the plant will be used to house the fabrication shop and weld test facility. There will be no change in the probability for a previously evaluated accident.

The decontamination facility provided by Entergy for SGRP use will be the Radwaste Storage Building (Old Radwaste Building).

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Reconfiguration of Decontamination Room 2140, from its present use as a Hot Tool Room, to an undress area does not affect the probability of a previously evaluated accident.

Therefore, the installation, use, and removal of the facilities described herein does not increase the probability of occurrence of an accident previously evaluated in the SAR, since these activities do not initiate any accidents described in the SAR. The Unit 2 SAR, including Sections 1.2, 1.7, 2.5, 11.5, 12.1, 12.5, and 15.1.16, and the Unit 1 SAR, including Sections 5.1 and 5.3, were reviewed for this determination.

2. Will the consequences of an accident previously evaluated in the SAR be increased?

No, the activities described in this DCP are separate from operation of plant and cannot affect previously evaluated events.

Since the OSGSF is not designed as a Seismic Category I structure, the potential for a seismic event during the life of the OSGSF raises the issue of a building collapse onto the stored OSGs or direct failure of the OSG(s) as a result of displacement from their storage saddles. Prior to removal from the containment, the OSGs will be drained and closure plates will be installed over all OSG openings. However, in the unlikely event of an OSGSF collapse, a breach of the OSG primary side could occur.

To evaluate the radiological consequences of an OSGSF collapse, atmospheric dispersion factors (χ/Q_s) at the OSGSF were determined (Reference Calculation 980642D201-01). These χ/Q_s were used in a dose calculation (Reference Calculation 980642D203-01) to determine the offsite dose consequences. It was conservatively postulated that both OSGs are ruptured by the OSGSF collapse. Based on historical precedence, the dose calculation assumed that 10% of the OSG activity is released due to the impact of the drop and 1% of this release amount is in the form of particulates small enough to become airborne. The prime contributors to the offsite dose were identified based on an isotopic distribution of surveyed OSG tubes provided in Entergy letters ANO-SGRP/BE-98-006 and ANO-SGRP/BE-98-035.

The offsite dose consequences associated with a release from the OSGs due to the collapse of the OSGSF were compared to the consequences of postulated accidents for a gaseous release. For assessing offsite dose consequences, an OSG rupture is considered to be most closely related to the rupture of a tank containing radioactive material. The waste gas decay tank (WGDT) rupture (Unit 2 SAR Section 15.1.16) is the limiting event currently evaluated in the SAR for accidental gaseous releases. It was demonstrated that the radiological consequences of a failure of both OSGs at the OSGSF are a small fraction of the 10CFR100 guideline values for accidental releases, are less than the consequences of the WGDT as described in Unit 2 SAR Table 15.1.16-2, and are below the 0.5 Rem limit for gas storage tanks defined in the bases of Technical Specification 3/4.11.2. In accordance with Regulatory Guides 1.29, 1.117, and 1.70, the radiological consequences from an OSG rupture are sufficiently low that it is not necessary to protect the OSGs from seismic events, tornadoes, or natural gas pipeline explosions. Thus, the consequences of an OSG airborne release have been demonstrated to be within the applicable regulatory guidelines and less than the comparable licensing basis accident currently evaluated in the SAR.

Prior to transport to the OSGSF, the OSGs will be drained of most of the residual water. Thus, significant quantities of water are not expected to be contained within the OSGs when stored in the OSGSF. An OSGSF collapse may result in a breach of the OSGs. In the unlikely event of an OSGSF failure resulting in a contaminated liquid spill, the spill will be contained within the building and the sump, or if the slab were to fail, within the soil in close proximity to the OSGSF since significant quantities of water are not expected to be contained in the OSGs. Any liquid release will be handled in accordance with existing ANO procedures.

The consequences of any other external events on the OSGSF, manmade or natural, are bounded by the seismic event, which is assumed to fail the structure.

Prior to removal of the OSGs from the containment, provisions will be made to control contamination on the OSGs. Following a manual wipedown, all external surfaces of the OSGs will be encapsulated to seal any

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remaining loose contamination (Reference DCP 980642D207). These precautions will preclude or limit the release of contamination within the OSGSF. On this basis, no airborne release from the OSGSF is assumed or expected, other than that associated with an OSGSF failure.

Prior to final storage of the OSGs at the OSGSF, the OSGs will be drained and the open nozzles on the OSGs will be closed with welded cover plates and shield plugs (installed per DCP 980642D207). After the OSGs are drained, there will only be a minimal liquid source left in them. Since the penetrations of the OSGs will be sealed, there will be no postulated release of any residual water remaining in the OSGs from an intact OSG. On this basis, no liquid release from the OSGSF is assumed, other than that associated with an OSGSF failure.

The OSGSF is designed such that the probable maximum flood level will not be in contact with the OSGs. The OSGSF top of slab will be at approximately 359'-6" above sea level. As described in Unit 2 SAR Section 2.4.2.2, the probable maximum flood (PMF) combined with a coincident upstream failure of the Ozark Dam results in a design basis flood elevation of 361 feet. The OSGSF walls will be sealed to a minimum of 361 feet. The entrance into the OSGSF from the vestibule will also be sealed to a minimum of 361 feet by a removable vertical steel plate. These measures will preclude water infiltration into the OSGSF. However, in the unlikely event that water does infiltrate into the OSGSF up to 361 feet, the OSGs will be stored such that this water load would not cause them to fall off their storage saddles and rupture. Further, since the bottom of the OSGs will be above 361 feet and the external surfaces of the OSGs are encapsulated to fix any loose contamination, there will be no external contamination released into the water. Therefore, there are no radiological consequences associated with the probable maximum flood.

The OSGSF is a one story, reinforced concrete structure with an 18 inch thick roof. Drainage of precipitation is provided for by the sloped roof, which is covered with a membrane system, and conveyed by means of guttering and downspouts to the ground which slopes to the 100-year drainage ditch. The siting of the OSGSF is such that it will be the least obstructive to surface water flow as it flows towards the ditch. During normal precipitation, in the unlikely event of cracking of the roof slab and failure of the membrane system, any leakage could contact the OSGs and collect on the floor of the building. However, prior to final storage of the OSGs in the OSGSF, the exterior surfaces of the OSGs will be encapsulated to seal any loose contamination. Even if the encapsulant failed, the building sump is provided with sump monitoring provisions, which will permit periodic monitoring to detect this condition and alert personnel to initiate appropriate maintenance actions. Therefore, there will be no contamination from the OSGs released into the storm water runoff.

The NSGSA, Containment Mock-up, Office Facility, CAF, POD Facility, and Toilet Facilities are temporary facilities that are not connected to, or immediately adjacent to, any existing structures. Any failure of these structures will not impact any nearby SSCs. Any interface with existing plant utilities (power, water, etc.), and any impact on the consequences of a previously evaluated accident is addressed in the 10CFR50.59 review for DCP 980642D206.

Entergy Warehouse No. 2 already has an interface with existing plant utilities. This interface and its impact on the consequences of a previously evaluated accident is addressed in the 10CFR50.59 review for DCP 980642D206. There will be no change in the consequences for a previously evaluated accident.

The existing ANO Fabrication Shop north of the plant will be used to house the fabrication shop and weld test facility. There will be no change in the consequences for a previously evaluated accident.

The decontamination facility provided by Entergy for SGRP use will be the Radwaste Storage Building (Old Radwaste Building).

Reconfiguration of Decontamination Room 2140, from its present use as a Hot Tool Room, to an undress area does not affect the consequences of a previously evaluated accident.

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Therefore, the installation, use, and removal of the facilities described herein does not increase the consequences of an accident previously evaluated in the SAR. The Unit 2 SAR, including Sections 1.2, 1.7, 2.5, 11.5, 12.1, 12.5, and 15.1.16, and the Unit 1 SAR, including Sections 5.1 and 5.3, were reviewed for this determination.

3. Will the probability of a malfunction of equipment important to safety be increased?

The OSGSF, NSGSA, Containment Mock-up, Office Facility, CAF, POD Facility, and Toilet Facilities are stand-alone, non-safety related facilities that are not connected to, or immediately adjacent to, any existing structures. Any failure of these structures will not impact any nearby SSCs. These facilities may have an interface with existing plant utilities (power, water, etc.). This interface, if it exists, and its impact on the probability of a malfunction of important to safety equipment is addressed in the 10CFR50.59 review for DCP 980642D206.

Entergy Warehouse No. 2 already has an interface with existing plant utilities. This interface and its impact on the probability of a malfunction of important to safety equipment is addressed in the 10CFR50.59 review for DCP 980642D206. There will be no change in the probability of a malfunction of equipment important to safety.

The existing ANO Fabrication Shop north of the plant will be used to house the fabrication shop and weld test facility. There will be no change in the probability of a malfunction of important to safety equipment.

The decontamination facility provided by Entergy for SGRP use will be the Radwaste Storage Building (Old Radwaste Building).

Reconfiguration of Decontamination Room 2140, from its present use as a Hot Tool Room, to an undress area does not affect the probability of a malfunction of equipment important to safety.

Therefore, the installation, use, and removal of the facilities described herein does not increase the probability of a malfunction of equipment important to safety. The Unit 2 SAR, including Sections 1.2, 1.7, 2.5, 11.5, 12.1, 12.5, and 15.1.16, and the Unit 1 SAR, including Sections 5.1 and 5.3, were reviewed for this determination.

4. Will the consequences of a malfunction of equipment important to safety be increased?

The permanent addition of the OSGSF to the plant site and storage of the OSGs does not change, degrade, or prevent actions described or assumed in any malfunction of equipment important to safety.

The permanent addition of the OSGSF to the plant site and storage of the OSG's does not change, degrade, or prevent actions described or assumed in any previously evaluated accident analysis. Construction of the OSGSF will have no adverse effect on plant flood levels. Due to its massive weight, a steam generator will not become a tornado missile. The SSCs and administrative controls relied upon in the event of a fire in any plant fire area to ensure the Plant's ability to achieve and maintain a safe shutdown condition will not be affected. Given the negligible amount of combustibles inside the facility, non-combustible rating of the encapsulation media used on the OSG's, and lack of an ignition source, a fire in the OSGSF is not considered credible.

The temporary NSGSA, Containment Mock-up, Office Facility, CAF, POD Facility, and Toilet Facilities are not connected to, or immediately adjacent to, any existing structures. Any failure of these structures will not impact any nearby SSCs. These facilities may have an interface with existing plant utilities (power, water, etc.). This interface, if it exists, and its impact on the consequences of a malfunction of equipment important to safety is addressed in the 10CFR50.59 review for DCP 980642D206.

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Document No. DCP 980642D201 Rev./Change No. 0

10CFR50.59 Review Continuation Page

Entergy Warehouse No. 2 already has an interface with existing plant utilities. This interface and its impact on the consequences of a malfunction of important to safety equipment is addressed in the 10CFR50.59 review for DCP 980642D206. There will be no change in the consequences of a malfunction of equipment important to safety.

The existing ANO Fabrication Shop north of the plant will be used to house the fabrication shop and weld test facility. There will be no change in the consequences of a malfunction of equipment important to safety.

The decontamination facility provided by Entergy for SGRP use will be the Radwaste Storage Building (Old Radwaste Building).

Reconfiguration of Decontamination Room 2140, from its present use as a Hot Tool Room, to an undress area does not affect the consequences of a malfunction of equipment important to safety.

The OSG encapsulant is a non-flammable material. Although there may be combustibles associated with the construction of the OSGSF and the storage of the OSGs (e.g., plywood shims between the OSGs and saddles, OSGSF roofing materials), the OSGSF is an unoccupied facility, without continuous power and without an ignition source. Based on the low combustible loading at the OSGSF and the absence of an ignition source, the likelihood of a fire event is minimal.

The OSGSF is a stand-alone, non-safety related facility with no interface with permanent plant structures or systems and not connected to, or immediately adjacent to, any existing structures. In the event of a fire in any plant area, the SSCs, documentation, and administrative controls relied upon to ensure the Station's ability to achieve and maintain a safe shutdown condition will not be affected by the OSGSF.

Therefore, the installation, use, and removal of the facilities described herein does not increase the consequences of a malfunction of equipment important to safety. The Unit 2 SAR, including Sections 1.2, 1.7, 2.5, 11.5, 12.1, 12.5, and 15.1.16, and the Unit 1 SAR, including Sections 5.1 and 5.3, were reviewed for this determination.

5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created?

In the unlikely event of an OSGSF collapse, a breach of the OSG primary side could occur. The offsite dose consequences associated with a release from the OSGs due to the collapse of the OSGSF were compared to the consequences of postulated accidents for a gaseous release. For assessing offsite dose consequences, an OSG rupture is considered to be most closely related to the rupture of a tank containing radioactive material. The WGDT rupture (Unit 2 SAR Section 15.1.16) is the limiting event currently evaluated in the SAR for accidental gaseous releases. It was demonstrated that the radiological consequences of a failure of both OSGs at the OSGSF are a small fraction of the 10CFR100 guideline values for accidental releases, are less than the consequences of the WGDT as described in Unit 2 SAR Table 15.1.16-2, and are below the 0.5 Rem limit for gas storage tanks defined in the bases of Technical Specification 3/4.11.2. Thus, the consequences of an OSG airborne release have been demonstrated to be within the applicable regulatory guidelines and less than the comparable licensing basis accident currently evaluated in the SAR.

The NSGSA, Containment Mock-up, Office Facility, CAF, POD Facility, and Toilet Facilities are stand-alone, non-safety related facilities that are not connected to, or immediately adjacent to, any existing structures. Any failure of these structures will not impact any nearby SSCs and, therefore, will not create a different type of accident. These facilities may have an interface with existing plant utilities (power, water, etc.). This interface, if it exists, and its impact on the possibility of creating a different type of accident is addressed in the 10CFR50.59 review for DCP 980642D206.

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Document No. DCP 980642D201 Rev./Change No. 0

10CFR50.59 Review Continuation Page

Entergy Warehouse No. 2 already has an interface with existing plant utilities. This interface and its impact on the probability of a malfunction of important to safety equipment is addressed in the 10CFR50.59 review for DCP 980642D206. There will be no possibility of creating a new type of accident.

The existing ANO Fabrication Shop north of the plant will be used to house the fabrication shop and weld test facility. There will be no possibility of creating a new type of accident.

The decontamination facility provided by Entergy for SGRP use will be the Radwaste Storage Building (Old Radwaste Building).

Reconfiguration of Decontamination Room 2140, from its present use as a Hot Tool Room, to an undress area, will not create the possibility of a different type of accident.

Therefore, the installation, use, and removal of the facilities described herein does not create the possibility of an accident of a different type than previously evaluated in the SAR. The Unit 2 SAR, including Sections 1.2, 1.7, 2.5, 11.5, 12.1, 12.5, and 15.1.16, and the Unit 1 SAR, including Sections 5.1 and 5.3, were reviewed for this determination.

6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created?

The OSGSF is designed for wind, seismic, and flood loads which meet or exceed the Unit 2 SAR requirements for Seismic Category II structures. The OSGSF will be a stand-alone facility, having no interface with other permanent plant SSCs. The OSGSF uses passive features to perform its design function and will have no interactions or interconnections with any SSCs that perform important-to-safety functions. The design and location of the OSGSF ensures that no safety-related or important-to-safety SSCs will be impacted by its postulated collapse.

The NSGSA, Containment Mock-up, Office Facility, CAF, POD Facility, and Toilet Facilities are temporary stand-alone, non-safety related facilities that are not connected to, or immediately adjacent to, any existing structures. Any failure of these structures will not impact any nearby SSCs and, therefore, will not create a different type of malfunction of equipment important to safety. These facilities may have an interface with existing plant utilities (power, water, etc.). This interface, if it exists, and its impact on the possibility of creating a different type of malfunction of equipment important to safety is addressed in the 10CFR50.59 review for DCP 980642D206.

Entergy Warehouse No. 2 already has an interface with existing plant utilities. This interface and its impact on the possibility of a different type of malfunction of equipment important to safety is addressed in the 10CFR50.59 review for DCP 980642D206. There will be no possibility of creating a new type of malfunction of equipment important to safety.

The existing ANO Fabrication Shop north of the plant will be used to house the fabrication shop and weld test facility. There will be no possibility of creating a new type of malfunction of equipment important to safety.

The decontamination facility provided by Entergy for SGRP use will be the Radwaste Storage Building (Old Radwaste Building).

Reconfiguration of Decontamination Room 2140, from its present use as a Hot Tool Room, to an undress area, will not create the possibility of a different type of malfunction of equipment important to safety.

Therefore, the installation, use, and removal of the facilities described herein does not create the possibility of a different type of malfunction than any previously evaluated in the SAR. The Unit 2 SAR, including Sections 1.2, 1.7, 2.5, 11.5, 12.1, 12.5, and 15.1.16, and the Unit 1 SAR, including Sections 5.1 and 5.3, were reviewed for this determination.

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10CFR50.59 Review Continuation Page

7. Will the margin of safety as defined in the basis for any technical specification be reduced?

The only Technical Specifications applicable to the subject of this evaluation are 6.13 - High Radiation Area and 6.14 - Offsite Dose Calculation Manual (ODCM). The applicable portion of the Technical Specification 6.11 concerns the use of barricades. The lockable access door will function as a barricade for the OSGSF. Technical Specification 6.14 specifies requirements for changing the ODCM and maintaining the level of radioactive effluent control required by 10 CFR 20.1302, 40 CFR Part 190, 10 CFR 50.36(a), and Appendix I to 10 CFR Part 50. The OSGSF design meets all regulatory limits specified by these regulations and no fission product boundaries will be affected as a result of DCP 980642D201.

Therefore, the installation, use, and removal of the facilities described herein does not reduce the margin of safety as defined in the basis for any Technical Specification.

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FORM TITLE:	FORM NO.	REV.
10CFR50.59 DETERMINATION	1000.131A	003-03-0

Document No. TAP 00-1-007

Rev./Change No. 0

Title Installation of throttling valves in the P34A/B inboard bearing service water piping.

Brief description of proposed change: Temporary Alteration 00-1-007 will install a ball valve in the 3/4" service water outlet from the Decay Heat pump P34A & P34B inboard bearing coolers (E-50A/B), and provide instructions for throttling the service water flow through the inboard bearing coolers to prevent overcooling of the bearing housings. An operator will be available to adjust the service water flow as needed to keep the temperature within allowable limits.

Will the proposed Activity:

1. Require a change to the Operating License including:

Technical Specifications (excluding the bases)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Operating License?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Confirmatory Orders?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
2. Result in information in the following SAR documents (including drawings and text) being (a) no longer true or accurate, or (b) violate a requirement stated in the document:

SAR (multi-volume set for each unit)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Core Operating Limits Report	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Fire Hazards Analysis?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Bases of the Technical Specifications?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Technical Requirements Manual?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
NRC Safety Evaluation Reports?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
3. Involve a test or experiment not described in the SAR?
(See Attachment 2 for guidance)

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
4. Result in a potential impact to the environment? (Complete the Environmental Impact Determination of this form.)

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
5. Result in the need for a Radiological Safety Evaluation per section 6.1.5?

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
6. Result in any potential impact to the equipment or facilities utilized for Ventilated Storage Cask activities per Section 6.1.6?

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
7. Involve a change under 10CFR50.54 for the following SAR documents per Section 6.1.7:

QAMO?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
E-Plan?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

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Document No. TAP 00-1-007 ~~TAP 00-1-008~~ Rev./Change No. 0

Basis for Determination (Questions 1, 2 & 3):

1. This change does not change the design basis limit for P34 bearing temperature. This is beyond the level of detail contained in the operating license documents and technical Specifications.
2. The valves will be operated in accordance with criteria which is detailed in ER 002334E103, which provides the technical basis for this temp-alt. The line in which the ball valve will be installed is shown on SAR figure 9-12; however, since this is a temporary configuration, the SAR figure will not be changed.
3. The valves will be operated to maintain proper bearing temperatures. This is a component level change which will be monitored to maintain the bearing operating condition within approved limits to prevent bearing failure and which will not affect the performance of the pump or the decay heat system. This Temp Alt. does not constitute a test or experiment not described in the SAR.

☐ Proposed change does not require 10 CFR 50.59 Evaluation per Attachment 1, Item # ___, (If checked, note appropriate item #, send LDCR to Licensing).

Search Scope:

List sections reviewed in the Licensing Basis Documents specified in Question 1, 2 and 3. If a search was performed on LRS, the LRS search index should be entered under "Section" with the search statement(s) used in parentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified and searches only text, not figures or drawings). Attach and distribute a completed LDCR per Section 6.1.2 if LBD changes are required.

Document

LRS:

50.59- Unit 1

MANUAL SECTIONS:

Unit 1 sar

Unit 1 T.S.

FIGURES:

Unit 1 SAR

Section

All (LPI, DH, Long Term, DHR w/10 Cooler, E-60, Bearing Cooler, Service Water w/10 Bearing, Service Water w/10 Bearing, Bearing, Service Water Flow)

9.3, 9.5, 14

3.1.1

9-12


Certified Reviewer's Signature

John Richardson
Printed Name

02-09-2000
Date

Reviewer's certification expiration date: 07-08-2000

Assistance provided by:

Printed Name

Scope of Assistance

Date

DAVID MacPUGG
Search Scope Review Acceptability (NA, if performed by Technical Review per 1000.006)


Certified Reviewer's Signature

DAVID MacPUGG
Printed Name

2/16/00
Date

ARKANSAS NUCLEAR ONE		
FORM TITLE: 10CFR60.59 DETERMINATION	FORM NO. 1000.131A	REV. 003-03-0

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ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Document No. TAP 00-1-007Rev./Change No. 0

Complete the following Determination. If the answer to any checklist item is "Yes", an Environmental Evaluation is required. See Section 6.1.4 for additional guidance.

Will the Activity being evaluated:

- | <u>Yes</u> | <u>No</u> | |
|--------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Disturb land that is beyond that initially disturbed during construction (i.e., new construction of buildings, creation or removal of ponds, or other terrestrial impact)? See Unit 2 SAR Figure 2.5-17. This applies only to areas outside the protected area. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase thermal discharges to lake or atmosphere? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Modify the design or operation of cooling tower which will change drift characteristics? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Install any new transmission lines leading offsite? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Change the design or operation of the intake or discharge structures? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Discharges any chemicals new or different from that previously discharged? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve incineration or disposal of any potentially hazardous materials on the ANO site? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Result in a change to nonradiological effluents or licensed reactor power level? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially change the type or increase the amount of non-radiological air emissions from the ANO site. |

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10CFR50.59 Eval. No. FFN # 00-010
(Assigned by PSC)

Document No. TAP 00-1-007Rev./Change No. 0Title INSTALLATION OF THROTTLING VALVES IN THE P34A/B INBOARD BEARING SERVICE WATER PIPING

A WRITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO EACH QUESTION MUST BE ATTACHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A SIMPLE STATEMENT OF CONCLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDANCE FOR RESPONSE.

If the answer to any question on this form is "Yes," then an unreviewed safety question is involved. If the answer to all questions is "No," then the proposed change does not involve an unreviewed safety question.

1. Will the probability of an accident previously evaluated in the SAR be increased?

Yes ☐ No ☒

This temporary alteration will install a valve in the service water outlet line from the decay heat pump P34A/B inboard bearing coolers. The valves will be throttled to maintain the bearings within existing temperature limits without overcooling the bearing housings. While operator controlled cooling water flow to these bearings is a change from the normal configuration, the target operating temperature is not changed by this activity and the decay heat system will operate with the same performance properties as before. Neither service water flow through the P34A/B bearings nor the bearing temperature is an initiator for any accident evaluated in the SAR, and the additional valve has been evaluated for seismic considerations, therefore this change has no effect on the probability of any accident analyzed in the SAR.

2. Will the consequences of an accident previously evaluated in the SAR be increased?

Yes ☐ No ☒

This alteration is limited to conditions in which reactor building integrity is not required. There are no accidents evaluated in the SAR which are initiated while below hot shutdown that require the decay heat pumps. Since the bearing temperature will be maintained within existing limits, the nature of any possible leakage due to bearing failure will not be changed and therefore the dose consequences of an accident will not increase.

3. Will the probability of a malfunction of equipment important to safety be increased?

Yes ☐ No ☒

While the service water flow through the bearing coolers may be less than that required by procedure for ES conditions, the bearing temperature limit which is the basis for service water flow will not be increased. This alteration is intended to offset the effects of lower than normal service water temperatures, not to decrease the cooling effect below that which is otherwise required. The fact that the bearing temperature is being monitored and controlled directly by an operator will result in heightened scrutiny of that parameter and will not increase the probability of the malfunction of the equipment.

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4. Will the consequences of a malfunction of equipment important to safety be increased?

Yes ☐ No ☒

The temperature limit for the P34A/B bearings will be maintained to existing requirements as recommended by the vendor. The modifications to the tubing will have no effect on the integrity of the service water system. The temporary alteration effects are limited to the decay heat pumps. The consequences of a malfunction of these pumps will not be increased by this change. The alteration will not adversely impact the ability of the decay heat pumps to mitigate a malfunction of equipment important to safety.

5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created?

Yes ☐ No ☒

The new valves are ball valves which are appropriate for the intended service. The new valves are able to add resistance to flow in the service water piping through the inboard bearings. The flow through these components is minimal compared to the service water system flow and will be controlled to maintain the proper bearing temperature in the pump bearing. Only the service water and decay heat systems are affected, and there are no significant changes to the operation of either system's function or operation, therefore there is no possibility of any new accident being created.

6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created?

Yes ☐ No ☒

Since the design parameter of bearing temperature is still being controlled to the same limit, the design basis is maintained and the design stress levels are still bounding. Any change to service water flow will be a decrease in flow to this component and cannot starve any other component of flow. The total flow to this component is insignificant compared to the total service water system flow. Previous analysis is still bounding and this activity does not cause the possibility of a malfunction of equipment important to safety of a different type.

7. Will the margin of safety as defined in the basis for any technical specification be reduced?

Yes ☐ No ☒

There is no margin of safety defined in any technical specification basis which is reduced by throttling the service water flow through the P34A/B bearings. The bearing temperature will be maintained to the existing requirements and no change in system performance will result.

John Richardson John Richardson 02-09-2000
 Certified Reviewer's Signature Printed Name Date

Reviewer's certification expiration date: 07-08-2000

Assistance provided by:

Printed Name

Scope of Assistance

Date

PSC review by: DBrown Date: 2/12/00

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FORM TITLE:	FORM NO.	REV.
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Document No. 002337N101 Rev./Change No. 0

Title Add Isolation Valve For P-99

Brief description of proposed change:

The scope of this nuclear change is to install valve GZ-21 which will serve to isolate vacuum degasifier seal water pump P-99 during maintenance. There is presently no means to isolate P-99 on the inlet side to moisture separator tank T-76. New flanges will also be installed to provide easier removal of the pump. A drain cap is being added at drain valve GZ-1016.

Will the proposed Activity:

1. Require a change to the Operating License including:

Technical Specifications (excluding the bases)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Operating License?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Confirmatory Orders?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
2. Result in information in the following SAR documents (including drawings and text) being (a) no longer true or accurate, or (b) violate a requirement stated in the document:

SAR (multi-volume set for each unit)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Core Operating Limits Report?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Fire Hazards Analysis?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Bases of the Technical Specifications?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Technical Requirements Manual?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
NRC Safety Evaluation Reports?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
3. Involve a test or experiment not described in the SAR?
(See Attachment 2 for guidance)

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
4. Result in a potential impact to the environment? (Complete Environmental Impact Determination of this form.)

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
5. Result in the need for a Radiological Safety Evaluation per section 6.1.5?

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
6. Result in any potential impact to the equipment or facilities utilized for Ventilated Storage Cask activities per Section 6.1.6?

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
7. Involve a change under 10CFR50.54 for the following SAR documents per Section 6.1.7?

QAMO?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
E-Plan?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

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Document No. 002337N101

Rev./Change No. 0

Basis for Determination (Questions 1, 2, & 3):

Background

There is presently no feasible means of isolating P-99 for maintenance without rendering large portions of the clean liquid radwaste and gaseous waste systems inoperable. A valve is needed on the inlet side of the pump for isolation. Flanges on the inlet side are also needed to facilitate removal of the pump. A drain cap is being added at drain valve GZ-1016.

Question 1

A review of the Unit 1 Technical Specifications, Operating License, and Confirmatory Orders using LRS and a HARD copy of these documents did not reveal any sections that would be affected by adding an isolation valve and flanges at the vacuum degasifier seal water pump P-99.

Question 2

A review of all the documents listed in Question 2 was performed using LRS and a HARD copy of the Unit 1 SAR. SAR Figure 11-1, P&ID M-214 Sh. 2 needs to be revised to show the new valve GZ-21, the new flanges, and a new threaded pipe cap at drain valve GZ-1016. No other SAR sections are affected. A 10CFR evaluation is required.

Question 3

Installation of GZ-21 and a set of flanges will not involve a test or experiment not described in the SAR. All testing associated with this installation will be in accordance with approved ANO procedures.

☐ Proposed change does not require 10CFR50.59 Evaluation per Attachment 1, Item #__ (If checked, note appropriate item #, send LDCR to Licensing).

Search Scope:

List sections reviewed in the Licensing Basis Documents specified in questions 1, 2 and 3. If search was performed on LRS, The LRS search index should be entered under "Section" with the search statement(s) used in parentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified and searches only text, not figures or drawings). **Attach and distribute a completed LDCR per Section 6.1.2 if LBD changes are required.**

Document **Section**

LRS: All ("clean w/5 liquid, liquid w/5 waste, P-99, vacuum w/5 degas, gaseous w/5 waste")
 MANUAL SECTIONS: Unit 1 SAR T.O.C. and Sections 11.1.3, 14.2.2.7, Tables 11-6, 11-12, 11-18, and 11-19,
 FIGURES: Unit 1 SAR Figure 11-1

TS 3.24 and TS 325.2.
2-11-00

 Certified Reviewer's Signature Stephen J. Lynn Printed Name 2/10/00 Date

Reviewer's certification expiration date: 5/26/01

Assistance provided by:
 Printed Name

Scope of Assistance

002337N101
 PAGE 5 REV 0 Date

Search Scope Review Acceptability (NA, if performed by Technical Reviewer per 1000.006)

 Certified Reviewer's Signature Lee R. Schwartz Printed Name 2-11-00 Date

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ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Document No. 002337N101

Rev./Change No. 0

Complete the following Determination. If the answer to any item below is "Yes", an Environmental Evaluation is required. See Section 6.1.4 for additional guidance.

Will the Activity being evaluated:

Yes No

- | | | |
|--------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Disturb land that is beyond that initially disturbed during construction (i.e., new construction of buildings, creation or removal of ponds, or other terrestrial impact)? See Unit 2 SAR Figure 2.5-17. This applies only to areas outside the protected area. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase thermal discharges to lake or atmosphere? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Modify the design or operation of cooling tower which will change drift characteristics? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Install any new transmission lines leading offsite? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Change the design or operation of the intake or discharge structures? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Discharges any chemicals new or different from that previously discharged? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve incineration or disposal of any potentially hazardous materials on the ANO site? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Result in a change to nonradiological effluents or licensed reactor power level? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially change the type or increase the amount of non-radiological air emissions from the ANO site. |

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Document No. 002337N101 Rev./Change No. 0 10CFR50.59 Eval. No. FEA 00-011
(Assigned by PSC)

Title Add Isolation Valve For P-99

A WRITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO EACH QUESTION MUST BE ATTACHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A SIMPLE STATEMENT OF CONCLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDANCE FOR RESPONSE.

If the answer to any question on this form is "Yes," then an unreviewed safety question is involved. If the answer to all questions is "No," then the proposed change does not involve an unreviewed safety question.

1. Will the probability of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒
2. Will the consequences of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒
3. Will the probability of a malfunction of equipment important to safety be increased? Yes ☐ No ☒
4. Will the consequences of a malfunction of equipment important to safety be increased? Yes ☐ No ☒
5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created? Yes ☐ No ☒
6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created? Yes ☐ No ☒
7. Will the margin of safety as defined in the basis for any technical specification be reduced? Yes ☐ No ☒

Stephen J. Lynn Stephen J. Lynn
Certified Reviewer's Signature Printed Name Date

Reviewer's certification expiration date: 5/26/01

Assistance provided by:

Printed Name	Scope of Assistance	Date
_____	_____	_____
_____	_____	_____
_____	_____	_____

PSC review by: DB Date: 2/14/00

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10CFR50.59 Review Continuation Page

1. The only analyzed accident in the SAR related to waste gas is the "Waste Gas Tank Rupture" in Section 14.2.2.7. This analyzed accident involves an unexpected and uncontrolled release to the atmosphere of the radioactive gases stored in one waste gas tank. The contents of the tank are assumed to have maximum possible activity. The addition of isolation valve GZ-21 and piping flanges in the seal water piping for the vacuum degasifiers will not increase the probability of the waste gas tank rupture accident. The failure of the vacuum degasifier would only result in an inability to degas the RCS during shutdowns. The vacuum degasifier and the gaseous waste system is not required for the safe shutdown of the plant. Valve GZ-21 will be normally open and will be closed to isolate P-99, the vacuum degasifier seal water pump, for maintenance.
2. The consequences of the Waste Gas Tank Rupture accident described in the SAR will not be increased as a result of this change. The analysis of this accident concluded that the release of one waste gas decay tank contents with maximum activity would not exceed exposure limits to a member of the public at the exclusion boundary. This change will not affect the volume or activity of waste gas stored in the decay tanks. The complete failure of the seal water piping would only make the vacuum degasifier unavailable for degassing operations. This modification will not affect any existing events or plant conditions assumed prior to and following a waste gas tank rupture so that the analysis of events and consequences for this accident as provided in SAR Section 14.2.2.7 remains unchanged. No radiological barriers are affected by this change and no new pathways for the release of radiation are created.
3. The installation of GZ-21, the inlet and outlet flanges to P-99, and the drain cap on GZ-1016 will not have any impact on any equipment important to safety. The new valve, the seal water pump, the vacuum degasifier, and the Gaseous Waste System serve no safety-related function. The new valve will be classified QA Program Code S-U1 to assure that the system is maintained to high levels of quality consistent with its importance.
4. The installation of valve GZ-21, the new flanges, and the drain cap can in no way affect offsite dose consequences due to malfunctions of equipment important to safety. The valve, flanges, and cap only serve to isolate P-99 and provide for ease of maintenance. The Gaseous Waste System is not used for any plant response to an analyzed accident. The dose for personnel responding to accidents can not be affected by the addition of the valve, flanges, and cap.
5. The only accident that could result from this modification is the leakage of liquid waste from the new valve, pipe welds, flanges, or the pipe cap. Although part of the Gaseous Waste System, this line contains seal water collected from T-76. Leakage would be collected by area floor drains. Since the valve, Gaseous Waste and Liquid Radwaste Systems serve no safety-related function, no credible accident can be created by this modification.
6. This modification only affects the seal water piping for the vacuum degasifier. The vacuum degasifiers, the seal water pump, and other components in this portion of the Gaseous Waste System are non-safety related and can in no way affect other equipment important to safety.
7. The Bases for Technical Specifications 3.24 "Explosive Gas Mixture" limits the concentration of hydrogen/oxygen in the waste gas storage tanks to prevent a flammable or detonable mixture. These levels provide reasonable assurance that no explosion will occur that will rupture the waste gas decay tanks. This modification of seal water piping for the vacuum degasifiers will have no effect on hydrogen or oxygen mixtures in the waste gas tanks.

Technical Specifications 3.25.2, "Radioactive Gas Storage Tanks" involves restricting the amount of radioactivity in a waste gas storage tank. This proposed modification will not affect in any way the volume of waste gas or the activity levels of the gas. The unavailability of the vacuum degasifiers would only delay the processing of waste gas. Consequently, the amount of fission gases that will be present in a waste gas tank at any time will not be changed by this design change.

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FORM TITLE:

10CFR50.59 DETERMINATION

FORM NO.
1000.131AREV.
3 PC-1PAGE 3 REV 0Document No. ER002371N101Rev./Change No. 0Title Leak Repair of S/G Hot Leg Level Tap Nozzles

Brief description of proposed change:

Nuclear Change ER002371N101 provides the modification package for the repair of the hot leg level tap nozzles at valves RC-1063/1064, RC-1065/1066, RC-1067/1068, RC-1073/1073, RC-1075/1076, and RC-1077/1078. The new hot leg level tap nozzles are considered to be of superior design to the existing nozzles. The method of installation of the new nozzle will result in a small gap between the end of the Inconel sleeve and the hot leg nozzle. This will allow reactor coolant to contact the carbon steel hot leg piping in the gap area. The evaluation of the potential for material degradation due to reactor coolant being in contact with carbon steel was evaluated in calculation 86-E-0074-88. This calculation evaluated the corrosion rates for materials in the pressurizer that involved reactor coolant, carbon steel and alloy 600 materials. Based on the calculation summary, minimal corrosion of the carbon steel material is to be expected. The inspections implemented by this calculation verified that the carbon steel corrosion rates were minimal and this condition is acceptable. The pressure boundary weld on the new nozzles will be equivalent to the pressure boundary weld on the existing nozzles. The installation of the new nozzles will meet all Class 1 requirements of the ASME code.

Will the proposed Activity:

1. Require a change to the Operating License including:
 - Technical Specifications (excluding the bases)? Yes ☐ No ☒
 - Operating License? Yes ☐ No ☒
 - Confirmatory Orders? Yes ☐ No ☒
2. Result in information in the following SAR documents (including drawings and text) being (a) no longer true or accurate, or (b) violate a requirement stated in the document:
 - SAR (multi-volume set for each unit)? Yes ☒ No ☐
 - Core Operating Limits Report? Yes ☐ No ☒
 - Fire Hazards Analysis? Yes ☐ No ☒
 - Bases of the Technical Specifications? Yes ☐ No ☒
 - Technical Requirements Manual? Yes ☐ No ☒
 - NRC Safety Evaluation Reports? Yes ☐ No ☒
3. Involve a test or experiment not described in the SAR?
(See Attachment 2 for guidance) Yes ☐ No ☒
4. Result in a potential impact to the environment? (Complete Environmental Impact Determination of this form.) Yes ☐ No ☒
5. Result in the need for a Radiological Safety Evaluation per section 6.1.5? Yes ☐ No ☒
6. Result in any potential impact to the equipment or facilities utilized for Ventilated Storage Cask activities per Section 6.1.6? Yes ☐ No ☒
7. Involve a change under 10CFR50.54 for the following SAR documents per Section 6.1.7?
 - QAMO? Yes ☐ No ☒
 - E-Plan? Yes ☐ No ☒

FORM TITLE:

10CFR50.59 DETERMINATION

FORM NO.

1000.131A

REV.

3 PC-1, 2

ENVIRONMENTAL IMPACT DETERMINATION
(UNIT 1 and UNIT 2)PAGE 5 REV. (Document No. ER002371N101Rev./Change No. 0

Complete the following Determination. If the answer to any item below is "Yes", an Environmental Evaluation is required. See Section 6.1.4 for additional guidance.

Will the Activity being evaluated:

YesNo☐☒

Disturb land that is beyond that initially disturbed during construction (i.e., new construction of buildings, creation or removal of ponds, or other terrestrial impact)? See Unit 2 SAR Figure 2.5-17. This applies only to areas outside the protected area.

☐☒

Increase thermal discharges to lake or atmosphere?

☐☒

Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower?

☐☒

Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower?

☐☒

Modify the design or operation of cooling tower which will change drift characteristics?

☐☒

Install any new transmission lines leading offsite?

☐☒

Change the design or operation of the intake or discharge structures?

☐☒

Discharges any chemicals new or different from that previously discharged?

☐☒

Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water?

☐☒

Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water?

☐☒

Involve incineration or disposal of any potentially hazardous materials on the ANO site?

☐☒

Result in a change to nonradiological effluents or licensed reactor power level?

☐☒

Potentially change the type or increase the amount of non-radiological air emissions from the ANO site.

FORM TITLE:

10CFR50.59 SAFETY EVALUATION

FORM NO.

1000.131B

REV.

3 PC-2

PAGE 6 REV. 0Document No. ER002371N101Rev./Change No. 010CFR50.59 Eval. No. 00-012

(Assigned by PSC)

Title Leak Repair of S/G Hot Leg Level Tap Nozzles

A WRITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO EACH QUESTION MUST BE ATTACHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A SIMPLE STATEMENT OF CONCLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDANCE FOR RESPONSE.

If the answer to any question on this form is "Yes," then an unreviewed safety question is involved. If the answer to all questions is "No," then the proposed change does not involve an unreviewed safety question.

1. Will the probability of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒

The new hot leg level tap nozzles are considered to be of superior design to the existing nozzles. The method of installation of the new nozzle will result in a small gap between the end of the Inconel sleeve and the hot leg nozzle. This will allow reactor coolant to contact the carbon steel hot leg piping in the gap area. The evaluation of the potential for material degradation due to reactor coolant being in contact with carbon steel was evaluated in calculation 86-E-0074-88. This calculation evaluated the corrosion rates for materials in the pressurizer that involved reactor coolant, carbon steel and alloy 600 materials. Based on the calculation summary, minimal corrosion of the carbon steel material is to be expected. The inspections implemented by this calculation verified that the carbon steel corrosion rates were minimal and this condition is acceptable. The pressure boundary weld on the new nozzles will be equivalent to the pressure boundary weld on the existing nozzles. The installation of the new nozzles will meet all Class 1 requirements of the ASME code. The postulated accident applicable to the hot leg level nozzles is a guillotine failure of the nozzle, which results in a small break LOCA. The installation of the new nozzles does not introduce any new failure modes and the likelihood of a failure is not increased as a result of installing the new nozzles. Therefore, the probability of an accident previously evaluated in the SAR is not increased due to the installation of the new hot leg level nozzles.

2. Will the consequences of an accident previously evaluated in the SAR be increased? Yes ☐ No ☒

The applicable accident is a guillotine failure of the hot leg level nozzle that results in a small break LOCA. The worst case scenario would be a weld failure in which the nozzle is ejected from the RCS piping. The diameter of the bore that penetrates the RCS piping is the same as the existing design. A failure of the nozzle would result in the same consequences as a failure of the existing nozzle. Since the consequences of the applicable accident are bounded by the existing analysis, the consequences of an accident previously evaluated in the SAR are not increased.

3. Will the probability of a malfunction of equipment important to safety be increased? Yes ☐ No ☒

The hot leg level nozzles are considered part of the RCS pressure boundary and are therefore classified as equipment important to safety. The installation of the new nozzles will be performed such that all Class 1 ASME code requirements are met. The installation of the new nozzles will not introduce any new loads on the RCS piping. Post installation testing will ensure that the natural frequency of the new level nozzle assembly will not be excited by the RCP running frequencies as discussed in the NCP. Therefore, the probability of a malfunction of equipment important to safety will not be increased.

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4. Will the consequences of a malfunction of equipment important to safety be increased?

Yes ☐ No ☒

The worst case malfunction of the hot leg level nozzle would be a weld failure in which the nozzle is ejected from the RCS piping. The diameter of the bore that penetrates the RCS piping is the same as the existing design. A failure of the nozzle would result in the same consequences as a failure of the existing nozzle. Therefore, the consequences of a malfunction of equipment important to safety will not be increased.

5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created?

Yes ☐ No ☒

The worst case postulated accident associated with replacement of the hot leg level nozzles would be a failure in which the nozzle is ejected from the RCS piping. This accident is bounded by the analysis for a small break LOCA. Therefore, the possibility of an accident of a different type than that previously evaluated in the SAR will not be created as a result of the installation of the new nozzles.

6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created?

Yes ☐ No ☒

The postulated malfunction associated with replacement of the hot leg level nozzles would be a failure in which the nozzle is ejected from the RCS piping. This accident is bounded by the analysis for a small break LOCA. Therefore, the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR will not be created.

7. Will the margin of safety as defined in the basis for any technical specification be reduced?

Yes ☐ No ☒

The hot leg level tap nozzles function as a reactor coolant pressure boundary, which is one of the fission product barriers. This change will have no effect on the system pressures that the nozzle will be exposed to. The installation of the nozzles will not introduce any new loads or stresses on the RCS piping. Installation of the new hot leg level nozzles will not degrade a fission product barrier and as such will not reduce any margin of safety.



Certified Reviewer's Signature

Butch Hollowoa

Printed Name

2/18/00

Date

Reviewer's certification expiration date: 9/9/01

Assistance provided by:

Printed Name

Scope of Assistance

Date

PSC review by: _____ Date: _____

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ARKANSAS NUCLEAR ONE		FORM NO.	REV.
FORM TITLE:	10CFR50.59 DETERMINATION	1000.131A	003-03-0

Document No. ER 002371N101

Rev./Change No. 2

Title Leak Repair of S/G Hot Leg Level Tap Nozzles

Brief description of proposed change: NCPR-2 of this NCP will install a special repair for the nozzle at valves RC-1071/1072. The configuration of the existing root valves and instrument tubing will be retained. The special repair will consist of a weld overlay that is to be installed around the existing weld. After installation of the overlay weld, a new fillet weld will be installed between the overlay weld and the existing nozzle.

Will the proposed Activity:

- Require a change to the Operating License including:

Technical Specifications (excluding the bases)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Operating License?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Confirmatory Orders?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
- Result in information in the following SAR documents (including drawings and text) being (a) no longer true or accurate, or (b) violate a requirement stated in the document:

SAR (multi-volume set for each unit)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Core Operating Limits Report	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Fire Hazards Analysis?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Bases of the Technical Specifications?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Technical Requirements Manual?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
NRC Safety Evaluation Reports?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
- Involve a test or experiment not described in the SAR?
(See Attachment 2 for guidance)

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
- Result in a potential impact to the environment? (Complete the Environmental Impact Determination of this form.)

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
- Result in the need for a Radiological Safety Evaluation per section 6.1.5?

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
- Result in any potential impact to the equipment or facilities utilized for Ventilated Storage Cask activities per Section 6.1.6?

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
- Involve a change under 10CFR50.54 for the following SAR documents per Section 6.1.7:

QAMO?	
E-Plan?	

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Rev./Change No. **2**

Basis for Determination (Questions 1, 2 & 3):

See continuation page for discussion concerning the basis for determination.

☐ Proposed change does not require 10 CFR 50.59 Evaluation per Attachment 1, Item #__, (If checked, note appropriate item #, send LDCR to Licensing).

Search Scope:

List sections reviewed in the Licensing Basis Documents specified in Question 1, 2 and 3. If a search was performed on LRS, the LRS search index should be entered under "Section" with the search statement(s) used in parentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified and searches only text, not figures or drawings). **Attach and distribute a completed LDCR per Section 6.1.2 if LBD changes are required.**

Document

Section

LRS:

Unit 1 50.59

(ASME w/10 code), (ANSI B31.7), (Pressure boundary w/10 repair), (Pressure boundary w/10 weld*), (non w/10 code), (code w/10 repair), (code w/10 weld*), (weld w/10 pad), (weld w/10 buildup), (RCS)

MANUAL SECTIONS:

Unit 1 SAR

Unit 1 TS

Section 1.4.10, 1.4.11, 1.4.26, 1.4.27, 4.1.3, Table 4-6, 5.1.3.2
5.3.2

FIGURES:

None

Butch Holloway
Certified Reviewer's Signature

Butch Holloway
Printed Name

2/23/00
Date

Reviewer's certification expiration date: 9/9/01

Assistance provided by:

Printed Name

Scope of Assistance

Date

Search Scope Review Acceptability (NA, if performed by Technical Review per 1000.006)

Joseph C. King Jr.
Certified Reviewer's Signature

Joseph C. King Jr.
Printed Name

2/23/00
Date

ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Document No. ER 002371N101Rev./Change No. 0

Complete the following Determination. If the answer to any checklist item is "Yes", an Environmental Evaluation is required. See Section 6.1.4 for additional guidance.

Will the Activity being evaluated:

YesNo

- | | | |
|--------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Disturb land that is beyond that initially disturbed during construction (i.e., new construction of buildings, creation or removal of ponds, or other terrestrial impact)? See Unit 2 SAR Figure 2.5-17. This applies only to areas outside the protected area. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase thermal discharges to lake or atmosphere? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Modify the design or operation of cooling tower which will change drift characteristics? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Install any new transmission lines leading offsite? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Change the design or operation of the intake or discharge structures? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Discharges any chemicals new or different from that previously discharged? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve incineration or disposal of any potentially hazardous materials on the ANO site? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Result in a change to nonradiological effluents or licensed reactor power level? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially change the type or increase the amount of non-radiological air emissions from the ANO site. |

ARKANSAS NUCLEAR ONE		
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10CFR50.59 Review Continuation Page

Question 1: The requirements for the number of channels for the Hot Leg Level Monitoring System is specified in Table 3.5.1-1 of the Unit 1 TS. Section 5.3.2.1 of the Unit 1 TS states that the reactor coolant system is designed and constructed in accordance with code requirements and references the reader to the Unit 1 SAR, Section 4.1.3. The changes implemented in this revision to the NCP will have no affect on the functionality of the level instrumentation and will not cause information contained in the Unit 1 TS, Operating License, or Confirmatory Orders to be untrue or inaccurate.

Question 2: The changes described in this revision to the NCP are considered to be an "alternate code repair". The general design criteria (GDC) for the reactor coolant pressure boundary are defined in the Unit 1 SAR, Section 1.4. The applicable sub-sections are GDC-14, 15, 30, and 31. These guidelines state in part that the material selection, design and fabrication of the reactor coolant pressure boundary are in accordance with recognized codes (i.e. ASME, ANSI). Unit 1 RCS piping is designed to the requirements of ANSI B31.7, "Code for Pressure Piping, Nuclear Power Piping". The Unit 1 RCS piping is also discussed in SAR Section 4.1.3. Specifically, nozzles on the reactor coolant piping are addressed in Section 4.1.3.5, which states that nozzles comply with the requirements of Section 4.1.3.2. Per Section 4.1.3.2, repairs or modifications made to RCS piping shall meet the requirements for Class 1 components in accordance with IWA-4000 of ASME, Section XI. IWA-4170 requires the repair to be in accordance with the Original Construction Code with provisions to use later Editions of the Construction code or ASME Section III. The proposed repair does not meet all the requirements of an ASME Section III weld repair. As such, a 10CFR50.59 Evaluation will be performed. Since this repair is considered to be temporary, no changes to the Unit 1 SAR will be initiated.

Question 3: The change implemented by NCPR-2 of this NCP will perform a special repair on the RCS level instrument tap at valves RC-1071/1072. The design function of the nozzle will not be impacted. Implementation of the proposed repair does not constitute a Test or Experiment not described in the SAR.

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10CFR50.59 Eval. No. FFN-00-013
(Assigned by PSC)

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Rev./Change No. 2

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Title Leak Repair of S/G Hot Leg Level Tap Nozzles

A WRITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO EACH QUESTION MUST BE ATTACHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A SIMPLE STATEMENT OF CONCLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDANCE FOR RESPONSE.

If the answer to any question on this form is "Yes," then an unreviewed safety question is involved. If the answer to all questions is "No," then the proposed change does not involve an unreviewed safety question.

1. Will the probability of an accident previously evaluated in the SAR be increased?

Yes ☐ No ☒

The alternate repair of the RC-1071/1072 hot leg level tap nozzle will result in a branch attachment that is of equal or greater strength to the original nozzle. The accident applicable to the hot leg level nozzle is a guillotine failure of the nozzle, which results in a small break LOCA. An analysis of the repair will be performed and included in Relief Request 99-1-001. The evaluation will document that the structural strength of the weld is not degraded. The failure mechanisms associated with the weld will also be evaluated and documented in Relief Request 99-1-001. The failure mechanisms associated with the alternate repair are the same as those for the original nozzle installation. Since a small portion of the Alloy 600 material will remain in place, the possibility of future leakage due to primary water stress corrosion cracking (PWSCC) can not be ruled out. However, PWSCC leaks in the nozzle would be from axial cracking, and thus would be characterized by very small leak rates gradually increasing to detectable levels. Since the nozzle is located on the bottom of the RCS Hot Leg, there is very limited potential for corrosion on the RCS piping even if the leakage was initially undetected. It is concluded that the likelihood of a failure is not increased. Based on the evaluations involved with the proposed repair and their results, this repair is considered equivalent to the existing nozzle installation. Therefore, the probability of an accident previously evaluated in the SAR is not increased due to the proposed alternate repair of the hot leg level nozzle.

2. Will the consequences of an accident previously evaluated in the SAR be increased?

Yes ☐ No ☒

The applicable accident is a guillotine failure of the hot leg level nozzle that results in a small break LOCA. The worst case scenario would be a weld failure in which the nozzle is ejected from the RCS piping. The physical interface characteristics of the nozzle will not be changed as a result of the proposed repair. The diameter of the nozzle that penetrates the RCS piping is unchanged. A failure of the repaired nozzle would result in the same consequences as a failure of the existing nozzle. Since the consequences of the applicable accident are bounded by the existing analysis, the consequences of an accident previously evaluated in the SAR are not increased.

3. Will the probability of a malfunction of equipment important to safety be increased?

Yes ☐ No ☒

The hot leg level nozzles are considered part of the RCS pressure boundary and are therefore classified as equipment important to safety. The installation of the proposed weld repair does not meet all the requirements of a weld repair per ASME Section III. 10CFR50.55a allows repairs to Class 1 piping that does not meet all code requirements provided NRC approval of the proposed repair is granted. Analysis of the proposed weld configuration will verify that the structural strength of the weld as required by the applicable code is met. The failure modes for the repair of the RC-1071/1072 nozzle are the same as for the original nozzle. The weld pad buildup of Alloy 690 equivalent material takes no credit for the existing weld material, and thus provides significant margin against catastrophic nozzle failure. Since a small

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10CFR50.59 EVALUATION			

portion of the Alloy 600 material will remain in place, the possibility of future leakage due to PWSCC can not be ruled out. However, PWSCC leaks in the nozzle would be from axial cracking, and thus would be characterized by very small leak rates gradually increasing to detectable levels. Since the nozzle is located on the bottom of the RCS Hot Leg, there is very limited potential for corrosion on the RCS piping even if the leakage was initially undetected. Further, there is no carbon steel safety related piping located below this nozzle. PWSCC propagates at a very slow rate and the proposed repair is only intended for the remainder of this fuel cycle. Additionally, Relief Request 99-01-001 must be approved by the NRC prior to plant heatup. Based on the analysis performed for the proposed repair it is concluded that the probability of a malfunction of equipment important to safety will not be increased.

4. Will the consequences of a malfunction of equipment important to safety be increased? Yes ☐ No ☒

The worst case malfunction of the hot leg level nozzle would be a weld failure in which the nozzle is ejected from the RCS piping. The physical characteristics for the portion of the nozzle that penetrates the RCS piping is the same as the existing nozzle. A failure of the nozzle would result in the same consequences as a failure of the existing nozzle. Therefore, the consequences of a malfunction of equipment important to safety will not be increased.

5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created? Yes ☐ No ☒

The worst case postulated accident associated with replacement of the weld repair of the RC-1071/1072 hot leg level nozzle would be a failure in which the nozzle is ejected from the RCS piping. This accident is bounded by the analysis for a small break LOCA. Therefore, the possibility of an accident of a different type than that previously evaluated in the SAR will not be created as a result of the installation of the new nozzles.

6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created? Yes ☐ No ☒

The postulated malfunction associated with a weld repair of the RC-1071/1072 hot leg level nozzle would be a weld failure in which the nozzle is ejected from the RCS piping. This accident is bounded by the analysis for a small break LOCA. Therefore, the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR will not be created.

7. Will the margin of safety as defined in the basis for any technical specification be reduced? Yes ☐ No ☒

The hot leg level tap nozzles function as a reactor coolant pressure boundary, which is one of the fission product barriers. This change will have no effect on the system pressures that the nozzle will be exposed to. The weld pad buildup of Alloy 690 equivalent material takes no credit for the existing weld material, and thus provides significant margin against catastrophic nozzle failure. Analysis will be performed to show that all structural requirements of the nozzle as required by code are met. The proposed weld repair will not degrade a fission product barrier and as such will not reduce any margin of safety.

Butch Holloway Butch Holloway 2/23/00
Certified Reviewer's Signature Printed Name Date

Reviewer's certification expiration date: 9/9/01

Assistance provided by:

Printed Name Scope of Assistance Date

PSC review by: [Signature] Date: 2/23/00

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ARKANSAS NUCLEAR ONE		Page 1
FORM TITLE:	10CFR50.59 DETERMINATION	FORM NO. 1000.131A REV. 3 PC-1

This Document contains 3 Pages.

Document No. ER-002376N101 Rev./Change No. 0

Title Addition of RCP P32A, P32C & P32D Backstop Lube Oil Flow Computer Points

Brief description of proposed change:

This ER will add one computer point for monitoring lube oil flow from each of the two Backstop Lube Oil pumps per RCP pump motor (P32A, P32C & P32D). P32B is not a Siemens build pump and does not contain a Backstop Lube Oil system. The backstop lube oil system supplies oil to the anti-rotational devices. This ER will utilize existing spare backstop lube oil flowswitches to provide indication in the form of computer points for monitoring the backstop lube oil flow.

Will the proposed Activity:

1. Require a change to the Operating License including:

Technical Specifications (excluding the bases)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Operating License?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Confirmatory Orders?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
2. Result in information in the following SAR documents (including drawings and text) being (a) no longer true or accurate, or (b) violate a requirement stated in the document:

SAR (multi-volume set for each unit)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Core Operating Limits Report?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Fire Hazards Analysis?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Bases of the Technical Specifications?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Technical Requirements Manual?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
NRC Safety Evaluation Reports?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
3. Involve a test or experiment not described in the SAR?
(See Attachment 2 for guidance)

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
4. Result in a potential impact to the environment? (Complete Environmental Impact Determination of this form.)

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
5. Result in the need for a Radiological Safety Evaluation per section 6.1.5?

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
6. Result in any potential impact to the equipment or facilities utilized for Ventilated Storage Cask activities per Section 6.1.6?

	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---
7. Involve a change under 10CFR50.54 for the following SAR documents per Section 6.1.7?

QAMO?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
E-Plan?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

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Document No. ER-002376N101

Rev./Change No. 0

Basis for Determination (Questions 1, 2, & 3):

This change will utilize existing spare backstop lube oil flow switches for monitoring adequate backstop lube oil flow in the form of digital computer points for RCP P32A, P32C & P32D. P&ID M-238, Sh.1 depicts the backstop lube oil system and associated flowswitches and will be revised to depict these computer points. This P&ID is SAR Figure 7-21 and therefore the response to question No.2 above is marked "Yes" for SAR. An attached 50.59 Safety Evaluation has been performed for this design change. A search was conducted of the Operating License documents, utilizing ZY Index, to determine if this proposed change would affect any other licensing basis document. The search criteria used is listed below along with the sections reviewed manually.

☐ Proposed change does not require 10CFR50.59 Evaluation per Attachment 1, Item # ____ (If checked, note appropriate item #, send LDCR to Licensing).

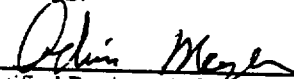
Search Scope:

List sections reviewed in the Licensing Basis Documents specified in questions 1, 2 and 3. If search was performed on LRS, the LRS search index should be entered under "Section" with the search statement(s) used in parentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified and searches only text, not figures or drawings). Attach and distribute a completed LDCR per Section 6.1.2 if LBD changes are required.

<u>Document</u>	<u>Section</u>
LRS: 50.59 - Unit 1	"Containment w/15 electrical penetration", "Lube Oil w/15 anti", "Backstop", "Lube Oil w/15 ARD"

MANUAL SECTIONS: SAR Section 4.2.2.6 "Reactor Coolant Pump Motor", Section 5.2.2.1.1 "Electrical Penetrations"

FIGURES:

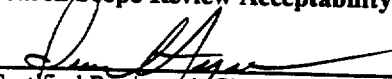
	<u>ADRIAN MEYER</u>	<u>2/24/00</u>
Certified Reviewer's Signature	Printed Name	Date

Reviewer's certification expiration date: 12/9/00

Assistance provided by:

Printed Name	Scope of Assistance	Date
_____	_____	_____
_____	_____	_____
_____	_____	_____

Search Scope Review Acceptability (NA, if performed by Technical Reviewer per 1000.006)

	<u>TIMOTHY L. AGNES</u>	<u>2/24/00</u>
Certified Reviewer's Signature	Printed Name	Date

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ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Document No. ER-002376N101

Rev./Change No. 0

Complete the following Determination. If the answer to any item below is "Yes", an Environmental Evaluation is required. See Section 6.1.4 for additional guidance.

Will the Activity being evaluated:

- | <u>Yes</u> | <u>No</u> | |
|--------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Disturb land that is beyond that initially disturbed during construction (i.e., new construction of buildings, creation or removal of ponds, or other terrestrial impact)? See Unit 2 SAR Figure 2.5-17. This applies only to areas outside the protected area. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase thermal discharges to lake or atmosphere? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Modify the design or operation of cooling tower which will change drift characteristics? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Install any new transmission lines leading offsite? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Change the design or operation of the intake or discharge structures? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Discharges any chemicals new or different from that previously discharged? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve incineration or disposal of any potentially hazardous materials on the ANO site? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Result in a change to nonradiological effluents or licensed reactor power level? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially change the type or increase the amount of non-radiological air emissions from the ANO site. |

FORM TITLE: <div style="text-align: center;">10CFR50.59 SAFETY EVALUATION</div>	ARKANSAS NUCLEAR ONE	FORM NO. <div style="text-align: center;">1000.131B</div>	Page 1 REV. <div style="text-align: center;">3 PC-2</div>
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ALM
2/24/00

~~This Document contains 3 Pages~~

Document No. ER-002376N101 Rev./Change No. 0 10CFR50.59 Eval. No. CC-014
FFN
CC-014

Title Addition of RCP P32A, P32C & P32D Backstop Lube Oil Flow Computer Points
 Note: This Safety Evaluation is being performed due to addition of computer points to P&ID M-238, Sh.1 (SAR Fig. 7-21)

A WRITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO EACH QUESTION MUST BE ATTACHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A SIMPLE STATEMENT OF CONCLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDANCE FOR RESPONSE.

If the answer to any question on this form is "Yes," then an unreviewed safety question is involved. If the answer to all questions is "No," then the proposed change does not involve an unreviewed safety question.

- | | | |
|--|------------------------------|--|
| 1. Will the probability of an accident previously evaluated in the SAR be increased? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 2. Will the consequences of an accident previously evaluated in the SAR be increased? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 3. Will the probability of a malfunction of equipment important to safety be increased? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 4. Will the consequences of a malfunction of equipment important to safety be increased? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 7. Will the margin of safety as defined in the basis for any technical specification be reduced? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |

 Certified Reviewer's Signature	<u>ADRIAN MEYER</u> Printed Name	<u>2/24/00</u> Date
------------------------------------	-------------------------------------	------------------------

Reviewer's certification expiration date: 12/9/00

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Assistance provided by:

Printed Name	Scope of Assistance	Date
_____	_____	_____
_____	_____	_____
_____	_____	_____

PSC review by: Date: 2/26/00

1. Will the probability of an accident previously evaluated in the SAR be increased? No

The addition of digital computer points to provide indication of "Low Backstop Lube Oil Flow" will not increase the probability of any accident previously evaluated in the SAR. The low backstop lube oil flow signal will be supplied by existing flowswitches that are presently spared. The computer sources a low voltage signal to these contacts and based on the contact position, the computer senses a Low Flow or Not Low Flow condition. The cables utilized to provide these contact inputs to the Plant Computer are existing Black cables routed in power & control raceways.

FORM TITLE:

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10CFR50.59 SAFETY EVALUATION

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REV.

3 PC-2

The cables are rated for the voltage signals sourced by the computer. The cables utilized for these computer points are sized and routed properly and therefore this change will not increase the probability of an accident previously evaluated in the SAR.

2. Will the consequences of an accident previously evaluated in the SAR be increased ? No

Per ULD-0-TOP-12 "Electrical Protection/Coordination", ANO-1 is not committed to the requirements of RG 1.63, "Containment Overcurrent Protection". The design utilized for these digital computer points is consistent with the design employed for existing digital computer points that obtain their signal from within the containment. These points are routed through Containment Penetrations on feedthru conductors consisting of #14AWG wire. These feedthru conductors are sized to adequately carry the signal conducted for the computer points. Therefore this change will not increase the consequences of an accident previously evaluated in the SAR.

3. Will the probability of a malfunction of equipment important to safety be increased ? No

These flowswitches and their associated computer points do not interface with any safety related equipment. Proper separation and isolation is maintained between these BOP circuits and Class 1E circuits to prevent any failures of the computer point circuits from degrading any Class 1E circuit. Therefore this change will not increase the probability of a malfunction of equipment important to safety.

4. Will the consequences of a malfunction of equipment important to safety be increased ? No

No equipment important to safety relies upon these flowswitches or proposed computer points to perform its safety function. These flowswitches and computer points perform no function to mitigate the consequences of a malfunction of equipment important to safety and therefore this change will not increase the consequences of a malfunction of equipment important to safety.

5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created ?
No

These computer point circuits are passive circuits. They do not provide any control function for any equipment in the plant and therefore they cannot initiate any event that would lead to an accident. Failure of these computer point circuits is bounded by loss of indication of adequate lube oil flow from the Backstop Pumps to the RCP anti-rotational devices. This loss of indication will not cause any undesired transients that could lead to any accident. These circuits perform no active function nor could their failure be a precursor to any accident and therefore this change will not create the possibility of an accident of a different type than any previously evaluated in the SAR.

6. Will the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created ? No

This change will utilize existing spare flowswitches and existing spared cables to provide the computer points. Therefore this change is not installing any equipment that could challenge any equipment important to safety during a seismic event by falling - no equipment is being added by this change. This change will not create any interfaces with any equipment important to safety that could lead to degradation of equipment important to safety.

7. Will the margin of safety as defined in the basis for any technical specification be reduced ? No

This change will not affect any Tech Spec controlled equipment. The flowswitches to be used for the proposed computer points are existing spare flowswitches. Utilization of these flowswitches as computer point inputs will not reduce the margin of safety as defined in the basis for any Tech Spec.

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