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<b>FORM TITLE:</b>	<b>10CFR50.59 DETERMINATION</b>	<b>FORM NO.</b>	<b>1000.131A</b>	<b>REV.</b>	<b>003-04-0</b>
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This Document contains 5 Pages.

Document No. OP-2311.002 Rev./Change No. 012-00-0

Title SERVICE WATER SYSTEM FLOW TEST

Brief description of proposed change:

The major change in this revision is the addition of Supplement 5 which allows performance of a full two loop flow test with ACW remaining in service and being supplied by the 2P4B pump. This same test was performed in 2P99 via OP-2409.635. In addition, the change adds specific acceptance criteria that includes flow degradation for instrument error, pump degradation, strainer fouling, etc. Also enhancements for requiring engineering evaluations with 10CFR50.59's when throttling valves, leaving flows below design limits, and independent verification of analyses were added. Lastly minor corrections for noting that ECP is preferred suction source, and no longer requiring notification of Chemistry when 2E35A is placed inservice were made.

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?
  - QAPM? Yes  No
  - E-Plan? Yes  No
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  No



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FORM NO.

1000.131A

REV.

003-04-0

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

Document No. OP-2311.002

Rev./Change No. 012-00-0

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



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.

003-04-0

Document No. OP-2311.002

Rev./Change No. 012-00-0

10CFR50.59 Eval. No.

*FFN#*  
00-101

(Assigned by PSC)

Title Service Water System Flow Test

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

Ted S. Ivy  
Printed Name

8/23/00  
Date

Reviewer's certification expiration date: 10/4/01

Assistance provided by:

Printed Name

Scope of Assistance

Date

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PSC review by:



Date:

9/14/00

FORM TITLE:

10CFR50.59 REVIEW CONTINUATION PAGE

FORM NO.

1000.131C

REV.

003-04-0

Document No. OP-2311.002Rev./Change No. 012-00-010CFR50.59 Review Continuation Page

1. This procedure revision adds a supplement that aligns the service water and ACW systems in an alignment that allows flow testing of the service water system in an ESF alignment, and still have ACW in service. It does this by isolating the 2P4B service water pump from both loops by closing the loop crosstie valves. 2P4B will be aligned to supply only ACW components. Both loops of service water will remain operable during the performance of this test, which exceeds the requirements in the modes this test is allowed to be performed in. This is done without defeating any interlocks, and all automatic isolation valves are still capable of performing their design function. Precautions are taken to assure that adequate flow is supplied to ACW by 2P4B so the pump and components will not be adversely affected. ACW flow will be directed to the flume and the Cooling Tower basin through the normal operation of system valves. Cooling Tower basin level will be monitored and the test secured if high or low basin level occurs. Service Water cooling to CCW can be secured in this test with components still being cooled, though the heat load will be considerably reduced. If required, components still being cooled by CCW will have operating limits established and monitored during the test. The service water system and ACW are being aligned in a manner that will still allow them to perform their design and safety functions if required. The loss of service water flow to CCW or ACW has been previously analyzed, and this flow will also still be secured automatically in the event of an accident signal. Compensatory actions will assure equipment operation is unaffected on ACW and CCW. Since all systems will be operated within design requirements, this test has no impact on the frequency of any previously analyzed accident. None of the other changes made in this revision impact the ability of the systems to perform their function. Therefore the probability of an accident previously evaluated will not be increased.
2. The addition of a Supplement for testing with ACW in service requires an alignment that is not normally performed or specified in any operating procedure. The alignment required by the performance of this procedure is within the design capability of the service water and ACW systems. Compensatory actions are being assigned to monitor CCW cooled components and basin levels to assure limits are not exceeded. The service water system remains capable of performing all its design and accident mitigation functions. Radioactive release pathways are unaffected. The CCW and ACW systems are not relied upon in the SAR for accident mitigation and will still isolate on an ESF signal. The remaining changes made by this revision are editorial in nature. Because all the systems affected can still perform their safety related functions, the consequences of an accident previously evaluated in the SAR are unaffected.
3. This revision to the procedure allows aligning the 2P4B to supply ACW components while both loops of service water are aligned in an ESF alignment. Both loops of service water will remain operable during the performance of this supplement, which exceeds the requirements in the modes this test is allowed to be performed in. It also allows securing service water flow to CCW in modes 5 or 6 with components still requiring cooling. The components cooled by CCW and ACW are non-safety related. The service water system will remain in operation at all times, and all safety related components cooled by it will remain operable. The test also requires that operating limits be established for any components still in service on CCW, and that the test be terminated when these limits are reached. This assures that all CCW components potentially affected by the loss of flow will not be adversely impacted by this operation. Precautions are also taken to assure that adequate flow is supplied to ACW by 2P4B so the pump and components will not be adversely affected. None of the other changes affect the operation of the equipment since they are editorial in nature. Therefore, all equipment will continue be able to perform its function, and the probability of a malfunction of equipment important to safety is not increased.
4. This procedure revision is editorial in nature except for the addition of a new supplement that allows the two loop full flow test to be performed with ACW in service. During the performance of this supplement in modes 5 or 6, the service water system will be placed in a two-loop ESF alignment, and will remain operable and all components will remain capable of performing their functions. No interlocks or overrides are defeated. 2P4B will supply ACW, which will be isolated from both service water loops. However, 2P4B is not required since it is the spare pump. The other pumps will be operable. The securing of service water to CCW when components are still being cooled by CCW will result in temperature increases. However, the test also requires that operating limits be established for any components still in service on

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CCW, and that the test be terminated when these limits are reached. Precautions are also taken to assure that 2P4B is unaffected by the test lineup, and Cooling Tower Basin is not overfilled or underfilled. ACW loads will still be provided cooling during this test. Dose rates to the public are unaffected by this operation since all equipment will function as previously analyzed, and no barriers for mitigating the affects are affected. Therefore, the consequences of a malfunction of equipment important to safety are not increased.

5. This revision adds a new supplement that places the service water and ACW systems in an alignment that allows flow testing of the service water system in an ESF alignment with ACW in service. It will also allow securing service water flow to CCW with components cooled by this system still in service. However, this supplement requires that operating limits and precautions be established for these components still in service, and that the test be terminated and flow reestablished if these limits are reached. Operation of the equipment in this manner assures that it will still be able to perform its function, and that no other equipment will be adversely impacted by this operation. The service water is aligned in an alignment that still allows it to perform all its safety functions. Components on ACW will continue to be cooled by service water unless isolated by an ES signal. By doing this, all previous analyses in the SAR are still valid and are unaffected. The service water system will remain operable during this evolution. Operating the equipment in this manner and within these limits will not create any new accidents since all components will remain capable of performing their function. All other changes made by this revision are editorial in nature and do not impact system operation. Therefore, the possibility of an accident of different type than previously analyzed in the SAR is not created.
6. The changes made by this revision are editorial in nature with the exception of the addition of a new Supplement 5. Supplement 5 places service water and ACW in an alignment that allows for flow testing two loops of service water with ACW in service, and isolating cooling to CCW with components still in service. The design of the service water system is such that it allows placing the system in this alignment. Flow to CCW and ACW is automatically isolated upon receiving an SIAS, MSIS or RAS signal for an accident. Manually isolating CCW is allowed by the design of the system. Therefore the service water system is not being operated outside its design capabilities. All components remain capable of performing their design functions. With the limitations imposed by the procedure when operating in this manner, no malfunctions of equipment important to safety are created that are not already analyzed or bounded. Therefore, the possibility of malfunction of equipment important to safety of a different type than was previously evaluated in the SAR is not created.
7. The addition of a new supplement 5 in this procedure allows placing components in an alignment that is not normally performed, but is allowed by the design of the system. All components remain capable of performing their safety functions. The service water system will remain operable at all times during this test, and the bases for the service water technical specification will be unaffected. All margins to safety will be maintained. The procedural operating limits and monitoring requirements assure that design margins for the systems and the components cooled by them are not exceeded. All components will remain functional and will be operated within their design capabilities. In addition, both loops of service water will remain operable during the performance of this supplement, which exceeds the technical specification requirements in the modes this supplement is allowed to be performed in. No Technical Specification Bases margins to safety are affected by the operation of the systems in this manner. The remaining changes made by this revision are editorial in nature. Therefore, the margin to safety as defined in the basis of any Technical Specification will not be reduced.

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**ARKANSAS NUCLEAR ONE**

FORM TITLE: <p align="center"><b>10CFR50.59 DETERMINATION</b></p>	FORM NO. <p align="center"><b>1000.131A</b></p>	REV. <p align="center"><b>3 PC-1</b></p>
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Document No. **2628.013**

Rev./Change No. **003-00-0**

Title **Operation of Unit 2 Service Water Corrosion Inhibitor Injection System**

Brief description of proposed change: **Revised procedure to address changing the corrosion inhibitor injected into the Unit 2 service water/auxiliary cooling water from Calgon product MSW-104 to Calgon product TRC-319. Added instruction to verify the cross-connect is closed prior to starting the injection pump if the cross-connect is not desired. Added "Otherwise, N/A" to conditional steps.**

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

<b>ARKANSAS NUCLEAR ONE</b>		
FORM TITLE: <b>10CFR50.59 DETERMINATION</b>	FORM NO. <b>1000.131A</b>	REV. <b>3 PC-1,2</b>

Document No. **2628.013**

Rev./Change No. **003-00-0**

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

**See continuation page.**

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

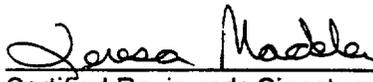
**Search Scope:**

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.**

<u>Document</u>	<u>Section</u>
LRS:	
<b>50.59 - Common</b>	<b>50.59 – Common (zinc* or Zn, phosphate or PO4, orthophosphate, MSW-104 or MSW104, corrosion inhibitor*, Calgon)</b>

MANUAL SECTIONS:	
Unit 2 SAR	<b>9.2.1.2.2.1, 10.4.5.2</b>

FIGURES:	
Unit 2 SAR	<b>1.2-1, 9.2-1</b>

	<b>Teresa Madeley</b>	<b>3/24/99</b>
Certified Reviewer's Signature	Printed Name	Date

Reviewer's certification expiration date: 9/2/99

Assistance provided by:

Printed Name	Scope of Assistance	Date
<u>N/A</u>		

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

<u>N/A</u>		
Certified Reviewer's Signature	Printed Name	Date

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

Document No. **2628.013**

Rev./Change No. **003-00-0**

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.   |

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

Document No. 2628.013Rev./Change No. 003-00-0

### 10CFR50.59 Review Continuation Page

**Discussion:** This procedure change is revising the corrosion inhibitor injected into the Unit 2 service water/auxiliary cooling water from Calgon product MSW-104 to Calgon product TRC-319. This change added "Otherwise, N/A" on conditional steps which have signoffs. Instruction was also added to verify the cross-connect is closed prior to starting the injection pump if the cross-connect is not desired.

MSW-104, the corrosion inhibitor currently injected into the Unit 2 service water, contains zinc chloride, phosphoric acid and dispersants. Since the emergency cooling pond (ECP) is not an approved outfall for the release of zinc, this corrosion inhibitor must be secured when service water is aligned to return to the ECP. This results in the service water corrosion rates increasing during the time the corrosion inhibitor is secured. At the request of ANO, Calgon's Research and Development department performed laboratory testing to select and test alternatives to zinc for corrosion protection. The laboratory testing indicated that a new product (later to be called TRC-319) showed good promise in meeting the objectives at ANO. This product was field tested at ANO in 1998 under plant conditions using the Calgon Water Test Trailer (see attached Calgon report).

The test trailer evaluation agreed with Calgon's previous laboratory test that indicated TRC-319 would work effectively under the conditions found at ANO. Results indicated that TRC-319 can control the steel corrosion in the service water/auxiliary cooling water without the use of zinc. This will allow for continuous chemical treatment that is not interrupted when service water is aligned to the ECP and will result in overall lower corrosion rates and better system control. The testing also showed a slight improvement on admiralty corrosion rates.

Several types of common gaskets and O-rings used in the service water and auxiliary cooling water system were soaked in various dilutions of TRC-319 to determine the effect of TRC-319. After soaking the materials in neat TRC-319, in a 100 ppm dilution and in a 10 ppm dilution of TRC-319 for 3 months (85 days), no negative effect was observed on the materials (see attached memorandum from Calgon). Deionized water was used as the blank in this test.

Materials compatibility reports for TRC-319 and MSW-104 are attached. Based on lab estimate, TRC-319 is unsatisfactory with aluminum, carbon steel, plasite 4100 (vinyl ester), fiberglass 382, fiberglass 400 and silicon 65 in the neat form. Based on lab estimate, MSW-104 is unsatisfactory with carbon steel, placite 7122 (epoxy), stainless steel 304 and stainless steel 316 in the neat form. However, both of these products are used as carbon steel corrosion inhibitors at lower concentrations. A UF designation on the materials compatibility report means that one or more of the neat product's individual components in the concentrations found in the neat product, were estimated (not tested) to be detrimental to these materials. This estimation is based on the neat product over long periods, such as storage and transportation, as viewed by DOT requirements (see attached memorandum from Calgon). TRC-319 will be used at approximately 4 ppm as product in the service water/auxiliary cooling water system. A materials list which contains the majority of the materials in the Unit 2 service water system is attached. Aluminum, plasite 4100 and silicon 65 are not materials that the service water/auxiliary cooling water or chemical will be coming in contact with. There is some fiberglass in the cooling tower that is used as a wind break and to assist in the support of some of the cooling tower fill. However, there are no compatibility concerns at the chemical concentrations that will be in the system (see attached memorandum from Calgon).

The TRC-319 will be stored in the same bulk tank and fed through the same day tank and pump system as the former MSW-104. The materials currently being used in this feed system are compatible with TRC-319 (see attached memorandum from Calgon).

Samples of TRC-319 and MSW-104 were analyzed by Calgon Laboratories at different combinations of the two products at various temperatures to determine if any precipitation problems would be expected when filling the bulk tank with TRC-319. The testing showed no problems in the low concentrations of MSW-104 expected. The MSW-104 will be used down to a point as low as possible (to the bottom of the feed line) and then filled with TRC-319. Cleaning of the tank before filling with TRC-319 will not be necessary (see attached memorandum from Calgon).

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FORM TITLE: <b>10CFR50.59 REVIEW CONTINUATION PAGE</b>	FORM NO. <b>1000.131C</b>	REV. <b>3</b>

Document No. **2628.013**

Rev./Change No. **003-00-0**

### **10CFR50.59 Review Continuation Page**

**Question 1:** The changes made in this procedure change are beyond the level of detail addressed in the Operating Licenses. Nothing in this procedure change will require a change to the Operating Licenses.

**Question 2:** The Unit 2 SAR, Section 9.2.1.2.2.1, states "The Corrosion Inhibitor Injection System injects corrosion inhibitor and dispersant for control of suspended solids into each service water bay using metered pumps for injection. Corrosion rates are monitored by using test coupons." This information will continue to be true as a result of changing the corrosion inhibitor injected into the Unit 2 service water bays from MSW-104 to TRC-319. Adding instruction to verify the cross-connect is closed prior to starting the injection pump if the cross-connect is not desired is beyond the level of detail addressed in the SAR documents. Adding "Otherwise, N/A" to the conditional steps is administrative in nature and will have no affect on the SAR documents.

The Unit 2 SAR, Section 10.4.5.2, addresses a Calgon additive mixture which is continuously injected into the circulating water to maintain a set concentration. As a result of changing the corrosion inhibitor added to the Unit 2 service water bays from MSW-104 to TRC-319, the chemicals added at the cooling tower will only be added as needed to maintain the desired phosphate concentrations. TRC-319 contains phosphoric acid, sodium HEDP, partially neutralized phosphonocarboxylic acids, and dispersants. Since the Unit 2 service water provides makeup to the Unit 2 circulating water, the chemical will provide corrosion protection to the service water and auxiliary cooling water and then will be cycled up in the cooling tower to provide the necessary chemical concentrations in the Unit 2 circulating water.

**Question 3:** Changes are being made to address changing the corrosion inhibitor injected into the Unit 2 service water/auxiliary cooling water from MSW-104 to TRC-319. This procedure change is also adding instruction to verify the cross-connect is closed prior to starting the injection pump if the cross-connect is not desired. "Otherwise, N/A" was added to conditional statements. None of these changes involve a test or an experiment not described in the SAR as defined in Procedure 1000.131.

**Question 4:** Prior to testing TRC-319 in a lake water side stream, an environmental evaluation was performed for the use of this product as a replacement for MSW-104. Permission to use TRC-319 in the service water/auxiliary cooling water on a plant wide basis has been granted by the Arkansas Department of Pollution Control and Ecology (name change of department will go into effect on 3/31/99). There will be no potential impact to the environment as a result of changing the corrosion inhibitor injected into the Unit 2 service water/auxiliary cooling water from MSW-104 to TRC-319.

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

10CFR50.59 Eval. No. FFW-99-030  
(Assigned by PSC)

Document No. 2628.013Rev./Change No. 003-00-0Title Operation of Unit 2 Service Water Corrosion Inhibitor Injection System

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 

No. TRC-319, the new corrosion inhibitor that will be injected into the Unit 2 service water/auxiliary cooling water, will have no detrimental effect on the service water, auxiliary cooling water or circulating water systems (see attached material compatibility reports and supporting documentation). TRC-319 has a higher pH (1.3-2.3) than MSW-104 (pH <1.0), the corrosion inhibitor currently being used. Unlike MSW-104, TRC-319 is not corrosive to stainless steel in the neat form. Corrosion rates, suspension of solids and scale potential will continue to be controlled using this new chemical. In the event that the Unit 2 service water corrosion inhibitor system is out-of-service, the chemicals currently being fed at the cooling tower will be available for injection into the Unit 2 circulating water for corrosion control, solids suspension and scale control. Therefore, 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?

Yes  No 

No. There are no accidents in the SAR that would have their radiation dose consequences altered as a result of changing the corrosion inhibitor used in the service water, auxiliary cooling water or circulating water. There will be no detrimental effect on any of these systems as a result of this change.

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

Yes  No 

No. TRC-319 is less corrosive than MSW-104, the corrosion inhibitor currently being injected into the service water/auxiliary cooling water (see attached material compatibility reports and supporting documentation). Testing has shown that TRC-319 can control the steel corrosion rates under plant conditions without the use of zinc, a constituent of MSW-104. This will allow for continuous chemical treatment that is not interrupted when service water is aligned to the ECP and will result in overall lower corrosion rates and better system control. The testing also showed a slight improvement on admiralty corrosion rates. Since Unit 2 service water provides makeup to the Unit 2 circulating water, the chemical will also help control scaling, corrosion rates, and solids in the circulating water. The chemicals currently added at the cooling tower would still be available for addition to the Unit 2 circulating water if needed. Therefore, the probability of a malfunction of equipment important to safety will not be increased.

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

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Change 003-00-0  
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4. Will the consequences of a malfunction of equipment important to safety be increased? Yes  No

**No. Changing the corrosion inhibitor injected into the service water/auxiliary cooling water will have no detrimental effect on these systems or the circulating water system that receives makeup from the service water. Therefore, the dose 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

**No. TRC-319 is less corrosive than MSW-104, the current corrosion inhibitor injected into the service water/auxiliary cooling water. TRC-319 is compatible with the materials in the service water, auxiliary cooling water, and circulating water at the treatment concentrations (approx. 4 ppm as product in the service water/auxiliary cooling water). TRC-319 is compatible with the current chemical feed system (see attached Calgon report). TRC-319 is more environmentally friendly than MSW-104, which contains zinc. Testing on side-stream lake water has shown that TRC-319 can control the corrosion rates in the service water/auxiliary cooling water to an acceptable level. Therefore, changing the corrosion inhibitor injected into the service water/auxiliary cooling water will not be an initiator for 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? Yes  No

**No. Changing the corrosion inhibitor injected into the service water/auxiliary cooling water from MSW-104 to TRC-319 will have no detrimental effect on the service water, auxiliary cooling water or circulating water systems (see attached material compatibility reports and supporting documentation). TRC-319 is less corrosive than MSW-104, the current corrosion inhibitor injected into the service water/auxiliary cooling water. Testing has shown that TRC-319 can control the corrosion rates under plant conditions. 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

**No. The operation of the service water/auxiliary cooling water or circulating water systems will not be negatively affected by changing the corrosion inhibitor from MSW-104 to TRC-319. There are no margins of safety that would be reduced as a result of this change.**

Teresa Madeley \_\_\_\_\_ **Teresa Madeley** \_\_\_\_\_ **3/24/99** \_\_\_\_\_  
Certified Reviewer's Signature Printed Name Date

Reviewer's certification expiration date: 9/2/99

Assistance provided by:

N/A Printed Name Scope of Assistance Date

PSC review by: [Signature] Date: 4/1/99

**140**

SAR DISCREPANCY 2-98-0043	ARKANSAS NUCLEAR ONE	Page 1
FORM TITLE: 10CFR50.59 DETERMINATION	FORM NO. 1000.131A	REV. 003-04-0

This Document contains 3 Pages.

Document No. SAR Discrepancy 2-98-0043 Rev./Change No. 0

Title \_\_\_\_\_

Brief description of proposed change:

The SAR states, "In the event the fuel pool pump breakers are opened, an alarm is annunciated in the control room." This alarm does not exist. The proposed change requested in SAR Discrepancy 2-98-0043 is to delete this sentence.

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?
  - QAPM? Yes  No
  - E-Plan? Yes  No
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  No

<b>FORM TITLE:</b> 10CFR50.59 DETERMINATION	<b>FORM NO.</b> 1000.131A	<b>REV.</b> 003-04-0
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Document No. SAR Discrepancy 2-98-0043 Rev./Change No. 0

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

Question 1: This will not require a change to the Operating License documents because the specific details of this change are beyond the level of detail specified in these documents.

Question 2: This will require a change to the ANO-2 SAR as described above.

Question 3: This change will not involve a test or experiment that is not described in the SAR. This change is to delete a specific statement in the SAR and will not authorize any plant activities including any tests or experiments.

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: ANO-2 50.59 ("spent fuel pool" and alarm)

MANUAL SECTIONS:

FIGURES:

	<u>Mark Spinelli</u>	<u>6-28-00</u>
Certified Reviewer's Signature	Printed Name	Date

Reviewer's certification expiration date: 3-24-01

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	Printed Name	Date

FORM TITLE:

10CFR50.59 DETERMINATION

FORM NO.

1000.131A

REV.

003-04-0

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

Document No. SAR Discrepancy 2-98-0043

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

- 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.

003-04-0

This Document contains 2 Pages.

Document No. SAR Discr 2-98-0043 Rev./Change No. 0 10CFR50.59 Eval. No. FFN#00-071  
 (Assigned by PSC)

Title \_\_\_\_\_

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 components/systems impacted by this change are not credited with initiating any of the evaluated accidents in the SAR. This change will not create any new conditions that would increase the likelihood of the events which are credited with initiating an evaluated accident.

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

This change will not alter the offsite dose consequences of any accident previously analyzed in the SAR. This change will not create any new pathways for release of radioactive material nor will it affect dose to the public from any previously analyzed event. The affected equipment is not safety related, is not relied upon for accident mitigation and will not hinder equipment that is relied upon for accident mitigation.

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

The equipment associated with this change is not safety related, is not relied upon by equipment that is important to safety, and is physically separated and electrically isolated from such equipment.

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

This modification will not affect the offsite dose consequences due to malfunctions of equipment important to safety. This change does not prevent or adversely impact 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.

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

There are no new conditions or plant operating practices resulting from this change which could cause a new or different type accident than those already 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

This change does not modify or change any equipment important to safety. The affected equipment is physically separated and electrically isolated from equipment important to safety and poses no risks to it.

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

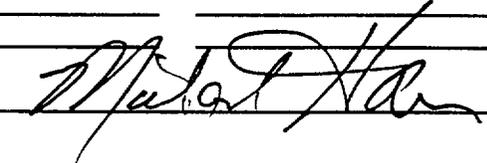
There are no margins of safety defined in the technical specification bases for the affected equipment. The margins of safety defined in the technical specification bases for other systems will not be changed or affected.

 Certified Reviewer's Signature	Mark Spinelli Printed Name	6/28/00 Date
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Reviewer's certification expiration date: 3/24/01

Assistance provided by:

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

PSC review by:  Date: 7/13/00

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<b>FORM TITLE:</b> 10CFR50.59 DETERMINATION	<b>FORM NO.</b> 1000.131A	<b>REV.</b> 003-04-0
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Document No. TAP 00-2-014 Rev./Change No. 0

Title Temporary Connections for Isophase Bus Coolers

**Brief description of proposed change:**

This TAP will add tees and isolation valves for connecting an alternate cooling water supply to the 2E-17 A&B Isophase Bus Cooling Coils if needed during cycle 15. If another supply is indicated as necessary, another package or TAP revision will generate the necessary documentation. The scope of this TAP is add the necessary piping connections without altering the CCW or IBC system functions or operating methods at this time. This TAP will be installed during 2R14 since the systems are currently removed from service. This TAP will also remove 2TI-6979, which is one of the two return air local temperature indicators in the system. This will allow a plug to be installed and metal conductor temperatures to be read with a handheld infrared thermometer. This TAP will also install local temperature indicators on the bus conductors allowing for metal temperature readings during cycle 15.

**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?
  - QAPM? Yes  No
  - E-Plan? Yes  No
  
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  No

<b>FORM TITLE:</b> 10CFR50.59 DETERMINATION	<b>FORM NO.</b> 1000.131A	<b>REV.</b> 003-04-0
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Document No. TAP 00-2-014 Rev./Change No. 0

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

Adding temporary tees and isolation valves to the CCW 2JBD-83 & -89 -3" piping does not affect any information in the Operating License or LBDs with the exception of 2SAR Figure 9.2-6, which is CCW P&ID M-2234 Sheet 2. 2TI-6979 is not discussed in the Operating License or LBDs, so removing it causes no changes to those documents. The Isophase Bus Cooling System is not relied upon by the U2 SOPP to support any of the Shutdown Functions that support nuclear safety. Adding valves and temperature indicators with the systems out of service does not constitute a test or experiment not described in the SAR and this is not considered an IPTE.

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

**Search Scope:**

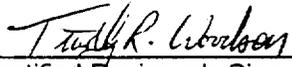
List sections reviewed in the Licensing Basis Documents specified in questions 1, 2 and 3. If search was performed on LRS, the LRS search index should be entered under "Section" with the search statement(s) used in parentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified 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 ("isophase bus cooling"), (isophase /-10, 10/ cooling), 2C-8A, 2TI-6979, 2E-17A

MANUAL SECTIONS: 2SAR Sections 8.3, 9.2.2 and 10.2

FIGURES: 2SAR Figure 9.2-6

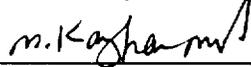
	Tim Woodson	11-9-00
Certified Reviewer's Signature	Printed Name	Date

Reviewer's certification expiration date: 11/19/01

Assistance provided by:

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

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

	MAJID KAYHAN-MAHD	11/10/00
Certified Reviewer's Signature	Printed Name	Date

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

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

Document No. TAP 00-2-014 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

- 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.

<b>FORM TITLE:</b> 10CFR50.59 SAFETY EVALUATION	<b>FORM NO.</b> 1000.131B	<b>REV.</b> 003-04-0
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Document No. TAP 00-2-014 Rev./Change No. 0 10CFR50.59 Eval. No. FFN#00-137  
(Assigned by PSC)

Title Temporary Connections for Isophase Bus Coolers

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

Timothy R. Woodson Tim Woodson 11-9-00  
Certified Reviewer's Signature Printed Name Date

Reviewer's certification expiration date: 11/19/01

Assistance provided by:

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

PSC review by: T. Brown Date: 11/11/00

FORM TITLE:

10CFR50.59 SAFETY EVALUATION

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003-04-0

**Summary**

The 2E-17 A&B Isophase Bus Coolers reject heat from the Isophase Bus to the CCW system. TAP 00-2-014 will provide additional tees and valves to allow an alternate source other than CCW to be the heat sink. This measure is being taken as a precaution during 2R14 to allow an alternate heat sink to be used to maintain the electrical output at 100% during warm weather if that is needed. This TAP will also remove 2TI-6979 to allow a port for a handheld infrared thermometer to measure conductor temperature, and will also install three thermometers that will measure metal conductor temperatures for monitoring the system during cycle 15. If an alternative cooling source is needed for 2E-17 A&B, another package and 10CFR50.59 evaluation will be required because that is beyond the scope of this 10CFR50.59 review.

The IB & IBC systems are not depicted on any SAR figures or described in the SAR. The 2E-17 A&B coolers are shown on the CCW P&ID and described as a load in the U2 SAR. Any accidents or failures caused by the IBC system are bounded by turbine trips or load rejections described in Chapter 15 of the U2 SAR. There are no material compatibility concerns associated with the additional valves, the cap at 2TI-6979, and the installed thermometers.

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

The addition of four new valves will be installed using current construction standards for 2JBD class piping, removal of 2TI-6979 is not considered significant, and the addition of three thermometers for measuring bus conductor temperature will improve ANO's ability to monitor the isophase bus system. All the changes consist of adding passive components. None of the evaluated accidents will have increased probability within a frequency class or between a frequency class because of the additional piping components and change in temperature indicators.

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

The physical changes to the CCW, IB, and IBC systems are considered passive in nature and they will not present any additional offsite dose consequences by having the components installed. The changes are also considered to be bounded by previously evaluated accidents.

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

The IB and IBC systems are not safety related systems nor are they required for safe shutdown as described in Chapter 7 of the U2 SAR. The changes to the CCW system do not affect any safety related portions of the CCW system. The CCW containment isolation valves will still perform their safety functions independent of the condition of the components added by this TAP. The IB and IBC systems have no safety related functions or failure modes that could prevent safety related SSCs from performing their functions. The net effect of this TAP does not have an adverse affect on any safety related equipment.

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

This TAP will not alter the operating methods for the CCW, IB, or IBC systems. The U2 SAR has previously evaluated turbine trips and loss of loads. Adding the tees, valves, cap, and temperature indicators to the CCW and IBC systems does not alter the existing failure modes of those systems. These systems remain bounded by previously analyzed accidents in the SAR and no additional dose would be seen either on site or off site by having this TAP installed.

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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 SAR has evaluated turbine trips and loss of external loads. Adding passive components to the CCW, IB, and IBC systems does not add any new failure or operating modes for these systems. Since no new failure or operating modes are created by this TAP, no new accidents are created that are not bounded by the existing accidents in the SAR. This TAP does not create a different type of accident by adding passive components to the CCW, IB, and IBC systems.

**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 TAP will install additional components whose presence will not add any additional operating or failure modes to the CCW, IB, or IBC systems. All existing system characteristics are bounded by previously analyzed accidents in the SAR. These changes cannot prevent any safety related components from performing their functions if called upon.

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

The U2 Technical Specifications do not define an explicit basis for the CCW, IB, or IBC systems with regards to operating temperatures and air and water flowrates on the 2E-17 A&B cooling coils. The level of safety is unchanged by this TAP.

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FORM TITLE:

10CFR50.59 SAFETY EVALUATION

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This Document contains 2 Pages.

FFN 12

Document No. TAP 99-2-005Rev./Change No. 010CFR50.59 Eval. No. 99-099

(Assigned by PSC)

Title TEMPORARY COOLING TO 2K-4A FROM LOOP 1 SERVICE WATER.

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 TAP will be installed when the plant is in Mode 5. There are no accidents described in the SAR (chapter 15) for the Service Water System or for the Blowdown System when the plant is in Mode 5. Internal plant flooding is mentioned briefly in chapter 9.2.1.3. During times when the T-Alt is in operation, a dedicated Operator will be stationed on elev. 335 to isolate the temporary hoses should a leak develop. Both service loops will remain operable with the T-Alt in service, which will allow both SDC Loops to remain in operation in Mode 5 (T/S 3.4.1.3). Therefore, 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? Yes  No

There are no accidents described in the SAR which would have their radiation dose consequences altered by the installation of this TAP. There are no accidents described in the SAR (chapter 15) for the Service Water System or for the Blowdown System when the plant is in Mode 5. Both loops of service water remain operable, along with both Loops of SDC which are required in Mode 5. Internal plant flooding is mentioned briefly in chapter 9.2.1.3, with the unit designed to handle such an event. An operator will be constantly stationed near 2SW-1550 to shut the valve should an emergency occur. Therefore, 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? Yes  No

When this TAP is installed the plant will be in a safe shutdown condition (mode 5). The 2K-4A diesel will be inoperable, due to SW pipe replacement, but 2K-4B will remain fully operational. Both loops of service water remain operable, along with both loops of SDC. The TAP will connect to the operable Loop 1 service water system at 2SW-1550, but the amount of water removed from the SW loop will be minimal (200-400 gpm) compared to the large amount of water flowing through the 20" Loop 1 header. An operator will be constantly stationed near 2SW-1550 to shut the valve should an emergency occur. A walkdown was performed of the proposed route of the temporary hoses. The only equipment important to safety found along the route was MCC 2B-52 and the CCP's. 2B-52 is a red train MCC, with the green train protected during the 2P-99 outage. In addition, a spray shield is permanently installed in front of the MCC to prevent water spray from reaching the energized equipment. This shield will protect the MCC if a water leak or spray were to develop from the temporary hose. Temporary hose fittings in the area of the MCC will be minimized to reduce the likelihood of water spray on the MCC. The CCP's

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FORM TITLE:

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3 PC-2

are protected from direct water spray by concrete block walls. Flooding of the CCP rooms will not be a factor since a leak in the area of the CCP rooms would be noticed by the dedicated Operator and the temporary hoses secured prior to flooding becoming a problem. Based upon the above evaluation, 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 TAP will install temporary hoses in the auxiliary building during mode 5 shutdown. The activities proposed by this TAP do not affect nor change the failure mode of any equipment important to safety required to operable in mode 5. 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 installation of this TAP could cause a minor internal flood. However, a dedicated Operator will be stationed on level 335' to isolate the temporary hoses if a leak were to develop. The Unit 2 SAR has already evaluated internal floods by service water and found that adequate precautions were in place to deal with the flood. Therefore, the possibility of an accident of a different type than any previously evaluated in the SAR is 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

Internal flooding is the accident that could occur. The SAR has already evaluated internal flooding in the aux building and determined this type of accident to be acceptable. Therefore, the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR would not be created.

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

The margin of safety for the service water system in the TS bases was reviewed. No margin could be found which was related to the installation of this TAP. Service Water loop 2 will remain unaffected by this T-Alt. Service water Loop 1 will remain operable during T-ALT operation, so the margin of safety related to service water is maintained. Therefore, the margin of safety as defined in the basis for any technical specification will not be reduced.

C. J. Sesny  
Certified Reviewer's Signature

Chuck Sesny  
Printed Name

10/26/99  
Date

Reviewer's certification expiration date: 9/8/2001

Assistance provided by:

Printed Name	Scope of Assistance	Date
none		

PSC review by: T. Brown

Date: 11/6/99

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FORM TITLE:

10CFR50.59 REVIEW CONTINUATION PAGE

FORM NO.

1000.131C

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Document No. T-Alt 99-2-7

Rev./Change No. 0

10CFR50.59 Review Continuation Page

Answers for 10CFR50.59 Safety Evaluation for T-Alt 99-2-7.

Removing 2CV-1481-1 and replacing it with a spool piece and blank flange.

Question 1

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

The answer is No.

Accidents listed in the SAR were reviewed to identify assumptions associated with each accident. The assumptions are listed in chapter 15. After review of evaluated accidents it was apparent that removing 2CV-1481-1 and installing a blank does not increase the probability of these accidents. In fact the probability of one accident, loss of service water, was reduced. The single failure analysis for the SW system (SAR Table 9.2-5) was reviewed for impact. The required safety position for 2CV-1481-1 is closed to protect ECP inventory. Removing 2CV-1481-1 and blanking the pipe eliminates the need to consider the effect of the valve failing to close as discussed in Table 9.2-5. The system is arguably "safer" with the T-Alt since a potential active failure is eliminated.

The spool piece installed in place of the valve will be manufactured and installed as per Design Engineering's specifications documented in the T-Alt. Since spool piece manufacture and installation will meet design requirements of the system, the probability of an accident will not be increased.

Loop 1 return to ECP, 2CV-1541-1, will remain normally closed and will still receive a signal to open post accident. Thus, there is no change in the failure considerations for this valve. As noted in the table, if the valve fails to open as required rendering Loop I inoperable, the redundant SW loop will still be available.

Implicit in Question 1 is the question, "Will the change in system operating configuration increase the probability of an accident previously evaluated in the SAR".

The answer is No.

During normal operations 2CV-1481-1 is open. The service water return header is designed, however, for operation with 2CV-1481-1 in either the open or closed position. In fact, electrical interlocks will close 2CV-1481-1 when the ECP valve, 2CV-1541-1, is opened. Based on the current design, closing 2CV-1481-1 does not create an operating condition that will increase the probability of an accident. The current design is based on having either 2CV-1481-1 or 2CV-1541-1 open.

The T-Alt will change the normal operating configuration of the service water return header. Per procedure changes associated with this T-Alt, the ECP return valve, 2CV-1541-1 will remain normally closed even though flow through 2CV-1481-1 is blanked. This change is

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acceptable because it has been shown that return flow through the ACW/CCW return valve, 2CV-1543-1, and cooling tower make-up valve, 2CV-1540, is adequate. It has also been shown that Loop 1 flow can exit the header via Loop 2 returns and the "squeeze valve", 2CV-1460. At least one of these flow paths is always available during normal operations. Based on the evaluated adequacy of these flow paths it is appropriate to operate the service water system in this configuration. Since service water can be operated appropriately in this configuration, the new configuration does not increase the probability of a loss of service water accident.

### Question 2

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

The answer is No.

The design of 2CV-1481-1 is to close and prevent inventory loss from the ECP during applicable accidents discussed in chapter 15 of the SAR. The safety function of 2CV-1481-1 is preserved by installation of the blank. Since the safety function is preserved the consequences of applicable accidents are not increased.

Loop 1 return to ECP, 2CV-1541-1, will remain normally closed and will still receive a signal to open post accident. This is the same as the original design. Since design operation of 2CV-1541-1 did not change there is no change in the failure considerations for this valve. As noted in SAR table 9.2-5, if the valve fails to open as required rendering Loop 1 inoperable, the redundant SW loop will still be available. Since there is no change in failure considerations and all safety functions are preserved, the consequences of an accident are not increased.

### Question 3

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

The answer is No.

The T-Alt actually reduces the probability of malfunction by eliminating an active failure possibility. By removing 2CV-1481-1 and installing a blank the active failure of 2CV-1481-1 to close is eliminated. Removing 2CV-1481-1 does not impact the operability or probability of malfunction for 2CV-1541-1 to open. Engineering review of electrical drawings show that the electrical interlock between 2CV-1541-1 and 2CV-1481-1 is not "two way". The review concludes that the control circuitry for 2CV-1541-1 does not depend on 2CV-1481-1. Based on this review the probability of malfunction of 2CV-1541-1 is not increased. In the case where 2CV-1541-1 fails to open on an actuation signal while 2CV-1543-1 and 2CV-1542-2 subsequently close, loop 1 SW becomes inoperable. This event is bounded by single failure analysis that includes either active or passive failures because neither failure would render loop 2 inoperable.

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Question 4

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

The answer is No.

The loop 1 service water return header safety functions are maintained with this T-Alt. Removal of 2CV-1481-1 and blank installation does not add safety significance to other service water components during an accident scenario. The actuated configuration of service water is effectively the same as original design with the installation of the blank. Since the actuated configuration is the same, reliance on other equipment is not increased. Since no other component is relied upon more heavily than original design, the consequences of failure of other components is not increased.

Question 5

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

The answer is No.

This T-Alt deals with the service water return header. The possible accidents associated with this T-Alt are Loss of SW and Flooding due to piping failure associated with an Earthquake. These accidents are evaluated in SAR chapter 15. Because of the limited scope of this T-Alt an accident of a different type than any previously evaluated in the SAR has not been created. The SAR chapter 15 accidents bounds any postulated failures associated with this T-Alt.

Question 6

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

The answer is No.

The T-Alt introduces the spool and blank as two new pieces of equipment into the SWS. This change, however, does not create a different type malfunction than previously evaluated in the SAR because the design of the spool piece meets or exceeds the existing piping requirements. The SAR evaluates the failure of 2CV-1481-1 to close and the effects of flooding due to a SWS rupture. The evaluation of that failure is the same as would be for the blank flange and spool piece. Therefore, no new possibilities of malfunction are created.

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This Document contains 5 Pages.

Document No. T-Alt 99-2-7 Rev./Change No. 0 10CFR50.59 Eval. No. 99-105  
 (Assigned by PSC)

Title T-ALT FOR REMOVING 2CV-1481-1 AND REPLACING WITH BLIND FLANGE AND SPOOL PIECE.

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>LINDSLEY S. BRANNETT</u> Printed Name	<u>11/18/99</u> Date
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Reviewer's certification expiration date: 8/4/2000

Assistance provided by:

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

PSC review by: VBrown Date: 11/19/99

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10CFR50.59 Eval. No. FFN # 99-104  
(Assigned by PSC)

Document No. TAP-99-2-9

Rev./Change No. 0

Title TAP to install gag on 2PSV-5249

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

CCW is not required for the safe shutdown of the reactor and is not credited with initiating any of the evaluated accidents in the SAR. The valve will be closed as required for its Containment Isolation function. Overpressurization protection will be provided by other relief valves in the system. Therefore, the probability of a previously evaluated accident is not increased.

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

The Containment Isolation function of the relief valve will not be affected by the Temp Alt. Because overpressurization protection is still provided, the Containment Penetration function will be unaffected by the Temp Alt. No offsite dose consequences will be increased by the gagging of this relief valve in the Containment Building. Therefore, the consequences of a previously evaluated accident will not be increased.

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

CCW provides cooling water to the RCP motor and the RCP Seals. This Temp Alt will prevent the relief valve from leaking. The Temp Alt will actually reduce the probability that the cooling water to this equipment could be lost. The Containment Isolation function is also more reliable with the gag installed. Therefore, the probability of a malfunction of equipment important to safety is not increased.

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

There are no new accident conditions or events created by this Temp Alt. Offsite dose projections for the evaluated accidents will not be affected by this Temp Alt. CCW is not credited for the accident analysis and the Containment Isolation function is maintained. Therefore, the Temp Alt will not affect the consequences of the malfunction of any equipment.

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

The Containment Penetration function will remain the same with the relief valve gagged. The overpressurization protection of the penetration is still provided by the other relief valves in the system. The Temp Alt does not affect any other plant systems. Because no new failure different from the evaluated failures is introduced, the possibility of a different type of accident is not created.

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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 Temp Alt does not introduce a malfunction that has not been previously evaluated. The basic function of the Containment Penetration and its ability to provide Containment Isolation remains unaffected by the installation of the Temp Alt. No other safety related system is affected. CCW inside the Containment Building is closed loop system. The installation of the Temp Alt will not introduce a malfunction of any equipment that has not been previously evaluated.

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

Allowances for Containment leakage will remain the same after the installation of the Temp Alt. The gag will not affect the LLRT results of the penetration. The most likely result of the gag will be less possibility of leakage through the relief valve. The margin of safety in the basis of the Tech Specs will remain the same.

 Steve Bonner 11/18/99  
 Certified Reviewer's Signature Printed Name Date

Reviewer's certification expiration date: 7/9/2000

Assistance provided by:

Printed Name Scope of Assistance Date

PSC review by:  Date: 11/19/99

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Document TS Bases 2.1.2 Change Rev./Change No. 0Title Adding Description of Replacement Steam Generator Hydro Testing and Code Year

## Brief description of proposed change:

This is a change to the TS 2.1.2 Basis to reflect the historical hydrotest conditions of the RCS which are changing due to steam generator replacement. This includes a deletion of information regarding the original full RCS hydrotest and an addition to add a description of the hydrostatic testing that will be completed for the replacement steam generators and the in service leak testing that will be performed after installation during initial startup. The change also reflects the different year and addenda to which the replacement steam generators were designed and fabricated. This 50.59 is only evaluating the changes to the description to the technical specification Bases. The 50.59 for the RSG installation will be completed under the RSG DCP packages.

## 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 TS Bases 2.1.2 Change Rev./Change 0

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

**Q1.**

This is only a change to a TS Bases and does not impact the operating license or any confirmatory order. Question 1 excludes changes to TS Bases; therefore, this is not considered a change to a Technical Specification.

**Q2**

This is a change to a TS Bases, and therefore a 50.59 Evaluation is required. This change deletes the historical description of the original RCS hydrotesting and adds the description of RCS hydrotesting requirements which will apply after SG replacement. The RSG is hydrotested in the manufacturer's (ENSA) shop prior to shipping to the site. This hydrotest will be performed at 3125 psig, whereas the original RCS was hydrotested at 3125 psia. Accordingly, the new test pressure is bounding for the old test pressure. The effect of this change is covered in the Evaluation.

In lieu of hydrotesting the entire RCS after RSG installation, non-destructive examinations will be performed on the RSG/RCS piping welds and in-service leak testing at post installation startup will be performed in accordance with Code requirements. Use of the Code Case that allows this has been approved by the NRC for ANO (and generically for the industry). This approach is consistent with the intent of the original Bases requirement.

The change also reflects the different year and addenda of the ASME Code to which the replacement steam generators were designed and fabricated. This Code has been approved by the NRC. A Code reconciliation will be performed to address the change in the Code year/addenda, consistent with the requirements of ASME Section XI and the footnote in the TS Bases.

Changes will be completed to the ANO-2 SAR to reflect the RSG as a part of the RSG DCPs.

**Q3**

This is only change to a TS Bases. This change does not propose any new test or experiment.

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

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**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.**

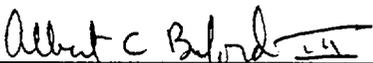
Document

Section

LRS: All 50.59 documents searched with search statements "hydro", "hydrotest", and "3125". Although the statements concerning the original RCS configuration are still true, several locations were identified that may need to be modified to reflect the RSGs. These sections of the SAR will be revised by the RSG DCPs.

MANUAL SECTIONS: Section 5.2, Tables 5.1-1, 5.5-2, 5.5-3

FIGURES: 5.1-3

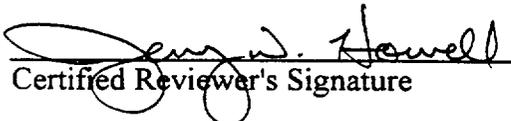
	Albert C. Buford, III	12/15/99
Certified Reviewer's Signature	Printed Name	Date

Reviewer's certification expiration date: 6/30/00

Assistance provided by:

Printed Name	Scope of Assistance	Date
Stan Batch	LRS and manual searches	11/29/99

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

	JERRY W. HOWELL	12/16/99
Certified Reviewer's Signature	Printed Name	Date

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

Document TS 2.1.2 Bases Change Rev./Change 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

- |                          |                                     |   |
|--------------------------|-------------------------------------|---|
| <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. TS 2.1.2 Bases Change Rev./Change No. 0 10CFR50.59 Eval. No. FFN-99-117  
 (Assigned by PSC)  
 Title Adding Description of Replacement Steam Generator Hydro Testing and Code Year

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

Albert C Buford III Albert C. Buford, III 12/15/99  
 Certified Reviewer's Signature Printed Name Date

Reviewer's certification expiration date: 6/30/00

Assistance provided by:  
 Printed Name Scope of Assistance Date  
Jerry Howell Independent Review 12/15/99

PSC review by: [Signature] Date: 12/16/99

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A summary of the changes being covered by this evaluation are delineated in the determination. Refer to the determination for more information with respect to the changes being made and the background information.

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

The proposed TS Bases change deletes historical information for the original RCS configuration and adds a description of the replacement steam generator hydrotesting and in-service RCS leak testing in the Bases of the Technical Specifications. The RSG hydrotesting is performed in the manufacturer's (ENSA) shop prior to shipping to the site. This pressure will be 15 psi higher than the original steam generator hydrotesting to be consistent with the slightly higher design pressure of the RSG's (gauge vs. absolute design pressures). This testing will be performed at the ENSA facility and will not affect any other system or component. There are no new systems, components, substructures, design changes, physical alterations, or new operating conditions being proposed by this change. The description being added verifies the RSG is hydrotested in accordance with the intent of the original TS 2.1.2 Bases and will have no impact on the probability of an accident previously evaluated in the SAR. Thus the new Bases is consistent with the appropriate Code requirements as was the original Bases, and the RCS pressure boundary is unaffected. Therefore, there is no change in the probability of any accident previously evaluated.

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

The description verifies the replacement steam generators are tested to as high of pressure as the original RCS components. There are no new systems, substructures, design changes, physical alterations, or new operating conditions being proposed by this change. Accordingly, there are no dose effects related to this change. Evaluation of the dose effects of steam generator replacement will be covered by the SGR DCP. Therefore, the dose consequences of accidents previously evaluated in the SAR are unchanged by the proposed change to the TS Bases.

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

This change does not by itself result in any physical changes to the plant. Changes will be completed to the ANO-2 design basis documentation to reflect the replacement steam generators as a part of the RSG DCPs, including a reconciliation of the OSG design code versus the RSG design code. The description being added to the TS Bases verifies the replacement steam generators are tested in the fabrication shop to a pressure slightly higher than the original RCS components, are in accordance with Code requirements, and are consistent with the intent of the original TS 2.1.2 Bases. Consequently, 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?** No

Dose consequences related to SGR will be evaluated as a part of the RSG DCPs. No new or different operating conditions or operating requirements for equipment important to safety are being proposed by this addition to the technical specification Bases. The RSG hydrotesting is performed in the manufacturer's (ENSA) shop prior to shipping to the site. No safety analysis assumptions related to equipment operability or equipment malfunctions

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are affected by these changes. Consequently, the consequences of a malfunction of equipment important to safety will not be affected.

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

No

Testing the RSG in the shop to the same or greater test conditions as the initial RCS condition (along with use of the post installation NDE and in-service leak testing requirements of the Code) ensures overall RCS integrity; therefore no new accidents of a different type than any previously evaluated in the SAR are created by these changes.

**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

The hydrotesting is performed in the manufacturer's (ENSA) shop prior to shipping to the site. Since the RSG will be tested to as high a pressure as the original steam generators and inservice leak testing performed per code requirements, 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 bases for any technical specification be reduced?**

No

Since the RSG will be tested to as high a pressure as the original steam generators and in accordance with the original TS 2.1.2 Bases intent, and a Code reconciliation performed for OSG versus RSG design requirements, the margin of safety as defined by the Bases for the technical specifications are not reduced by this change to the TS Bases.

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3 PC-1

This Document contains 6 Pages.

Document No. TS 3/4.4.12 Bases ChangeRev./Change No. 0Title Changing the Limiting Design Basis Event for the ANO-2 LTOP System

Brief description of proposed change:

The installation of the RSGs and the implementation of changes that will lead to power uprate have the potential to affect the design basis transients that determine the LTOP requirements. The analytical basis for the ANO-2 LTOP requirements were updated to account for these changes as well as other changes in plant configuration.

The two postulated limiting overpressure events are the simultaneous injection of two HPSI pumps and all three charging pumps into a water-solid RCS (mass addition) and the start of an idle RCP with a secondary-to-primary temperature differential of 100°F (energy addition event). The bases currently list the mass addition event as the limiting event. The analyses that were done for the RSGs show the energy addition event is the limiting event.

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

Document No. TS 3/4.4.12 Bases Change Rev./Change No. 0

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

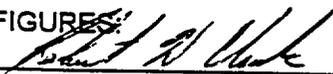
See page 4 for the basis for the determinations to questions 1, 2 and 3.

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 – ANO-2 (LTOP; "Low Temperature Overpressure Protection"; "N-514"; "2PSV-4732"; "2PSV-4742")
MANUAL SECTIONS:	ANO-2 Tech Specs and Bases 3/4.4.2; 3/4.4.3; 3/4.4.12 FHA 5.8.1, 5.9.1 SER Supplement 1 to original SER, 69, 109, 180, 199 ANO-2 SAR 3.6.4.2.12; 5.1; 5.2.1.4; 5.2.1.5; 5.2.4.3.2; 5.2.2; 5.5.12; 5.5.13; Table 6.3-22; 7.6.1.3; 7.6.2.3

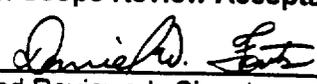
FIGURES:  Robert Wayne Clark 12/06/99  
 Certified Reviewer's Signature Printed Name Date

Reviewer's certification expiration date: 11/12/2001

Assistance provided by:

Printed Name	Scope of Assistance	Date

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

 Daniel W. Fouts 12/6/99  
 Certified Reviewer's Signature Printed Name Date

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

Document No. TS 3/4.4.12 Bases ChangeRev./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

- |                          |                                     |   |
|--------------------------|-------------------------------------|---|
| <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.   |

10CFR50.59 Review Continuation PageDocument No. TS 3/4.4.12 Bases ChangeRev./Change No. 0**Background**

The installation of the RSGs and the implementation of changes that will lead to power uprate have the potential to affect design basis transients that determine LTOP requirements. The analytical basis for ANO-2 LTOP requirements were updated to account for these changes as well as other changes in plant configuration. The following is a listing of the parameters and inputs that were included in the reanalysis:

- HPSI pump flow rate
- Charging pump flow rate
- RCS and steam generator flow rates
- Reactor vessel pressure drops for part-loop operation
- Reference point in the reactor vessel for elevation difference with pressurizer reference point
- Relief valve capacity and discharge characteristic
- Relief valve inlet piping pressure drop
- Steam generator parameters, such as heat transfer area and volume
- Inclusion of appropriate decay heat input
- Inclusion of pressurizer heater's input
- Inclusion of surge line and relief valve pressure drops during relief valve discharge.

The new analysis incorporated two new major inputs: revised LTOP pressure-temperature (P-T) limits, and new pressure transient analyses. The new P-T limits were revised only to incorporate the new pressure correction factors (PCF) that were used for indexing the P-T limits at the beltline to the reference location in the pressurizer. The PCFs were revised because of changes to the reactor vessel pressure drops from revised RCS flow rates with the RSGs; a change in the reactor vessel pressure drop due to extension of the lower temperature boundary for two-RCP operation from the current 100°F to 70°F (indicated cold leg temperature, which includes 20°F uncertainty); and a change in the elevation head term between the beltline and the pressurizer reference point, due to a more accurate definition of the reactor vessel reference point for the elevation head.

The analyses of two postulated limiting mass and energy overpressure events assumed the most limiting operating conditions and system configurations, including the unavailability of one relief valve as the most limiting single failure. The mass addition transient analysis yielded a higher peak pressure than the existing analysis (522.2 psia vs. 517.7 psia) and the energy addition event (RCP start) produced the highest peak pressure (538.3 psia). Thus, the energy addition event replaces the mass addition event as the LTOP design basis. When corrected for the pressure drops in the surge line, the peak transient pressure in the pressurizer becomes 540.5 psia.

This analysis demonstrated that the new design peak pressure does not exceed the new LTOP P-T limits except for one point, which is at the minimum boltup temperature of 70°F. At this point, the 25°F/hr cooldown curve's most limiting pressure for 12.5°F per 1/2 hr step rate change (536.0 psia) is below the design peak by 4.5 psi. This overlap of the pressure transient with the P-T limit is shown not to affect the conclusions of the analysis because of the available conservatism between the P-T limits and the transient analysis due to inconsistent conservative assumptions.

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The proposed change implements changes to the bases of the ANO-2 LTOP Technical Specification and to the ANO-2 SAR to incorporate the results of LTOP analyses performed in support of the RSG project and power uprate as well as minor changes to provide consistency between sections of the SAR. The changes that require a 10CFR50.59 evaluation are:

1. Revisions to the Basis of TS 3/4.4.12 (Low Temperature Overpressure Protection Systems) to include energy addition events as well as mass addition events as design basis events that are considered in determining the limiting LTOP event; and to replace the inadvertent SIAS event with the RCP startup event as the limiting LTOP design basis event.
2. Revisions to SAR Section 5.2.2.4 (Low Temperature Overpressure Protection) to include the energy addition events as well as mass addition events as design basis events that are considered in determining the limiting LTOP event; and to extend the operating region for two RCPs from the present indicated  $T_{\text{cold}}$  of 100°F to an indicated  $T_{\text{cold}}$  of 70°F.
3. Revision to SAR Section 5.5.13.2 (Description of Safety and Relief Valves) to include the energy addition events as well as mass addition events as design basis events that are considered in determining the limiting LTOP event.
4. Revisions to SAR Section 7.6.1.3.2 (Design Basis Information for Low Temperature Overpressure Protection (LTOP) (2CAN128007, 2CAN107707)) to include the energy addition events as well as mass addition events as design basis events that are considered in determining the limiting LTOP event; and to replace the mass addition event (inadvertent SIAS) with the energy addition event (RCP startup) as the limiting LTOP design basis event.

### Bases for Determination

#### Question 1

The current ANO-2 Technical Specification Safety Limits, Limiting Safety Settings, and Limiting Conditions of Operation (LCOs) that are governing the operation of the LTOP system remain valid. Details of the ANO-2 LTOP system or its requirements are not mentioned in either the ANO-2 Operating License or any ANO-2 related Confirmatory Orders. Therefore, no changes are required to the ANO-2 Technical Specifications, Operating License, or Confirmatory Orders.

#### Question 2

The proposed changes are beyond the level of detail presented in the ANO-2 Core Operating Limits Report, FHA, and the TRM. Therefore, no changes are required to these documents.

The ANO-2 SAR, Bases to the ANO-2 Technical Specifications, and the NRC issued SERs explicitly discuss the requirements for the ANO-2 LTOP system. The purpose of the proposed change is to implement changes in the ANO-2 Technical Specification bases and the ANO-2 SAR to incorporate the results of the LTOP analyses performed in support of the RSG project and power uprate. Since the results of the new analyses indicate that a different event is limiting than currently stated in the Technical Specification bases and the SAR, these changes are necessary. These changes are described above. Therefore, a 10CFR50.59 evaluation is required.

In addition, several inconsistencies within the SAR descriptions of this system are being corrected with this package.

A review of the ANO-2 SERs indicated that NRC had previously reviewed and concurred with previous LTOP analyses that had identified the inadvertent SIAS as the limiting LTOP design basis event and provided limitations on RCP operation at low temperature (see SERs for amendments 109, 180 and 199). However, the resulting conclusions of the SERs are unaffected by these changes.

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**Question 3**

This package implements changes to the bases of the ANO-2 Technical Specifications and to the ANO-2 SAR regarding the results of LTOP analyses performed in support of the RSGs and power uprate. The changes do not involve tests or experiments in any way.

Document No. TS 3/4.4.12 Bases ChangeRev./Change No. 010CFR50.59 Review Continuation Page

A summary of the changes being incorporated by this evaluation has been made in the determination section. The information in the determination section delineates the need for this evaluation. As discussed in the determination, the following aspects of the change require a 10CFR50.59 evaluation:

1. Revisions to the SAR and TS Bases to include the energy addition events as well as mass addition events as design basis events that are considered in determining the limiting LTOP event. This change appears in SAR sections 5.2.2.4, 5.5.13.2 and 7.6.1.3.2 and the Basis for TS 3/4.4.12.
2. Revisions to the SAR and TS Bases to identify the startup of a RCP from a water-solid condition with 100°F secondary-to-primary temperature difference as the limiting LTOP design basis event. This change appears in SAR section 7.6.1.3.2 and the Basis for TS 3/4.4.12.
3. Revisions to the SAR to extend the operating region for two RCPs from the present indicated  $T_{cold}$  of 100°F to an indicated  $T_{cold}$  of 70°F. This change appears in SAR section 5.2.2.4.

All of these changes are required to ensure that the SAR correctly identifies the limiting design basis event and to permit extending the operating range of the RCPs in a manner that is consistent with the revised LTOP analyses.

The following discussion provides the bases for the 50.59 responses:

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

The changes proposed by this package are related to implementing analysis results in the SAR and TS Bases. Except for permitting the RCPs to be run at a lower RCS temperature, there are no changes to plant, plant procedures, control systems or setpoints as a result of the proposed changes to the SAR and TS Basis. Operating the RCPs at the lower temperature is consistent with the revised LTOP analysis and can not impact the initiation of any accidents previously evaluated in the SAR. Therefore, 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?** **NO**

The changes proposed by this package are related to implementing analysis results in the SAR and TS Bases. The changes relate to the limiting design basis event for the LTOP system, which is used when the plant is shutdown and on shutdown cooling. These changes do not require any changes to either plant equipment or plant operations. The change does not create any new pathways for radioactive material to be released into the environment or change the source terms assumed in any accident previously evaluated in the SAR. 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**

The change does not modify any plant equipment or modify the way the plant is operated except to permit operation of the RCPs at lower RCS temperatures than was permitted previously. The analyses performed in support of this change have shown that operation of the RCPs at the lower temperature does not result overpressurization of the RCS following the limiting design basis event. Since no equipment will be operated outside of its design basis and there is no impact on the reliability of any equipment important to safety and no impacts to any accident initiators, the proposed changes will not increase the probability of a malfunction of equipment important to safety.

FORM TITLE:

ARKANSAS NUCLEAR ONE

10CFR50.59 SAFETY EVALUATION

FORM NO. 1000.131B

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This Document contains 3 Pages.

Document No. TS 3/4.4.12 Bases Change

Rev./Change No. 0

10CFR50.59 Eval. No.

FEN-99-116

(Assigned by PSC)

Title Changing the Limiting Design Basis Event for the ANO-2 LTOP System

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

See page 2 for the responses to the above questions.

Robert Wayne Clark  
Certified Reviewer's Signature

Robert Wayne Clark  
Printed Name

12/06/99  
Date

Reviewer's certification expiration date: 11/12/2001

Assistance provided by:

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

PSC review by: AB

Date: 12/16/99

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

The changes proposed by this package are related to implementing the results of revised LTOP analyses and extending the operation of RCPs to a lower temperature while on shutdown cooling. The proposed changes do not result in any different failure modes of equipment important to safety. Therefore, there are no changes to any potential release paths for radioactive material due to a different kind of malfunction. Since this change does not affect release paths or source term, the 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

The changes proposed by this package are related to implementing the results of revised LTOP analyses and extending the operation of the RCPs to a lower temperature while on shutdown cooling, which is consistent with the revised LTOP analyses. Although the revised LTOP analyses have identified a different limiting transient (RCP startup), this event is not created by the proposed change (i.e., it was previously bounded by a different pressurization event (inadvertent SIAS)). The failure modes of the equipment important to safety were not affected. In addition, no initiators to any of the accidents are impacted. Therefore, the possibility of an accident of a different type than any previously evaluated in the SAR is 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? NO

The changes proposed by this package are related to implementing the results of revised LTOP analyses and extending the operation of the RCPs to a lower temperature while on shutdown cooling. The change does not replace or change the configuration of any plant equipment. Further, the revised LTOP analysis shows that operating the RCPs at a lower temperature does not challenge any equipment important to safety. The failure modes of the equipment important to safety were not affected. In addition, no initiators to any of the accidents are impacted. Therefore, the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR is not created.

7. Will the margin of safety as defined in the bases for any Technical Specification be reduced? NO

The changes proposed by this package are related to implementing the results of the revised LTOP analyses and extending the operation of the RCPs to a lower temperature while on shutdown cooling. The revised LTOP analyses identified a more limiting design basis event, which resulted in a higher predicted pressure than was previously calculated. However, the analysis demonstrated that the new design peak pressure does not exceed the LTOP P-T limits. Although the LTOP P-T limits were revised to incorporate new pressure correction factors, which are used to index the limits at the reactor vessel beltline to measured conditions in the pressurizer, the P-T limits at the reactor vessel beltline were not changed. In addition, the current limits and margins were developed using the methodology outlined in ASME Code Case N-514. This same methodology was used in the revised analyses. Therefore, the P-T limit curves of LCO 3.4.9.1, the heatup and cooldown limitations of LCO 3.4.9.1, the relief valve lift setting of  $\leq 430$  psig of LCO 3.4.12 and the LTOP enable temperature of 220°F of LCO 3.4.12 ensure no reduction in the margin of safety as defined in the bases of the technical specifications.

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This Document contains 5 Pages.

Document No. LDCR to ANO-2 TS Bases 3/4.6.2.2 Rev./Change No. \_\_\_\_\_

Title ANO-2 TSP Surveillance Test TS Bases Change for SG Replacement

**Brief description of proposed change:**

The description of the testing of tri-sodium phosphate is being modified. The quantity of TSP to be tested and the boron concentration of the test solution are both increased slightly. The assumed mass of borated water in the sump post LOCA has been decreased, and the sentences describing this value and the calculation of minimum TSP volume have been modified. The changes reflect the sump pH analyses revised for the SG replacement project. The new analyses are slightly more conservative (produce a slightly lower minimum pH) than the current analyses, by changing the assumed composition of the sump water. A lower mass of water at a higher boron concentration, corresponding to an assumption of 0 RCS volume rather than maximum RCS volume, results in a slightly lower calculated pH (7.05 versus 7.06), but still above the minimum allowable of 7.0.

**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. LDCR to ANO-2 TS Bases 3/4.6.2.2 Rev./Change No. \_\_\_\_\_

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

See the 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.**

<u>Document</u>	<u>Section</u>
LRS:	50.59 – Unit 2 ("TSP", "phosphate", "7.06", "8.07", "5284102")
MANUAL SECTIONS:	SAR Section 6.2, TRM(all)

**FIGURES:**

	Stanley J. Haynes	12/8/99
Certified Reviewer's Signature	Printed Name	Date

Reviewer's certification expiration date: 3/18/2000

**Assistance provided by:**

<u>Printed Name</u>	<u>Scope of Assistance</u>	<u>Date</u>
Jacque Lingenfelter	Draft Determination and Search	12/6/99

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

	Daniel W. Fouts	12/9/99
Certified Reviewer's Signature	Printed Name	Date

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

Document No. LDCR to ANO-2 TS Bases 3/4.6.2.2 Rev./Change No. \_\_\_\_\_

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

- 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.

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Document No. LDCR to ANO-2 TS Bases 3/4.6.2.2

Rev./Change No. \_\_\_\_\_

10CFR50.59 Review Continuation Page**Background**

In support of the SG replacement project, the post LOCA sump pH calculation (97-3950D201-01) was revised to determine the impact of the increased RCS volume. This calculation determines the equilibrium minimum and maximum sump pH values during recirculation. The key acceptance criterion for this analysis, is that the minimum pH be greater than 7.0 to assure proper cleanup of post LOCA iodine, assuming the Tech Spec minimum volume of tri-sodium phosphate (TSP). The maximum pH has no specific limit, but is used in the evaluation of equipment environmental qualifications.

Using a conservatively large maximum RCS volume resulted in a very slight increase in the maximum calculated sump pH. The change was small enough however, that the pH value rounded to the nearest tenth (which is sufficient accuracy for the purposes of evaluating equipment qualifications) remains unchanged at 8.1.

In the process of revising the calculation it was determined that the minimum post-LOCA pH is calculated assuming no RCS inventory reaches the sump, rather than a maximum RCS volume. By excluding the RCS volume which would be at a lower boron concentration than the other sump water sources, the sump boron concentration is increased. The change in pH using a 0 RCS volume is very small. The new minimum pH, is 7.05 versus the previously reported 7.06 value. The mass and boron concentration of water in the sump for the minimum pH calculation, without the RCS volume contribution, is 4883310 lbm at 3129 ppmb.

Since the new pH value is still above the minimum allowable value of 7.0, the bases for the required TSP volume is unchanged. However, the TS bases description of the parameters of the TSP surveillance test must be changed. The new test parameters are based on a sump mass and boron concentration rounded up to 4885000 lbm and 3130 ppmb respectively. The new TSP sample mass of 3.09 grams ( $\pm 0.05$ ) in one liter of water at a boron concentration of 3130 ppmb, is representative of the sump mixture with 278 ft<sup>3</sup> of TSP and 4885000 lbm of water.

The bases have also been changed to characterize the mass of the sump water as the calculated value resulting in the lowest pH, rather than the maximum possible volume as currently stated. As currently stated in the bases, the test solution would be representative of the maximum boron concentration corresponding to the maximum possible sump volume following a LOCA. The objective of establishing this limiting set of conditions is to assure that the minimum volume of TSP, when added to the worst combination of water volumes and boron concentrations from the various sources of borated water, would still produce a pH of more than 7.0. In the original pH analysis, the maximum volume at the maximum boron concentration from all borated water sources, including the RCS, were combined. In the revised analysis, the contribution of the RCS was found to have a very slightly non-conservative effect. Although it is not physically possible to have a LOCA that releases the contents of the SITs without releasing the contents of the RCS, it is much simpler to ignore the RCS volume altogether than to justify any specific minimum volume. This assumption has the added benefit of making the minimum pH calculation independent of any future changes to the RCS volume of boron concentration. Although this assumption does not exactly match the statement in the bases, it is clear that the conditions generating the minimum pH value and not the maximum possible sump volume, are of primary importance in determining the minimum TSP volume and surveillance test parameters.

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

As described above, the revised sump pH calculation does not impact the minimum required TSP volume and no changes are required to the Technical Specifications, other than the proposed changes to the bases section. The details of TSP volume determination or surveillance testing requirements are not mentioned in either the operating license or any confirmatory orders.

Section 6.2.3.3.1.2 of the ANO-2 SAR discusses the calculation of minimum and maximum sump pH and minimum TSP volume in general terms that remain true given the revised sump calculation. No other SAR section address

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

these aspects of TSP. Neither the COLR, the Fire Hazards Analysis nor the Technical Requirements Manual, contain any references to TSP volume or testing.

The SER supporting Technical Specification Amendment 194, which supported the replacement of the NaOH System with TSP, discussed the calculation of TSP volume and TSP testing requirements. Although the revised calculation affects statements of fact made in this SER, the resulting conclusions of the SER are unaffected by these changes. The previous calculated values of maximum and minimum pH, 7.06 and 8.07, were given in the SER as statements of fact. The key conclusion of the SER with respect to iodine retention, that iodine cleanup would be acceptable since the equilibrium pH would be greater than 7, remains unchanged. The conclusion that the equilibrium pH reduction, from a range of 8.8 to 11 using the NaOH System to a range of 7 to 8.1 with TSP, would not adversely affect equipment qualification or hydrogen generation remains unchanged.

The SER also addressed the test parameters used in the surveillance testing of the TSP. The SER specifically stated that these parameters were located in the bases to permit future changes under the controls of 10CFR50.59. Consequently the parameter changes, which are consistent with the SER presentation, do not affect the conclusions of the SER. The SER also characterized the test solution as representing the maximum sump volume. As described above, the re-characterization of the mass of the sump water as the calculated value resulting in the lowest pH, does not impact the conclusions of the SER.

The revised sump pH calculation and proposed changes to the Technical Specification bases do not create any new test or experiment. The TSP surveillance test is performed in accordance with an existing procedure.

<b>FORM TITLE:</b>	<b>10CFR50.59 SAFETY EVALUATION</b>	<b>FORM NO.</b> 1000.131B	<b>REV.</b> 3 PC-2
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This Document contains 3 Pages.

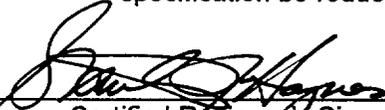
Document No. LDCR to ANO-2 TS Bases 3/4.6.2.2 Rev./Change No. \_\_\_\_\_ 10CFR50.59 Eval. No. FEN-99-115  
(Assigned by PSC)

Title ANO-2 TSP Surveillance Test TS Bases Change for SG 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.

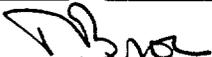
- 1. Will the probability of an accident previously evaluated in the SAR be increased? Yes  No
- 2. Will the consequences of an accident previously evaluated in the SAR be increased? Yes  No
- 3. Will the probability of a malfunction of equipment important to safety be increased? Yes  No
- 4. Will the 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

 Stanley J. Haynes 12/8/99  
Certified Reviewer's Signature Printed Name Date

Reviewer's certification expiration date: 3/18/2000

Assistance provided by:

Printed Name <u>Jacque Lingenfelter</u>	Scope of Assistance <u>Draft Evaluation</u>	Date <u>12/6/99</u>
_____	_____	_____
_____	_____	_____

PSC review by:  Date: 12/16/99

<b>FORM TITLE:</b>	<b>FORM NO.</b>	<b>REV.</b>
<b>10CFR50.59 REVIEW CONTINUATION PAGE</b>	<b>1000.131C</b>	<b>3</b>

Document No. LDCR to ANO-2 TS Bases 3/4.6.2.2 Rev./Change No. \_\_\_\_\_

10CFR50.59 Review Continuation Page

A summary of the changes being covered by this evaluation are delineated in the determination. Refer to the determination for more information with respect to the changes being made and the background information.

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

The proposed modifications include minor changes to the calculated minimum post LOCA equilibrium pH, the characterization of the calculation of the minimum pH and TSP volume, and the TSP surveillance test parameters described in the bases of the Technical Specifications. There are no new systems, components, substructures, design changes, physical alterations, or new operating conditions being proposed by this change. The calculations and tests supporting the performance of the TSP, are in no way related to any accident precursor. The modification of these values and test parameters will have no impact on 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**

The proposed changes do not affect the acceptable performance of the TSP. The changes to the TSP test parameters and characterization of the minimum pH calculation described in the TS bases, assure that the surveillance test of the TSP will correctly verify its required buffering characteristics. This in turn assures that the post LOCA pH will be within its required limits. The equilibrium post LOCA pH is still within the range demonstrated to assure adequate iodine removal and retention and acceptable consequences with respect to equipment qualification and hydrogen production. These changes collectively assure that the consequences of the LOCA, the only event to credit TSP performance, remain unchanged. Therefore, the consequences of accidents previously evaluated in the SAR are unchanged by the proposed changes.

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

The proposed changes do not affect the acceptable performance of the TSP. The changes to the TSP test parameters and characterization of the minimum pH calculation described in the TS bases, assure that the surveillance test of the TSP will correctly verify its required buffering characteristics. This in turn assures that the post LOCA pH will be within its required limits. The equilibrium post LOCA pH is still within the range demonstrated to assure acceptable equipment environmental qualification and hydrogen production. No new systems, components, substructures, design changes, physical alterations, and no new or different operating conditions for equipment important to safety are being proposed by these changes. Consequently, 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? No**

The proposed changes do not affect the acceptable performance of the TSP. The changes to the TSP test parameters and characterization of the minimum pH calculation described in the TS bases, assure that the surveillance test of the TSP will correctly verify its required buffering characteristics. This in turn assures that the post LOCA pH will be within its required limits. The equilibrium post LOCA pH is still within the range demonstrated to assure adequate iodine removal and retention and acceptable consequences with respect to equipment qualification and hydrogen production. No new or different operating conditions or operating requirements for equipment important to safety are being proposed by these changes. No safety analysis assumptions related to equipment operability or equipment

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malfunctions are affected by these changes. Consequently, the probability 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?

No

Apart from the minor changes to the test procedure parameters that will make a small change in the conduct of the TSP surveillance test, these changes have no physical impact on the plant or its operation. No plant modifications, new components, physical alterations, or new operating conditions are being implemented by these changes; therefore no new accidents of a different type than any previously evaluated in the SAR are created by these changes.

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

Apart from the minor changes to the test procedure parameters that will make a small change in the conduct of the TSP surveillance test, these changes have no physical impact on the plant or its operation. No plant modifications, new components, physical alterations, or new operating conditions for the plant or for equipment important to safety are being implemented by these changes. Since there are no physical changes to the plant or its operation, 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 bases for any technical specification be reduced?

No

Technical Specifications for the minimum volume of TSP are established to assure that the minimum post LOCA equilibrium pH is greater than 7.0. As described in the Technical Specification bases, maintaining a pH above this value decreases the level of airborne iodine in containment and reduces the radiological consequences from containment atmosphere leakage following a LOCA. Maintaining this pH also reduces the occurrence of stress corrosion cracking of austenitic stainless steel components in containment. Although this pH limit is not clearly related to a margin to safety for a fission product barrier (as defined in Attachment 2 to OP-1000.131), it is sufficiently significant to warrant consideration as a limit to a margin to safety.

As described above, these changes do not affect this limit. The minimum equilibrium pH is still above 7.0. The slight decrease in the calculated minimum pH, from 7.06 to 7.05, represents a small but acceptable reduction in design margin to the 7.0 limit. No other aspects of these changes affect this limit. The test parameter changes and the changes to the characterization of the calculation of the minimum pH and TSP volume, assure that the surveillance test of the TSP will correctly verify its required buffering characteristics. This in turn assures that the post LOCA pH will be within its required limits. There are no new systems, components, substructures, design changes, physical alterations, or new operating conditions being proposed by these changes that could affect this margin to safety. Consequently, the margin of safety as defined by the bases for the technical specifications are unaffected by these changes.

**148**

FORM TITLE:

10CFR50.59 DETERMINATION

FORM NO.

1000.131A

REV.

3 PC-1

Document No. OP-2409.630

Rev./Change No. 000-00-0

Title Flow Diversion Through One Containment Cooling Fan Unit

Brief description of proposed change: This work plan provides directions for flow testing of the service water system to 2VCC-2B and for installing blinds which will block service water flow to 2VCC-2A.

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

Document No. OP-2409.630

Rev./Change No. 000-00-0

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

1. This work plan does not change or impact the License, Technical Specifications, or confirmatory orders. The work performed in this procedure is consistent with these documents.
2. This work plan will block flow through 2VCC-2A. This is inconsistent with the description in Chapter 9 of the SAR of the service water system.
3. The impact of this testing is local to the inoperable cooler group and does not adversely impact other components cooled by the service water system. The testing does not degrade the margins of safety during normal operations or degrade the adequacy of SSCs to prevent or mitigate accidents. The discussion presented in the work plan explains how the containment isolation function, during the time the system is breached for flange installation, is provided by the closed isolation valve and existence of a water seal. Based on this, the work plan does not result in a test or experiment as defined in 1000.131 Attachment 2.

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.**

<u>Document</u>	<u>Section</u>
LRS: 50.59 Unit 2	Containment w/10 cooler

MANUAL SECTIONS:  
Chapter 6 and 9

FIGURES:  
9.2-1

<u><i>Patrick Williams</i></u>	<u>Patrick Williams</u>	<u>8/11/99</u>
Certified Reviewer's Signature	Printed Name	Date

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

Assistance provided by:

Printed Name	Scope of Assistance	Date
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**Search Scope Review Acceptability (NA, if performed by Technical Review per 1000.006)**

<u><i>Tim L. Woodson</i></u>	<u>Tim Woodson</u>	<u>8-11-99</u>
Certified Reviewer's Signature	Printed Name	Date

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

Document No. OP-2409.630

Rev./Change No. 000-00-0

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.   |

<b>ARKANSAS NUCLEAR ONE</b>	FORM NO. <b>1000.131B</b>	REV. <b>3 PC-2</b>
FORM TITLE: <b>10CFR50.59 EVALUATION</b>		

10CFR50.59 Eval. No. FFN # 99-055  
(Assigned by PSC)

Document No. 2409.630

Rev./Change No. 000-00-0

Title Evaluation of 2VCC-2B With Flow to 2VCC-2A Isolated

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 work plan does not manipulate any equipment which would influence any accident precursor which is evaluated in the ANO-2 SAR. Performance of this work plan does not impact the Loss of Service Water System event. As such, the activities implemented by the work plan 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? Yes  No

The activities performed by this work plan impact service water flow through the cooling coils which are already declared inoperable (which is within the limits of the technical specification LCO) and will be managed such that the flow elsewhere in the SW system will not be degraded below that established during the 2R13 SW flow test. Since the actual change to the system results in an increased pressure at the inlet of the cooler unit it will not result in a reduction of flow to other components cooled by Service Water. During installation of the blind flange the service water system will be breached inside containment. Based on the discussion of this presented in the work plan, the containment isolation function is provided by the closed isolation valve and existence of a water seal during the breach. Since flow to other SW components is not impacted and the containment isolation function is not compromised the consequences of an accident previously evaluated in the SAR would not be increased.

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

The addition of the blind flange does not impact reliability of the SW system. This is a flow diversion condition which does not impact the rate of failure of any component. The reliability of the SW system is not impacted by the change in valve status since the flow to the other components cooled by the system is not reduced below that which is credited during ESF actuation. Since the SW system will perform, as designed and credited, 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 actions specified in the work plan do not impact the ability of the SW system to perform its safety function in the event of a plant transient or accident. During installation of the blind flange the service water

ARKANSAS NUCLEAR ONE		
FORM TITLE: <b>10CFR50.59 EVALUATION</b>	FORM NO. <b>1000.131B</b>	REV. <b>3 PC-2</b>

Document No. **2409.630**

Rev./Change No. **000-00-0**

Title **Evaluation of 2VCC-2B With Flow to 2VCC-2A Isolated**

system will be breached inside containment. Based on the discussion of this presented in the work plan, the containment isolation function is provided by the closed isolation valve and existence of a water seal during the breach. Since the change in SW system flow through the containment cooler unit will not result in an impact in the cooling capability for the other components in the system and the containment isolation function is maintained there is no increase in 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? Yes  No

This work plan does not manipulate any equipment which would influence any accident precursor. Since this work plan does not impact the ability of the plant to respond to any accident nor does it result in any active change which would cause a plant perturbation it does not create any different type of accident 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? Yes  No

The activity delineated in the work plan does not change the system alignment such that it cannot perform its function summarized in the SAR. The changes to the system relate solely to the SW flow through the cooler and do not impact SW cooling to other components in the loop. During installation of the blind flange the service water system will be breached inside containment. Based on the discussion of this presented in the work plan, the containment isolation function is provided by the closed isolation valve and existence of a water seal during the breach. This will not create any other type of failure mode for this configuration. Thus, the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR would not be created.

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

The work plan will reduce the flow through the cooler group while not reducing the flow to the other SW system components. The status of the cooler group is addressed by the Technical Specification LCO. In addition the containment isolation function of the system will be maintained while the system is breached. Based on this there would be no impact to the margin of safety as defined in the basis for any technical specification.

Patrick Williams Certified Reviewer's Signature      Patrick Williams Printed Name      8/11/99 Date

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

Assistance provided by:

Printed Name      Scope of Assistance      Date

PSC review by: ABro      Date: 8/12/99

**149**

This Document contains 4 Pages.

Document No. WORK PLAN 2409.631 Rev./Change No. 0  
 Title 2VSF-1A, CONTAINMENT COOLING FAN, REPAIR

**Brief description of proposed change:**

The subject work plan addresses maintenance activities on the containment cooling fan/motor assembly required because of high vibration levels on the fan motor. The maintenance activity consists of replacing the motor bearings or complete motor replacement. Three out of four of the containment cooling fans will be operating during the maintenance evolution. The operating fans will be 2VSF-1B, C, D while 2VSF-1A will be shutdown for the maintenance activity.

Because of the problems with 2VSF-1A, it has been declared inoperable and secured. This required TS 3/4.6.2.3.a LCO to be entered. The LCO basically consists of a 7 day time clock to restore the fan or divert enough Service Water to the 2VSF-1C cooling coil or shutdown.

The Containment Cooling system consists of four fans and cooling coil sub groups. The A & C fans discharge into a common plenum while the B & D fans discharge into a second plenum. The two plenums are cross connected without isolation capability (no damper in the cross connect). The backflow damper in the A fan housing is located on the upstream side of the fan, so the fan cannot be isolated from the common discharge plenums being supplied by the other fans. To resolve the isolation problem, a flange at the discharge duct of the 'A' fan will be opened and a flat plate blind flange installed to provide temporary isolation during the maintenance process. Opening the flange allows some pressurized air to escape the fan discharge plenums. Additionally, determining the motor wiring connections requires access to the inside the 2VSF-1A housing. This is accomplished by opening an access door, which also results in air escaping from the fan discharge header. While in the configurations where the air can escape, all four fan groups will be declared inoperable although 3 of the four will continue to operate. Declaring the fans inoperable results in entering the LCO for TS 3/4.6.2.3.a. This LCO basically requires the system to be restored within 72 hrs or shutdown. The expectation is that the four fans will be declared inoperable for approximately 2 hours during determination of the wiring and installation of the blind flange. Likewise, the fans will have to be declared inoperable when the blind flange is removed and the wiring relanded. The second inoperable period will also last approximately 2 hours.

While the blind flange is installed, the other three fan units will function the same as if the 2VSF-1A was simply secured (turned off). Flow from the operating fans to the system distribution header will not be impeded. During the process of installing and removing the blind flange & fan assembly, the air escape passages will be opened as mentioned above. During this period, some of the flow will escape at the fan unit rather than going out through the distribution header. The total cooling to the building will not change since the same quantity of air is still being supplied, however the distribution will change. The impact on the containment temperature has been assessed by ER991899I204 and is not expected to change significantly.

ER991893E203 assessed the various seismic concerns that arise during the process. Some of the concerns are the integrity of the housing unit with the flanges broken, integrity of the blind flange, and II/I issues with the tools & fan assembly (including replacement motor).

**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  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

Document No. WORK PLAN 2409.631 Rev./Change No. 0

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

1. This Work Plan will not require a change to the operating license.
2. This work plan will install a blank flange on the exhaust duct of 2VSF-1A, which will result in the Figure 9.4-4 of the Unit 2 SAR being inaccurate.
3. Does not result in a test or experiment as defined in 1000.131 Attachment 2.

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 ("containment w/10 cooler" "containment cooling" "containment atmosphere")

MANUAL SECTIONS: Unit 2 SAR ("Section 6.2.2" "Section 9.4.5"), TS 3/4.6.2.3 & 3/4.6.1.4

FIGURES: Unit 2 SAR ("Figure 9.4-4")

<i>Cleveland Reasoner</i>	Cleveland Reasoner	8/11/99
Certified Reviewer's Signature	Printed Name	Date

Reviewer's certification expiration date: 11/09/00

**Assistance provided by:**

Printed Name John Harvey	Scope of Assistance LBD document assistance	Date 8-10-99

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

Certified Reviewer's Signature	Printed Name	Date
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## ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Document No. WORK PLAN 2409.631Rev./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

- |                          |                                     |   |
|--------------------------|-------------------------------------|---|
| <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 3 Pages.

Document No. Work Plan 2409.631

Rev./Change No. 0

10CFR50.59 Eval. No.

(Assigned by PSC)

FFN #  
99-054

Title 2VSF-1A, CONTAINMENT COOLING FAN, REPAIR

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 work plan does not manipulate any equipment which would influence any accident precursor which is evaluated in the ANO-2 SAR. The Containment Coolers are used to mitigate accidents, the presence of the blind flange on the exhaust duct of 2VSF-1A will not lead to any accidents evaluated in the SAR. As such, the activities implemented by the work plan will not increase the probability of an accident previously evaluated in the SAR. Containment temperatures during this evolution could become elevated. During this period, containment temperatures will continue to be monitored in accordance with TS 3.6.1.4 and appropriate actions would be taken within TS if temperatures increased above allowable values.

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

The presence of the blind flange on the exhaust duct will not affect the operability of the other three Containment Coolers. The Containment Cooling Group that contains 2VSF-1A is already inoperable and the appropriate Tech Spec LCO entered (TS 3/4.6.2.3.b). The ductwork with the flange installed will meet the seismic criteria of the pre-work duct. During certain times during the installation and removal of the blind flange, both Containment Cooling Groups will be inoperable but the appropriate Tech Spec LCO will be entered. Based on this the consequences of an accident previously evaluated in the SAR would not be increased. The containment cooling system and the containment spray system are redundant to each other in providing post accident cooling of the containment atmosphere. During this period, the Containment Spray system will provide to assured post accident containment cooling capability.

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

The presence of the blind flange on the exhaust duct will not affect the operability of the other three Containment Coolers or any other equipment important to safety. The Containment Cooling Group that contains 2VSF-1A is already inoperable and the appropriate Tech Spec LCO entered. The ductwork with the flange installed will meet the seismic criteria of the pre-work duct. The system flow requirements will be restored prior to considering the system operable. Additional combustibles brought into containment will be addressed by compensatory measures required by OP1000.047. The probability of a malfunction of equipment important to safety will not be increased.

10CFR50.59 SAFETY EVALUATION

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

The presence of the blind flange on the exhaust duct of 2VSF-1A will affect the operability of 2VSF-1A only. The Containment Cooling Group that contains 2VSF-1A is already inoperable and the appropriate Tech Spec LCO entered. The condition of 2VSF-1A will not affect the off-site dose consequences due to the failure of any 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

Since the flange on the exhaust duct of 2VSF-1A will be seismically mounted, it will not cause damage to any other equipment. The failure of 2VSF-1A is not an accident initiator and the flange affects this piece of equipment only. Based on this the possibility of an accident of a different type than previously evaluated in the SAR will not be created. The resulting system configuration to have one fan unit removed is in accordance TS 3/4.6.2.3.

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 flange on the exhaust duct of 2VSF-1A will be seismically mounted, it will not cause damage to any other equipment. The only equipment that could be affected by this flange is 2VSF-1A which is already considered inoperable. Based on this, 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

All configurations of the Containment Cooling Groups that will result from this work plan are covered by the Tech Spec LCO. During performance of the WP, TS 3/4.6.2.3.b will be entered and the appropriate time clocks met. After performance of the WP, the Containment Cooling system will continue to provide adequate containment cooling in accordance with the TS's. The performance of this WP will not affect performance of any fission product boundaries discussed in the SAR. The margin of safety as defined in the basis of any Tech Spec will not be reduced.

Cleveland Reasoner  
Cleveland Reasoner  
Certified Reviewer's Signature

Cleveland Reasoner  
Printed Name

8/11/99  
Date

Reviewer's certification expiration date: 11/09/00

Assistance provided by:

Printed Name  
Steve Bennett

Scope of Assistance  
Licensing Considerations

Date  
8-11-99

PSC review by:

[Signature]

Date:

8/11/99

**150**

FORM TITLE:

10CFR50.59 REVIEW CONTINUATION PAGE

FORM NO.

1000.131C

REV.

3

Document No. OP-2409.635Rev./Change No. 00-010CFR50.59 Review Continuation Page

1. This workplan aligns the service water and ACW systems in an alignment that allows flow testing of the service water system in a ESF alignment, and still have ACW in service. It does this by isolating the 2P4B service water pump from both loops by closing the loop crosstie valves. 2P4B will be aligned to supply only ACW components. Both loops of service water will remain operable during the performance of this test which exceeds the requirements in the modes this test is allowed to be performed in. This is done without defeating any interlocks, and all automatic isolation valves are still capable of performing their design function. Precautions are taken to assure that adequate flow is supplied to ACW by 2P4B so the pump and components will not be adversely affected. ACW flow will be directed to the flume and the Cooling Tower basin through the normal operation of system valves. Cooling Tower basin level will be monitored and the test secured if high or low basin level occurs. Service Water cooling to CCW will be secured in this test with components still being cooled, though the heat load will be considerably reduced. Components still being cooled by CCW will have operating limits established and monitored during the test. The service water system and ACW are being aligned in a manner that will still allow them to perform their design and safety functions if required. The loss of service water flow to CCW or ACW has been previously analyzed, and this flow will also still be secured automatically in the event of an accident signal. Compensatory actions will assure equipment operation is unaffected on ACW and CCW. Since all systems will be operated within design requirements, this test has no impact on the frequency of any previously analyzed accident. Therefore the probability of an accident previously evaluated will not be increased.
2. The alignment required by the performance of this test is within the design capability of the service water and ACW systems. Compensatory actions are being assigned to monitor CCW cooled components and basin levels to assure limits are not exceeded. The service water system remains capable of performing all its design and accident mitigation functions. Radioactive release pathways are unaffected. The CCW and ACW systems are not relied upon in the SAR for accident mitigation and will still isolate on an ESF signal. Because all the systems affected can still perform their safety related functions, the consequences of an accident previously evaluated in the SAR are unaffected.
3. This test allows aligning the 2P4B to supply ACW components while both loops of service water are aligned in an ESF alignment. Both loops of service water will remain operable during the performance of this test which exceeds the requirements in the modes this test is allowed to be performed in. It also allows securing service water flow to CCW in modes 5 and 6 with components still requiring cooling. The components cooled by CCW and ACW are non-safety related. The service water system will remain in operation at all times, and all safety related components cooled by it will remain operable. The test also requires that operating limits be established for any components still in service on CCW, and that the test be terminated when these limits are reached. This assures that all CCW components potentially affected by the loss of flow will not be adversely impacted by this operation. Precautions are also taken to assure that adequate flow is supplied to ACW by 2P4B so the pump and components will not be adversely affected. Therefore, all equipment will continue be able to perform its function, and the probability of a malfunction of equipment important to safety is not increased.
4. During the performance of this test in modes 5 or 6, the service water system will be placed in a two loop ESF alignment, and will remain operable and all components will remain capable of performing their functions. No interlocks or overrides are defeated. ACW will be supplied by 2P4B which will be isolated from both service water loops. However, 2P4B is not required since it is the spare pump. The other pumps will be operable. The securing of service water to CCW when components are still being cooled by CCW will result in temperature increases. However, the test also requires that operating limits be established for any components still in service on CCW, and that the test be terminated when these limits are reached. Precautions are also taken to assure that 2P4B is unaffected by the test lineup, and Cooling Tower Basin is not overfilled or underfilled. ACW loads will still be provided cooling during this test. Dose rates to the public are unaffected by this operation since all equipment will function as previously analyzed, and no barriers for mitigating the affects are affected. Therefore, the consequences of a malfunction of equipment important to safety is not increased.

FORM TITLE: 10CFR50.59 REVIEW CONTINUATION PAGE

FORM NO. 1000.131C

REV. 3

Document No. OP-2409.635 Rev./Change No. 00-0 10CFR50.59 Eval. No. (Assigned by PSC)

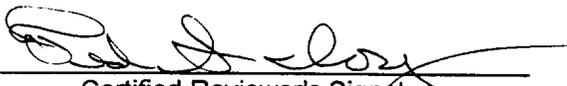
FFN # 99-100

Title 2P99 Service Water System Flow Test

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

Ted S. Ivy  
Printed Name

10/16/99  
Date

Reviewer's certification expiration date: 10/04/01

Assistance provided by:

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

PSC review by: 

Date: 11/8/99

FORM TITLE:

10CFR50.59 REVIEW CONTINUATION PAGE

FORM NO.

1000.131C

REV.

3

5. This new test procedure aligns the service water and ACW systems in an alignment that allows flow testing of the service water system in a ESF alignment and still have ACW in service. It will also allow securing service water flow to CCW with components cooled by this system still in service. However, this procedure requires that operating limits and precautions be established for these components still in service, and that the test be terminated and flow reestablished if these limits are reached. Operation of the equipment in this manner assures that it will still be able to perform its function, and that no other equipment will be adversely impacted by this operation. The service water is aligned in an alignment that still allows it to perform all its safety functions. Components on ACW will continue to be cooled by service water unless isolated by an ES signal. By doing this, all previous analyses in the SAR are still valid and are unaffected. The service water system will remain operable during this evolution. Operating the equipment in this manner and within these limits will not create any new accidents since all components will remain capable of performing their function. Therefore, the possibility of an accident of different type than previously analyzed in the SAR is not created.
6. This test places service water and ACW in an alignment that allows for flow testing two loops of service water with ACW in service, and isolating cooling to CCW with components still in service. The design of the service water system is such that it allows placing the system in this alignment. Flow to CCW and ACW is automatically isolated upon receiving an SIAS, MSIS or RAS signal for an accident. Manually isolating CCW is allowed by the design of the system. Therefore the service water system is not being operated outside its design capabilities. All components remain capable of performing their design functions. With the limitations imposed by the procedure when operating in this manner, no malfunctions of equipment important to safety are created that are not already analyzed or bounded. Therefore, the possibility of malfunction of equipment important to safety of a different type than was previously evaluated in the SAR is not created.
7. The performance of this test places components in an alignment that is not normally performed, but is allowed by the design of the system. All components remain capable of performing their safety functions. The service water system will remain operable at all times during this test, and the bases for the service water technical specification will be unaffected. All margins to safety will be maintained. The procedural operating limits and monitoring requirements assure that design margins for the systems and the components cooled by them are not exceeded. All components will remain functional and will be operated within their design capabilities. In addition, both loops of service water will remain operable during the performance of this test which exceeds the technical specification requirements in the modes this test is allowed to be performed in. No Technical Specification Bases margins to safety are affected by the operation of the systems in this manner. Therefore, the margin to safety as defined in the basis of any Technical Specification will not be reduced.

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<b>ARKANSAS NUCLEAR ONE</b>		
FORM TITLE: <b>10CFR50.59 EVALUATION</b>	FORM NO. <b>1000.131B</b>	REV. <b>3 PC-2</b>

10CFR50.59 Eval. No. 00-003  
(Assigned by PSC)

Document No. 2409.656

Rev./Change No. 000-00-0

Title Unit 2 Dispersant Trial

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

ARKANSAS NUCLEAR ONE

FORM TITLE:

10CFR50.59 EVALUATION

FORM NO.

1000.131B

REV.

3

Page 2 of 4



Certified Reviewer's Signature

Phillip C. Robbins

Printed Name

1-13-00

Date

Reviewer's certification expiration date: 11-10-00

Assistance provided by:

Printed Name

Scope of Assistance

Date

PSC review by:



Date:

1-20-00

**ARKANSAS NUCLEAR ONE**

<b>FORM TITLE:</b> 10CFR50.59 DETERMINATION	<b>FORM NO.</b> 1000.131A	<b>REV.</b> 3 PC-1,2
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Document No. 2409.656

Rev./Change No. 000-00-0

**Basis for Determination (Questions 1, 2 & 3):**  
**See page 4**

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:  
50.59 Unit 2

All Keywords- (disp\*,PAA, Betz\*, polymer,blowdown filter, turbine, TOC, deposit, feedwater w/10 iron, blowdown w/10 iron, steam generator w/10 iron)

**MANUAL SECTIONS:**  
**10.2, 10.3, 10.4**

**FIGURES:**  
**N/A**

  
\_\_\_\_\_  
Certified Reviewer's Signature

**Philip C. Robbins**  
\_\_\_\_\_  
Printed Name

**1-13-00**  
\_\_\_\_\_  
Date

Reviewer's certification expiration date: 11-10-00

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

N/A  
\_\_\_\_\_  
Printed Name

N/A  
\_\_\_\_\_  
Date

**ARKANSAS NUCLEAR ONE**

FORM TITLE: <b>10CFR50.59 DETERMINATION</b>	FORM NO. <b>1000.131A</b>	REV. <b>3 PC-1</b>
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Document No. 2409.656

Rev./Change No. 000-00-0

Title Unit 2 Dispersant Trial

Brief description of proposed change: Workplan to provide instructions for injecting a dispersant in the Unit 2 secondary system.

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

<b>FORM TITLE:</b>			<b>FORM NO.</b>	<b>REV.</b>
<b>10CFR50.59 DETERMINATION</b>			<b>1000.131A</b>	<b>3</b>

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

Document No. 2409.656

Rev./Change No. 000-00-0

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 checked="" type="checkbox"/> | <input 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.   |

Procedure 2409.656 000-00-0  
CFR 50.59 Determination

This workplan addresses performing a trial injection of a dispersant (Betzdearborn DA 6801) in the Unit 2 secondary system. The dispersant should help prevent deposition of particulate iron in the steam generators. This trial should last around six months and provide the basis for further qualification testing. Although the license based documents are not affected, a 50.59 evaluation with attached qualification documentation is prudent.

The bases for questions 1-3 are listed below.

1. No –The license-based documents do not address activities, which are affected by this workplan.
2. No – The SAR documents do not address adding a dispersant. Implementing the workplan will not invalidate SAR requirements.
3. No – Performing a dispersant is not a test or experiment.

### Discussion

This procedure change involves adding a dispersant to the Unit 2 secondary system for approximately six months. This is an EPRI funded project which is intended to prove the effectiveness of using a dispersant to prevent iron deposition in the steam generators. An extensive qualification program was performed to ensure there would not be adverse effects on plant materials. This information is summarized in three attached reports from Dominion Engineering (Attachments 1-3) and a report from Pedro Point Technology (Attachment 4). An engineering review was also performed (see Attachment 5).

Answers to the seven questions on pages one and two are listed below.

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

No. The chemistry of the secondary system affects only one accident scenario. That accident is Steam generator tube rupture with or without a concurrent loss of AC power. This accident could result from failure of steam generator tubes due to secondary side corrosion. Adding a dispersant will not increase corrosion of steam generator tubes. A report from Dominion Engineering (LR-5088-00-03) is attached which describes the testing programs and evaluations which were performed to ensure steam generator tube integrity would not be affected. The goal of the dispersant is to reduce iron deposition in the steam generators. This reduction in deposits should reduce the potential for corrosion.

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

No. Adding a dispersant to the secondary system does not play a role in changing or preventing actions described in any accident previously evaluated in the SAR. This activity does not affect any barriers to mitigate dose to the public or to release radioactive materials.

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

No. The procedure changes will not be detrimental to the steam generators. The lower deposition rates should help prevent corrosion of tubes. The ability of the steam generators to provide a mitigating function for accidents will be maintained. The probability of a malfunction of this equipment will not be increased.

Doc #: 2409.656 Rev #: 000-00-0Title Unit 2 DISPERSANT TRIAL

## 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: THE USE OF BETZ-DEARBORN DA 6801 (PAA) WAS NOT EVALUATED BY ANY OF THE LISTED REFERENCES. PAA IS A NEW CHEMICAL IDENTIFIED FOR USE AT AWO.

- 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: THE USE OF PAA AT AWO WAS EVALUATED BY THE ARKANSAS DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ) APDES BRANCH. ON 12/16/99, THE ADEQ GRANTED AUTHORIZATION FOR AWO TO USE PAA.

- 2.3 Does the proposed activity result in a significant change in nonradiological effluents or licensed reactor power level? Yes  No

Discussion: THE ADEQ HAS AUTHORIZED AWO TO USE PAA WITH NO CONCERNS REGARDING THE USE OF THIS PRODUCT AS SPECIFIED IN THE LETTER (AWO-99-00467) FROM ENTERGY. THE USE OF PAA REQUIRES A REACTOR POWER OF 90% OR GREATER.

Evaluator: Jamie Dennis Callaway Date: 01-17-00  
 Supt., Chem.: Kellae Partidge Date: 1-17-00  
 PSC Review: [Signature] Date: 1-20-00

FORM TITLE: NONRADIOLOGICAL ENVIRONMENTAL EVALUATION FORM	FORM NO. 1052.034A	REV. 0
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4. Will the consequences of a malfunction of equipment important to safety be increased?

No. The change maintains secondary chemistry controls. In the case of a primary to secondary leak the dispersant will not cause primary isotopes to come out of solution. It will not result in increased radiological release or an increase in dose if failures occur in components related to safety.

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

No. This procedure change does not negatively affect secondary chemistry controls. It does not degrade steam generator chemistry or increase secondary corrosion. See attached reports from Dominion Engineering. The change should actually reduce corrosion. Therefore, the possibility of an accident different than previously indicated will not be created.

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

No. The procedure change does not introduce a potential detrimental affect on any equipment important to safety. The change maintains or reduces the potential for corrosion, and does not introduce any type of failure mode not previously recognized or evaluated.

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

No. Section 3/4.4.5 of the Unit Two Technical Specifications Bases states " The plant is expected to be operated in a manner that the secondary coolant will be maintained within those chemistry limits found to result in negligible corrosion of the steam generator tubes. If the secondary coolant chemistry is not maintained with those limits, localized corrosion may result in stress corrosion cracking. The extent of the cracking during plant operation would be limited by the limitation of steam generator tube leakage between the primary coolant and the secondary coolant system (primary – secondary leakage = 150 gallons per day per steam generator)." This procedure change will not result in increased steam generator corrosion, and therefore will not cause steam generator tube leakage to be affected. Therefore the margin to safety defined in Tech Spec Bases and SAR is not reduced.

**152**

<b>FORM TITLE:</b> 10CFR50.59 DETERMINATION	<b>FORM NO.</b> 1000.131A	<b>REV.</b> 003-04-0
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This Document contains 3 Pages.

Document No. OP-2409.689 Rev./Change No. 00-00-0

Title ECP RETURN LINE CLEANING

**Brief description of proposed change:**

This workplan controls the cleaning of the ECP return line. The line will be cleaned Poly Pigs constructed of polyurethane foam. The pigs will be forced through the line using service water pressure at a permanent cleaning connection installed on the ECP Return line 2HBC-83-30" at EL. 335 in the Auxiliary Building extension. The pigs will exit at the ECP and be retrieved by divers. A launching station will be attached to the permanent cleaning connection, and ACW for the Blowdown heat exchangers or an equivalent water source will be used to initially launch the pigs into the piping. This work can only be performed when the unit is shutdown and the ECP is not required. One SW loop remains operable for this evolution.

**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?
  - QAPM? Yes  No
  - E-Plan? Yes  No
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  No

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

This workplan installs temporary equipment on to permanent plant equipment and as a result it affects two SAR Figures 9.2-1 and 10.4-7. As a result a 50.59 evaluation is required. The cleaning of the ECP return line using Poly pigs has no impact on the descriptions in the COLR, FHA, Tech Spec Bases, Technical Requirements Document or any NRC SER. As shown in the environmental checklist there is no environmental impact. This is a workplan that hooks up temporary equipment to a permanently installed cleaning station and heat exchanger piping. The ECP return line and blowdown heat exchangers are not required to be operable in the mode this workplan can be performed in. This is not considered a test or experiment not described in the SAR since the sections of the system affected by this test are considered inoperable and are not required in the mode the test is performed in. No RSE is required. The details of this kind of work are not described in the QAMO or E-plan, and the VSC activities are unaffected by this testing.

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 2 50.59, (ACW, auxiliary cooling, 2E68\*, ECP, ECP w/20 piping, SW\* w/10 piping, blowdown w/10 heat exchanger

MANUAL SECTIONS: 9.2.1, 9.2.5, 10.4.10

FIGURES: 9.2-1, 10.4-7, 7.4-2

Certified Reviewer's Signature	Ted S. Ivy	Printed Name	7/3/00	Date
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Reviewer's certification expiration date: 10/4/01

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	James H. Crabill	Printed Name	7/11/00	Date
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FORM TITLE:

10CFR50.59 DETERMINATION

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

Document No. OP-2409.689

Rev./Change No. 00-00-0

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



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.

<b>FORM TITLE:</b>	10CFR50.59 SAFETY EVALUATION	<b>FORM NO.</b>	1000.131B	<b>REV.</b>	003-04-0
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This Document contains 3 Pages.

Document No. OP-2409.689 Rev./Change No. 00-00-0 10CFR50.59 Eval. No. FFN#00-090  
 (Assigned by PSC)

Title ECP Return Line Cleaning

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

Ted S. Ivy  
 Printed Name

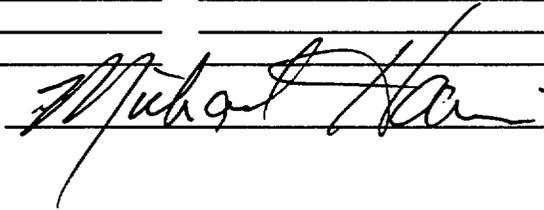
7/3/00  
 Date

Reviewer's certification expiration date: 10/4/01

Assistance provided by:

Printed Name	Scope of Assistance	Date

PSC review by:



Date:

8/19/00

FORM TITLE:

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FORM NO.

1000.131C

REV.

003-04-0

Document No. OP-2409.689Rev./Change No. 00-00-010CFR50.59 Review Continuation Page

This workplan controls the cleaning of the ECP return line. The line will be cleaned with Poly Pigs constructed of polyurethane foam. The pigs will be forced through the line using service water pressure at a permanent cleaning connection installed on the ECP Return line 2HBC-83-30" at EL. 335 in the Auxiliary Building extension. The pigs will exit at the ECP and be retrieved by divers. A launching station will be attached to the permanent cleaning connection, and ACW water for the steam generator Blowdown heat exchangers will be used to initially launch the pigs into the piping. This work can only be performed when the unit is shutdown and the ECP is not required. Both service water loops are required to be available and the loop used for the cleaning will be considered inoperable for this evolution. The other loop is required to be operable.

1. This workplan can only be performed in modes 5 and 6. In these modes only one loop of SW is required to be operable and the ECP, steam generator blowdown and ACW systems are not required. This workplan makes the ECP and blowdown heat exchanger 2E68A/B unavailable for use and results in one loop of SW being declared inoperable. One loop of SW is required to be operable during the cleaning and is isolated from the ECP return line and the inoperable loop of SW. This assures SW remains available to perform its functions in mitigating accidents. In these modes there are no accidents that are adversely affected by this activity. The installation of the cleaning equipment will not have any impact on equipment required to be operable in modes 5 and 6. Therefore the probability of an accident previously evaluated is not increased.
2. This workplan cleans the ECP return line using foam pigs and hooking up temporary cleaning equipment to a permanently installed cleaning connection that was last used in 2R12 using the same process. The cleaning results in the ECP, one loop of SW and the Blowdown heat exchanger being unavailable for use. However, this cleaning can only be performed in modes 5 and 6 where this equipment is not required. One loop of SW is required to be operable which assures that SW remains capable of performing its functions. Radioactive release pathways are unaffected. This work has no adverse impact to the accidents analyzed in the SAR and applicable in the required modes, nor does it impact any of the analyzed offsite doses since minimum equipment operability is maintained. Therefore, the consequences of an accident previously evaluated are not increased.
3. The cleaning of the ECP return line via this workplan results in the ECP, blowdown heat exchangers, and one loop of SW being inoperable. ACW will be available for supplying pressure to launch the pigs into the line and as a return piping source for draining the return line. This work can only be performed in modes 5 and 6 when this equipment is not required. One loop of SW is required to be operable during the cleaning and it is isolated from the work than is ongoing. The SW system will be operated within design limits. All equipment will be restored to its normal design prior to exiting modes 5 and 6. This assures those minimum requirements for the performance of equipment important to safety is maintained. No other equipment important to safety is impacted by this work. Therefore there is no increase in the probability of a malfunction of this equipment.
4. The modes this workplan is allowed to be performed in limits the possible accident scenarios. During these modes only one loop of SW is required to be operable. This one loop will not be affected by the cleaning operation. Only the ECP, one loop of SW and the Blowdown heat exchanger and ACW are impacted by this work. They are not required to be available in the applicable modes. One loop of SW is required to be operable which assures that SW remains capable of performing its functions. A loss of SW has been previously analyzed and this work has no adverse impact to this analysis. Dose rates to the public are unaffected by this operation since all equipment required to function in these modes as previously analyzed are not affected by this work, and no barriers for mitigating the affects are affected. Therefore, the consequences of a malfunction of equipment important to safety are not increased.
5. This workplan cleans the ECP return line using foam pigs and hooking up temporary cleaning equipment to a permanently installed cleaning connection that was last used in 2R12 using the same process. The cleaning results in the ECP, one loop of SW and the Blowdown heat exchanger being unavailable for use. ACW will be available for supplying pressure to launch the pigs into the line and as a return piping source for draining the return line. However, this cleaning can only be performed in modes 5 and 6 where this equipment is not required. One loop of SW is required to be operable which assures that SW remains capable of performing its functions in these modes. The operable loop is isolated from this work. No other systems are impacted by this work. The SW system will be operated within design limits. All equipment will be restored to its normal design prior to exiting modes 5 and 6. A

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loss of SW has been previously analyzed and this work has no adverse impact to this analysis. No new failure modes are created that would result in any new accidents not bounded by previous analyses. Therefore the possibility of an accident of a different type than previously evaluated is not created.

6. Cleaning of the ECP return line requires that the ECP return be isolated and unavailable for use. In addition, the loop of SW used for the cleaning operation will be considered inoperable. ACW will also be used for launching the poly pigs and as a return connection for draining the ECP return line. The steam generator blowdown heat exchangers will be unavailable for use, but are not required in modes 5 and 6 nor is the ECP or ACW. One loop of SW is required and remains operable during the cleaning. This loop of SW is isolated from this work to assure it can perform its functions. All equipment is operated within design limits to assure no new malfunctions of equipment are created. The loss of SW is still the most limiting case which has been previously analyzed, and is unaffected by this work. Therefore, the possibility of malfunction of equipment important to safety of a different type than was previously evaluated in the SAR is not created.
7. The performance of this workplan will result in the ECP, one loop of SW and the Blowdown heat exchanger being unavailable for use. ACW will be available for supplying pressure to launch the pigs into the line and as a return piping source for draining the return line. However, this cleaning can only be performed in modes 5 and 6 where this equipment is not required. All components on the operable SW loop remain capable of performing their safety functions. The required one loop of the service water system will remain operable at all times during this workplan, and the bases for the service water technical specification will be unaffected. All margins to safety will be maintained. The procedural operating limits and monitoring requirements assure that design margins for the systems and the components cooled by them are not exceeded. All components will remain functional and will be operated within their design capabilities. No Technical Specification Bases margins to safety are affected by the operation of the systems in this manner. Therefore, the margin to safety as defined in the basis of any Technical Specification will not be reduced.