

ARKANSAS NUCLEAR ONE

FORM TITLE:

10CFR50.59 DETERMINATION

FORM NO. 1000.131A Page 1 REV. 003-04-0

This Document contains 3 Pages.

Document N	ER002357E201	Rev./Change No. 0		
Title	HPSI Injection Valve Plug Design Char	nge		
Brief descrip	ion of proposed change:			
1/5016-2/5 are of a dif scoring pro	is the replacement of the valve plugs in the 135-1/5036-2/5055-1/5056-2/5075-1/5076-2 erent material and shape than the existing polems previously encountered. The change port, also to reduce the potential for future s	, with plugs of a different design. The re plugs. The plugs are being replaced in o also includes the chamfering of the edo	placeme order to a	ent plugs alleviate
Will the prop	osed Activity:			
1. Requi	e a change to the Operating License includi	ng:		
Techn	cal Specifications (excluding the bases)?		Yes□	No⊠
Opera	ing License?		Yes□	No⊠
Confir	natory Orders?		Yes□	No⊠
	in information in the following SAR docume onger true or accurate, or (b) violate a requ			
SAR (nulti-volume set for each unit)?		Yes⊠	No
Core (perating Limits Report?		Yes□	No⊠
Fire H	azards Analysis?		Yes□	No⊠
Bases	of the Technical Specifications?		Yes□	No⊠
Techn	cal Requirements Manual?		Yes.	No⊠
NRC :	afety Evaluation Reports?		Yes□	No⊠
	e a test or experiment not described in the S e Attachment 2 for guidance)	SAR?	Yes□	No⊠
	in a potential impact to the environment? (Option Determination of this form.)	Complete Environmental	Yes□	No⊠
5. Resul	in the need for a Radiological Safety Evalu	ation per section 6.1.5?	Yes□	No⊠
	in any potential impact to the equipment or I for Ventilated Storage Cask activities per		Yes□	No⊠
	e a change under 10CFR50.54 for the follow ction 6.1.7?	ving SAR documents		
QAPI	?		Yes□	No⊠
E-Pla	?	•••	Yes□	No⊠
8. Does (NRC	his review depend on future NRC approval SER, Relief, etc)? (forward change to PSC	of other actions? per 6.3.8 or 6.3.9 02357 E 201	Yes[]	No⊠

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Document No. ER0	02357E201	Rev./Change No.	0	V.A. I
Basis for Determinat	ion (Questions 1, 2, & 3):			
0 // 1 D	T. 11001311111111111111111111111111111111			
therefore no change	e: The HPSI injection valve plug is required to the operating licens	design is not addres: e.	sed in the operating lice	ense and
Question 2 Response: The HPSI injection valve plug material is addressed in SAR Sections 6.3.2.4 and 6.3.2.19. Specifically, these SAR sections convey that components of the SIS (or materials in contact with radioactive coolant) are fabricated of austenitic stainless steel, and the valve seats are stellite or equivalent material. The entire replacement plugsic constructed of the NOREM B1 material (i.e., no hardfacing of a different material) which is not considered to be austenitic stainless steel. No other SAR document is affected by this change.				
Question 3 Response modification testing v	e: No test or experiment not desc will consist of existing test activitie	ribed in the SAR is in	nvolved with this chang	e. Post
	does not require 10CFR50.59 Eva , send LDCR to Licensing).	aluation per Attachm	ent 1, Item # (If ch	ecked, note
Search Scope:				
performed on LRS, the parentheses. Controlle	in the Licensing Basis Documents ELRS search index should be entered hard copies of the documents swings). Attach and distribute a	ered under "Section" shall be reviewed (LF	with the search statem RS is not verified and s	ent(s) used in earches only
<u>Document</u>	Section			
LRS:	All (valve, HPSI, high pressure : 2CV-5036-2, 2CV-5055-1, 2CV-			
MANUAL SECTIONS:	6.3			
FIGURES:	Table 6.3-1, Table 6.3-3, Figure	6.3-2		
Stinks)				
Certified Reviewer's Si	Stephen .	Printed Name		<i>-22-00</i> Date
' 0 (J	· ····································		Date
Reviewer's certification	expiration date: 5/26/01			
Assistance provided by	r:			
Printed Name Randall S. Smith		e of Assistance		Date 4/14/00
Search Stone Review	Acceptability (NA, if performed	by Technical Review	wer per 1000 006)	
	Company (in a periorified		·	- 25-00
Certified Reviewer's Si	gnature	Printed Name	<u> </u>	Date

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ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Docume	ent No.	ER002357E201 Rev./Change No. 0
		llowing Determination. If the answer to any item below is "Yes", an Environmental Evaluation is ection 6.1.4 for additional guidance.
Will the	Activity	being evaluated:
<u>Yes</u>	<u>No</u>	
	\boxtimes	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.
	\boxtimes	Increase thermal discharges to lake or atmosphere?
	\boxtimes	Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower?
	\boxtimes	Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower?
	\boxtimes	Modify the design or operation of cooling tower which will change drift characteristics?
	\boxtimes	Install any new transmission lines leading offsite?
	\boxtimes	Change the design or operation of the intake or discharge structures?
	\boxtimes	Discharges any chemicals new or different from that previously discharged?
	\boxtimes	Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water?
	\boxtimes	Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water?
	\boxtimes	Involve incineration or disposal of any potentially hazardous materials on the ANO site?
	\boxtimes	Result in a change to nonradiological effluents or licensed reactor power level?
	\boxtimes	Potentially change the type or increase the amount of non-radiological air emissions from the

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					This Document con	tains 1 Page.
Docum	nent No.	ER002357E201	Rev./Change No.	1	_ 10CFR50.59 Eval. N	o. <u>F</u> FN#00-056
					Revision No.	1
∟vaiuai	tion alter	r 30 review may becom	evisions to 10CFR50.59 me necessary due to SR for additional guidance.	Evaluations. C review, ch	Revisions to a 10CFR anges to the original de	50.59 ocument, etc.
Reason	n for revis	sion to 10CFR50.59 Ev	aluation:			
hardfac	ce materia	al). ER002357E209 ha	r that the valve plugs ord ial designated as NORE s been generated to pro his revision to the 50.59 material. No change to t	M 02A (NOR vide the docu	EM B1 was the previous imentation of equivaler	usly available ncy based on
Will the	proposed	d revision result in any	additional:			
1) C	hange to	the Operating License	?		Yes ☐ No 🗵	
2) C	hange to	other Licensing Basis	Document?		Yes 🗌 No 🛛	
3) C	onduct of	f test or experiment?			Yes ☐ No 🖾	
4) im	npact to t	he environment?			Yes ☐ No 🖾	
5) Ne	eed for a	Radiological Safety Ev	aluation?		Yes ☐ No 🗵	
6) lm	npact Ver	ntilated Storage Cask A	ctivities		Yes ☐ No 🏻	
7) Im	pact the	QAPM or E-Plan?			Yes ☐ No 🏻	
If yes. de	escribe b	elow and take appropri	ate action as per initial D	etermination	:	
N/A						
extensive	e change fevious 1 Reviewe	s). Changes should be s, new forms may be u	valuation by placing revise lined through, initialed, sed with revision bars in the PSC for the property of th	dated and inc the margin d review.	dicated with the revision lenoting changes. Atta	n n
3011641		- : :			Date:	7/21/00

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10CFR50.59 Review Continuation Page

Synopsis of Modification

ER002357E201 replaces the valve plugs of the eight HPSI injection MOV's with an updated design. The existing plug design has exhibited a tendency to become scored when operated during high flow conditions. Once scored, the possibility of galling is heightened. The new plug design differs in two respects from the existing design. The existing stainless steel plug material is replaced with an alloy known as NOREM B1 (also known as NOREM 01) This material, developed by EPRI, is recommended by the valve manufacturer as a replacement plug material for this application. It was developed as a hardfacing material, however, for valve sizes 2" and smaller (the subject valves are 2") the entire plug is constructed of the material. The superior hardness of the new plug material in relation to the stainless steel valve body reduces the possibility of scoring and galling. The new plug design is also shaped differently from the existing plug. The new plug is what is known as a double taper design. Per the valve manufacturer, the Cv of the valve is not changed by the change in plug shape or material. Testing performed by ANO personnel at the Wyle test facilities has confirmed the superior performance offered by the new plug design in terms of resistance to scoring and reduced valve factor. or by NOREM OZA

Another facet of the change is the chamfering of the edge of the outlet port. The damage seen previously has been concentrated in the outlet port area and is believed to be the result of the plug passing the existing sharp edges of the outlet port and in essence being scraped by that sharp edge.

Finally, the valve bodies will be honed (if needed) prior to installation of the new plugs. This will further reduce the possibility of future scoring.

Post modification testing will include applicable MOV testing, system flow verification and stroke timing. However, if the associated manual valves used for flow balancing are required for isolation or are otherwise disturbed, a workplan to rebalance system flows may be required.

Design Basis

Replace of the system is accomplished by throttling of the manual valve associated with each injection MOV. The new plug design will not alter the flow characteristics of the balanced system because the injection MOV's are opened fully and plug shape of the MOV's is not a controlling factor. The NOREM B1 material is compatible with radioactive fluid contact and contains <0.1% by weight of cobalt. This material has been previously evaluated and found acceptable for use at ANO (Reference Specification ANO-M-2456). This change is intended only to replace an existing valve component with a more suitable design. No risk is added by virtue of this modification.

The change will cause one aspect of the SAR to no longer be true in that the SAR states that all SIS components in contact with the radioactive coolant are austenitic stainless steel except for valve seats. Since the entire plug is of the NOREM B1 alloy (not considered an austenitic stainless steel), an LDCR will be processed to effect a change to the SAR. Or NOREM OZA 21/00 OCV.

Answers Form 1000.131B Questions

Question 1 Response: HPSI system component failure is not credited with initiating any of the previously evaluated accidents in the SAR. The valves will remain normally closed and will open in response to a safeguards actuation as before. Replacement of the injection MOV plugs with an updated design does not therefore increase the probability of an accident previously evaluated in the SAR.

Question 2 Response: The replacement valve plugs will provide the same component function as the existing plugs. The change in material and shape of the plugs will also not affect HPSI system functional performance, i.e., flow capacity and isolation capability are unaffected. Therefore, the consequences of an accident previously evaluated in the SAR is not increased.

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Question 3 Response: The replacement plugs are constructed to the same Code requirements and ANO design specification as the existing plugs and will serve identical functions. The conditions under which any associated system equipment operates is unchanged. Therefore, the probability of the malfunction of equipment important to safety is not increased.

Question 4 Response: No change in HPSI system configuration or functional capabilities is introduced by this change. The consequence of failure of the new valve plug design is identical to that which would have previously been experienced. Therefore, the consequences of a malfunction of equipment important to safety are unchanged.

Question 5 Response: The change in valve plug design does not affect HPSI system operation or configuration or its interface with other plant systems. It is therefore not credible that an accident of a different type than any previously evaluated in the SAR would be created.

Question 6 Response: No change in HPSI system capabilities or performance is introduced by this change. The new plug design is subject to the same Code requirements and ANO design specification stipulations as the existing plugs and will serve identical functions. No malfunction of equipment important to safety of a different type than previously evaluated in the SAR will be created.

Question 7 Response: The performance capabilities of the HPSI system or any of its components are unaffected by the change of injection MOV plug design. Because the HPSI system and component performance is unaffected, the margin of safety defined in the basis for any technical specification will not be reduced.

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			т	his Document cont	ains 3 F	ages.
Docui	ment No.	ER002357E201	Rev./Change No.	0		
Title		HPSI Injection Valve Plug Design Chang	e			
Brief	description	of proposed change:				
The 1/50 are score	change is 016-2/5035 of a differe ring proble	the replacement of the valve plugs in the zero-1/5036-2/5055-1/5056-2/5075-1/5076-2, went material and shape than the existing plums previously encountered. The change and also to reduce the potential for future sc	vith plugs of a differe lgs. The plugs are b lso includes the cha	ent design. The repoeing replaced in or	olaceme der to a	ent plugs illeviate
Will t	he propose	ed Activity:				
1.	Require a	change to the Operating License including	j :			
	Technical	Specifications (excluding the bases)?			Yes□	No⊠
	Operating	License?			Yes□	No⊠
	Confirmat	ory Orders?			Yes□	No⊠
2.	Result in (a) no lon	information in the following SAR document ger true or accurate, or (b) violate a require	s (including drawing ement stated in the o	s and text) being document:		
	SAR (mu	ti-volume set for each unit)?			Yes⊠	No
	Core Ope	rating Limits Report?			Yes□	No⊠
	Fire Haza	rds Analysis?			Yes□	No⊠
	Bases of	the Technical Specifications?			Yes□	No⊠
	Technica	Requirements Manual?			Yes□	No⊠
	NRC Safe	ety Evaluation Reports?			Yes□	No⊠
3.	Involve a (See A	test or experiment not described in the SA	R?		Yes□	No⊠
4.	Result in Impact D	a potential impact to the environment? (Co	omplete Environmen	ital	Yes[No⊠
5.	Result in	the need for a Radiological Safety Evaluat	ion per section 6.1.5	5?	Yes□	No⊠
6.	Result in utilized for	any potential impact to the equipment or for For Ventilated Storage Cask activities per Se	acilities ection 6.1.6?		Yes□	No⊠
7.		change under 10CFR50.54 for the following 6.1.7?	ng SAR documents			
	QAPM?				Yes□	No⊠
	E-Plan?				Yes□	No⊠
8.	Does this (NRC SE	review depend on future NRC approval of R, Relief, etc)? (forward change to PSC p	f other actions? er 6.3.8 or 6.3.9) _{FR}	 	Yes□	No⊠

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Document No.	ER002357E201	Rev./Change No.	0	· · · · · · · · · · · · · · · · · · ·	
Basis for Determ	nination (Questions 1, 2, & 3):				
	ponse: The HPSI injection valve ange is required to the operating li		sed in the operating lic	ense and	
6.3.2.19. Speci radioactive coo material. The e different materi	Question 2 Response: The HPSI injection valve plug material is addressed in SAR Sections 6.3.2.4 and 6.3.2.19. Specifically, these SAR sections convey that components of the SIS (or materials in contact with radioactive coolant) are fabricated of austenitic stainless steel, and the valve seats are stellite or equivalent material. The entire replacement plugsic constructed of the NOREM B1 material (i.e., no hardfacing of a different material) which is not considered to be austenitic stainless steel. No other SAR document is affected by this change.				
	ponse: No test or experiment not ting will consist of existing test ac		nvolved with this chang	ge. Post	
	ange does not require 10CFR50.59 em #, send LDCR to Licensing).	9 Evaluation per Attachm	ent 1, Item # (If ch	ecked, note	
Search Scope:					
performed on LR parentheses. Co	ewed in the Licensing Basis Docur S, the LRS search index should be ntrolled hard copies of the docume r drawings). Attach and distribu	e entered under "Section" ents shall be reviewed (Lf	' with the search staten RS is not verified and s	nent(s) used in earches only	
Document	<u>Section</u>				
LRS:	All (valve, HPSI, high press 2CV-5036-2, 2CV-5055-1,				
MANUAL SECTION	DNS: <u>6.3</u>				
FIQURES;	7 Table 6.3-1, Table 6.3-3, F	igure 6.3-2			
Stephens	· Num Step	hen J. Lynn	ی	-22-00	
Certified Reviews		Printed Name		Date	
Reviewer's certifi	cation expiration date: 5/26/01				
Assistance provid	led by:				
Printed N Randall S.		Scope of Assistance		Date 4/14/00	
Search 8cape R	eview Acceptability (NA, if perfo	rmed by Technical Revie	wer per 1000.006)		
586	M.	Stare Chandler	5	-25-00	
Certified Reviews	er's Signature	Printed Name	••••	Date	

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ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Docume	ent No.	ER002357E201	Rev./Change No. 0
Complet	te the fo		answer to any item below is "Yes", an Environmental Evaluation is dance.
Will the	Activity	being evaluated:	
<u>Yes</u>	<u>No</u>		
		buildings, creation or ren	nd that initially disturbed during construction (i.e., new construction of noval of ponds, or other terrestrial impact)? See Unit 2 SAR Figure to areas outside the protected area.
	\boxtimes	Increase thermal dischar	ges to lake or atmosphere?
		Increase concentration of tower?	f chemicals to cooling lake or atmosphere through discharge canal or
	\boxtimes	Increase quantity of che tower?	micals to cooling lake or atmosphere through discharge canal or
	\boxtimes	Modify the design or ope	eration of cooling tower which will change drift characteristics?
	\boxtimes	Install any new transmis	sion lines leading offsite?
	\boxtimes	Change the design or op	eration of the intake or discharge structures?
	\boxtimes	Discharges any chemica	ls new or different from that previously discharged?
	\boxtimes	Potentially cause a spill water or ground water?	or unevaluated discharge which may effect neighboring soils, surface
	\boxtimes	Involve burying or place surface water or ground	ment of any solid wastes in the site area which may effect runoff, water?
	\boxtimes	Involve incineration or o	isposal of any potentially hazardous materials on the ANO site?
	\boxtimes	Result in a change to no	onradiological effluents or licensed reactor power level?
	\boxtimes	Potentially change the t	ype or increase the amount of non-radiological air emissions from the

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FOF	RN TO SUB	10CFR50.59 F	REVISION		FORM NO. 1000.131D	REV. 003-04-0
					This Document cont	ains 1 Page.
Doc	cument No.	ER002357E201	Rev./Change No.	1	10CFR50.59 Eval. No	FFN#00-057
					Revision No.	1
Eva	luation after	pe used to document Rev PSC review may becom 6.2.4 of this procedure f	e necessary due to SR			
Rea	son for revi	sion to 10CFR50.59 Eval	uation:			
E20 hard info	8 are now of dface materi rmation prov	informed by the supplier only available in a materialial). ER002357E209 has vided by the supplier. The luation to the new plug m	al designated as NORE been generated to pro is revision to the 50.59	M 02A (NOR vide the docu evaluation is	EM B1 was the previou umentation of equivalen required due to specifications.	sly available cy based on c reference in
Will	the propose	ed revision result in any a	dditional:			
1)	Change t	o the Operating License?			Yes 🗌 No 🛚	
2)	Change t	o other Licensing Basis D	ocument?		Yes 🗌 No 🖾	
3)	Conduct	of test or experiment?			Yes 🗌 No 🖾	
4)	Impact to	the environment?			Yes 🗌 No 🖾	
5)	Need for	a Radiological Safety Eva	aluation?		Yes 🗌 No 🖾	
6)	Impact Ve	entilated Storage Cask A	ctivities		Yes ☐ No 🏻	
7)	Impact th	e QAPM or E-Plan?			Yes 🗌 No 🖾	
If ye	es, describe	below and take appropria	ate action as per initial	Determinatio	n:	
N/A						
pagi exte	e of the fom ensive chang	ns to the 10CFR50.59 Ev n(s). Changes should be ges, new forms may be u s 10CFR50.59 Evaluation	lined through, initialed sed with revision bars i	, dated and ir n the margin	ndicated with the revision	n number. For
Cen	UNION X	ver's Signature	Stephe	n V. Printed N	y nn Iame	8-29-00 Date
Rev	riewer's cert	ification expiration date:	_5/26/0			
PSC	C review:	Bin	-		 Date:	9/21/00
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Synopsis of Modification

Document No. ER002357E201

ER002357E201 replaces the valve plugs of the eight HPSI injection MOV's with an updated design. The existing plug design has exhibited a tendency to become scored when operated during high flow conditions. Once scored. the possibility of galling is heightened. The new plug design differs in two respects from the existing design. The existing stainless steel plug material is replaced with an alloy known as NOREM B1 (also known as NOREM 01). This material, developed by EPRI, is recommended by the valve manufacturer as a replacement plug material for this application. It was developed as a hardfacing material, however, for valve sizes 2" and smaller (the subject valves are 2") the entire plug is constructed of the material. The superior hardness of the new plug material in relation to the stainless steel valve body reduces the possibility of scoring and galling. The new plug design is also shaped differently from the existing plug. The new plug is what is known as a double taper design. Per the valve manufacturer, the Cv of the valve is not changed by the change in plug shape or material. Testing performed by ANO personnel at the Wyle test facilities has confirmed the superior performance offered by the new plug design in terms of resistance to scoring and reduced valve factor. or by NOREM OZA

Another facet of the change is the chamfering of the edge of the outlet port. The damage seen previously has been concentrated in the outlet port area and is believed to be the result of the plug passing the existing sharp edges of the outlet port and in essence being scraped by that sharp edge.

Finally, the valve bodies will be honed (if needed) prior to installation of the new plugs. This will further reduce the possibility of future scoring.

Post modification testing will include applicable MOV testing, system flow verification and stroke timing. However, if the associated manual valves used for flow balancing are required for isolation or are otherwise disturbed, a workplan to rebalance system flows may be required.

Design Basis

Replace of the system is accomplished by throttling of the manual valve associated with each injection MOV. The new plug design will not alter the flow characteristics of the balanced system because the injection MOV's are opened fully and plug shape of the MOV's is not a controlling factor. The NOREM B1 material is compatible with radioactive fluid contact and contains <0.1% by weight of cobalt. This material has been previously evaluated and found acceptable for use at ANO (Reference Specification ANO-M-2456). This change is intended only to replace an existing valve component with a more suitable design. No risk is added by virtue of this modification.

The change will cause one aspect of the SAR to no longer be true in that the SAR states that all SIS components in contact with the radioactive coolant are austenitic stainless steel except for valve seats. Since the entire plug

Answers Form 1000.131B Questions

Question 1 Response: HPSI system component failure is not credited with initiating any of the previously evaluated accidents in the SAR. The valves will remain normally closed and will open in response to a safequards actuation as before. Replacement of the injection MOV plugs with an updated design does not therefore increase the probability of an accident previously evaluated in the SAR.

Question 2 Response: The replacement valve plugs will provide the same component function as the existing plugs. The change in material and shape of the plugs will also not affect HPSI system functional performance, i.e., flow capacity and isolation capability are unaffected. Therefore, the consequences of an accident previously ER002357E202 ER 002357 evaluated in the SAR is not increased.

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Question 3 Response: The replacement plugs are constructed to the same Code requirements and ANO design specification as the existing plugs and will serve identical functions. The conditions under which any associated system equipment operates is unchanged. Therefore, the probability of the malfunction of equipment important to safety is not increased.

Question 4 Response: No change in HPSI system configuration or functional capabilities is introduced by this change. The consequence of failure of the new valve plug design is identical to that which would have previously been experienced. Therefore, the consequences of a malfunction of equipment important to safety are unchanged.

Question 5 Response: The change in valve plug design does not affect HPSI system operation or configuration or its interface with other plant systems. It is therefore not credible that an accident of a different type than any previously evaluated in the SAR would be created.

Question 6 Response: No change in HPSI system capabilities or performance is introduced by this change. The new plug design is subject to the same Code requirements and ANO design specification stipulations as the existing plugs and will serve identical functions. No malfunction of equipment important to safety of a different type than previously evaluated in the SAR will be created.

Question 7 Response: The performance capabilities of the HPSI system or any of its components are unaffected by the change of injection MOV plug design. Because the HPSI system and component performance is unaffected, the margin of safety defined in the basis for any technical specification will not be reduced.

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			This Do	cument contains 3 Pages.
Docui	ment No.	ER002357E201	Rev./Change No. 0	
Title		HPSI Injection Valve Plug Design Chang	e	
Brief	description	of proposed change:		
The 1/50 are	change is 016-2/5035 of a differency	the replacement of the valve plugs in the -1/5036-2/5055-1/5056-2/5075-1/5076-2, went material and shape than the existing plums previously encountered. The change and also to reduce the potential for future so	vith plugs of a different des ugs. The plugs are being r ilso includes the chamferin	sign. The replacement plugs eplaced in order to alleviate
Will t	he propose	ed Activity:		
1.	Require a	change to the Operating License including	j :	
	Technical	Specifications (excluding the bases)?		Yes⊡ No⊠
	Operating	License?		Yes⊡ No⊠
	Confirma	ory Orders?		Yes⊡ No⊠
2.	Result in (a) no lon	information in the following SAR documen ger true or accurate, or (b) violate a requir	ts (including drawings and ement stated in the docum	text) being ent:
	SAR (mu	ti-volume set for each unit)?		Yes⊠ No□
	Core Ope	rating Limits Report?		Yes⊡ No⊠
	Fire Haza	ords Analysis?		Yes□ No⊠
	Bases of	the Technical Specifications?		Yes□ No⊠
	Technica	Requirements Manual?		Yes□ No⊠
	NRC Saf	ety Evaluation Reports?		Yes□ No⊠
3.		test or experiment not described in the SA Attachment 2 for guidance)	AR?	Yes⊡ No⊠
4.		a potential impact to the environment? (C etermination of this form.)	omplete Environmental	Yes⊡ No⊠
5.	Result in	the need for a Radiological Safety Evalua	tion per section 6.1.5?	Yes⊡ No⊠
6.	Result in utilized for	any potential impact to the equipment or for Ventilated Storage Cask activities per S	acilities ection 6.1.6?	Yes⊡ No⊠
7.		change under 10CFR50.54 for the followion 6.1.7?	ng SAR documents	
	QAPM?			Yes□ No⊠
	E-Plan?			Yes⊡ No⊠
8.	Does this (NRC SE	s review depend on future NRC approval o R, Relief, etc)? (forward change to PSC p	f other actions? er 6.3.8 or 6.3.9)	ER 00235 7 € 7 0 3 0 × 0

	<u> </u>	ARKANSAS NUCLEAR ONE		Page 2
FORM TITLE:	10CFR50.59 DETERM		FORM NO. 1000.131A	REV. 003-04-0
	TOOT NOU.35 DETERM		1000.1017	Paul I
Document No. ER0	022575201	Rev./Change No	· 0	K40 1
			·	
Basis for Determinat	tion (Questions 1, 2,	& 3):		
Question 1 Respons therefore no change	e: The HPSI injection is required to the ope	n valve plug design is not addro Frating license.	essed in the operating li	cense and
6.3.2.19. Specifical radioactive coolant) material. The entire	ly, these SAR sections are fabricated of austereplacement plugies	n valve plug material is address convey that components of the politic stainless steel, and the vectorstructed of the NOREM B1, to be austenitic stainless steem 1/60	ne SIS (or materials in o valve seats are stellite o material (i.e., no hardfa	contact with r equivalent scing of a lent is affected
	e: No test or experim will consist of existing	ent not described in the SAR in test activities.		
Proposed change appropriate item #	does not require 10C , send LDCR to Licen	FR50.59 Evaluation per Attach sing).	nment 1, Item # (If	checked, note
Search Scope:				
performed on LRS, th	e LRS search index si led hard copies of the	is Documents specified in ques hould be entered under "Section documents shall be reviewed distribute a completed LDCR	on" with the search state (LRS is not verified and	ement(s) used in I searches only
Document	Section			
LRS:	All (valve, HPSI, hi 2CV-5036-2, 2CV-	igh pressure safety Injection, 2 5055-1, 2CV-5056-2, 2CV-507	CV-5015-1, 2CV-5016- 5-1, 2CV-5076-2, stellit	2. 2CV-5035-1, e, cobalt)
MANUAL SECTIONS	: <u>6.3</u>	· ·		
FIQURES:	Table 6.3-1, Table	6.3-3, Figure 6.3-2		
Stinking	um	Stephen J. Lynn		5-22-00
Certified Reviewer's		Printed Name		Date
Reviewer's certification	on expiration date:	5/26/01		
Assistance provided l	by:			
Printed Name Randall S. Smi		Scope of Assistance		Date 4/14/00
Search Scope Revie	w Acceptability (NA	, if performed by Technical Re		
580		Store Chandle	<u>e</u>	5-Z5-00
Certified Reviewer's	Signature	Printed Name	•••	Date

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PAGE 6 REV 0

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

ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Docume	ent No.	ER002357E201 Rev./Change No. 0
		lowing Determination. If the answer to any item below is "Yes", an Environmental Evaluation is ection 6.1.4 for additional guidance.
Will the	Activity t	peing evaluated:
<u>Yes</u>	<u>No</u>	
	\boxtimes	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.
	\boxtimes	Increase thermal discharges to lake or atmosphere?
	\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\tin}\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\tetx{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\tetx{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\texi}\text{\text{\texi}\text{\text{\text{\text{\tetx}\text{\text{\text{\text{\texi}\text{\text{\text{\text{\text{\ti}\text{\text{\texit{\text{\texi}\text{\texit{\text{\text{	Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower?
	\boxtimes	Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower?
	\boxtimes	Modify the design or operation of cooling tower which will change drift characteristics?
	\boxtimes	Install any new transmission lines leading offsite?
	\boxtimes	Change the design or operation of the intake or discharge structures?
	\boxtimes	Discharges any chemicals new or different from that previously discharged?
	\boxtimes	Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water?
	\boxtimes	Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water?
	\boxtimes	Involve incineration or disposal of any potentially hazardous materials on the ANO site?
	\boxtimes	Result in a change to nonradiological effluents or licensed reactor power level?
	\boxtimes	Potentially change the type or increase the amount of non-radiological air emissions from the ANO site.

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FOR	M TITLE: 10CFR50.59 REVISION	FORM NO. 1000.131D	REV. 003-04-0
		This Document conta	ins 1 Page.
Docu	ment No. ER002357E201 Rev./Change No. 1	10CFR50.59 Eval. No	FFNH 00-058
		Revision No.	1
Eval	form is to be used to document Revisions to 10CFR50.59 Evaluations. uation after PSC review may become necessary due to SRC review, char to section 6.2.4 of this procedure for additional guidance.	Revisions to a 10CFR5 anges to the original do	0.59 cument, etc.
Rea	son for revision to 10CFR50.59 Evaluation:		
E208 hard	has been informed by the supplier that the valve plugs ordered in conjugate and only available in a material designated as NOREM 02A (NOR) face material). ER002357E209 has been generated to provide the documation provided by the supplier. This revision to the 50.59 evaluation is original evaluation to the new plug material. No change to the response	EM B1 was the previous Imentation of equivalen required due to specific	sly available cy based on c reference in
Will	the proposed revision result in any additional:		
1)	Change to the Operating License?	Yes 🗌 No 🛚	
2)	Change to other Licensing Basis Document?	Yes 🗌 No 🖾	
3)	Conduct of test or experiment?	Yes 🗌 No 🛭	
4)	Impact to the environment?	Yes ☐ No 🛭	
5)	Need for a Radiological Safety Evaluation?	Yes 🗌 No 🖾	
6)	Impact Ventilated Storage Cask Activities	Yes ☐ No 🛚	
7)	Impact the QAPM or E-Plan?	Yes ☐ No 🏻	
if ye	s, describe below and take appropriate action as per initial Determinatio	n:	
N/A			
pag exte fron Cer	cate revisions to the 10CFR50.59 Evaluation by placing revision number of the form(s). Changes should be lined through, initialed, dated and it ensive changes, new forms may be used with revision bars in the margin of previous 10CFR50.59 Evaluation. Return to the PSC for review.	ndicated with the revision denoting changes. Att	8-29-00 Date
PS	C review:	Date	= <u>Alorloo</u>
	F R	002357E203	

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FORM TITLE: FORM NO. REV.	ARKANSAS NUCLEAF	ONE	Page 1
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10CFR50.59 Review Continuation Page

Rev./Change No. 0

Synopsis of Modification

Document No. ER002357E201

ER002357E201 replaces the valve plugs of the eight HPSI injection MOV's with an updated design. The existing plug design has exhibited a tendency to become scored when operated during high flow conditions. Once scored. the possibility of galling is heightened. The new plug design differs in two respects from the existing design. The existing stainless steel plug material is replaced with an alloy known as NOREM B1 (also known as NOREM 01). This material, developed by EPRI, is recommended by the valve manufacturer as a replacement plug material for this application. It was developed as a hardfacing material, however, for valve sizes 2" and smaller (the subject valves are 2") the entire plug is constructed of the material. The superior hardness of the new plug material in relation to the stainless steel valve body reduces the possibility of scoring and galling. The new plug design is also shaped differently from the existing plug. The new plug is what is known as a double taper design. Per the valve manufacturer, the Cv of the valve is not changed by the change in plug shape or material. Testing performed by ANO personnel at the Wyle test facilities has confirmed the superior performance offered by the new plug design in terms of resistance to scoring and reduced valve factor. Or by NOREM OZA

Another facet of the change is the chamfering of the edge of the outlet port. The damage seen previously has been concentrated in the outlet port area and is believed to be the result of the plug passing the existing sharp edges of the outlet port and in essence being scraped by that sharp edge.

Finally, the valve bodies will be honed (if needed) prior to installation of the new plugs. This will further reduce the possibility of future scoring.

Post modification testing will include applicable MOV testing, system flow verification and stroke timing. However, if the associated manual valves used for flow balancing are required for isolation or are otherwise disturbed, a workplan to rebalance system flows may be required.

Design Basis

Region and NOREM OZA

Flow balance of the system is accomplished by throttling of the manual valve associated with each injection MOV. The new plug design will not alter the flow characteristics of the balanced system because the injection MOV's are opened fully and plug shape of the MOV's is not a controlling factor. The NOREM B1 material is compatible with radioactive fluid contact and contains <0.1% by weight of cobalt. This material has been previously evaluated and found acceptable for use at ANO (Reference Specification ANO-M-2456). This change is intended only to replace an existing valve component with a more suitable design. No risk is added by virtue of this modification.

The change will cause one aspect of the SAR to no longer be true in that the SAR states that all SIS components in contact with the radioactive coolant are austenitic stainless steel except for valve seats. Since the entire plug is of the NOREM B1 alloy (not considered an austenitic stainless steel), an LDCR will be processed to effect a is of the NOREM B1 alloy (not considered fine change to the SAR. Or NOREM OZA 21/00 Rev.)

Answers Form 1000,131B Questions

Question 1 Response: HPSI system component failure is not credited with initiating any of the previously evaluated accidents in the SAR. The valves will remain normally closed and will open in response to a safeguards actuation as before. Replacement of the injection MOV plugs with an updated design does not therefore increase the probability of an accident previously evaluated in the SAR.

Question 2 Response: The replacement valve plugs will provide the same component function as the existing plugs. The change in material and shape of the plugs will also not affect HPSI system functional performance, i.e., flow capacity and isolation capability are unaffected. Therefore, the consequences of an accident previously evaluated in the SAR is not increased.

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ER002357E201

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Question 3 Response: The replacement plugs are constructed to the same Code requirements and ANO design specification as the existing plugs and will serve identical functions. The conditions under which any associated system equipment operates is unchanged. Therefore, the probability of the malfunction of equipment important to safety is not increased.

Question 4 Response: No change in HPSI system configuration or functional capabilities is introduced by this change. The consequence of failure of the new valve plug design is identical to that which would have previously been experienced. Therefore, the consequences of a malfunction of equipment important to safety are unchanged.

Question 5 Response: The change in valve plug design does not affect HPSI system operation or configuration or its interface with other plant systems. It is therefore not credible that an accident of a different type than any previously evaluated in the SAR would be created.

Question 6 Response: No change in HPSI system capabilities or performance is introduced by this change. The new plug design is subject to the same Code requirements and ANO design specification stipulations as the existing plugs and will serve identical functions. No malfunction of equipment important to safety of a different type than previously evaluated in the SAR will be created.

Question 7 Response: The performance capabilities of the HPSI system or any of its components are unaffected by the change of injection MOV plug design. Because the HPSI system and component performance is unaffected, the margin of safety defined in the basis for any technical specification will not be reduced.

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	10CFR50.59 DETERMINATION	1000.131A	003-04-0

		This Documen	This Document contains 3 Pag		
Docu	ment No.	ER002357E201 Rev./Change No. 0			
Title		HPSI Injection Valve Plug Design Change			
Brief	description	n of proposed change:			
1/50 are sco	016-2/5035 of a differe ring proble	the replacement of the valve plugs in the ANO-2 HPSI injection MOV's, tag 5-1/5036-2/5055-1/5056-2/5075-1/5076-2, with plugs of a different design. The ent material and shape than the existing plugs. The plugs are being replaced may be previously encountered. The change also includes the chamfering of the ort, also to reduce the potential for future scoring.	ne replaceme d in order to a	ent plugs alleviate	
Will t	the propose	ed Activity:			
1.	Require a	change to the Operating License including:			
	Technical	Specifications (excluding the bases)?	Yes□	No⊠	
	Operating	License?	Yes[No⊠	
	Confirmat	tory Orders?	Yes[No⊠	
2.		information in the following SAR documents (including drawings and text) be ger true or accurate, or (b) violate a requirement stated in the document:	ing		
	SAR (mul	lti-volume set for each unit)?	Yes⊠	No□	
	Core Ope	erating Limits Report?	Yes□	No⊠	
	Fire Haza	ards Analysis?	Yes□	No⊠	
	Bases of	the Technical Specifications?	Yes□	No⊠	
	Technical	Requirements Manual?	Yes□	No⊠	
	NRC Safe	ety Evaluation Reports?	Yes□	No⊠	
3.		test or experiment not described in the SAR? Attachment 2 for guidance)	Yes.	No⊠	
4.		a potential impact to the environment? (Complete Environmental etermination of this form.)	Yes□	No⊠	
5.	Result in	the need for a Radiological Safety Evaluation per section 6.1.5?	Yes□	No⊠	
6.		any potential impact to the equipment or facilities or Ventilated Storage Cask activities per Section 6.1.6?	Yes□	No⊠	
7.	Involve a per Section	change under 10CFR50.54 for the following SAR documents on 6.1.7?			
	QAPM?		Yes□	No⊠	
	E-Plan?		Yes□	No⊠	
8.	Does this (NRC SE	review depend on future NRC approval of other actions? R, Relief, etc)? (forward change to PSC per 6.3.8 or 6.3.9)	Yes 🗆	No⊠	

Document NoER002357E201	EV. 003-04-0
Document NoER002357E201 Rev./Change No0	
Question 1 Response: The HPSI injection valve plug design is not addressed in the operating license therefore no change is required to the operating license. Question 2 Response: The HPSI injection valve plug material is addressed in SAR Sections 6.3.2.4 6.3.2.19. Specifically, these SAR sections convey that components of the SIS (or materials in contain radioactive coolant) are fabricated of austenitic stainless steel, and the valve seats are stellite or equivaterial. The entire replacement plugie constructed of the NOREM B1, material (i.e., no hardfacing different material) which is set considered to be austenitic stainless steel. No other SAR document by this change. Question 3 Response: No test or experiment not described in the SAR is involved with this change modification testing will consist of existing test activities. Question 3 Response: No test or experiment not described in the SAR is involved with this change modification testing will consist of existing test activities. Proposed change does not require 10CFR50.59 Evaluation per Attachment 1, Item # (If check 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 we benformed on LRS, the LRS search index should be entered under "Section" with the search statement barrentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified and sear ext. not figures or drawings). Attach and distribute a completed LDCR per Section 6.1.2 if LBD circument Section RS: All (valve, HPSI, high pressure safety Injection, 2CV-5015-1, 2CV-5016-2, 2CV-5036-2, 2CV-5036-2, 2CV-5036-2, 2CV-5055-1, 2CV-5075-1, 2CV-5076-2, stellite, cot MANUAL SECTIONS: 6.3 Table 6.3-1, Table 6.3-3, Figure 6.3-2 Stephen J. Lynn Certified Reviewer's Signature Printed Name	(1
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Cuestion 2 Response: The HPSI injection valve plug material is addressed in SAR Sections 6.3.2.4 6.3.2.19. Specifically, these SAR sections convey that components of the SIS (or materials in contar adioactive coolant) are fabricated of austenitic stainless steel, and the valve seats are stellite or equivalent. The entire replacement plugsic fonstructed of the NOREM B1-material (i.e., no hardfacing different material) which is not considered to be austenitic stainless steel. No other SAR document is by this change. Question 3 Response: No test or experiment not described in the SAR is involved with this change. modification testing will consist of existing test activities. Proposed change does not require 10CFR50.59 Evaluation per Attachment 1, Item #, (If check 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 were formed on LRS, the LRS search index should be entered under "Section" with the search statement parentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified and search, not figures or drawings). Attach and distribute a completed LDCR per Section 6.1.2 if LBD crequired. Document Section All (valve, HPSI, high pressure safety Injection, 2CV-5015-1, 2CV-5016-2, 2CV-5036-2, 2CV-5036-2, 2CV-5055-1, 2CV-5075-1, 2CV-5076-2, stellite, cot appropriate in the search statement of the search state	
6.3.2.19. Specifically, these SAR sections convey that components of the SIS (or materials in contar radioactive coolant) are fabricated of austenitic stainless steel, and the valve seats are stellite or equipment of the valve seats are stellite or equipment of the valve seats are stellite or equipment in the entire replacement plugsic constructed of the NOREM B1, material (i.e., no hardfacing different material), which is not considered to be austenitic stainless steel. No other SAR document is by this change. Question 3 Response: No test or experiment not described in the SAR is involved with this change. modification testing will consist of existing test activities. Proposed change does not require 10CFR50.59 Evaluation per Attachment 1, Item # (If check 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 we performed on LRS, the LRS search index should be entered under "Section" with the search statement parentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified and sear text, not figures or drawings). Attach and distribute a completed LDCR per Section 6.1.2 if LBD circument Section LRS: All (valve, HPSI, high pressure safety Injection, 2CV-5015-1, 2CV-5016-2, 2C 2CV-5036-2, 2CV-5055-1, 2CV-5056-2, 2CV-5075-1, 2CV-5076-2, stellite, cot approach and steriling from the content of the c	e and
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List sections reviewed in the Licensing Basis Documents specified in questions 1, 2 and 3. If search we performed on LRS, the LRS search index should be entered under "Section" with the search statement parentheses. Controlled hard copies of the documents shall be reviewed (LRS is not verified and sear text, not figures or drawings). Attach and distribute a completed LDCR per Section 6.1.2 if LBD correquired. Document Section LRS: All (valve, HPSI, high pressure safety Injection, 2CV-5015-1, 2CV-5016-2, 2CV-5036-2, 2CV-5036-2, 2CV-5055-1, 2CV-5056-2, 2CV-5075-1, 2CV-5076-2, stellite, cottendard to the control of the control	ed, note
List sections reviewed in the Licensing Basis Documents specified in questions 1, 2 and 3. If search we be	
All (valve, HPSI, high pressure safety Injection, 2CV-5015-1, 2CV-5016-2, 2C 2CV-5036-2, 2CV-5055-1, 2CV-5056-2, 2CV-5075-1, 2CV-5076-2, stellite, cot MANUAL SECTIONS: 6.3 Table 6.3-1, Table 6.3-3, Figure 6.3-2 Stephen J. Lynn Certified Reviewer's Signature Printed Name	ches only
MANUAL SECTIONS: 6.3 FIGURES: Table 6.3-1, Table 6.3-3, Figure 6.3-2 Stephen J. Lynn Certified Reviewer's Signature Printed Name	√-5035-1
Table 6.3-1, Table 6.3-3, Figure 6.3-2 Stephen J. Lynn Certified Reviewer's Signature Printed Name	<u>uiti</u>
Stephen J. Lynn Stephen J. Lynn Sertified Reviewer's Signature Printed Name	
Certified Reviewer's Signature Printed Name	
Certified Reviewer's Signature Printed Name	2-00
Reviewer's certification expiration date:	Date
Assistance provided by:	
Printed Name Scope of Assistance Randall S. Smith LRS Search 4	
	Date /14/00
Search Scope Review Acreptability (NA, if performed by Technical Reviewer per 1000.006)	
State Character 5- Certified Reviewer's Signature Printed Name	/14/00

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FORM TITLE:		FORM NO.	REV.
1	10CFR50.59 DETERMINATION	1000.131A	003-04-0

ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Docume	nt No.	ER002357E201 Rev./Change No
Complet	e the fo	llowing Determination. If the answer to any item below is "Yes", an Environmental Evaluation is section 6.1.4 for additional guidance.
Will the	Activity	being evaluated:
<u>Yes</u>	<u>No</u>	
	\boxtimes	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.
	\boxtimes	Increase thermal discharges to lake or atmosphere?
		Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower?
	\boxtimes	Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower?
	\boxtimes	Modify the design or operation of cooling tower which will change drift characteristics?
	\boxtimes	Install any new transmission lines leading offsite?
	\boxtimes	Change the design or operation of the intake or discharge structures?
	\boxtimes	Discharges any chemicals new or different from that previously discharged?
	\boxtimes	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?
	\boxtimes	Involve incineration or disposal of any potentially hazardous materials on the ANO site?
	\boxtimes	Result in a change to nonradiological effluents or licensed reactor power level?
	\boxtimes	Potentially change the type or increase the amount of non-radiological air emissions from the

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FOR	RM TITLE:	10CFR50.5	9 REVISION		FORM NO. 1000.131D	REV. 003-04-0
					This Document con	tains 1 Page.
Doc	ument No.	ER002357E201	Rev./Change No.	1	10CFR50.59 Eval. N	o. FFN#00-059
•					Revision No.	1
Eva	luation afte	r PSC review may beco	Revisions to 10CFR50.59 Editions to 10CFR50.5			
Rea	ison for rev	ision to 10CFR50.59 E	valuation:			
Enn Inio	are now o ∴e mater …ation pro	only available in a mate ial). ER002357E209 h vided by the supplier.	er that the valve plugs ord rial designated as NORE! as been generated to prov This revision to the 50.59 material. No change to the	M 02A (NOR ride the doc evaluation is	REM B1 was the previo umentation of equivale s required due to speci	usly available ncy based on ic reference in
Will	the propos	ed revision result in an	y additional:			
1)	Change t	o the Operating Licens	e?		Yes ☐ No 🏻	
2)	Change t	o other Licensing Basi	s Document?		Yes 🗌 No 🛭	
3)	Conduct	of test or experiment?			Yes 🗌 No 🛭	
4)	Impact to	the environment?			Yes 🗌 No 🛭	
5)	Need for	a Radiological Safety I	Evaluation?		Yes 🗌 No 🛭	
6)	Impact V	entilated Storage Cask	Activities		Yes 🗌 No 🛚	
7)	Impact th	e QAPM or E-Plan?			Yes 🗌 No 🛭	
If ye	es, describe	below and take appro	oriate action as per initial (Determinatio	on:	
N/A						
pag exte	e of the fon ensive chan	m(s). Changes should ges, new forms may be s 10 CFR50.59 Evaluat	Evaluation by placing revibe lined through, initialed, a used with revision bars in ion. Return to the PSC for	dated and in the marging review.	ndicated with the revisi	on number. For
Cert	tified Revie	yer's Signature	Tepne	Printed)	ame	Date
Rev	riewer's cert	tification expiration date	=: <u>5/26/01</u>			, 1
PSC	C review:	art 1			Date	: <u> 4/91/00</u>

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10CFR50.59 Review Continuation Page

Rev./Change No. 0

Synopsis of Modification

Document No. ER002357E201

ER002357E201 replaces the valve plugs of the eight HPSI injection MOV's with an updated design. The existing plug design has exhibited a tendency to become scored when operated during high flow conditions. Once scored. the possibility of galling is heightened. The new plug design differs in two respects from the existing design. The existing stainless steel plug material is replaced with an alloy known as NOREM B1 (also known as NOREM 01) This material, developed by EPRI, is recommended by the valve manufacturer as a replacement plug material for this application. It was developed as a hardfacing material, however, for valve sizes 2" and smaller (the subject valves are 2") the entire plug is constructed of the material. The superior hardness of the new plug material in relation to the stainless steel valve body reduces the possibility of scoring and galling. The new plug design is also shaped differently from the existing plug. The new plug is what is known as a double taper design. Per the valve manufacturer, the Cv of the valve is not changed by the change in plug shape or material. Testing performed by ANO personnel at the Wyle test facilities has confirmed the superior performance offered by the new plug design in terms of resistance to scoring and reduced valve factor. Or by NOREM OZA

Another facet of the change is the chamfering of the edge of the outlet port. The damage seen previously has been concentrated in the outlet port area and is believed to be the result of the plug passing the existing sharp edges of the outlet port and in essence being scraped by that sharp edge.

Finally, the valve bodies will be honed (if needed) prior to installation of the new plugs. This will further reduce the possibility of future scoring.

Post modification testing will include applicable MOV testing, system flow verification and stroke timing. However, if the associated manual valves used for flow balancing are required for isolation or are otherwise disturbed, a workplan to rebalance system flows may be required.

Design Basis

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Rev \

Flow balance of the system is accomplished by throttling of the manual valve associated with each injection MOV. The new plug design will not alter the flow characteristics of the balanced system because the injection MOV's are opened fully and plug shape of the MOV's is not a controlling factor. The NOREM B1 material is compatible with radioactive fluid contact and contains <0.1% by weight of cobalt. This material has been provided evaluated and found acceptable for use at ANO (Reference Specification ANO-M-2456). This change is intended only to replace an existing valve component with a more suitable design. No risk is added by virtue of this modification.

The change will cause one aspect of the SAR to no longer be true in that the SAR states that all SIS components in contact with the radioactive coolant are austenitic stainless steel except for valve seats. Since the entire plug is of the NOREM B1 alloy (not considered an austenitic stainless steel), an LDCR will be processed to effect a is of the NOREM B1 alloy (not considered Reschange to the SAR. Or NOREM 02A 811/00 Rev.)

Answers Form 1000.131B Questions

Question 1 Response: HPSI system component failure is not credited with initiating any of the previously evaluated accidents in the SAR. The valves will remain normally closed and will open in response to a safeguards actuation as before. Replacement of the injection MOV plugs with an updated design does not therefore increase the probability of an accident previously evaluated in the SAR.

Question 2 Response: The replacement valve plugs will provide the same component function as the existing plugs. The change in material and shape of the plugs will also not affect HPSI system functional performance, i.e., flow capacity and isolation capability are unaffected. Therefore, the consequences of an accident previously evaluated in the SAR is not increased.

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Question 3 Response: The replacement plugs are constructed to the same Code requirements and ANO design specification as the existing plugs and will serve identical functions. The conditions under which any associated system equipment operates is unchanged. Therefore, the probability of the malfunction of equipment important to safety is not increased.

Question 4 Response: No change in HPSI system configuration or functional capabilities is introduced by this change. The consequence of failure of the new valve plug design is identical to that which would have previously been experienced. Therefore, the consequences of a malfunction of equipment important to safety are unchanged.

Question 5 Response: The change in valve plug design does not affect HPSI system operation or configuration or its interface with other plant systems. It is therefore not credible that an accident of a different type than any previously evaluated in the SAR would be created.

Question 6 Response: No change in HPSI system capabilities or performance is introduced by this change. The new plug design is subject to the same Code requirements and ANO design specification stipulations as the existing plugs and will serve identical functions. No malfunction of equipment important to safety of a different type than previously evaluated in the SAR will be created.

Question 7 Response: The performance capabilities of the HPSI system or any of its components are unaffected by the change of injection MOV plug design. Because the HPSI system and component performance is unaffected, the margin of safety defined in the basis for any technical specification will not be reduced.

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This Document contains 3 Pages

			71113 0	occurrent contains or	ages.
Document No.		ER002357E201 Re	v./Change No. 0		
Title		HPSI Injection Valve Plug Design Change			
Brief	description	of proposed change:			
1/50 are scor	016-2/5035 of a differe ring proble	the replacement of the valve plugs in the ANG-1/5036-2/5055-1/5056-2/5075-1/5076-2, with nt material and shape than the existing plugs as previously encountered. The change also to reduce the potential for future scoring	plugs of a different de The plugs are being includes the chamferi	esign. The replaceme replaced in order to a	nt plugs illeviate
Will t	he propose	d Activity:			
1.	Require a	change to the Operating License including:			
	Technical	Specifications (excluding the bases)?		Yes□	No⊠
	Operating	License?		Yes□	No⊠
	Confirmat	ory Orders?		Yes□	No⊠
2.	Result in i	nformation in the following SAR documents (i ger true or accurate, or (b) violate a requireme	ncluding drawings and ent stated in the docur	d text) being nent:	
	SAR (mul	ti-volume set for each unit)?		Yes⊠	No□
	Core Ope	rating Limits Report?		Yes□	No⊠
	Fire Haza	rds Analysis?		Yes□	No⊠
	Bases of	he Technical Specifications?		Yes□	No⊠
	Technical	Requirements Manual?		Yes[No⊠
	NRC Safe	ty Evaluation Reports?		Yes□	No⊠
3.		test or experiment not described in the SAR? ttachment 2 for guidance)		Yes.	No⊠
4.		a potential impact to the environment? (Competermination of this form.)	lete Environmental	Yes□	No⊠
5.	Result in	he need for a Radiological Safety Evaluation	per section 6.1.5?	Yes.	No⊠
6.		any potential impact to the equipment or facili r Ventilated Storage Cask activities per Section		Yes□	No⊠
7.	Involve a	change under 10CFR50.54 for the following Son 6.1.7?	SAR documents		
	QAPM?			Yes□	No⊠
	E-Plan?			Yes□	No⊠
8.	Does this (NRC SE	review depend on future NRC approval of oth R, Relief, etc)? (forward change to PSC per 6	ner actions? .3.8 or 6.3.9)	FR 002257E3	No⊠

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FORM TITLE:	10CFR50.59 DETERMI		FORM NO. 1000.131A	REV. 003-04-0
				Rev
Document No. ERO	002357E201	Rev./Change No.	0	
Basis for Determina	tion (Questions 1, 2, &	3):		
Question 1 Responsible therefore no change	se: The HPSI injection verse is required to the opera	alve plug design is not address ting license.	sed in the operating li	cense and
6.3.2.19. Specifical radioactive coolant) material. The entire different material),w	ly, these SAR sections c are fabricated of austen replacement plugie cor	alve plug material is addressed onvey that components of the itic stainless steel, and the val- nstructed of the NOREM B1 ma be austenitic stainless steel	SIS (or materials in over seats are stellite over aterial (i.e., no hardfa	ontact with requivalent
Question 3 Respons modification testing	se: No test or experimen will consist of existing te	t not described in the SAR is in stactivities.	nvolved with this char	nge. Post
Proposed change appropriate item #	does not require 10CFR , send LDCR to Licensir	50.59 Evaluation per Attachmog).	ent 1, Item # (If c	checked, note
Search Scope:				
performed on LRS, the parentheses. Control	e LRS search index shou led hard copies of the do	ocuments specified in questio ald be entered under "Section" cuments shall be reviewed (LF tribute a completed LDCR pe	with the search state RS is not verified and	ment(s) used in searches only
Document	Section			
LRS:		pressure safety Injection, 2CV 5-1, 2CV-5056-2, 2CV-5075-1		
MANUAL SECTIONS:	6.3			
FIQURES:	<u>Table 6.3-1, Table 6.3</u>	-3. Figure 6.3-2		
Stinkan		Stephen J. Lynn		C22 02
Certified Reviewer's S	mm Inature	Printed Name		<i>5-22-00</i> Date
Reviewer's certificatio	v n expiration date: <u>5/2</u>	6/01		
Assistance provided b	y:			
Printed Name Randall S. Smitl	LRS Search	Scope of Assistance		Date 4/14/00
	7			
Search & Cope Review	v Acesptability (NA, if p	erformed by Technical Review	•	- 25-00
Certified Reviewer's S	ignature	Printed Name		Date

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1 0,1,	10CFR50.59 DETERMINATION	1000.131A	003-04-0

ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Documen	tNo. E	R002357E201	Rev./Change No0					
Complete	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 A	Will the Activity being evaluated:							
<u>Yes</u>	<u>No</u>							
		Disturb land that is beyond that initial buildings, creation or removal of pond 2.5-17. This applies only to areas our	ly disturbed during construction (i.e., new construction of ds, or other terrestrial impact)? See Unit 2 SAR Figure tside the protected area.					
	\boxtimes	Increase thermal discharges to lake of	or atmosphere?					
		Increase concentration of chemicals tower?	to cooling lake or atmosphere through discharge canal or					
	\boxtimes	Increase quantity of chemicals to coctower?	ling lake or atmosphere through discharge canal or					
	\boxtimes	Modify the design or operation of coo	ling tower which will change drift characteristics?					
	\boxtimes	Install any new transmission lines lea	ding offsite?					
	\boxtimes	Change the design or operation of th	e intake or discharge structures?					
	\boxtimes	Discharges any chemicals new or dif	ferent from that previously discharged?					
	\boxtimes	Potentially cause a spill or unevaluat water or ground water?	ed discharge which may effect neighboring soils, surface					
	\boxtimes	Involve burying or placement of any surface water or ground water?	solid wastes in the site area which may effect runoff,					
	\boxtimes	Involve incineration or disposal of an	y potentially hazardous materials on the ANO site?					
	\boxtimes	Result in a change to nonradiologica	l effluents or licensed reactor power level?					
	\boxtimes	Potentially change the type or increa	se the amount of non-radiological air emissions from the					

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FOR	M TITLE:	10CFR50.59	REVISION		FORM NO. 1000.131D	REV. 003-04-0	
					This Document conta	nins 1 Page.	
Docu	ument No.	ER002357E201	Rev./Change No.	1	10CFR50.59 Eval. No.	FFN#00-06	
•					Revision No.	1	
Eval	uation after	pe used to document Re PSC review may becon 6.2.4 of this procedure	ne necessary due to SR	C review, ch	Revisions to a 10CFR5 anges to the original doo	0.59 cument, etc.	
Reas	son for revis	sion to 10CFR50.59 Eva	iluation:				
E208 hard: infor	8 are now o face materi mation prov	nly available in a materi al). ER002357E209 has vided by the supplier. The	al designated as NORE s been generated to pro his revision to the 50.59	M 02A (NOR vide the doci evaluation is	unction with ER002357EREM B1 was the previous umentation of equivalents required due to specific for Questions 1 through	sly available cy based on c reference in	
Will 1	the propose	ed revision result in any	additional:				
1)	Change to the Operating License?				Yes 🗌 No 🛭		
2)	Change to other Licensing Basis Document?				Yes ☐ No 🏻		
3)	Conduct	of test or experiment?			Yes ☐ No 🏻		
4)	Impact to	the environment?			Yes 🗌 No 🖾		
5)	Need for	a Radiological Safety Ev	valuation?		Yes 🗌 No 🖾		
6)	Impact Ve	entilated Storage Cask A	Activities		Yes 🗌 No 🖾		
7)	impact th	e QAPM or E-Plan?			Yes 🗌 No 🛚		
If ye	s, describe	below and take appropr	riate action as per initial	Determination	on:		
N/A							
page exte (pn) Cert	e of the formensive chan- t of previou United Review	m(s) Changes should b	pe lined through, initialed used with revision bars on. Return to the PSC f	d, dated and in the marging or review.	r at the top right hand coindicated with the revision denoting changes. Atta	on number. For	
	review:	JR 14-			 Date	: 9/21/00	
, 34				E D	002357E205		

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		lev. 1

10CFR50.59 Review Continuation Page

Rev./Change No. 0

Synopsis of Modification

Document No. ER002357E201

ER002357E201 replaces the valve plugs of the eight HPSI injection MOV's with an updated design. The existing plug design has exhibited a tendency to become scored when operated during high flow conditions. Once scored. the possibility of galling is heightened. The new plug design differs in two respects from the existing design. The existing stainless steel plug material is replaced with an alloy known as NOREM B1 (also known as NOREM 01). This material, developed by EPRI, is recommended by the valve manufacturer as a replacement plug material for this application. It was developed as a hardfacing material, however, for valve sizes 2" and smaller (the subject valves are 2") the entire plug is constructed of the material. The superior hardness of the new plug material in relation to the stainless steel valve body reduces the possibility of scoring and galling. The new plug design is also shaped differently from the existing plug. The new plug is what is known as a double taper design. Per the valve manufacturer, the Cv of the valve is not changed by the change in plug shape or material. Testing performed by ANO personnel at the Wyle test facilities has confirmed the superior performance offered by the new plug design in terms of resistance to scoring and reduced valve factor. Or by NOREM OZA

Another facet of the change is the chamfering of the edge of the outlet port. The damage seen previously has been concentrated in the outlet port area and is believed to be the result of the plug passing the existing sharp edges of the outlet port and in essence being scraped by that sharp edge.

Finally, the valve bodies will be honed (if needed) prior to installation of the new plugs. This will further reduce the possibility of future scoring.

Post modification testing will include applicable MOV testing, system flow verification and stroke timing. However, if the associated manual valves used for flow balancing are required for isolation or are otherwise disturbed, a workplan to rebalance system flows may be required.

Design Basis

REPLATION DESIGN BASIS

Flow balance of the system is accomplished by throttling of the manual valve associated with each injection MOV. The new plug design will not alter the flow characteristics of the balanced system because the injection MOV's are opened fully and plug shape of the MOV's is not a controlling factor. The NOREM B1 material is compatible with radioactive fluid contact and contains <0.1% by weight of cobalt. This material has been previously evaluated and found acceptable for use at ANO (Reference Specification ANO-M-2456). This change is intended only to replace an existing valve component with a more suitable design. No risk is added by virtue of this modification.

The change will cause one aspect of the SAR to no longer be true in that the SAR states that all SIS components in contact with the radioactive coolant are austenitic stainless steel except for valve seats. Since the entire plug is of the NOREM B1 alloy (not considered an austenitic stainless steel), an LDCR will be processed to effect a change to the SAR. Or NOREM O2A 21/00 Pev.

Answers Form 1000,131B Questions

Question 1 Response: HPSI system component failure is not credited with initiating any of the previously evaluated accidents in the SAR. The valves will remain normally closed and will open in response to a safeguards actuation as before. Replacement of the injection MOV plugs with an updated design does not therefore increase the probability of an accident previously evaluated in the SAR.

Question 2 Response: The replacement valve plugs will provide the same component function as the existing plugs. The change in material and shape of the plugs will also not affect HPSI system functional performance, i.e., flow capacity and isolation capability are unaffected. Therefore, the consequences of an accident previously evaluated in the SAR is not increased.

ER002357E205

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Question 3 Response: The replacement plugs are constructed to the same Code requirements and ANO design specification as the existing plugs and will serve identical functions. The conditions under which any associated system equipment operates is unchanged. Therefore, the probability of the malfunction of equipment important to safety is not increased.

Question 4 Response: No change in HPSI system configuration or functional capabilities is introduced by this change. The consequence of failure of the new valve plug design is identical to that which would have previously been experienced. Therefore, the consequences of a malfunction of equipment important to safety are unchanged.

Question 5 Response: The change in valve plug design does not affect HPSI system operation or configuration or its interface with other plant systems. It is therefore not credible that an accident of a different type than any previously evaluated in the SAR would be created.

Question 6 Response: No change in HPSI system capabilities or performance is introduced by this change. The new plug design is subject to the same Code requirements and ANO design specification stipulations as the existing plugs and will serve identical functions. No malfunction of equipment important to safety of a different type than previously evaluated in the SAR will be created.

Question 7 Response: The performance capabilities of the HPSI system or any of its components are unaffected by the change of injection MOV plug design. Because the HPSI system and component performance is unaffected, the margin of safety defined in the basis for any technical specification will not be reduced.

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

			-	This Document con	tains 3 Pages.
Docu	ment No.	ER002357E201	Rev./Change No.	0	
Title		HPSI Injection Valve Plug Design C	hange		
Brief	description	of proposed change:			
The 1/50 are scor	change is 016-2/5035 of a differenting proble	the replacement of the valve plugs in 1/5036-2/5055-1/5056-2/5075-1/5076 ent material and shape than the existims previously encountered. The chart, also to reduce the potential for future.	5-2, with plugs of a differ ng plugs. The plugs are nge also includes the cha	ent design. The re being replaced in o	placement plug order to alleviate
Will t	he propose	ed Activity:			
1.	Require a	change to the Operating License inc	luding:		
	Technica	Specifications (excluding the bases)	?		Yes⊡ No⊠
	Operating	; License?			Yes□ No⊠
	Confirma	tory Orders?			Yes□ No⊠
2.	Result in (a) no lor	information in the following SAR docuger true or accurate, or (b) violate a r	ıments (including drawin equirement stated in the	gs and text) being document:	
	SAR (mu	lti-volume set for each unit)?			Yes⊠ No□
	Core Ope	erating Limits Report?			Yes□ No⊠
	Fire Haza	ards Analysis?			Yes□ No⊠
	Bases of	the Technical Specifications?			Yes□ No⊠
	Technica	I Requirements Manual?			Yes□ No⊠
	NRC Saf	ety Evaluation Reports?			Yes□ No⊠
3.		i test or experiment not described in t Attachment 2 for guidance)	ne SAR?		Yes⊡ No⊠
4.	Result in Impact D	a potential impact to the environmen etermination of this form.)	t? (Complete Environme	ntal	Yes□ No⊠
5.	Result in	the need for a Radiological Safety E	valuation per section 6.1	.5?	Yes□ No⊠
6.	Result in utilized f	any potential impact to the equipmer or Ventilated Storage Cask activities	nt or facilities per Section 6.1.6?		Yes□ No⊠
7.		a change under 10CFR50.54 for the food on 6.1.7?	ollowing SAR documents		
	QAPM?				Yes□ No⊠
	E-Plan?				Yes□ No⊠
8.	Does thi (NRC SE	s review depend on future NRC appro ER, Relief, etc)? (forward change to F	oval of other actions? SC per 6.3.8 or 6.3.9)	ER 00	Yes□ No⊠ 2357E206

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FORM TITLE:	ARKANSA	S NUCLEAR ONE	FORM NO.	Page 2 REV.	
•	10CFR50.59 DETERMINATION		1000.131A	003-04-0	
				Rev	
Document No. ER00	02357E201	Rev./Change No.	0		
Basis for Determinat	ion (Questions 1, 2, & 3):				
	e: The HPSI injection valve pluging is required to the operating licer		sed in the operating lice	ense and	
6.3.2.19. Specifically radioactive coolant) a material. The entire different material), who will be seen to be	e: The HPSI injection valve plugy, these SAR sections convey the are fabricated of austenitic stain replacement plugsie constructed nich is not considered to be aust neither of Rev 1	nat components of the less steel, and the val- l of the NOREM B1 ma enitic stainless steel)	SIS (or materials in converse seats are stellite or eaterial (i.e., no hardfaci	ntact with equivalent ng of a nt is affected	
Question 3 Response: No test or experiment not described in the SAR is involved with this change. Post modification testing will consist of existing test activities.					
	does not require 10CFR50.59 E	valuation per Attachm	ent 1, Item # (If ch	ecked, note	
Search Scope:					
performed on LRS, the parentheses. Controlle	in the Licensing Basis Documer E LRS search index should be er ed hard copies of the documents wings). Attach and distribute a	ntered under "Section" s shall be reviewed (LF	with the search statem RS is not verified and s	ent(s) used in earches only	
Document	Section				
LRS:	All (valve, HPSI, high pressure 2CV-5036-2, 2CV-5055-1, 2CV				
MANUAL SECTIONS:	6.3				
FIQURES:	Table 6.3-1, Table 6.3-3, Figur	re 6.3-2			
tinka				-22-00	
Certified Reviewer's S		1 J. Lynn Printed Name		Date	
Reviewer's certification	V n expiration date: <u>5/26/01</u>				
Assistance provided by	/ :				
Printed Name Randall S. Smith		ope of Assistance		Date 4/14/00	
Search Scope Review	v Acesptability (NA, if performe	ed by Technical Review	wer per 1000.006)		
58 (1		The Chambles	.5-	-25-00	
Certified Reviewer's Si	ignature	Printed Name		Date	

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	ARKANSAS NUCLEAR ONE		Page 3
FORM TITLE:		FORM NO.	REV.
	10CFR50.59 DETERMINATION	1000.131A	003-04-0

ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Documei	nt No.	ER002357E201 Rev./Change No. 0
		ellowing Determination. If the answer to any item below is "Yes", an Environmental Evaluation is Section 6.1.4 for additional guidance.
Will the	Activity	being evaluated:
<u>Yes</u>	No	
	\boxtimes	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.
	\boxtimes	Increase thermal discharges to lake or atmosphere?
		Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower?
	\boxtimes	Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower?
	\boxtimes	Modify the design or operation of cooling tower which will change drift characteristics?
	\boxtimes	Install any new transmission lines leading offsite?
	\boxtimes	Change the design or operation of the intake or discharge structures?
	\boxtimes	Discharges any chemicals new or different from that previously discharged?
	\boxtimes	Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water?
	\boxtimes	Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water?
	\boxtimes	Involve incineration or disposal of any potentially hazardous materials on the ANO site?
	\boxtimes	Result in a change to nonradiological effluents or licensed reactor power level?
	\boxtimes	Potentially change the type or increase the amount of non-radiological air emissions from the ANO site.

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FOR	M TITLE:	10CFR50.5	9 REVISION		FORM NO. 1000.131D	REV. 003-04-0
	<u> </u>				This Document conta	ins 1 Page.
Docu	ument No.	ER002357E201	Rev./Change No.	1	10CFR50.59 Eval. No.	FFN#00-06
					Revision No.	1
Eval	uation after	PSC review may become	Revisions to 10CFR50.59 ome necessary due to SF e for additional guidance.	RC review, cha		
Reas	son for revi	sion to 10CFR50.59 E	valuation:			
E208 hard: infon	8 are now o face materi mation prov	nly available in a mate al). ER002357E209 h rided by the supplier.	er that the valve plugs orderial designated as NORE as been generated to proof this revision to the 50.59 material. No change to	M 02A (NORE ovide the docu evaluation is	EM B1 was the previous mentation of equivalenc required due to specific	ly available by based on reference in
₩ill t	the propose	d revision result in an	y additional:			
1)	Change to	the Operating Licens	e?		Yes 🗌 No 🛚	
2)	Change to	o other Licensing Basis	s Document?		Yes 🗌 No 🖾	
3)	Conduct	of test or experiment?			Yes 🗌 No 🖾	
4)	Impact to	the environment?			Yes 🗌 No 🛛	
5)	Need for	a Radiological Safety E	Evaluation?		Yes 🗌 No 🛛	
6)	Impact Ve	entilated Storage Cask	Activities		Yes 🗌 No 🛭	
7)	Impact the	e QAPM or E-Plan?			Yes ☐ No 🏻	
If yes	s, describe	below and take approp	oriate action as per initial	Determination	n:	
N/A						
page exter nont Certi	e of the form nsive chang of previous MACA ified Review	n(s). Changes should les, new forms may be	Evaluation by placing revibe lined through, initialed a used with revision bars ion. Return to the PSC for the PSC	, dated and in in the margin o	dicated with the revision denoting changes. Attac	number. For
PSC	review:		when I		Date:	7/3/160
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FORM TITLE: 10CFR50.59 REVIEW CONTINUATION	INSAS NUCLEAR ONE	FORM NO. 1000.131C	Page 1 REV. 003-04-0
			lev. 1
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10CFR50.59 Review Continuation Page

Synopsis of Modification

FR002357E201 replaces the valve plugs of the eight HPSI injection MOV's with an updated design. The existing plug design has exhibited a tendency to become scored when operated during high flow conditions. Once scored. the possibility of galling is heightened. The new plug design differs in two respects from the existing design. The existing stainless steel plug material is replaced with an alloy known as NOREM B1 (also known as NOREM 01). € This material, developed by EPRI, is recommended by the valve manufacturer as a replacement plug material for this application. It was developed as a hardfacing material, however, for valve sizes 2" and smaller (the subject valves are 2") the entire plug is constructed of the material. The superior hardness of the new plug material in relation to the stainless steel valve body reduces the possibility of scoring and galling. The new plug design is also shaped differently from the existing plug. The new plug is what is known as a double taper design. Per the valve manufacturer, the Cv of the valve is not changed by the change in plug shape or material. Testing performed by ANO personnel at the Wyle test facilities has confirmed the superior performance offered by the new plug design in terms of resistance to scoring and reduced valve factor. Or by NOREM OZA

Another facet of the change is the chamfering of the edge of the outlet port. The damage seen previously has been concentrated in the outlet port area and is believed to be the result of the plug passing the existing sharp edges of the outlet port and in essence being scraped by that sharp edge.

Finally, the valve bodies will be honed (if needed) prior to installation of the new plugs. This will further reduce the possibility of future scoring.

Post modification testing will include applicable MOV testing, system flow verification and stroke timing. However, if the associated manual valves used for flow balancing are required for isolation or are otherwise disturbed, a workplan to rebalance system flows may be required.

Design Basis

Refiled and NOREM OZA

Flow balance of the system is accomplished by throttling of the manual valve associated with each injection MOV. The new plug design will not alter the flow characteristics of the balanced system because the injection MOV's are opened fully and plug shape of the MOV's is not a controlling factor. The NOREM B1 material is compatible with radioactive fluid contact and contains <0.1% by weight of cobalt. This material has been previously evaluated and found acceptable for use at ANO (Reference Specification ANO-M-2456). This change is intended only to replace an existing valve component with a more suitable design. No risk is added by virtue of this modification.

The change will cause one aspect of the SAR to no longer be true in that the SAR states that all SIS components in contact with the radioactive coolant are austenitic stainless steel except for valve seats. Since the entire plug is of the NOREM B1 alloy (not considered an austenitic stainless steel), an LDCR will be processed to effect a change to the SAR. Or NOREM OZA 21/00 Rev.

Answers Form 1000,131B Questions

Question 1 Response: HPSI system component failure is not credited with initiating any of the previously evaluated accidents in the SAR. The valves will remain normally closed and will open in response to a safeguards actuation as before. Replacement of the injection MOV plugs with an updated design does not therefore increase the probability of an accident previously evaluated in the SAR.

Question 2 Response: The replacement valve plugs will provide the same component function as the existing plugs. The change in material and shape of the plugs will also not affect HPSI system functional performance, i.e., flow capacity and isolation capability are unaffected. Therefore, the consequences of an accident previously evaluated in the SAR is not increased.

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Question 3 Response: The replacement plugs are constructed to the same Code requirements and ANO design specification as the existing plugs and will serve identical functions. The conditions under which any associated system equipment operates is unchanged. Therefore, the probability of the malfunction of equipment important to safety is not increased.

Question 4 Response: No change in HPSI system configuration or functional capabilities is introduced by this change. The consequence of failure of the new valve plug design is identical to that which would have previously been experienced. Therefore, the consequences of a malfunction of equipment important to safety are unchanged.

Question 5 Response: The change in valve plug design does not affect HPSI system operation or configuration or its interface with other plant systems. It is therefore not credible that an accident of a different type than any previously evaluated in the SAR would be created.

Question 6 Response: No change in HPSI system capabilities or performance is introduced by this change. The new plug design is subject to the same Code requirements and ANO design specification stipulations as the existing plugs and will serve identical functions. No malfunction of equipment important to safety of a different type than previously evaluated in the SAR will be created.

Question 7 Response: The performance capabilities of the HPSI system or any of its components are unaffected by the change of injection MOV plug design. Because the HPSI system and component performance is unaffected, the margin of safety defined in the basis for any technical specification will not be reduced.

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EARLY TITLE		FORM NO	DEM
FORM TITLE:		FORM NO.	REV.
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This Document contains 3 Pages.

Docui	ment No.	ER2686E201	Rev./Change No.				
Title		Installing caps on the Safety Injection Tank Vents, T-ALT 00-2-008					
Con Per	dition Rep CA-8, this	configuration is a Temp Alt.	s installation of caps on the Safety Injection T T-Alt 00-2-008 was generated for installing c ing documents for the T-ALT.				
\Will t	he propose	d Activity					
1.		change to the Operating Lic	cense includina:				
••	•	Specifications (excluding th	-	Yes⊡ No X			
	Operating		,	— Yes⊡ No X			
	Confirmat	ory Orders?		Yes⊡ No X			
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:			being				
	SAR (mul	ti-volume set for each unit)?		Yes X No□			
	Core Ope	rating Limits Report?		Yes⊟ No X			
	Fire Haza	rds Analysis?		Yes⊡ No X			
	Bases of	the Technical Specifications	?	Yes⊡ No X			
	Technical	Requirements Manual?		Yes⊡ No X			
	NRC Safe	ety Evaluation Reports?		Yes⊡ No X			
3.		test or experiment not descr ttachment 2 for guidance)	ribed in the SAR?	Yes⊡ No X			
4.		a potential impact to the envetermination of this form.)	vironment? (Complete Environmental	Yes⊡ No X			
5.	Result in	the need for a Radiological	Safety Evaluation per section 6.1.5?	Yes⊡ No X			
6.		any potential impact to the ϵ r Ventilated Storage Cask a		Yes⊡ No X			
7.	Involve a per Section		for the following SAR documents				
	QAPM?			Yes⊡ No X			
	E-Plan?			Yes⊡ No X			
8.			RC approval of other actions? unge to PSC per 6.3.8 or 6.3.9)	Yes□ No X			

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FORM TITLE:	10CFR50.59 DETER	RMINATION	1000.131A	REV. 003-04-0
Document No.	ER002686E201	Rev./Change No.		
Basis for Dete	rmination (Questions 1, 2	2, & 3):		
orders for the Q2. A search 6.3-2 will need Q3. This ER	SITS vents. I was done on LRS of the d I to be changed to show th does not create a test. A s	rating License discuss venting the locuments listed in Q2 and the onleat the caps can be either installed search was done on LRS of the do lated to this ER. Attachment 2 was	y change will be to the or removed. cuments listed in Q2,	e SAR. Figure
	change does not require 10 e item #, send LDCR to Lice	CFR50.59 Evaluation per Attachn ensing).	nent 1, Item #, (If	checked, note
Search Scope	:			
performed on L parentheses.	RS, the LRS search index Controlled hard copies of th	asis Documents specified in questi s should be entered under "Section ne documents shall be reviewed (L d distribute a completed LDCR	" with the search stat .RS is not verified an	ement(s) used in disearches only
<u>Document</u>	<u>Section</u>			
LRS: Searche	d on SIT, 2SV-5006, 2SV-5	5026, 2SV-5046, 2SV-5066, Vent	and Safety Injection	Tank.
MANUAL SEC	TIONS: All SAR Figures			
FIGURES: All	01			
- Mary		Keith Perkins		7-29-2000
Certified Revie	ewer's Signature	Printed Name		Date
Reviewer's cer	rtification expiration date:	7-31-2001		
Assistance pro	ovided by:			
Printed	i Name	Scope of Assistance		Date
Search Scope	e Review Acceptability (N	IA, if performed by Technical Rev	iewer per 1000.006)	· · · · · · · · · · · · · · · · · · ·
Rill	1	Bill Greesum	ŕ	7-30-00
Certified Revi	ewer's Signature	Printed Name		Date

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•	DETERMINATION	1000.131A	003-04-0

ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Docume	nt No.	ER002686E201 Rev./Change No
Complet required	te the fo	ollowing Determination. If the answer to any item below is "Yes", an Environmental Evaluation is Section 6.1.4 for additional guidance.
Will the	Activity	being evaluated:
<u>Yes</u>	<u>No</u>	
	X	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.
	X	Increase thermal discharges to lake or atmosphere?
	X	Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower?
	X	Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower?
	X	Modify the design or operation of cooling tower which will change drift characteristics?
	X	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?
	Х	Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water?
	X	Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water?
	X	Involve incineration or disposal of any potentially hazardous materials on the ANO site?
	X	Result in a change to nonradiological effluents or licensed reactor power level?
	X	Potentially change the type or increase the amount of non-radiological air emissions from the ANO site.

	01 / T-ALT 00-2-008	ARKANSAS NUCLEAR ONE	FORM NO	Page 1 REV.
FORM TIT	10CFR50.59 SAFETY	EVALUATION	FORM NO. 1000.131B	003-04-0
			This Document cont	ains 1 Page.
Document	No. <u>ER002686E201</u>	Rev./Change No.	10CFR50.59 Eval. N (Assigned by PS0	
Title <u>Ins</u>	talling Caps on SIT Vents			
ATTACHE	D. EACH QUESTION MUST B	HE BASIS FOR THE ANSWER TO BE ANSWERED SEPARATELY. A TACHMENT 2 PROVIDES GUIDA	SIMPLE STATEMEN	TOF
		is "Yes," then an unreviewed safety change does not involve an unrevi		
	Will the probability of an accide increased?	nt previously evaluated in the SAR	be Yes 🗌 I	No X
2.	Will the consequences of an ac be increased?	cident previously evaluated in the S	SAR Yes 🗌 I	No X
3.	Will the probability of a malfund be increased?	ction of equipment important to safe	ety Yes 🗌 📗	No X
4.	Will the consequences of a mal safety be increased?	function of equipment important to	Yes 🗌 🔝	No X
5.	Will the possibility of an accider evaluated in the SAR be create	nt of a different type than any previ d?	ously Yes 🗌 🗆	No X
6.	Will the possibility of a malfunc a different type than any previo	tion of equipment important to safe usly evaluated in the SAR be creat	ty of Yes □ led?	No X
7.	Will the margin of safety as def specification be reduced?	ined in the basis for any technical	Yes 🗌	No X
	///			
W.	Joseph	Keith Perkins		7-29-2000
Cer	tified Reviewer's Signature	Printed Name		Date
Reviewer	's certification expiration date:	7-31-2001		
Assistanc	e provided by:			
Pi	rinted Name	Scope of Assistance		Date

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Date: 3/3/00

10CFR50.59 Safety Evaluation for ER002686E201 / T-ALT 00-2-008 Questions and written answers

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

The answer is NO.

The SAR does not credit the SIT vent valves as an accident initiator. Therefore, capping the vent line down stream of a SIT vent valve does not add a multiplier to the probabilities for analyzed accidents. Therefore, the probability of an accident is not increased.

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

The answer is NO.

Capping a vent line will not prevent a SIT from performing its function. The SIT will still re-flood the core as designed. Since each SIT will perform its function, core damage evaluations for evaluated accidents will not be increased. Since core damage is not increased, the consequences (offsite release) of an accident are not increased.

The vents can be used to reduce SIT pressure during the cool-down and depressurization phases of a small break LOCA. This prevents the SITs from "dumping" into the RCS. This can also be accomplished by closing the SIT outlet MOV. The EOPs have steps instructing Operations to close the SIT outlet MOVs when RCS pressure is less than 700 psia. Those EOP steps have a contingency that prevents Operations from lowering RCS pressure below 230 psia in the event the SIT can not be isolated or vented. This requirement comes from CALC-91-EQ-2001-02, which shows that SIT Nitrogen will not enter the RCS if RCS pressure is maintained above 227 psia. The EOPs currently list this method of SIT isolation. Both methods obtain the same result. This does not prevent delay of cool down of the RCS because shutdown cooling (SDC) entry conditions can be met. Once SDC is conditions are met SDC will be placed in service and the S/G will not be required for decay heat removal. RCS pressure will be maintained above 230 psia until the SITs can be depressurized. Procedure 2104.001, "SIT OPS", provides three methods for depressurizing the SIT. One method utilizes the SIT vents another method utilizes the SIT N2 add valves and the third method uses the SIT drain to the RWT. SIT drain to the RWT requires off site power.

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The following tables list the power supplies to each of the SIT drain, vent, sample and Nitrogen make-up valves. As can be seen by the table, the power supplies are diverse.

The Vent and N2 add valves are powered from 2D21 which is available during lose of off-site power and an EDG. Operator action can be used open a vent path for use of these valves per 2104.001. The drain valves are powered from red DC but the drains to the RWT and RDT require off-site power of ACC diesel power to operate.

The SIT OPS procedure does not list SIT sample as a means to depressurize a SIT. Approved procedures are in place for sampling a SIT, they have not been specifically applied for the purposes of depressurizing a SIT. It has been listed here because, if needed, the procedure could be changed to provide that option. Once the procedure change is made it would provide another means for OPS to depressurize the SIT with additional power supply options. The SIT sample valves will be powered from either off-site or from an EDG or DC. They are powered from an inverter. The containment isolation valve for the SIT sample is powered from Red DC. As can be seen, there are numerous possibilities for the contingency of failure of a SIT outlet MOV.

Valve	Description	Handswitch	Power
2SV-5006	2T-2A Vent	2HS-5006 on 2C-33	2D21-04 (2C-33 Fuse 6 & 6A)
2SV-5026	2T-2B Vent	2HS-5026 on 2C-33	2D21-04 (2C-33 Fuse 6 & 6A)
2SV-5046	2T-2C Vent	2HS-5046 on 2C-33	2D21-04 (2C-33 Fuse 7 & 7A)
2SV-5066	2T-2D Vent	2HS-5066 on 2C-33	2D21-04 (2C-33 Fuse 7 & 7A)

Valve	Description	Handswitch	Power
2SV-5001-1	2T-2A N2 Drain	2HS-5001 on 2C-17	2D23-01 2C-17 Fuse 22 & 23
2SV-5021-1	2T-2B N2 Drain	2HS-5021 on 2C-17	2D23-01 2C-17 Fuse 22 & 23
2SV-5041-2	2T-2C N2 Drain	2HS-5041 on 2C-16	2D24-01 2C-16 Fuse 5 & 6.
2SV-5061-2b	2T-2D N2 Drain	2HS-5061 on 2C-16	2D24-01 2C-16 Fuse 5 & 6.

Valve	Description	Handswitch	Power
2SV-5005A/B	2T-2A N2 Add	2HS-5005 on 2C-33	2D21-04 (2C-33 Fuse 6 & 6A)
2SV-5025A/B	2T-2B N2 Add	2HS-5025 on 2C-33	2D21-04 (2C-33 Fuse 6 & 6A)
2SV-5045A/B	2T-2C N2 Add	2HS-5045 on 2C-33	2D21-04 (2C-33 Fuse 7 & 7A)
2SV-5065A/b	2T-2D N2 Add	2HS-5065 on 2C-33	2D21-04 (2C-33 Fuse 7 & 7A)

Valve	Description	Handswitch	Power
2CV-5081	SIT drain to RDT	2HS-5081 on 2C-33	2B71-E2
2CV-5082	SIT drain to RWT	2HS-5082 on 2C-33	2B71-E3

Valve	Description	Handswitch	Power
2SV-5872	"A" SIT Penetration Sample Isolation	2HS-5872 on 2C-116	2Y2-30
2SV-5873	"B" SIT Penetration Sample Isolation	2HS-5873 on 2C-116	2Y2-30
2SV-5874	"C" SIT Penetration Sample Isolation	2HS-5874 on 2C-116	2Y2-30
2SV-5875	"D" SIT Penetration Sample Isolation	2HS-5875 on 2C-116	2Y2-30
2SV-5876	SIT Master Sample Isolation	2HS-5876-2 on 2C-16	2D24-01

Generic Letter 91-18 was reviewed for its impact on this safety evaluation and the T-ALT. Per GL 91-18 this condition is a nonconforming condition. Per GL 91-18 the compensatory action its-self must be evaluated to determine if the actions can be taken with in a "reasonable time frame". Since the procedure approved methods listed above do not delay cool down and entry into shutdown cooling, and since depressurization of the RCS can be achieved to reduce SBLOCA leakage, these compensatory actions meet the NRC's evaluation criteria as being within a "reasonable time frame". If necessary a reactor building entry could be make with a days time to vent the SITs. Based on the above discussions, capping the vent lines will not increase the consequences of an accident.

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

The answer is NO.

Capping the vent lines does not interact with plant equipment other than the SIT vents. Installation of the caps will not increase the probability of malfunction of the vents.

The caps will actually reduce the probability of malfunction of the SIT. One component of the probability of SIT failure is inadvertently opening a vent. This would reduce SIT pressure and make the SIT inoperable. By capping the vents this failure mechanism is eliminated which reduces the probability of malfunction of equipment important to safety.

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

The answer is NO.

The capability of the vent lines to vent the SIT is not important to nuclear safety. The capability of the vent valves to maintain N2 gas pressure in the SIT is important to nuclear safety. Capping the vent lines will actually reduce the consequences of a malfunction of the SIT vent valve by preventing the SIT from becoming inoperable due to inadequate over pressure.

Capping the vents will not create a condition such that other components can be affected. The SITs and all other equipment will still perform their design functions. Therefore, the consequences of equipment malfunction will not be increased.

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

The answer is No.

Installation of the caps will not create the potential for a new or different type of accident. All needed aspects of SIT isolation can be accomplished without the use of the vents as discussed in question 2 above. There is no accident that can be initiated by installing the caps on the SIT vents.

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

The answer is NO.

The caps will not impact the operation of equipment other than the SIT and SIT vents. The impact of the SIT system has been evaluated in the SAR therefore; installation of the caps will not create a different type of malfunction that requires evaluation.

Question 7 Will the margin of safety as defined in the bases for any Technical Specification be reduced?

The answer is No.

The Tech Specs Bases do not discuss the use of SIT vents or any actions that require caps on the vent line. Therefore, the margin of safety is not reduced in Tech Spec bases.

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

This Document contains 3 Pages.

ERJBL4EJOI

Document No. Specification ANO-M-2243

Rev./Change No. 0

Title Ventilation Filters for Unit 2

Brief description of proposed change: Revised specification 6600-M-2243 in response to CR-C-1998-0177. Some of the codes and standards that the medium efficiency roughing filters and the high efficiency particulate air, HEPA, filters were originally specified and supplied to have been superceded and or replaced by more current codes and standards. Specification ANO-M-2243 Revision 0 revises 6600-M-2243 Rev. 8 and provides the requirements for purchasing of the medium efficiency roughing filters and HEPA filters for the Aux. Bld. Radwaste Area Exh. Sys., Cont. Purge Exh. Sys., Fuel Handling Radwaste Area Exh. Sys., and Aux. Bld. Ext. Radwaste Area Exh. Sys. to current new and or revised codes and standards by the addition of Attachment 1. The changes in the revised specification do not add to or change the function of the installed filter components being addressed.

vviii t	ne proposed Activity:		
1.	Require a change to the Operating License including: Technical Specifications (excluding the bases)? Operating License? Confirmatory Orders?	Yes Yes Yes	No⊠ No⊠ 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)? Core Operating Limits Report Fire Hazards Analysis? Bases of the Technical Specifications? Technical Requirements Manual? NRC Safety Evaluation Reports?	Yes	No N
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: QAPM? E-Plan?	Yes Yes	No⊠ 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⊠

ARKANSAS NUCLEAR ONE						
FORM TITLE:						
	10CFR50.59 DETE	RMINATION		FORM NO. 1000.131A	REV. 003-04-0	
Document No. Specifi	ication ANO-M-2	243	Rev./Change No.	0	Page 2 of 3	
Basis for Determination	on (Questions 1,	2 & 3):		_		
1.The Ops. Lic. Docs. Revised specification and 2.The SAR (multi-volum sections (9.4.3.1, 9.4.3.) documents were found and therefore these doc 3.The changes in the remedium efficiency rough experiments not describ procedures. Proposed change diappropriate item #, send	therefore these the set) was found 2.3, 9.4.5.2, Table not to be prescrip tuments will not invised specificationing filters and Hibed in the SAR and the set not require 1.	to contain suffice 9.4-3 and 12 tive in sufficien npacted. In address requested filters for indicated does not aution of the contact of th	cient detail concerning cient detail concerning 2.2.2) by LDCR will be t detail concerning the irements for the purch istallation into filter ba norize any equipment	g filters that revision to e required. The remain e changes in the revised hase and supply of repl anks and does not involve operation outside of ap	certain ing SAR d specification acement	
Search Scope: List sections reviewed in performed on LRS, the I parentheses. Controlled text, not figures or drawinequired.	LKS search index thard copies of t	c snould be ente he documents :	ered under "Section" v shall be reviewed (LR	with the search stateme	ent(s) used in	
Document LRS:	handling ventilati accident), (conta w/5 ventilation), (extension w/10	on), (luel w/5 ex on), (hepa filter), inment w/5 exhal (auxiliary w/5 v exhaust), (exten	raust), (Fuel W/5 ventil (prefilter),(roughing filteust), (containment w/5 pentilation), (auxiliary wasion w/10 ventilation)	e 1.52), (cask w/5 drop), lation), (criterion 60), (cri er), (fuel w/10 accident), (ourge), (radwaste w/5 exh l/5 exhaust), (auxiliary w (2VEF-8), (2VFP-10), (2V 1, (2VFF-51), (2VFP-33),	iterion 61), (fuel containment w/5 aust), (radwaste w/10 extension),	
MANUAL SECTIONS: ANO Unit 2 SAR Tech Specs Unit 2	3.1, 6.2.3, 6.5, 15.1.23-1, 15.1.	, 9.1.4.2.10, 9 23-2		2.2, 12.2, 15.1, Table		
FIGURES: ANO Unit 2 SAR		9.4-1, 9.4-2, 10		710.4		
And Nome Certified Reviewer's Sign Reviewer's certification e		06/08/01	avid N. Hamblen Printed Name		23/00 ate	
Assistance provided by: Printed Name N/A		Scop	oe of Assistance	[Date	

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

Certified Reviewer's Signature

WILLIAM E. ROGERS
Printed Name

8/29/00 Date

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

ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Document No. Specification ANO-M-2243

ANO site.

Rev./Change No. 0

required. See Section 6.1.4 for additional guidance.

Complete the following Determination. If the answer to any checklist item is "Yes", an Environmental Evaluation is Will the Activity being evaluated: Yes No Disturb land that is beyond that initially disturbed during construction (i.e., new construction of \square 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. \boxtimes П Increase thermal discharges to lake or atmosphere? Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or 冈 tower? Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or \boxtimes tower? П Modify the design or operation of cooling tower which will change drift characteristics? Ø Install any new transmission lines leading offsite? 冈 図 Change the design or operation of the intake or discharge structures? Discharges any chemicals new or different from that previously discharged? \boxtimes Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface Ø water or ground water? Involve burying or placement of any solid wastes in the site area which may effect runoff, \boxtimes surface water or ground water? 冈 Involve incineration or disposal of any potentially hazardous materials on the ANO site? 冈 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 \boxtimes

	ARKANSAS NUCLEAR ONE	A 1 A 2	
FORM TITLE:	10CFR50.59 EVALUATION	FORM NO. 1000.131B	REV. 003-04-0

This Document contains 3 Pages.

10CFR50.59 Eval. No. FFN# 00-114 (Assigned by PSC)

Document No. ANO-M-2243

Rev./Change No. 0

Title Arkansas Nuclear One Procurement Specification Ventilation Filter Units for Unit 2

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

	increased?	Yes ☐ No 🛛
	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 🛭
N	David N. Hamblen	8/23/00
Certii	fied Reviewer's Signature Printed Name	Date
Revie	ewer's certification expiration date: 06/08/01	•
Assis	tance provided by:	
N/A	Printed Name Scope of Assistance	Date

Document No.	ANO-M-2243	Rev./Change No.	Rev. 0
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10CFR50.59 Evaluation Continuation Page for Safety Evaluation Question Answers

- 1. The changes provided in this specification will not impact any accidents analyzed in the SAR and therefore will not increase the probability of an accident. The medium efficiency roughing filters are not addressed in section 15.0 of the 2SAR however HEPA, filters, and filtration are mentioned in numerous places in the section that apply to the exhaust systems being addressed in this evaluation. The subject exhaust systems are referenced directly or implied in this accident sections to include 15.1.5.2.1.2 concerning filtering of condenser hotwell gases in conjunction with an RCP shaft seizure, 15.1.13.4 post accident leakage, 15.1.18 steam generator tube rupture, 15.1.23 fuel handling accidents to inside containment or in the auxiliary building and a cask drop. 15.1.24 small spills outside containment, and etc. These exhaust system filters perform a mitigation of consequence role in the reduction of offsite release of radioactive particulate and gases during the postulated accidents. The particulate removal efficiencies of these medium efficiency roughing filters and HEPA filters are, as specified in the applicable sections of 2SAR, not being reduced therefore, there will be no reduction in particulate capture and thus no affect on the quality of the filtered air stream flowing to the downstream associated charcoal adsorber and no reduction in the required iodine removal efficiencies for inorganic species and organic species of the charcoal adsorber. Fuel Handling Floor and Auxiliary Building Radwaste Area Exhaust Systems descriptions are in 2SAR 9.4.3.2.3 and the Containment Purge Exhaust System is described in 2SAR 9.4.5.2. The Auxiliary Building Extension Radwaste Area Exhaust System is not mentioned in any detail in the 2SAR.
- 2. The changes provided in this specification will not affect the function or operation of any components or systems used to mitigate a postulated accident. The filtering efficiencies as they relate to size of particle captured by the medium efficiency roughing filters and the HEPA filters are not being reduced and therefore the air stream being passed on to the charcoal adsorber will not affect the removal efficiencies for iodine and therefore radiation dose to the public or the on site dose is not being increased. This is to say that the particulate filtration achieved by the medium efficiency roughing filter and HEPA filter will remain unchanged as it relates to the cleanliness of the air stream being passed on to the charcoal adsorber.
- 3. The changes provided in this specification will not degrade the performance of equipment important to safety and cause a higher probability of malfunction. The exhaust systems affected are not safety related and have no safety function however, as discussed in 1 above, credit is taken for this equipment for offsite dose for some accidents in 2SAR 15.0 and therefore it is important to maintain the equipment design basis and assure that replacement filters are appropriate for the service and efficiency requirements. The changes in the specification will result in the medium efficiency roughing filter and HEPA filter being designed and constructed to equivalent codes, standards, and current revisions consistent with those used for the originals filters. No new failure modes would be introduced and therefore no increase in malfunction probability is expected.
- 4. The changes provided in this specification will not increase the consequences of malfunction of equipment important to safety. As stated in 3 above, the exhaust system affected are not safety related however, credit is taken for this equipment in 2SAR section 15.0. The changes in the specification will not result in a medium efficiency roughing filter or HEPA filter design of significant difference that could cause an increase of the consequences of malfunction by the introduction of a significant new design, different materials, or reduction of filter qualification testing by the manufacturer.
- 5. The changes provided in this specification will not create an accident of a different type than previously evaluated. The type of accident that this change could present would be any type of filter cell failure that would allow a reduction in particulate removal efficiencies in the air stream to the charcoal adsorber which could affect the iodine efficiency removal and the resultant dose release. This is not considered to be a credible failure since the filters are being designed and constructed to equivalent codes and standards consistent with the originals and with commensurate design qualification and production testing by the manufacturer.
- 6. The changes provided in this specification will not create a malfunction of equipment important to safety of a different type than previously evaluated. As stated in 3 above the equipment associated with the exhaust system filter train are not safety related however, credit is taken for this equipment in 2SAR section 15 for filtration of releases. The changes in the specification will result in the medium efficiency roughing filter or HEPA filter being designed and constructed to equivalent codes, standards and requirements consistent with the originals and therefore equipment malfunctions of a different type will be created.

NOT RV7 00

Document No. ANO-M-2243 Rev./Change No. Rev. 0

10CFR50.59 Evaluation Continuation Page for Safety Evaluation Question Answers

7. The changes provided in this specification do not reduce the margin of safety of the subject exhaust systems as defined in the Technical Specification bases. The filtering efficiencies as they relate to size of particle captured by the medium efficiency roughing filter and the HEPA filter are not being reduced, the exhaust systems flow rates are not being affected, the HEPA filter efficiencies for DOP removal is not affected, the maximum combined pressure differential across the HEPA and charcoal adsorber is not being increased, and the charcoal adsorber efficiencies for removal of iodine is not being reduced. Technical Specification bases 3/4.9.4 and 3/4.9.11 was reviewed and no reduction in margin to safety was identified.

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

			-	This Document con	tains 3 F	ages.
Docur	ment No.	ER002357E201 R	ev./Change No.	0		
Title		HPSI Injection Valve Plug Design Change				
Brief (description	of proposed change:				
1/50 are scor	016-2/5035 of a differe ring proble	the replacement of the valve plugs in the AN-1/5036-2/5055-1/5056-2/5075-1/5076-2, with material and shape than the existing plugs ms previously encountered. The change also to reduce the potential for future scori	n plugs of a differ s. The plugs are o includes the cha	ent design. The re being replaced in o	placeme rder to a	ent plugs illeviate
Will ti	ne propose	d Activity:				
1.	Require a	change to the Operating License including:				
	Technical	Specifications (excluding the bases)?			Yes□	No⊠
	Operating	License?			Yes 🗌	No⊠
	Confirmat	ory Orders?			Yes□	No⊠
2.	Result in i	nformation in the following SAR documents (ger true or accurate, or (b) violate a requirem	(including drawing lent stated in the	gs and text) being document:		
	SAR (mul	ti-volume set for each unit)?			Yes⊠	No□
	Core Ope	rating Limits Report?			Yes□	No⊠
	Fire Haza	rds Analysis?			Yes 🗌	No⊠
	Bases of	the Technical Specifications?			Yes□	No⊠
	Technical	Requirements Manual?			Yes□	No⊠
	NRC Safe	ety Evaluation Reports?			Yes□	No⊠
3.	Involve a (See A	test or experiment not described in the SAR'	?		Yes□	No⊠
4.		a potential impact to the environment? (Cometermination of this form.)	plete Environme	ntal	Yes□	No⊠
5.	Result in	the need for a Radiological Safety Evaluation	n per section 6.1.	5?	Yes□	No⊠
6.	Result in utilized for	any potential impact to the equipment or faci or Ventilated Storage Cask activities per Sect	lities ion 6.1.6?		Yes□	No⊠
7.	Involve a per Secti	change under 10CFR50.54 for the following on 6.1.7?	SAR documents			
	QAPM?				Yes□	No⊠
	E-Plan?				Yes□	No⊠
8.	Does this (NRC SE	review depend on future NRC approval of o R, Relief, etc)? (forward change to PSC per	ther actions? 6.3.8 or 6.3.9)	ED 0000E		No⊠

ER 002357E207 PAGE ≤ REV 0

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FORM TITLE:	10CFR50.59 DETERMINATION		FORM NO. 1000.131A	REV. 003-04-0
				Rev
Document No. ERO	002357E201	Rev./Change No.	0	<u> </u>
Basis for Determina	tion (Questions 1, 2, & 3):			
	se: The HPSI injection valve plue is required to the operating lice		sed in the operating lic	ense and
6.3.2.19. Specifical radioactive coolant)	se: The HPSI injection valve plus ly, these SAR sections convey the are fabricated of austenitic states replacement pluggie constructed thich is not considered to be ausual factorial for the of the ships of the sh	that components of the nless steel, and the val d of the NOREM B1 m	SIS (or materials in cove seats are stellite or aterial (i.e., no hardfac	ntact with equivalent ing of a
	se: No test or experiment not de will consist of existing test activ	escribed in the SAR is i	nvolved with this chang	ge. Post
	does not require 10CFR50.59 E #, send LDCR to Licensing).	Evaluation per Attachm	ent 1, Item # (If ch	necked, note
Search Scope:		***************************************		· · · · · · · · · · · · · · · · · · ·
performed on LRS, the parentheses. Control	d in the Licensing Basis Docume te LRS search index should be e led hard copies of the document awings). Attach and distribute	entered under "Section" ts shall be reviewed (Ll	' with the search staten RS is not verified and s	nent(s) used in searches only
Document	<u>Section</u>			
LRS:	All (valve, HPSI, high pressu 2CV-5036-2, 2CV-5055-1, 2C	re safety Injection, 2C\CV-5056-2, 2CV-5075-1	/-5015-1, 2CV-5016-2, 1, 2CV-5076-2, stellite,	2CV-5035-1, cobalt)
MANUAL SECTIONS	6 <u>.3</u>			
FIGURES:	Table 6.3-1, Table 6.3-3, Fig.	ure 6.3-2		
Stephen a	Um Stephe	en J. Lynn		-22-00
Certified Reviewer's	Signature	Printed Name		Date
Reviewer's certification	on expiration date: 5/26/01	-		
Assistance provided b	oy:			
Printed Name Randall S. Smit		cope of Assistance		Date 4/14/00
Search State Revie	w Acceptability (NA, if perform	ned by Technical Revie	wer per 1000.006)	
		- CL 01		- Z5-00
Certified Reviewer's	Signature	Printed Name		Date

Den /

ER002357E207 PAGE 6 REV 1 ER 002357E201 RS g/29/00 PAGE 6 REV 0

· · · · · · · · · · · · · · · · · · ·	ARKANSAS NUCLEAR ONE		Page 3
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	10CFR50.59 DETERMINATION	1000.131A	003-04-0

ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Docume	nt No.	ER002357E201 Rev./Change No. 0
		llowing Determination. If the answer to any item below is "Yes", an Environmental Evaluation is section 6.1.4 for additional guidance.
Will the	Activity	being evaluated:
<u>Yes</u>	<u>No</u>	
	\boxtimes	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.
	\boxtimes	Increase thermal discharges to lake or atmosphere?
	\boxtimes	Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower?
	\boxtimes	Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower?
	\boxtimes	Modify the design or operation of cooling tower which will change drift characteristics?
	\boxtimes	Install any new transmission lines leading offsite?
	\boxtimes	Change the design or operation of the intake or discharge structures?
	\boxtimes	Discharges any chemicals new or different from that previously discharged?
	\boxtimes	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?
	\boxtimes	Involve incineration or disposal of any potentially hazardous materials on the ANO site?
	\boxtimes	Result in a change to nonradiological effluents or licensed reactor power level?
	\boxtimes	Potentially change the type or increase the amount of non-radiological air emissions from the ANO site.

			ARKANSAS NUCLEA	R ONE	sax. · · · · · ·	Page 1
FOR	RM TITLE:	10CFR50.59	REVISION		FORM NO. 1000.131D	REV. 003-04-0
					This Document conta	ins 1 Page.
Doci	ument No.	ER002357E201	Rev./Change No.	1	_ 10CFR50,59 Eval. No.	FFN#00-062
					Revision No.	1
Eval	uation after	PSC review may become			Revisions to a 10CFR5 nanges to the original doc	
Rea	son for revi	sion to 10CFR50.59 Ev	aluation:			
E208 hard infor	8 are now o Iface mater mation pro	only available in a mater ial). ER002357E209 ha vided by the supplier. T	ial designated as NORE is been generated to pro his revision to the 50.59	M 02A (NOF vide the doc evaluation is	unction with ER002357E REM B1 was the previous umentation of equivalence s required due to specific for Questions 1 through	sly available cy based on c reference in
Will	the propose	ed revision result in any	additional:			
1)	Change t	o the Operating License	?		Yes 🗌 No 🛛	
2)	Change t	o other Licensing Basis	Document?		Yes ☐ No 🏻	
3)	Conduct	of test or experiment?			Yes ☐ No 🛭	
4)	impact to	the environment?			Yes ☐ No 🏻	
5)	Need for	a Radiological Safety E	valuation?		Yes 🗌 No 🛚	
6)	Impact V	entilated Storage Cask	Activities		Yes ☐ No 🏻	
7)	Impact th	e QAPM or E-Plan?			Yes ☐ No 🏻	
If ye	s, describe	below and take approp	riate action as per initial	Determinatio	on:	
N/A						
page exte	e of the formersive chan t of previou	n(s). Changes should be ges, new forms may be s 10 CFR50.59 Evaluation	e lined through, initialed	, dated and in the marginar review.	r at the top right hand co indicated with the revision denoting changes. Atta	n number. For ach this form to
	1	ver's Signature	-/ //	Printed i	yame	Date
Rev	iewer's cerl	ification expiration date	$= \frac{5/26/0}{}$		***	6.1.1
PSC	review:	" Dran			Date:	9/21/00

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FORM TITLE:		UATION PAGE	FORM NO. 1000.131C	Page 1 REV. 003-04-0
D Ma	ED0000575004			lev. 1
Document No.	ER002357E201	Rev./Change	e No. 0	

10CFR50.59 Review Continuation Page

Synopsis of Modification

ER002357E201 replaces the valve plugs of the eight HPSI injection MOV's with an updated design. The existing plug design has exhibited a tendency to become scored when operated during high flow conditions. Once scored, the possibility of galling is heightened. The new plug design differs in two respects from the existing design. The existing stainless steel plug material is replaced with an alloy known as NOREM 81 (also known as NOREM 01) This material, developed by EPRI, is recommended by the valve manufacturer as a replacement plug material for this application. It was developed as a hardfacing material, however, for valve sizes 2" and smaller (the subject valves are 2") the entire plug is constructed of the material. The superior hardness of the new plug material in relation to the stainless steel valve body reduces the possibility of scoring and galling. The new plug design is also shaped differently from the existing plug. The new plug is what is known as a double taper design. Per the valve manufacturer, the Cv of the valve is not changed by the change in plug shape or material. Testing performed by ANO personnel at the Wyle test facilities has confirmed the superior performance offered by the new plug design in terms of resistance to scoring and reduced valve factor. Or by NOREM OZA

Another facet of the change is the chamfering of the edge of the outlet port. The damage seen previously has been concentrated in the outlet port area and is believed to be the result of the plug passing the existing sharp edges of the outlet port and in essence being scraped by that sharp edge.

Finally, the valve bodies will be honed (if needed) prior to installation of the new plugs. This will further reduce the possibility of future scoring.

Post modification testing will include applicable MOV testing, system flow verification and stroke timing. However, if the associated manual valves used for flow balancing are required for isolation or are otherwise disturbed, a workplan to rebalance system flows may be required.

Design Basis

REAL DOREM OZA

Flow balance of the system is accomplished by throttling of the manual valve associated with each injection MOV. The new plug design will not alter the flow characteristics of the balanced system because the injection MOV's are opened fully and plug shape of the MOV's is not a controlling factor. The NOREM B1 material is compatible with radioactive fluid contact and contains <0.1% by weight of cobalt. This material has been provided evaluated and found acceptable for use at ANO (Reference Specification ANO-M-2456). This change is intended only to replace an existing valve component with a more suitable design. No risk is added by virtue of this modification.

The change will cause one aspect of the SAR to no longer be true in that the SAR states that all SIS components in contact with the radioactive coolant are austenitic stainless steel except for valve seats. Since the entire plug is of the NOREM B1 alloy (not considered an austenitic stainless steel), an LDCR will be processed to effect a change to the SAR. Or NOREM O2A 91/00 Rev.)

Answers Form 1000,131B Questions

Question 1 Response: HPSI system component failure is not credited with initiating any of the previously evaluated accidents in the SAR. The valves will remain normally closed and will open in response to a safeguards actuation as before. Replacement of the injection MOV plugs with an updated design does not therefore increase the probability of an accident previously evaluated in the SAR.

Question 2 Response: The replacement valve plugs will provide the same component function as the existing plugs. The change in material and shape of the plugs will also not affect HPSI system functional performance, i.e., flow capacity and isolation capability are unaffected. Therefore, the consequences of an accident previously ER002357E207 - ER-002357E20 evaluated in the SAR is not increased.

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Question 3 Response: The replacement plugs are constructed to the same Code requirements and ANO design specification as the existing plugs and will serve identical functions. The conditions under which any associated system equipment operates is unchanged. Therefore, the probability of the malfunction of equipment important to safety is not increased.

Question 4 Response: No change in HPSI system configuration or functional capabilities is introduced by this change. The consequence of failure of the new valve plug design is identical to that which would have previously been experienced. Therefore, the consequences of a malfunction of equipment important to safety are unchanged.

Question 5 Response: The change in valve plug design does not affect HPSI system operation or configuration or its interface with other plant systems. It is therefore not credible that an accident of a different type than any previously evaluated in the SAR would be created.

Question 6 Response: No change in HPSI system capabilities or performance is introduced by this change. The new plug design is subject to the same Code requirements and ANO design specification stipulations as the existing plugs and will serve identical functions. No malfunction of equipment important to safety of a different type than previously evaluated in the SAR will be created.

Question 7 Response: The performance capabilities of the HPSI system or any of its components are unaffected by the change of injection MOV plug design. Because the HPSI system and component performance is unaffected, the margin of safety defined in the basis for any technical specification will not be reduced.

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PAGE S REV O

				This Document cor	ntains 3 F	Pages.
Docu	ment No.	ER002357E201	Rev./Change No.	0		
Title		HPSI Injection Valve Plug Design	Change			
Brief	description	of proposed change:				
1/50 are scor	016-2/5035 of a differe ring proble	the replacement of the valve plugs 1-1/5036-2/5055-1/5056-2/5075-1/50 ent material and shape than the exist ms previously encountered. The chart, also to reduce the potential for fundamental fundamental for fundamental fundame	076-2, with plugs of a differ sting plugs. The plugs are nange also includes the ch	rent design. The re being replaced in o	eplaceme order to a	ent plugs alleviate
\ A/iii +	he propose	ed Activity:				
			a aludina:			
1.	•	change to the Operating License in			Va=	No
		Specifications (excluding the base	S) ?		Yes∐	No⊠
	Operating				Yes□	No⊠
		ory Orders?			Yes□	No⊠
2.	Result in i	information in the following SAR do ger true or accurate, or (b) violate a	cuments (including drawin a requirement stated in the	gs and text) being document:		
	SAR (mul	ti-volume set for each unit)?			Yes⊠	No
	Core Ope	rating Limits Report?			Yes□	No⊠
	Fire Haza	rds Analysis?			Yes□	No⊠
	Bases of	the Technical Specifications?			Yes□	No⊠
	Technical	Requirements Manual?			Yes□	No⊠
	NRC Safe	ety Evaluation Reports?			Yes□	No⊠
3.		test or experiment not described in Attachment 2 for guidance)	the SAR?		Yes□	No⊠
4.		a potential impact to the environme etermination of this form.)	ent? (Complete Environme	ental	Yes[No⊠
5.	Result in	the need for a Radiological Safety	Evaluation per section 6.1.	.5?	Yes□	No⊠
6.		any potential impact to the equipmonry Ventilated Storage Cask activities			Yes□	No⊠
7.	Involve a per Section	change under 10CFR50.54 for the on 6.1.7?	following SAR documents			
	QAPM?				Yes□	No⊠
	E-Plan?				Yes□	No⊠
8.	Does this (NRC SE	review depend on future NRC app R, Relief, etc)? (forward change to	roval of other actions? PSC per 6.3.8 or 6.3.9)	ER OO	Yes□ 2357 E	

	APKAN	SAS NUCLEAR ONE		Page 2
FORM TITLE:			FORM NO.	REV.
	10CFR50.59 DETERMINATION	ON	1000.131A	003-04-0
				Rev
Document No. ER0	02357E201	Rev./Change No.	0	•
		- 		
Basis for Determinat	tion (Questions 1, 2, & 3):			
	e: The HPSI injection valve point is required to the operating li		sed in the operating lic	ense and
6.3.2.19. Specificall radioactive coolant) material. The entire different material).w	le: The HPSI injection valve play, these SAR sections converge are fabricated of austenitic statement pluggie construction is not considered to be a neither of section.	y that components of the ainless steel, and the val ted of the NOREM B1 m ustenitic stainless steel.)	SIS (or materials in co ve seats are stellite or aterial (i.e., no hardfac	entact with equivalent sing of a
	e: No test or experiment not will consist of existing test ac		nvolved with this chan	ge. Post
	does not require 10CFR50.59 , send LDCR to Licensing).	9 Evaluation per Attachm	ent 1, Item # (If cl	necked, note
Search Scope:				
performed on LRS, the	I in the Licensing Basis Docur e LRS search index should be led hard copies of the docume awings). Attach and distribu	e entered under "Section' ents shall be reviewed (L	' with the search stater RS is not verified and :	nent(s) used in searches only
Document	Section			
LRS:	All (valve, HPSI, high pres 2CV-5036-2, 2CV-5055-1,	sure safety Injection, 2CV 2CV-5056-2, 2CV-5075-	V-5015-1, 2CV-5016-2. 1. 2CV-5076-2, stellite,	2CV-5035-1, cobalt)
MANUAL SECTIONS	: <u>6.3</u>			
FIGURES	Table 6.3-1, Table 6.3-3, F	igure 6.3-2		
tin				5-22-00
Certified Reviewer's		hen J. Lynn Printed Name		Date
Reviewer's certification	V			
Assistance provided b	oy:			
Printed Name Randall S. Smit		Scope of Assistance		Date 4/14/00
Search 800 be Revie	w Acceptability (NA, if perfo	rmed by Technical Revie	ewer per 1000.006)	
		Sach Ol.		- Z5-00
Certified Reviewer's	Signature	Printed Name		Date

ER002357E208 PAGE 6 REV 1 ER 882357E281 RS /29/00 PAGE 6 REV 8

	ARKANSAS NUCLEAR ONE		Page 3
FORM TITLE:		FORM NO.	REV.
	10CFR50.59 DETERMINATION	1000.131A	003-04-0

ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Documen	t NoE	R002357E201	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 A	ctivity be	ing evaluated:		
<u>Yes</u>	<u>No</u>			
		Disturb land that is beyond that init buildings, creation or removal of po 2.5-17. This applies only to areas	fally disturbed during construction (i.e., new construction of ends, or other terrestrial impact)? See Unit 2 SAR Figure putside the protected area.	
	\boxtimes	Increase thermal discharges to lake	e or atmosphere?	
		Increase concentration of chemical tower?	s to cooling lake or atmosphere through discharge canal or	
	\boxtimes	Increase quantity of chemicals to c tower?	ooling lake or atmosphere through discharge canal or	
	\boxtimes	Modify the design or operation of o	ooling tower which will change drift characteristics?	
	\boxtimes	Install any new transmission lines I	eading offsite?	
	\boxtimes	Change the design or operation of	the intake or discharge structures?	
	\boxtimes	Discharges any chemicals new or o	different from that previously discharged?	
	\boxtimes	Potentially cause a spill or unevaluwater or ground water?	ated discharge which may effect neighboring soils, surface	
	\boxtimes	Involve burying or placement of ar surface water or ground water?	y solid wastes in the site area which may effect runoff,	
	\boxtimes	Involve incineration or disposal of	any potentially hazardous materials on the ANO site?	
	\boxtimes	Result in a change to nonradiologi	cal effluents or licensed reactor power level?	
	\boxtimes	Potentially change the type or incr	ease the amount of non-radiological air emissions from the	

ARKANSAS NUCLEAR ONE Page 1 FORM TITLE: FORM NO. REV. 10CFR50.59 REVIEW CONTINUATION PAGE 1000.131C 003-04-0

Doy	
₹ Y V	

Document No. ER002357E201

Rev./Change No. 0

10CFR50.59 Review Continuation Page

Synopsis of Modification

ER002357E201 replaces the valve plugs of the eight HPSI injection MOV's with an updated design. The existing plug design has exhibited a tendency to become scored when operated during high flow conditions. Once scored the possibility of galling is heightened. The new plug design differs in two respects from the existing design. The existing stainless steel plug material is replaced with an alloy known as NOREM B1 (also known as NOREM 01). This material, developed by EPRI, is recommended by the valve manufacturer as a replacement plug material for this application. It was developed as a hardfacing material, however, for valve sizes 2" and smaller (the subject valves are 2") the entire plug is constructed of the material. The superior hardness of the new plug material in relation to the stainless steel valve body reduces the possibility of scoring and galling. The new plug design is also shaped differently from the existing plug. The new plug is what is known as a double taper design. Per the valve manufacturer, the Cv of the valve is not changed by the change in plug shape or material. Testing performed by ANO personnel at the Wyle test facilities has confirmed the superior performance offered by the new plug design in terms of resistance to scoring and reduced valve factor. Or by NOREM OZA

Another facet of the change is the chamfering of the edge of the outlet port. The damage seen previously has been concentrated in the outlet port area and is believed to be the result of the plug passing the existing sharp edges of the outlet port and in essence being scraped by that sharp edge.

Finally, the valve bodies will be honed (if needed) prior to installation of the new plugs. This will further reduce the possibility of future scoring.

Post modification testing will include applicable MOV testing, system flow verification and stroke timing. However, if the associated manual valves used for flow balancing are required for isolation or are otherwise disturbed, a workplan to rebalance system flows may be required.

Design Basis

Replace of the system is accomplished by throttling of the manual valve associated with each injection MOV. The new plug design will not alter the flow characteristics of the balanced system because the injection MOV's are opened fully and plug shape of the MOV's is not a controlling factor. The NOREM B1 material is compatible with radioactive fluid contact and contains <0.1% by weight of cobalt. This material has been previously evaluated and found acceptable for use at ANO (Reference Specification ANO-M-2456). This change is intended only to replace an existing valve component with a more suitable design. No risk is added by virtue of this modification.

The change will cause one aspect of the SAR to no longer be true in that the SAR states that all SIS components in contact with the radioactive coolant are austenitic stainless steel except for valve seats. Since the entire plug is of the NOREM B1 alloy (not considered change to the SAR. Or NOREM OZA 21/00 Rev.) is of the NOREM B1 alloy (not considered an austenitic stainless steel), an LDCR will be processed to effect a

Answers Form 1000,131B Questions

Question 1 Response: HPSI system component failure is not credited with initiating any of the previously evaluated accidents in the SAR. The valves will remain normally closed and will open in response to a safeguards actuation as before. Replacement of the injection MOV plugs with an updated design does not therefore increase the probability of an accident previously evaluated in the SAR.

Question 2 Response: The replacement valve plugs will provide the same component function as the existing plugs. The change in material and shape of the plugs will also not affect HPSI system functional performance, i.e., flow capacity and isolation capability are unaffected. Therefore, the consequences of an accident previously evaluated in the SAR is not increased.

ER002357E208

Rev.

Rev.1

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PAGE 9 REV 1

			ARKANSAS NUCLEA	R ONE		Page 1
FORM	A TITLE:	10CFR50.59	REVISION		FORM NO. 1000.131D	REV. 003-04-0
L					This Document con	tains 1 Page.
Docun	ment No.	ER002357E201	Rev./Change No.	_1	_ 10CFR50.59 Eval. N	o. <i>FFNH 00-0</i> 63
•					Revision No.	
Evalua	ation after	PSC review may beco	evisions to 10CFR50.59 me necessary due to SR for additional guidance.			
Reaso	on for revi	sion to 10CFR50.59 Ev	aluation:			
E208 hardfa	are now o ace materi nation prov	inly available in a materal). ER002357E209 havided by the supplier.	er that the valve plugs ordinal designated as NORE as been generated to property for the 50.59 material. No change to the source the source to the source the source that the source the source that the sourc	M 02A (NOF vide the doc evaluation i	REM B1 was the previous cumentation of equivale s required due to specif	usly available ncy based on īc reference in
Will th	ne propose	ed revision result in any	additional:			
1)	Change t	o the Operating License	e?		Yes 🗌 No 🖾	
2)	Change t	o other Licensing Basis	Document?		Yes 🗌 No 🖾	
3)	Conduct	of test or experiment?			Yes 🗌 No 🖾	
4)	Impact to	the environment?			Yes 🗌 No 🖾	
5)	Need for	a Radiological Safety E	valuation?		Yes 🗌 No 🛚	
6)	impact Ve	entilated Storage Cask	Activities		Yes 🗌 No 🛭	
7)	Impact th	e QAPM or E-Plan?			Yes 🗌 No 🛭	
If yes.	. describe	below and take approp	riate action as per initial	Determinati	on:	
N/A						
page of extens	of the formsive changor previous	n(s). Changes should l ges, new forms may be	Evaluation by placing revocation by placing	, dated and in the margin or review.	indicated with the revisi	on number. For
Revie	· wer's cert	ification expiration date	5/26/0	Ĺ		1
PSC r	review:	Thom	/ /		 Date	=: 92100
	•				ER002357	E 2 0 8 '

PAGE 8 REV 1

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FORM TITLE:	FORM NO.	REV.
10CFR50.59 REVIEW CONTINUATION PAGE	1000.131C	003-04-0

Question 3 Response: The replacement plugs are constructed to the same Code requirements and ANO design specification as the existing plugs and will serve identical functions. The conditions under which any associated system equipment operates is unchanged. Therefore, the probability of the malfunction of equipment important to safety is not increased.

Question 4 Response: No change in HPSI system configuration or functional capabilities is introduced by this change. The consequence of failure of the new valve plug design is identical to that which would have previously been experienced. Therefore, the consequences of a malfunction of equipment important to safety are unchanged.

Question 5 Response: The change in valve plug design does not affect HPSI system operation or configuration or its interface with other plant systems. It is therefore not credible that an accident of a different type than any previously evaluated in the SAR would be created.

Question 6 Response: No change in HPSI system capabilities or performance is introduced by this change. The new plug design is subject to the same Code requirements and ANO design specification stipulations as the existing plugs and will serve identical functions. No malfunction of equipment important to safety of a different type than previously evaluated in the SAR will be created.

Question 7 Response: The performance capabilities of the HPSI system or any of its components are unaffected by the change of injection MOV plug design. Because the HPSI system and component performance is unaffected, the margin of safety defined in the basis for any technical specification will not be reduced.

FORM TITLE:	10CFR50.59 DET	ERMINATION		FORM NO. 1000.131A	REV. 3 PC-1, 2
Document No	ER 002528 E201	Rev./Chan	nge No.	1	
			.90 (10		
	rmination (Questions 1				
shown in SAF	R sections 6.3.2.14 and 1 least 2' of margin betwe	3 and prior to Mode 5, the Ni Table 6.2-18 for the HPSI and een available and required " to ontainment building per ER (d CS syst for both p	ems respectively. / umps. The reducti	Also, Section 7.3
This slight de (Cycle 14 out	crease in NPSHA does i ages, from Mode 3 and	not require a documentation prior to Mode 5).	revision s	ince it is a tempora	ry condition
The operating	g license is not affected	and the activity does not rep	resent a t	est or experiment.	
Proposed of appropriate	change does not require e item #, send LDCR to l	10CFR50.59 Evaluation per Licensing).	Attachme	ent 1, Item # (If	f checked, note
Search Scope	:				
List sections re performed on bearentheses. text, not figure	eviewed in the Licensing LRS, the LRS search ind Controlled hard copies o	Basis Documents specified in the lex should be entered under of the documents shall be revaled distribute a completed	"Section" riewed (LF	with the search sta RS is not verified ar	tement(s) used in nd searches only
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List sections reperformed on parentheses. text, not figure required. Document LRS: 50.59-un MANUAL SECTION Certified Revie	eviewed in the Licensing LRS, the LRS search incompleted hard copies of sor drawings). Attach a Section Tit 2 ("eccs", "npsh", "eccs") CTIONS: chapter 6 and appear 6 Exercise Signature Appear of the complete state o	lex should be entered under f the documents shall be revand distribute a completed ecs and npsh", "LPI", "CS") 7: Sections 6.3.2.14.7.3 and Edward R. France Printed N	"Section" riewed (LF LDCR p	with the search starts is not verified an er Section 6.1.2 if	tement(s) used in a searches only LBD changes are
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List sections reperformed on parentheses. text, not figure required. Document LRS: 50.59-us MANUAL SECTION FIGURES: ch Certified Reviewer's ce Assistance pro-	eviewed in the Licensing LRS, the LRS search incontrolled hard copies of sor drawings). Attach a Section Section Thit 2 ("eccs", "npsh", "eccs", "npsh", "np	lex should be entered under f the documents shall be revand distribute a completed ecs and npsh", "LPI", "CS") 7: Sections 6.3.2.14.7.3 and Edward R. France Printed No. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	"Section" riewed (LF LDCR pr	with the search starts is not verified an er Section 6.1.2 if	7/20/00 Date

John Richardson

Printed Name

ARKANSAS NUCLEAR ONE

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

This Document contains 3 Pages.

				9
Doc	ument No.	ER 002528 E201	Rev./Change No1	
Title		ANO-2 CONTAINMENT SUMP OPER 2R14, FROM MODE 3 TO PRIOR TO M	ABILITY DURING CYCLE 14 OUT	AGES INCLUDING
Brief	description	of proposed change:		
Sinc	e 14 outage	nditions the NPSHA for the ECCS pumps is (from Mode 3 and prior to Mode 5) due to a relatively short duration and with a large uired.	in extra material allowed to be brough	ha loan about building
The	values that	are shown on the attached pages from the	SAR.	
Will	the propose	ed Activity:		
1.	Require a	change to the Operating License including	j :	
	Technical	Specifications (excluding the bases)?		Yes⊡ No⊠
	Operating	License?		Yes⊡ No⊠
	Confirmate	ory Orders?		Yes⊡ No⊠
2.	Result in in (a) no long	nformation in the following SAR document ger true or accurate, or (b) violate a require	es (including drawings and text) being ement stated in the document:	1
	SAR (mult	ti-volume set for each unit)?		Yes⊠ No⊡
	Core Oper	rating Limits Report?		Yes⊡ No⊠
	Fire Hazar	rds Analysis?		Yes⊡ No⊠
	Bases of th	he Technical Specifications?		Yes⊡ No⊠
	Technical	Requirements Manual?		Yes⊡ No⊠
	NRC Safet	ty Evaluation Reports?		Yes⊡ No⊠
3.	Involve a t (See At	est or experiment not described in the SA ttachment 2 for guidance)	R?	Yes⊡ No⊠
4.	Result in a Impact Det	potential impact to the environment? (Co termination of this form.)	mplete Environmental	Yes⊡ No⊠
5.	Result in th	he need for a Radiological Safety Evaluati	on per section 6.1.5?	Yes⊟ No⊠
6.	Result in a utilized for	ny potential impact to the equipment or fa Ventilated Storage Cask activities per Se	cilities ction 6.1.6?	Yes⊡ No⊠
7.	Involve a coper Section	change under 10CFR50.54 for the followin n 6.1.7?	g SAR documents	
	QAMO?			Yes⊡ No⊠
	E-Plan?			Yes No No

ARKANSAS NUCLEAR ONE

FORM TITLE:

10CFR50.59 SAFETY EVALUATION

FORM NO. 1000.131B Page 1 REV. 3 PC-2

This Document contains 1 Page.

Document No. <u>ER 002528 E201</u>	Rev./Change No. 1 10C	FR50.59 Eval Assigned by P	. No. <u>FFN#00-</u> 078				
Title ANO-2 Sump Operability Du	ring Cycle 14 Outages Including 2R14, from N						
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.							
	s form is "Yes," then an unreviewed safety que oposed change does not involve an unreviewed						
 Will the probability of an increased? 	accident previously evaluated in the SAR be	Yes 🗌	No ⊠				
Will the consequences or be increased?	f an accident previously evaluated in the SAR	Yes 🗌	No 🖾				
3. Will the probability of a r be increased?	nalfunction of equipment important to safety	Yes 🗌	No 🖾				
4. Will the consequences o safety be increased?	f a malfunction of equipment important to	Yes □	No 🖾				
Will the possibility of an evaluated in the SAR be	accident of a different type than any previously created?	Yes □	No 🖾				
	nalfunction of equipment important to safety of previously evaluated in the SAR be created?	Yes 🗌	No 🖾				
	as defined in the basis for any technical	Yes 🗌	No 🖾				
Edward & Fran	Edward R. France		7/20/00				
Certified Reviewer's Signatur	re Printed Name		Date				
Reviewer's certification expiration	date:5/27/01						
Assistance provided by:							
Printed Name John Richardson	Scope of Assistance Preparer of NPSH calcs for ECCS pumps		Date 7/20/00				
DSC review by:	SL	Date:	7/21/2000				

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

ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Docume	ent No.	ER 002528 E201	Rev./Change No. 1
Comple required	te the fo	ollowing Determination. If the a Section 6.1.4 for additional guid	nswer to any item below is "Yes", an Environmental Evaluation is ance.
Will the	Activity	being evaluated:	
<u>Yes</u>	No		
	\boxtimes	buildings, creation or remo	that initially disturbed during construction (i.e., new construction of val of ponds, or other terrestrial impact)? See Unit 2 SAR Figure o areas outside the protected area.
	\boxtimes	Increase thermal discharge	es to lake or atmosphere?
	⊠	Increase concentration of o	chemicals to cooling lake or atmosphere through discharge canal or
	☒	Increase quantity of chemi tower?	cals to cooling lake or atmosphere through discharge canal or
	\boxtimes	Modify the design or opera	tion of cooling tower which will change drift characteristics?
	\boxtimes	Install any new transmission	n lines leading offsite?
	\boxtimes	Change the design or oper	ation of the intake or discharge structures?
	\boxtimes	Discharges any chemicals	new or different from that previously discharged?
		Potentially cause a spill or water or ground water?	unevaluated discharge which may effect neighboring soils, surface
		Involve burying or placeme surface water or ground wa	ent of any solid wastes in the site area which may effect runoff, iter?
	\boxtimes	Involve incineration or disp	osal of any potentially hazardous materials on the ANO site?
	\boxtimes	Result in a change to nonra	adiological effluents or licensed reactor power level?
	\boxtimes	Potentially change the type	or increase the amount of non-radiological air emissions from the

FORM TITLE: 10CFR50.59 DET	ARKANSAS NUCLEAR ONE ERMINATION	FORM NO. 1000.131A	REV. 003-03-0	
			Page <u>2</u> of <u>6</u>	
Document No. <u>ER002409E201</u>	Rev./Change No.	<u>o</u>		
Basis for Determination (Questions 1, 2 & 3): Question 1: The Operating License does not address the need to provide cooling water to the HPSI pumps. Providing guidance to close the inlet isolation valves when service water temperature is below 75°F will not make the Operating License untrue. Question 2: The HPSI pump cooler inlet isolation valves appear in SAR figure 9.2-1. Adding a note to this drawing indicating that these valves may be either open or shut reference ER002409E201 does not make any of the information on the drawing untrue or inaccurate but it does add information to the drawing. Question 3. Closing the HPSI pump cooler inlet isolation valves when service water temperature is below 75°F will provide zero flow to the HPSI pump cooler as described in SAR Table 9.2-1, note 11. Since this condition is already analyzed in the SAR, it is not a test or experiment. 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 performed on LRS, the LRS search indeparentheses. Controlled hard copies of text, not figures or drawings). Attach a required.	ex should be entered under "Section" the documents shall be reviewed (LF	with the search staten	nent(s) used in searches only	
Document LRS:	Section			
50.59 - Unit 2	2E*53*, HPSI w/10 service, HPS Seal, High Pressure Safety Inje Safety Injection w/10 cool*, Hi bearing or Seal	ection w/10 service,	High Pressure	
MANUAL SECTIONS: 9.2.1, 6.3.2.2.4				
FIGURES: 9.2-1,	Table 9.2-1			
Certified Reviewer's Signature	Steven L. Smith Printed Name	·	4/2000 Date	
Reviewer's certification expiration date:	3/5/2001			
Assistance provided by:				

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

Certified Reviewer's Signature

Printed Name

Printed Name

Scope of Assistance

2/29/08
Date

Date

500455	ARKANSAS NUCLEAR ONE		
FORM TITLE:	10CFR50.59 DETERMINATION	FORM NO. 1000.131A	REV. 003-03-0

of <u>6</u>

Yes□ No⊠

						Р	age <u>1</u> o
Docu	iment No.	ER002409E201	Rev./Cha	ange No.	<u>o</u>		
Title	Isolatio	n of Service Water Cool	ng from HPSI Pumps				
		n of proposed change: ed Activity:	Evaluates Isolation of S	Service W	later Flow from HP	SI Pump	s
1.	Require a	a change to the Operating	License including:				
	Technica	Specifications (excluding	the bases)?			Yes□	No⊠
	Operating	J License?				Yes□	No⊠
	Confirma	tory Orders?				Yes□	No⊠
2.	Result in (a) no lon	information in the followinger true or accurate, or (b	g SAR documents (includ) violate a requirement st	ling drawi ated in the	ngs and text) being e document:		
	SAR (mu	iti-volume set for each uni	t)?			Yes⊠	No⊟
	Core Ope	erating Limits Report				Yes□	No⊠
	Fire Haza	ırds Analysis?				Yes□	No⊠
	Bases of	the Technical Specificatio	ns?			Yes□	No⊠
	Technical	Requirements Manual?				Yes□	No⊠
	NRC Safe	ety Evaluation Reports?				Yes□	No⊠
3.	Involve a (Se	test or experiment not de e Attachment 2 for guidan	scribed in the SAR? ce)			Yes[No⊠
4.	Result in a	a potential impact to the e onmental Impact Determin	nvironment? (Complete ation of this form.)			Yes□	No⊠
5.	Result in to	the need for a Radiologica n 6.1.5?	ll Safety Evaluation			Yes[]	No⊠
6.	Result in a Storage C	any potential impact to the ask activities per Section	e equipment or facilities ut 6.1.6?	tilized for	Ventilated	Yes□	No⊠
7.	Involve a per Sectio	change under 10CFR50.5 on 6.1.7:	4 for the following SAR de	ocuments	ı		
	QAMO?					Yes⊡	No⊠

E-Plan?

<u></u>			
FORM	ARKANSAS NUCLEAR ONE TITLE: 10CFR50.59 EVALUATION	FORM NO. 1000.131B	REV. 003-03-0
	10CFR 50 (A	.59 Eval. No. <u>()()</u> – · Assigned by PSC)	Page <u>4</u> of <u>6</u> 027
Docu	ment No. ER002409E201 Rev./Change No.	<u>0</u>	
Title_	Isolation of Service Water Flow from HPSI Pumps		
ΔΤΤΔ	RITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO CCHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A CLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDA	. SIMPLE STATEMEN	T OF
if the to all	answer to any question on this form is "Yes," then an unreviewed safet questions is "No," then the proposed change does not involve an unrev	y question is involved. riewed safety question.	If the answer
1.	Will the probability of an accident previously evaluated in the SAR be increased?	Ye	s 🗌 No 🛛
	The proposed change involves the cooling water flow to a safet the Emergency Core Cooling System which provides short term cooling and core reactivity control following a Loss of Coolant A Injection (HPSI) pump vendor has recently provided guidant operated with cooling water less than 75°F. Since the HPSI proposed change will not would increase the likelihood of events that are credited with evaluated by the SAR.	m and long term er Accident. The High P ce that the pump s oumps are standby e introduce any new o	nergency core ressure Safety should not be equipment and conditions that
2.	Will the consequences of an accident previously evaluated in the SAF increased?	R be .	es □ No ⊠
	ER974487E201 determined that the HPSI pumps remain operate their safety related function with zero service water coolin conclusions of the ER, the HPSI pumps will remain operable will the pumps are closed. This proposed change provides guidate valves when the service water is below 75°F and open these safety and higher. The closing of these valves has no impact on to perform its design functions, nor does it impact the SW accident them. The closing of these consequences of a prevent of securing service water cooling flow to the HPSI pumps.	ng flow to the pum hen the service water hee to close the service he valves when the s he ability of the SW hent analysis in the S hously analyzed accid	p. Based on inlet valves to vice water inlet service water is or HPSI system AR. Therefore,
3.	Will the probability of a malfunction of equipment important to safety	be	

ER974487E201 included review of testing and evaluation to determine past operability of the HPSI pumps during the late 1970's and early 1980 when service water flows were determined to be degraded. This testing and evaluation was documented in a 1981 report, Evaluation of HPSI Operability Without Service Water (SW) Cooling Report Revision 1, dated October 21, 1981. This report describes the testing performed, summarizes the test results, explains the analyses performed to extrapolate the measured data to the conditions which would exist in an accident and draws conclusions about the pump operability/reliability without service water flow. During November 1980, tests were run on the three ANO-2 HPSI pumps to determine the effect of pump operation without cooling water flow through the bearing and seal coolers. The pumps were tested by recirculating flow to the refueling water tank and were run until stable bearing and seal temperatures were achieved with zero cooling water flow. In order to assess the impact of loss of

increased?

Yes ☐ No 🖾

	ARKANSAS NUCLEAR ONE		
FORM TITLE:	10CFR50.59 DETERMINATION	FORM NO. 1000.131A	REV. 003-03-0
			1

Page <u>3</u> of <u>6</u>

ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Document No. ER002409E201

Rev./Change No. 0

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

Will the Activity being evaluated:

Yes	<u>No</u>	
		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.
	\boxtimes	increase thermal discharges to lake or atmosphere?
		Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower?
	\boxtimes	Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower?
	\boxtimes	Modify the design or operation of cooling tower which will change drift characteristics?
	\boxtimes	Install any new transmission lines leading offsite?
	\boxtimes	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?
	\boxtimes	Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water?
	\boxtimes	Involve incineration or disposal of any potentially hazardous materials on the ANO site?
	\boxtimes	Result in a change to nonradiological effluents or licensed reactor power level?
	\boxtimes	Potentially change the type or increase the amount of non-radiological air emissions from the ANO site.

			WANGAG MICH SAD GUE		
FOR	M TITLE:	10CFR50.59 EVAI	RKANSAS NUCLEAR ONE	FORM NO. 1000.131B	REV. 003-03-0
6.	Securing serve than 75°F doed determined the function with resistance for This lighter had a conservative of stagnant conditional flow and will have not circumstacredibly intro	nan any previously exice water cooling for some introduce a mat the HPSI pumpaero service water the service water exit load and reduce direction for service omponents will provide to other SW cooling adverse impact ances different end	of equipment important to safet valuated in the SAR be created flow to the HPSI pumps whe halfunction that has not been ps would continue to function. The change will slight system by removing the HPS and pipe resistance on the sence water operation. Additionate water operation. Additionate water in the system of any cool on the SW system or any cool on the SW system or any cool of equipment important	n service water temperate previously evaluated. tion and perform their ly reduce heat removal less pump lube oil and service water system is vertal chemical treatment are nof the isolated components. These less previous accidents and by previous accidents.	ER974487E201 safety-related oads and flow eal heat loads. y slight and in nd inspections conents. The s insignificant e changes are
7.	Securing servithan 75°F dood determined the function with HPSI pumps wereached in ER capability with maintainable left of the safety fadditional SW impact on the stagnant cany SW comp	ice water cooling fines not effect the lat the HPSI pump zero service water vithout service water service water land that these functions without service and personnents. Since no	in the basis for any technical low to the HPSI pumps when margin of safety in any teps would continue to open flow. The testing and analyted that the pumps would per flow. Bearing temperatur operating parameters would service water flow. The isold components, but this flow to meet design basis function of perating or reduction of perany technical specification.	n service water tempera chnical specification. It ate and perform their lysis performed in 1980 peratures stabilized. The erform their function were would stabilize at allow full non-degraded lation of these SW valvis negligible and will have a Additional chemical that there is no other than the than th	safety-related operated the conclusions ith no loss of a higher but performance res will direct we no adverse it treatment of
Certif	Jun 2 Tied Reviewer's S	Juit	Steven L. Smith Printed Name	2	2/ 29/00 Date
Revie	ewer's certification	n expiration date:	3/5/2001		
Assist	tance provided b	y:			
	Printed Name	е	Scope of Assistance	D	ate
PSC i	review by:	Brow	Da	te: 4/10/200	<u>0</u>

ARKANSAS NUCLEAR ONE

FORM TITLE:

10CFR50.59 EVALUATION

FORM NO. 1000.131B

REV. 003-03-0

service water flow through the HPSI pump bearing coolers and seal water coolers during accident conditions, a simplistic analysis using conservative assumptions was performed. This analysis adjusted the fluid temperatures of the pumped fluid upwards from the test conditions of ~75°F to a value of 200°F for containment sump temperature on recirculation and applied this same difference to the seal water cooler temperature. Additionally, the difference in the measured room ambient and the expected room temperature during a LOCA (115°F) was applied to both the bearing oil cooler and seal water cooler temperatures. These results which were reviewed by the pump vendor, Ingersoll-Rand, who confirmed that no reason exists to believe that the HPSI pumps would not have performed their intended function had an accident occurred during the time that service water flow was blocked. The pump seal manufacturer, Durametallic, prepared a test report for qualifying Dura Seals in 1978. This report documents testing performed to prove operability of their seals during various nuclear plant design conditions. This testing envelops the ANO HPSI pump accident conditions. The 1981 report concludes: "Based upon the testing performed at ANO-2 (running the HPSI pumps without service water flow through the pump bearing and seal water coolers) and the subsequent analyses, we have concluded that the HPSI pumps could have accomplished their accident function in spite of the loss of service water flow through their coolers which was discovered during the spring 1980 outage. This analysis was confirmed independently by our NSSS vendor (Combustion Engineering). ER974487E201 begins with the report summarized above and extrapolates the tests further, increasing the room temperature to 150°F and the temperature of the fluid to be pumped during recirculation to 250°F. During evaluation of these further extrapolations with the pump and seal vendors, a recommendation to use synthetic oil, Mobil SHC626, was added by the pump vendor. ER974487E201 concludes: "the allowable service water flowrate of the HPSI pumps coolers can remain at 0." The lubrication oil currently used in the HPSI pumps is the recommended Mobil SHC626. The isolation of these valves will direct additional SW flow to other cooled components, but this flow is negligible and will have no adverse impact on the system. Additional chemical treatment of the stagnant components and periodic inspections will assure that there is no adverse impact to any SW components. Therefore the proposed change of securing service water flow when service water temperatures are below 75°F does not increase the probability of malfunction of the HPSI pumps nor any other safety related equipment.

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

Yes ☐ No 🛛

Securing service water flow to the HPSI pumps will not affect offsite radiation dose (i.e. consequence of a failure) associated with the plant's response to an accident. The response of the HPSI pumps during an accident has been determined to be the same with or without service water cooling. There are no accidents evaluated in the SAR that would be affected by securing service water flow to the HPSI pumps, since these pumps have been evaluated by ER974487E201 to perform equally well with zero cooling water flow. Evaluation of the impact on the SW system by this ER has shown that there is no adverse impact to equipment important to safety nor the consequences of a malfunction.

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

Yes ☐ No 🖂

Securing the service water cooling flow to the HPSI pumps will not create an accident of a different type since no new failures are introduced by this change. ER974487E201 determined that the HPSI pumps did not require cooling water to perform their safety function. The recent letter from the pump vendor not recommending operation of the HPSI pumps with cooling water less than 75°F indicates the advisability of occasionally securing service water. Since the ER974487E201 determined the pumps are reliable without service water, the strategy of securing service water when temperatures are less than 75°F is optimal. Securing service water when temperatures are less than 75°F also insures no new pump failures are introduced. Additional chemical treatment of stagnant components and the verification of no adverse impact to any SW components by this ER assures all components and systems remain capable of performing their functions.

FORM TITLE: 10CFR60.59 REVIEW CONTINUATION PAGE FORM NO. REV. 1000.131C 2

Document No. ER 002528 E201

Rev./Change No. 1

10CFR50.59 Review Continuation Page

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

No, the extra material allowed in the reactor building is supervised to be brought out with the worker. A limit of 50 ft2 of unsupervised material is allowed based on NPSH margin for the ECCS pumps. No revision is required to the sump screen head loss calculation nor the NPSH calculation due to the temporary nature of the Cycle 14 outages', including 2R14, defined condition (from Mode 3 and prior to Mode 5) and because there is adequate margin for NPSH. There are no changes to modes of operation, performance characteristics or requirements, or operating procedures.

- 2. Will the consequences of an accident previously evaluated in the SAR be increased?
- No. This revision will not change the way in which the HPSI and CS systems respond under accident conditions (or any other conditions). The NPSHA was determined to be adequate before, and it is still adequate.
- 3. Will the probability of a malfunction of equipment important to safety be increased?
- No. This evaluation does not represent any design change to the plant. The margin between required and available NPSH could be less during the defined condition (from Mode 3 and prior to Mode 5), however, there is still a positive margin even under conditions which would exist with the most conservative assumptions for level, flow and sump blockage.
- 4. Will the consequences of a malfunction of equipment important to safety be increased?
- No. The decreased NPSH margin revealed by this evaluation will not change the operating characteristics of the pump or system. The HPSI and CS systems will respond in the same way as before, except that there is less room for modifications or procedural changes during the defined mode (from Mode 3 and prior to Mode 5) which would increase flow resistance or result in lower sump levels.
- 5. Will the possibility of an accident of a different type than any previously evaluated in the SAR be created?
- No. The HPSI and CS systems will be operated the same as before and the system response is not changed. While the NPSH available has been reduced, there is still adequate margin for NPSH and the difference in pump discharge pressure is not significant enough to make any difference in the characteristics of the system or in its interaction with other 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?
- No. The NPSH calculation (91-E-0116-01) assumes minimum sump water level and pump runout flow. Even under these conditions, there is adequate NPSH available to provide the proper pump suction conditions. Pump performance is not affected by a smaller NPSH margin. Provided that the margin is positive, the pumps can be expected to perform as designed.
- 7. Will the margin of safety as defined in the bases for any technical specification be reduced?
- No. The technical specifications require that the HPSI and CS systems be "operable". No margin of safety is defined which will be impaired by reduced NPSH margin, as long as NPSHA exceeds NPSHR.

	002631	ARKANSAS NUCLEAR	ONE			
	ORM TITLE:	10CFR50.59 DETERMINATION	ONE	FORM NO. 1000.131A	R	Page 1 RÉV. 003-04-0
Do	cument No.	ER002631E201 Box /C		This Document co	ntains	3 Pages.
Tit		Rev./C	hange No.			
		LRW/BMS Configuration 2BM-95, 2BM-98, 2LR\	W-269 and	2LRW-270. CR-2-2	2000-1	52
T V 21 9: C	his ER change: hese valves we alves 2LRW-4, BM-21B, 2BM-; 3-2003. These R-2-2000-152.	of proposed change: s the position of 2BM-95, 2BM-98, 2LRW-269 and 2LRV re new valves added per DCP-93-2003 but were shown 2LRW-47, 2LRW-22 2LRW-78, 2LRW-98, 2BM-19A, 2 3A, 2BM-23B, 2BM-53B 2BM-59, 2BM-61 and 2BM-76 valves did not get their position changed on the P&IDs: SAR Figure 11.2-1 sh1&2 and figure 11.2-2 sh1&2 will ons procedure 2104.014 will be changed to reflect the constant.	2BM-19B, 28 such that that the	BM-20A, 2BM-20B, 2 BM-20B, 2BM-20B, 2 Be vendor skid can be to operate the new	s the po BM-44, e utilize	osition of 2BM-21A,
	l the proposed		Olicot Agiae	position.		
1.	Require a	change to the Operating License including:				
		Specifications (excluding the bases)?			V	7
	Operating (Yes□	-
2.	Result in in	cory Orders? formation in the following SAR documents (including true or accurate, or (b) violate a requirement sta	ing drawing	s and text) being	Yes⊡ Yes⊡	No X
	SAR (multi-	volume set for each unit)?			Voc V	No.
	Core Opera	ting Limits Report?				No.
	Fire Hazard	s Analysis?				No X
	Bases of the	Technical Specifications?				No X
	Technical R	equirements Manual?				No X
	NRC Safety	Evaluation Reports?				No X
3.	involve a te	st or experiment not described in the SAR? achment 2 for guidance)	·			No X No X
4.	Result in a p	ootential impact to the environment? (Complete Er	vironment		. —	
5 .		need for a Radiological Safety Evaluation per sec	otion & 1 Ea		Yes□	
6.	Result in any	potential impact to the equipment or facilities entilated Storage Cask activities per Section 6.1.6			Yes∐	
7.		ange under 10CFR50 54 for the following SAR do		`	∕es∐	No X
	QAPM?				, —	
	E-Plan?					No X
8.	Does this rev	riew depend on future NRC approval of other action		Y	′es□	No X
	(NRC SER, I	Relief, etc)? (forward change to PSC per 6.3.8 or 6	5.3.9)	· Y	′es⊟	No X

FORM TITLE:		ARKANSAS NUCLEAR ONE	1 COPM NO	Page 2
ONN HILL.	10CFR50.59 DETERN	MINATION	FORM NO. 1000.131A	REV. 003-04-0
			1000.1017	000-04-0
Document NoE	R002631E201	Rev./Change No.	0	
Basis for Determi	nation (Questions 1, 2,	& 3):		
11.2-1 sh1&2 and currently in the sy	l 11.2-2 sh1&2. The SAR ystem. The system is desi	nging position of these valves was the only document that redigned to allow process water flow yes does not constitute a special	quires changing. These withrough the valves to	valves are operate the
Proposed char appropriate ite	nge does not require 10CF m #, send LDCR to Licen	FR50.59 Evaluation per Attachm sing).	nent 1, Item # (If	checked, note
Search Scope:	•			
performed on LRS parentheses. Conf	, the LRS search index st trolled hard copies of the	s Documents specified in question ould be entered under "Section documents shall be reviewed (Listribute a completed LDCR p	" with the search staten RS is not verified and s	nent(s) used in searches only
<u>Document</u>	Section			
2BM-53B 2BM-59, 2	V-9B, 2BM-19A, 2BM-19B, 2 BM-61, 2BM-76, 2F-11, 2F-	a was 2BM-95, 2BM-98, 2LRW-269 2BM-20A, 2BM-20B, 2BM-44, 2BM- 11A, 2T-72A, 2T-72B, 2T-15A; 2T- vaste;. LRW; BM, BMS and vendor.	21A, 2BM-21B, 2BM-23A, 15B. 2T-76A, 2T-76B, 2T-	2BM-23B.
MANUAL SECTIONS	S: ALL figures in Chapter 9 a	and 11. Manual search of DCP-93-2	2003	
FIGURES: 11.2-1 s	<u>h1, 11.2-1 sh2, 11.2-2 sh1 a</u>	and 11.2-2 sh2		
Jante la		Keith Perkins		6/08/00
Certified Reviewer	's Signature	Printed Name		Date
Reviewer's certific	ation expiration date:	7/31/01		
Assistance provide	ed by:			
Printed Na	me	Scope of Assistance		Date
Search Scope Re	view Acceptability (NA,	if performed by Technical Revie	ewer per 1000.006)	
Res 11	10			
Certified Reviewe	r's Signature	Printed Name		blizios Date
		·=		

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

ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Docum		ER2631E201 Rev./Change No.
Comple required	te the fo d. See S	llowing Determination. If the answer to any item below is "Yes", an Environmental Evaluation is
		being evaluated:
Yes	No	·
	x	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.
	X	Increase thermal discharges to lake or atmosphere?
	X	Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower?
	X	Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower?
	X	Modify the design or operation of cooling tower which will change drift characteristics?
	X	Install any new transmission lines leading offsite?
	X	Change the design or operation of the intake or discharge structures?
	X	Discharges any chemicals new or different from that previously discharged?
	X	Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water?
	X	Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water?
	X	Involve incineration or disposal of any potentially hazardous materials on the ANO site?
	X	Result in a change to nonradiological effluents or licensed reactor power level?
	X	Potentially change the type or increase the amount of non-radiological air emissions from the ANO site.

FORM TITLE:		ARKANSAS NUCL	LAK ONE	FORM	, Page
	10CFR50.59 DET	ERMINATION		FORM NO. 1000.131A	REV. 003-04-
Document No.	ER002631E201	Rev	v./Change No.	0	
Basis for Deter	mination (Questions 1,	, 2, & 3):	·		
currently in the	the LBD concluded that and 11.2-2 sh1&2. The saystem. The system is a fore, repositioning these	doning do	sament mat ted	uires changing. These	are saviev f
Proposed ch appropriate i	ange does not require 10 tem #, send LDCR to Lic	OCFR50.59 Evaluatio censing).	on per Attachme	ent 1, Item # (li	f checked, no
Search Scope:					
Parentheses. Co	ewed in the Licensing Ba S, the LRS search index ntrolled hard copies of the or drawings). Attach and		nger Section	with the search states	hasu (s)tnan
ocument	Section		•	•	
RS: 50.59 Unit 2. 2, 2LRW-78, 2LR BM-53B 2BM-59, T-69A, 2T-69B, 2	ALL. The search crite W-9B, 2BM-19A, 2BM-19B 2BM-61, 2BM-76, 2F-11, 2 I-15s, 2T-69A/B, Liquid Ra	E 444	TT, 20141-21	2LRW-270, 2LRW-4, 2L A, 2BM-21B, 2BM-23A, B, 2T-76A, 2T-76B, 2T-	.RW-47, 2LR\ 2BM-23B, 21A, 2T-21B,
ANUAL SECTION	IS: ALL figures in Chapter !	9 and 11. Manual sear	ch of DCP-93-200)3	
GURES: 11.2-1	sh1, 11.2-1 sh2, 11.2-2 sh1	1 and 11.2-2 sh2		·	
ertified Reviewe	do Cienado.	Keith Perkins			6/08/00
		Printe	ed Name		Date
viewer's certific	ation expiration date:	7/31/01			
sistance provide	ed by:				
Printed Na	me 	Scope of As	ssistance		Date
		·			
arch Scope Re	view Acceptability (NA	, if performed by Tec	hnical Reviewe	r per 1000.006)	
Mified Reviewer	's Signature	BUTCH H	ەدىن سىم	4	1/1/00
	a orginature		d Name		Date

Date

FORM TITLE: ARKANSAS NUCLEAR ONE		Page 1
10CFR50.59 SAFETY EVALUATION	FORM NO. 1000.131B	RÉV. 003-04-0
	This Document con	tains 1 Page.
Document No. <u>ER002631E201</u> Rev./Change No. <u>O</u>	10CFR50.59 Eval. N	
Title Changing normal position of 2BM-95, 2BM-98, 2LRW-269, 2LRW-270	(Assigned by PS) 4 other valves per E	C) R
A WRITTEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO ATTACHED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A SCONCLUSION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDAN	EACH QUESTION M SIMPLE STATEMEN NCE FOR RESPONS	MUST BE T OF SE.
If the answer to any question on this form is "Yes," then an unreviewed safety to all questions is "No," then the proposed change does not involve an unreview	swed safety question.	If the answer
 Will the probability of an accident previously evaluated in the SAR tincreased? 		io X
Will the consequences of an accident previously evaluated in the SA be increased?	-	ło X
3. Will the probability of a malfunction of equipment important to safety be increased?	y Yes ☐ N	lo X
4. Will the consequences of a malfunction of equipment important to safety be increased?		lo X
5. Will the possibility of an accident of a different type than any previous evaluated in the SAR be created?		lo X
6. Will the possibility of a malfunction of equipment important to safety a different type than any previously evaluated in the SAR be created	of Yes N	o X
7. Will the margin of safety as defined in the basis for any technical specification be reduced?	=	οX
Certified Reviewer's Signature Reith Perkins Printed Name	<u> </u>	6-8-00
Reviewer's certification expiration date: 7/31/01		Date
ssistance provided by:		
Printed Name Scope of Assistance	<u>.</u> .	Date
mA-1-		
SC review by: Make Harris	Date: 7//	3/2000

50.59 Evaluation Answers for ER002631E201

This ER changes the position of 2BM-95, 2BM-98, 2LRW-269 and 2LRW-270 as shown on M-2213 sh1 and M-2214 sh1. The valves are new valves added per DCP-93-2003 but were shown closed. The ER will also address the position of valves 2LRW-4, 2LRW-47, 2LRW-22 2LRW-7B, 2LRW-9B, 2BM-19A, 2BM-19B, 2BM-20A, 2BM-20B, 2BM-44, 2BM-21A, 2BM-21B, 2BM-23A, 2BM-23B, 2BM-53B 2BM-59, 2BM-61 and 2BM-76 such that the vendor skid can be utilized per DCP-93-2003. These valves did not get their position changed on the P&IDs as necessary to operate the new vendor skid. Ref CR-2-2000-152. SAR Figure 11.2-1 sh1&2 and figure 11.2-2 sh1&2 will be changed to show the valves in the proper position. Operations procedure 2104.014 will be changed to reflect the correct valve position. The 50.59 evaluation for DCP-93-2003 addressed using the vendor skid. The SAR text was changed when DCP-93-2003 was implemented. The P&ID change, however, only showed the new valves. It did not change the position of original valves to reflect use of the skid. The SAR search located text that was changed in the SAR to address the vendor skid.

Question 1

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

The answer is NO.

The SAR does not credit failure on the waste-processing portion (vender skid) of the LRW or BMS systems as accident initiators. Since the system is not an impact initiator it does not change the probability of an accident. The valves do not have a safety related isolation function. They are designed to be either open or closed as necessary for Operations for process wastewater. Therefore, changing the position of these valves does not create a new accident scenario such that the probability of an accident is increased.

Question 2

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

The answer is NO.

The valves do not have a safety related isolation function. They are not credited with minimizing the consequences of and accident. They are designed to be either open or closed as necessary for Operations for process wastewater. Therefore, changing the position of these valves does not create a new accident scenario such that the consequences of an accident are increased. The consequences of a loss of processed, or unprocessed, waste-water are not changed by repositioning these valves.

Question 3

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

The answer is NO

These valves are not important to safety. They do not have a safety function. The system is designed to operate with the valves in either the open or closed position as necessary for Operations to process wastewater. The valve line-up change does not create or eliminate a safety function. Therefore, the probability of malfunction of equipment important to safety is not changed.

Question 4

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

The answer is NO

These valves are not important to safety. They do not have a safety function. The system is designed to operate with the valves in either the open or closed position as necessary for Operations to process wastewater. The valves do not mitigate the consequences of any accident. Therefore, the consequences of malfunction of equipment important to safety are not changed.

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.

The valves are designed to be either open or closed as necessary for Operations for to process wastewater. Therefore, changing the position of these valves does not create a new accident. Since the system is designed for operation with the valves in either position, the possibility of a different type accident is not created.

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 valves do not interact with SSC differently or in a new way by changing status in either the open or closed position. Therefore, there are no new possibilities of malfunctions of equipment important to safety. The malfunction of these valves is not evaluated in the SAR.

Question 7

Will the margin of safety as defined in the basis for any Technical Specification be reduced?

The answer is NO.

A review was made of TS bases. The TS bases do not address or discuss this portion of the system. Nor do the bases discuss portions of the LRW or BMS systems that this change could affect. Therefore, the margin of safety is not impacted by the change.

ER002795N	201,	Revision	(
FORM TI	TLE:	:	

ARKANSAS NUCLEAR ONE

10CFR50.59 DETERMINATION

Page 3 FORM NO. 1000.131A

REV. 003-04-0

Docun	nent No.	ER002795N201	Rev./Change No.	NCPR-10		
Title		Repair of Leaking ANO-2 Hot Leg RTD N	lozzle 2TE-4610-4			
Brief o	description	of proposed change:				
Nucl The qual requ	lear Chang nozzle is ified for a irements.	ge ER002795N201 provides the modification to be repaired by weld overlay around the relimited service life (at least one cycle), but The RTD will remain in place and there is the exterior of the hot leg pipe to nozzle in	nozzle on the outsid meets ASME Secti no modification of	le of the hot leg pip ion III, Class 1 and	e. The r Section	repair is XI Code
Will th	ne propose	ed Activity:				
1.	Require a	change to the Operating License including	j:			
	Technical	Specifications (excluding the bases)?			Yes□	No⊠
	Operating	License?			Yes□	No⊠
	Confirmat	tory Orders?			Yes□	No⊠
2.	Result in (a) no lon	information in the following SAR document ger true or accurate, or (b) violate a require	ts (including drawing ement stated in the	gs and text) being document:		
	SAR (mu	lti-volume set for each unit)?			Yes⊠	No□
	Core Ope	erating Limits Report?			Yes□	No⊠
	Fire Haza	ards Analysis?			Yes□	No⊠
	Bases of	the Technical Specifications?			Yes□	No⊠
	Technica	l Requirements Manual?			Yes□	No⊠
	NRC Safe	ety Evaluation Reports?			Yes□	No⊠
3.		test or experiment not described in the SA Attachment 2 for guidance)	R?		Yes 🗌	No⊠
4.		a potential impact to the environment? (Coetermination of this form.)	omplete Environme	ntal	Yes□	No⊠
5.	Result in	the need for a Radiological Safety Evaluate	tion per section 6.1.	5?	Yes□	No⊠
6.		any potential impact to the equipment or for ventilated Storage Cask activities per Se			Yes□	No⊠
7.		a change under 10CFR50.54 for the followi	ng SAR documents			
	QAPM?				Yes□	No⊠
	E-Plan?				Yes 🗌	No⊠
8.		s review depend on future NRC approval o ER, Relief, etc)? (forward change to PSC p			Yes□	No⊠

ER002795N201, Revision 0	ARK	ANSAS NUCLEAR ONE	Page 4	l pro-
FORM TITLE:	OCEDEN EN DETERMINA	TION	FORM NO. 1000.131A	REV. 003-04-0
16	OCFR50.59 DETERMINA		<u> </u>	003-04-0
Basis for Determination	on (Questions 1, 2, & 3):	PAGE _	REV.	ØI
the hot leg RTD nozzl or functionality of the information contained untrue or inaccurate.	e design details. The cha hot leg temperature instra in the ANO-2 Technical Once the repair is made,	ons, Operating License or Canges implemented in this Numentation. Therefore, this Specifications, Operating Lithe RTD nozzle will be respected.	NCP will have no effect is modification will not c icense or confirmatory tored to compliance wi	t on the number ause Orders to be
different than the curr	ently installed configurati Analysis, Bases of the Te ent configuration of the Ho	P result in a hot leg RTD not not leg RTD not not level of cechnical Specifications or Not Leg RTD nozzles. As such	detail in the Core Opera RC Safety Evaluation	ating Limits Reports does e ANO-2
fluid, contrary to Table differs from the design	e 5.2-3. In addition, the i n transients depicted in th	in that RCS piping material repair will be qualified for <u>le</u> ne fatigue analysis for the R rstem, no LDCR will be issu	s now come in contact <u>ss thanat leas</u> t one fue RCS in the SAR. Becai	I cycle, which
by relocating the presidesign and serves the	sure boundary on the exi	s NCP are limited to code resting nozzle/pipe interface. s the original nozzle. Repaescribed in the SAR.	The repaired RTD no:	zzle is of similar
	does not require 10CFR5 em #, send LDCR to Lice	0.59 Evaluation per Attachr nsing).	ment 1, Item #	(If checked,
Search Scope:		10_10x1		
performed on LRS, the	LRS search index shouled hard copies of the doc	ocuments specified in quest d be entered under "Section uments shall be reviewed (ribute a completed LDCR	n" with the search state LRS is not verified and	ement(s) used in searches only
Document	Section			
LRS: ANO-2 50.59	(Corrosion), (Clad*) (Pl System), (Structural Ir (Resistance Temperatu	, (Leg w/5 RTD), (RCS Mat PS), (Plant Protective Syste Itegrity), (Stainless), (Well), Ire Detector), (Contact With nozzle or RTD), (Response CS or RTD)	em), (RRS), (Reactor R , (Thermal), (Thermo), n), (Alloy 600), PWSCC	Regulating (RTD), C), (Corrosion
MANUAL SECTIONS	Table 5.5-4, Table 5.5-3.6.4.2.1.1, SAR 3.7.3 5.2.5.5, SAR 5.5.3.2, S	3, Table 3.2-4, Table 5.1-1 5, Table 5.6-1, Table 7.2-2 4.2.1, SAR 5.1, SAR 5.2.1 SAR5.6.1.1, SAR 7.2.1.1.2 ons 7.2 thru 7.6, TS 3/4.4.1	, Table 7.2-3, Table 7.2 .5, SAR 5.2.3.2, SAR 5 .4, SAR 7.2.1.1.2.5.1.3	2-5, SAR 5.2.3.3, SAR
FIGURES:	Figure 5.1-1, Figure 5.	1-2, Figure 5.1-3, Figure 7.	6-3, Figure 7.2-29	
Oiling Ran Certified Reviewer's S	Signature //	William R. Rowlett, Jr. Printed Name		8/1 <u>0</u> /2000 Date

Rev./Change No. NCPR-10-

Document No. ER002795N201

FORM TITLE: 10CFR50.59 DETERM		ARKANSAS NUCLEAR ONE	Page 5 FORM NO.	REV.
		RMINATION	1000.131A	003-04-0
Title	Leak Repair of ANO-2 H	ot Leg RTD Nozzle 2TE-4610-4	PAGE	REV. Q
Reviewer's certi	fication expiration date:	5/25/2001		
Assistance prov	ided by:			
Printed !	Name	Scope of Assistance		Date
Search Scope	Review Acceptability (NA	A, if performed by Technical Revie	wer per 1000.006)	
Contified Review	ver's Signature	Joseph (King Printed Name)	Jr. 8-	Date

•••

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PAGE ____6

6 REV

ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Docume	nt No.	ER002795N201 Rev./Change No. NCPR-19	
Complet required	te the follo	ollowing Determination. If the answer to any item below is "Yes", an Environmental Eval Section 6.1.4 for additional guidance.	uation is
Will the	Activity b	being evaluated:	
<u>Yes</u>	<u>No</u>		
		Disturb land that is beyond that initially disturbed during construction (i.e., new consbuildings, creation or removal of ponds, or other terrestrial impact)? See Unit 2 SA 2.5-17. This applies only to areas outside the protected area.	
	\boxtimes	Increase thermal discharges to lake or atmosphere?	
	\boxtimes	Increase concentration of chemicals to cooling lake or atmosphere through discharg tower?	ge canal or
	\boxtimes	Increase quantity of chemicals to cooling lake or atmosphere through discharge car tower?	nal or
	\boxtimes	Modify the design or operation of cooling tower which will change drift characteristic	cs?
	\boxtimes	Install any new transmission lines leading offsite?	
	\boxtimes	Change the design or operation of the intake or discharge structures?	
	\boxtimes	Discharges any chemicals new or different from that previously discharged?	
	\boxtimes	Potentially cause a spill or unevaluated discharge which may effect neighboring so water or ground water?	ils, surface
	\boxtimes	Involve burying or placement of any solid wastes in the site area which may effect surface water or ground water?	runoff,
	\boxtimes	Involve incineration or disposal of any potentially hazardous materials on the ANO	site?
	\boxtimes	Result in a change to nonradiological effluents or licensed reactor power level?	
	\boxtimes	Potentially change the type or increase the amount of non-radiological air emission ANO site.	s from the

FORM TITLE:				
	10CFR50.59 EVALUATIO	N	FORM NO. 1000.131B	REV. 003-04-0
		10CFR5	マテ 0.59 Eval. No. <u></u> ごC	56 N #F
		((Assigned by PSC)	
Document No. ER002	<u> 95N201</u>	Rev./Change No.	NCPR-18PAGE	7
Title <u>Repair of Leaki</u>	ng ANO-2 Hot Leg RTD N	ozzie		
ATTACHED. EACH QU	SE PROVIDING THE BASIS JESTION MUST BE ANSW SUFFICIENT. ATTACHMI	VERED SEPARATELY. /	A SIMPLE STATEME	NT OF
repair of the hot leg RT will leave the internal Jequivalent to the existing qualification. A minor cand the hot leg to the of unclad carbon steel pip in SAR Section 5.2.3.2 Calculation 86-E-0074-of the RCS piping or rein 1994 that resulted in	cosed change: Nuclear Change: Description of the resulting configuration with respect thange is introduced in that sutside surface of the pipe, thange is introduced in that sutside surface of the pipe, thange material. This type of coand Table 5.2-3. However, 143), the exposure will not poair site. This document citis in the repair standpoint and will be tracket.	repair will apply an externation will be ASME Classet to RCS pressure bound the repair moves the presentation and permitting RCS floontact was intentionally as discussed in FTI Docresult in rates of corrosiontes a repair to pressurize will be qualified for less.	rnal weld to the O.D. of as 1 code qualified and lary considerations and essure boundary between the control of the control of the control of the component of the component of the component of the control of the cont	of the nozzle and distructurally ad seismic een the nozzle act with the design as noted (ANO) nise the integrity alvert Cliffs Unit it cycle, from a
•	then the proposed change y of an accident previously	does not involve an unre vevaluated in the SAR be	10- 10	on. tolècovi Yes □ No ☑
configuration. The between the leak reactor coolant to for material degration. Document 51-500 for carbon steel a minimal corrosion nozzle will be equivalent and corrosion nozzle will be equivalent to the LOCA. The reparation of the previously evaluation above, the exposion compromise the RCS pressure bottom to form the steel of the local steel of the l	e hot leg RTD nozzle restore method of repair of the noing existing J-weld and the contact the carbon steel hadation due to reactor cooled 27187-00 (ANO Calculation and alloy 600 materials expended to the carbon steel material walent to the pressure bour equirements of the ASME be tracked under the ANC hot leg RTD nozzles is a grir of the nozzle does not increased as a result of repaired in the SAR is not increased in the hot leg pipin undary, and the probability A is not increased.	res the configuration to a cozzle will result in an area new hot leg nozzle pressuct leg piping in the gap beant being in contact with a 86-E-0074-143). This cosed to reactor coolant, ial is expected. The presundary weld on the origin code. The modified nozzle condition reporting procuillotine failure of the noz troduce any new unanaly ring the nozzle. Therefor eased due to the repair of CS fluid will not result in any or repair site. As such	code-qualified, structural of unclad carbon stepsure boundary weld. The two welds carbon steel is evaluated alculation evaluates the Based on the calculates are boundary weld of all nozzle. The repair zele is qualified for less the probability of any the probability of any there is no adverse in adverse is no adverse in the probability of carbon, there is no adverse is the probability of any there is no adverse is the probability of any there is no adverse is the probability of any there is no adverse is the probability of any there is no adverse is the probability of any there is no adverse is the probability of any there is no adverse is not adverse is not adverse is no adverse is not adverse	urally equivalent eel piping This will allow The potential ted in FTI he corrosion rate tion conclusion, in the repaired of the nozzle will the thin at lest one accident small break d the likelihood on accident the As discussed sion that would impact upon the

The repair activities will not degrade the capability of the RCS to act as a fission product barrier since the pressure boundary integrity is not compromised by the change. The applicable accident is a guillotine failure of the hot leg level nozzle that results in a small break LOCA. The worst case scenario would be a

ER002	795N201, Revision 0 ARKANSAS NUCLEAR		Page 8
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	10CFR50.59 EVALUATION	1000.131B	003-04-0
	weld failure in which the nozzle is ejected from the RCS piping. The the RCS piping is unchanged from the existing design. A failure of same consequences as a failure of the existing nozzle. Since the coare bounded by the existing analysis, the consequences of an accide not increased.	<u>ne repaired nozzie w</u> nsequ <u>ences of the ar</u>	plicable accident
3.	Will the probability of a malfunction of equipment important to safety increased?	be	∕es □ No 🏻
	The RCS hot leg piping is considered equipment important to safety. considered part of the RCS pressure boundary and are therefore classafety. With the new weld installed, the hot leg RTD nozzle is restore Section III, Class 1 Code and is structurally sound. The repair will not piping. The natural frequency of the repaired RTD nozzle assembly we repair, and therefore will not be excited by the RCP running frequency repair does not change the RTD response time properties. Thermal in nozzle have been shown to be negligible. This modification does not parent RCS or negatively impact the containment isolation function. negative impact on the previously installed equipment and does not equipment or system malfunction. Therefore, the probability of a mal safety will not be increased.	sified as equipment in the compliance with the compliance with the compliance with the compliance with the compliance and the compliance of the compliance o	nportant to he ASME bads on the RCS cted by this hat the weld he repaired RTD ction of the not have a y of any
4.	Will the consequences of a malfunction of equipment important to sabe increased?	fety	Yes ☐ No 🏻
	The repair activity restores the integrity of the RCS pressure bor release paths or create new ones that could worsen the consequer worst case malfunction of the hot leg RTD nozzle would be a wele from the RCS piping. The diameter of the bore that penetrates the designs. A failure of the repaired nozzle would result in the same considered. Therefore, the consequences of a malfunction of equip increased. This modification does not have a negative impact on proteincrease the consequence of any equipment or system malfunction of equipment or performance characteristics of any equipment necessary operation of equipment important to safety.	ces of an equipment failure in which the RCS piping is the same sequences as a failure important to serviously installed equion. The modification	malfunction. The nozzle is ejected me as the existing ture of the original eafety will not be uipment and does not change
5.	Will the possibility of an accident of a different type than any previous	ısly	v . O Na Si

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

Yes 🔲 No 🔯

The activity is limited to subtle changes to the existing hot leg nozzle configuration. The worst case postulated accident associated with repair of the hot leg RTD nozzle would be a failure in which the nozzle is ejected from the RCS piping. Plausible accident scenarios associated with this feature of the plant are bounded by the existing small break LOCA analysis. Therefore, the possibility of an accident of a different type than that previously evaluated in the SAR will not be created as a result of the proposed repair of the RTD nozzle.

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 🖾

PAGE

No new equipment interrelationships or potential interactions are created by the activity. As discussed above, the exposure of RCS hot leg piping material to RCS fluid will not result in rates of corrosion that would compromise the integrity of the piping or nozzle repair site. The final configuration will be structurally equivalent to the existing nozzles.

ER002795N201, Revision 0	ARKANSAS NUCLEAR C	· · -	age 9
FORM TITLE:	EVALUATION	FORM NO. 1000.131B	REV. 003-04-0
7. Will the margin of safety as de specification be reduced? The activity restores complian boundary leakage and structur Technical Specification 3/4.4.6 specific Technical Specification nozzle will have non-destructive following the modification. The equivalent to the rest of the Respecification of the specific to the rest of the Respecification of the specification of the specification of the specification.	ce with Technical Specifications 3.4.6.2 ral integrity of ASME Code Class 1, 2, & 6.2 bases reflect the need to reduce RCS ons related to how the hot leg RTD nozzlove examination and leakage testing sufficies will provide a level of assurance again CS piping and equal to the original nozzloperation of the parent RCS or containing	& 3.4.10.1 that require 3 components respect 5 leakage to low levels e is attached to the pip cient to demonstrate z est pressure boundary e installation. Adding	ively. The There are n ing. The ero leakage failure the additional
Certified Reviewer's Signature Reviewer's certification expiration d	William R. Rowlett, Jr. Printed Name ate: 5/25/2001	8	<u>/10/2000</u> Date
Assistance provided by:			
Printed Name	Scope of Assistance		Date
	PSC review by:		11/200

	RM TITLE:	ARKANSAS NUCLEAR ONE		Page		
	VM IIILE;	10CFR50.59 DETERMINATION		FORM NO. 1000.131A	1	EV. 003-04-0
	-			PAGE	1 8	EV. O
Doc	ument No.	ER002795N202 Rev./Chang	e No.		۰۷ (5 •
Title	;	2R14 Replacement of Alloy 600 RTD and Sample/P	PT Noz	zies		
Brie	f description	n of proposed change:				
floor steel section we set the section will be set the se	ghteen of the mple/pressure replacement of the molecular personal molecular personal molecular personal molecular personal area of the termined to atterial which	ge ER002795N202 provides the modification package for the one sample Alloy 600 nozzle on the RCS hot legs. The nozzles are RTD's and one is a sample nozzle. Eight are taps, but were modified to RTDs during plant startup int this outage are the four RTDs that are below mid-loop we nozzles are only accessible when the Reactor is defur refore, because of the location of these five nozzles, this ator Outage when the Reactor will be defueled and RCS diffied RTD nozzles located on the RCS hot leg piping above to allow replacement if outage schedule permits. This by removing a portion of the existing nozzle and installing exterior of the hot leg pipe at the pipe to nozzle interfactive on the nozzle and the hot leg to the outside surface of carbon steel material to be in contact with RCS fluid. The be acceptable as documented in this NCP. The replace is more resistant to Primary Water Stress Corrosion Craftis replacement meets all ASME Section III, Class 1 and 1.5 in the replacement meets all ASME Section III, Class 1 and 1.5 in the replacement meets all ASME Section III, Class 1.5 in the replacement meets all ASME Section III, Class 1.5 in the replacement meets all ASME Section III.	here and the testing of the testing of the testing of the testing of the testing and the testing are t	re nineteen hot leg RTD nozzles weng. The nozzles the nozzles the nozzles the one sample nond the RCS Hot Lication will be instituted by the nozzle is configuration may be nozzle material will (PWSCC) than the RTD nozzle material will nozzle will nozzle material will nozzle will	nozzle original at are mazie that are mazie that will oves the ation will alluated ill be Alluated ill alluated	s total. ally nandatory t is at mid gris ring the our (4) to the disting be pressure allow a and oy 690
	the propose		illa oc	odon XI Oode lequ	11161116111	J.
1.	Require a	change to the Operating License including:				
	Technical	Specifications (excluding the bases)?			Yes□	No⊠
	Operating	License?			Yes[No⊠
	Confirmat	ory Orders?			Yes□	No⊠
2.	Result in i	information in the following SAR documents (including di ger true or accurate, or (b) violate a requirement stated i	rawing in the o	s and text) being document:		
	SAR (mui	ti-volume set for each unit)?			Yes⊠	No□
	Core Ope	rating Limits Report?			Yes□	No⊠
	Fire Haza	rds Analysis?			Yes 🗌	No⊠
	Bases of t	he Technical Specifications?			Yes□	No⊠
	Technical	Requirements Manual?			Yes□	No⊠
	NRC Safe	ty Evaluation Reports?			Yes□	No⊠
3.	Involve a (See A	test or experiment not described in the SAR? ttachment 2 for guidance)			Yes□	No⊠
4.	Result in a Impact De	a potential impact to the environment? (Complete Enviro etermination of this form.)	nmen	tal	Yes□	No⊠
5.	Result in t	he need for a Radiological Safety Evaluation per section	า 6.1.5	?	Yes[No⊠

Yes□ No⊠

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

6.

7. Involve a change under 10CFR50.54 for the following SAR documents	-04-0
BEI	
per Section 6.1.7?	<i>.</i> 0
Document No. ER002795N202 Rev./Change No. 0	
QAPM?	o⊠
E-Plan?	o⊠
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 N	o⊠
Basis for Determination (Questions 1, 2, & 3):	•
hot leg RTD or Sample/PT nozzle design details. The changes implemented in this NCP will have no effective the number or functionality of the hot leg instrumentation or Sampling. Therefore, this modification will not cause information contained in the ANO-2 Technical Specifications, Operating License or confirmatory Otto be untrue or inaccurate. The changes provided by this NCP will insure that these nozzles will be in compliance with T.S. 3.4.6.2, "Reactor Coolant System Leakage" and TS 3/4.4.10, "Structural Integrity". Question 2: The changes described in this NCP result in hot leg nozzles that have a configuration that is slightly different than the original nozzle configuration. However, the level of detail in the Core Operating Report, Fire Hazards Analysis, Bases of the Technical Specifications or NRC Safety Evaluation Reports on the describe the current configuration of these Hot Leg nozzles. As such, no changes to these ANO-2 documents are required.	ot rders Limits loes
The proposed change affects the ANO-2 SAR in that RCS piping materials now come in contact with the fluid, contrary to Table 5.2-3. This condition has been evaluated and determined to be acceptable. In additionable these replacements meet all ASME Section III, Class 1 and Section XI Code requirements. An LDCR is be submitted as part of this NCP.	dition
Question 3: The changes implemented by this NCP are limited to the replacement of Sample/PT and the modified RTD nozzles on the RCS hot leg piping. The replacement nozzle configuration is changed by upgrading the nozzle to Alloy 690 material and relocating the pressure boundary to the outer surface of the pipe at the nozzle/pipe interface. The replacement nozzles are of similar design and serve the same design as the original nozzles. These nozzle replacements do not constitute a test or experiment not described in the SAR.	a PCS
Proposed change does not require 10CFR50.59 Evaluation per Attachment 1, Item # (If checked appropriate item #, send LDCR to Licensing).	, note

CR-ANO-1-2000-0097-		ARKANSAS NUCLEAR ONE	Page 6			
FORM TITLE:		INANSAS NOCEEAR CHE	FORM NO.	REV.		
1	OCFR50.59 DETERMI	NATION	1000.131A	003-04-0		
• '						
Document No. <u>ERO</u>	02795N202	Rev./Change No.	0			
Search Scope:						
performed on LRS, the parentheses. Controlle	e LRS search index sho ed hard copies of the do	Documents specified in question uld be entered under "Section" vocuments shall be reviewed (LR stribute a completed LDCR pe	with the search state S is not verified and	ment(s) used in searches only		
<u>Document</u>	Section					
LRS: ANO-2 50.59	Materials), (2TE-4610 (Clad*) (PPS), (Plant (Structural Integrity), (RTD), (Resistance To (Corrosion Cracking),	e), (Hot Leg Sample), (Leg w/5 f *), (2TE-4635*), (2TE-4710*), (2 Protective System), (RRS), (Re (Stainless), (Well), (Thermal), (1 emperature Detector), (Contact (Weld w/30 nozzle or RTD), (Re), (Fatigue w/30 RCS or RTD)	2TE-4735*), (Incone actor Regulating Sy: Thermo), (Sample/P With), (Alloy 600), F	l), (Corrosion), stem), T Nozzle), WSCC).		
MANUAL SECTIONS:	Table 5.5-4, Table 5.5 3.6.4.2.1.1, SAR 3.7.3 5.2.5.5, SAR 5.5.3.2,	2-3, Table 3.2-4, Table 5.1-1, Ta 5-5, Table 5.6-1, Table 7.2-2, Ta 3.4.2.1, SAR 5.1, SAR 5.2.1.5, S SAR5.6.1.1, SAR 7.2.1.1.2.4, S ions 7.2 thru 7.6, TS 3/4.4.10	ble 7.2-3, Table 7.2- SAR 5.2.3.2, SAR 5.2	-5, SAR 2.3.3. SAR		
FIGURES:	Figure 5.1-1, Figure 5	.1-2, Figure 5.1-3, Figure 7.6-3,	Figure 7.2-29			
15.00 · P3	Kan Onto	Marillana D. Davidati I.	•			
Certified Reviewer's Si	ignature	William R. Rowlett, Jr. Printed Name		9/27/2000		
Reviewer's certification		25/2001		Date		
Assistance provided by	y :					
Printed Name		Scope of Assistance		Date		
Search Scope Review Acceptability (NA, if performed by Technical Reviewer per 1000.006)						
likesen (Twill	Joseph C. King Jr.				
Certified Reviewer's Si		oosepii o. Miig oi.		9/27/00		

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ER002795N202 ARKANSAS NUCLEAR ONE	Page 7	
FORM TITLE:		
10CFR50.59 DETERMINATION	FORM NO. 1000.131A	REV. 003-04-0

ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Docume	ent No.	ER002795N202	Rev./Change No0
Comple required	te the fol I. See Se	llowing Determination. If the answection 6.1.4 for additional guidanc	er to any item below is "Yes", an Environmental Evaluation is e.
Will the	Activity I	being evaluated:	
<u>Yes</u>	<u>No</u>		
	×	pullulitys, creation of temoval	t initially disturbed during construction (i.e., new construction of of ponds, or other terrestrial impact)? See Unit 2 SAR Figure eas outside the protected area.
	\boxtimes	Increase thermal discharges to	lake or atmosphere?
		Increase concentration of cher tower?	nicals to cooling lake or atmosphere through discharge canal or
	\boxtimes	Increase quantity of chemicals tower?	to cooling lake or atmosphere through discharge canal or
	\boxtimes	Modify the design or operation	of cooling tower which will change drift characteristics?
	\boxtimes	Install any new transmission lin	es leading offsite?
	\boxtimes	Change the design or operation	of the intake or discharge structures?
	\boxtimes	Discharges any chemicals new	or different from that previously discharged?
	\boxtimes	Potentially cause a spill or une water or ground water?	valuated discharge which may effect neighboring soils, surface
	×	Involve burying or placement of surface water or ground water?	f any solid wastes in the site area which may effect runoff,
	\boxtimes	Involve incineration or disposal	of any potentially hazardous materials on the ANO site?
	\boxtimes		ogical effluents or licensed reactor power level?
	\boxtimes	Potentially change the type or i	ncrease the amount of non-radiological air emissions from the

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FORM	TITLE:	4000000 50 5011111	.1	FORM NO.	REV.
		10CFR50.59 EVALUATIO	N	1000.131B	003-04-0
	failure of t	these hot leg RTD or Sample/ PT	nozzles that results in a	small break LOCA.	The worst ca
	scenario w	ould be a weld failure in which th	e nozzle is ejected from	the RCS piping. The	e diameter of
	nozzie tha	t penetrates the RCS piping is un	changed from the original	design. A failure of	tne replacem
	of the opp	uld result in the same consequence licable accident are bounded by the	es as a failure of the one	inal riozzie. Silice i	cident previou
		in the SAR are not increased.	e existing analysis, the oc	insequences or an ac	ANGONE PROVIDE
	CValuatou	In the GAR are not moreased.			
	\ B (*11) 4	and the shifteen and the same of a second and			
3.	increased	obability of a malfunction of equip	ment important to safety i	oe '	Yes □ No ⊠
	IIICIEaseu	f			163 [] 110 [2]
	The RCS	hot leg piping is considered equipn	nent important to safety.	The hot leg Sample-F	T / RTD nozz
	are consid	lered part of the RCS pressure bou	indary and are therefore of	classified as equipme	nt important to
	safety. Tr	ne replacement hot leg nozzle cont ad is structurally sound. The replace	riguration will be in compli	ance with the ASME	Section III, Cia
	the RCS r	piping. The natural frequency of the	e reniacement nozzie ass	embly, which will be	welded on the
	exterior of	f the RCS pipe, will be minimally in	npacted by this replaceme	ent, and therefore wil	not be excited
	by the RC	P running frequencies. Testing en	sures that the nozzie repl	acements will not cha	ange the RTD
		time properties. This modification			
		impact the containment isolation			
		usly installed equipment and does on. Therefore, the probability of a			
	increased		manunction of equipment	important to safety v	VIII HOLDE
	IIIOI GGGGG	•			
				·_ •	
4.	Will the co	onsequences of a malfunction of e	quipment important to sat	ety	Yes □ No ⊠
	be increas	sea r			
	Replacing	these Alloy 600 nozzles, which h	ave a history of leaking d	ue to PWSCC, with	Allov 690 nozz
	will elimin	nate RCS pressure boundary leak	age concerns at these no	ozzles. This change	does not mod
	existing 1	release paths or create new or	nes that could worsen	the consequences (<u>of an equipm</u>
	malfunction	on. The worst case malfunction of	of these hot leg nozzles	<u>would be a weld tal</u>	ore in which
	same as 1	ejected from the RCS piping. The original designs. A failure of t	he reniscement nozzie w	ould result in the sar	ne consequen
	as a failu	re of the original nozzle. Therefore	e, the consequences of a	malfunction of equip	ment importan
	safety wil	I not be increased. This modification	ation does not have a ne	egative impact on pr	eviously instal
	equipmen	t and does not increase the co	onsequence of any equi	pment or system m	naifunction.
		on does not change the operations			ment importan
	satety or	preclude the necessary operation of	or equipment important to	<u>saiety.</u>	
5.		ossibility of an accident of a different	ent type than any previous	sly	
	evaluated	in the SAR be created?			Yes ☐ No 🛚
	The activ	ity is limited to subtle changes to tl	he existina hot lea nozzle.	configuration. The we	orst case
	postulate	d accident associated with these re	epiacement hot leg nozzie	s would be a failure in	n which the
	nozzle is	ejected from the RCS piping. Plat	usible accident scenarios	associated with this fo	eature of the p
	are bound	ded by the existing small break LO	CA analysis. Therefore, the	ne possibility of an ac	cident of a
		type than that previously evaluated		<u>eated as a result of th</u>	ne installation o
	these rep	lacement hot leg instrumentation a	and sample nozzles.		
6.		ossibility of a malfunction of equip		of a	— —
	different	type than any previously evaluated	in the SAR be created?		Yes 🗌 No 🔯
	No now	equipment interrelationships or pot	tential interactions are ora	sted by the activity	As discussed
	above t	he exposure of RCS hot leg piping	material to RCS fluid will	not result in rates of	corrosion that
	would co	ompromise the integrity of the pipir	ng or replacement nozzles	. The final configura	tion will be
		ally equivalent to the original nozzl		9	

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FORM TITLE: 10CFR50.59 EVALUATION		FORM NO. 1000.131B	REV. '003-04-0
			00-111 NA
Document No. <u>ER002795N202</u>	Rev./Change No.	<u>•</u>	
Title 2R14 Replacement of Alloy 600 RTD and	i Sample/PT Nozzles	PAGE	REV. O
A M/DITTEN RESPONSE PROMIDING THE RAN			

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.

Brief description of proposed change: Nuclear Change ER002795N202 provides the modification package for the replacement of the modified RTDs and the sample Alloy 600 nozzles which are on the RCS hot legs. The replacement nozzles will be made of Alloy 690 material which is more resistant to Primary Water Stress Corrosion Cracking (PWSCC) than the original Alloy 600 material. The replacement nozzle configuration will add an external weld to the O.D. of the RCS pipe to nozzle interface and will leave a remnant of the original nozzle in the RCS pipe with the internal J-weld. This configuration moves the pressure boundary between the nozzle and the hot leg to the outside surface of the pipe and permits RCS fluid to come into contact with the unclad carbon steel piping material. This type of contact was intentionally avoided in the original design as noted in SAR Section 5.2.3.2 and Table 5.2-3. This condition has previously been evaluated in many industry and ANO documents. The most recent evaluation (FTI Document 51-5007187-00, ANO Calculation 88-E-0074-143), determined that this exposure will not result in rates of corrosion that would compromise the integrity of the RCS piping or replacement nozzles. This document cites a repair to pressurizer heater nozzles at Calvert Cliffs Unit 2 in 1994 that resulted in similar contact. The replacement configuration will be ASME Class 1 code qualified and structurally equivalent to the original configuration with respect to RCS pressure boundary considerations and seismic qualification.

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 replacement hot leg nozzle configuration is code-qualified and structurally equivalent to the original configuration. The configuration of the replacement nozzle will result in an area of unclad carbon steel piping between the remnant of the original nozzle and the new replacement new nozzle. This will allow reactor coolant to contact the carbon steel hot leg piping in the gap between the two nozzle sections. The potential for material degradation due to reactor coolant being in contact with carbon steel has been previously evaluated in multiple industry and ANO documents. The most recent evaluation is FTI Document 51-5007187-00 (ANO Calculation 86-E-0074-143). Based on these evaluations the corrosion rates for carbon steel and Alloy 600 materials exposed to reactor coolant are minimal. The pressure boundary weld on the replacement nozzle will be equivalent to the pressure boundary weld on the original nozzle. The replacement nozzle will meet all Class 1 requirements of the ASME code. The postulated accident applicable to the hot leg Sample/ PT or RTD nozzles is a quillotine failure of the nozzle, which results in a small break LOCA. The replacement nozzle does not introduce any new unanalyzed failure modes and the likelihood of a failure is not increased as a result of the installation of these replacement nozzles. Therefore, the probability of an accident previously evaluated in the SAR is not increased due to this modification of these hot leg nozzles. As discussed above, the exposure of piping material to RCS fluid will not result in adverse rates of corrosion that would compromise the integrity of the hot leg piping. As such, there is no adverse impact upon the RCS pressure boundary, and the probability of an accident previously evaluated in the SAR, such as a small break LOCA is not increased.

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

Yes ☐ No 🖾

The replacement activities will not degrade the capability of the RCS to act as a fission product barrier since the pressure boundary integrity is not compromised by the change. The applicable accident is a quillotine

ERUU2/95N2U2, Revision 0	ARKANSAS NUCLEAR C	NE P	age 10
FORM TITLE: 10CFR50.59 EVALU	ATION	FORM NO. 1000.131B	REV. 003-04-0
7. Will the margin of safety as defined in specification be reduced? These activities insure the compliance pressure boundary leakage and structu. The Technical Specification 3/4.4.6.2 to are no specific Technical Specification piping. These replacement nozzles will requirements. This will provide a level of the RCS piping and equal to the original than the interface between the exterior surface parent RCS or containment isolation for	with Technical Specifications 3. ral integrity of ASME Code Class bases reflect the need to reduce a related to how these hot leg not have non-destructive examinate of assurance against pressure beinal nozzle installation. Moving the of the RCS piping and nozzle installation.	4.6.2 & 3.4.10.1, which is 1, 2, & 3 component RCS leakage to low lead to be be be a secondaried to be	s respectively. Invels. There Ithe RCS Ith code Ithe rest Ithe to the rest Ithe to the weld at
Certified Reviewer's Signature Reviewer's certification expiration date:	William R. Rowlett, Jr. Printed Name 5/25/2001	<u>9/2</u>	7/ <i>0</i> 0 Date
Printed Name	Scope of Assistance	C	Date
	BSC ravious by:	No. Data	. alalm

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ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Document No.	ER 002796N201
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ANO site.

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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: Yes No \Box \boxtimes 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. \Box \boxtimes Increase thermal discharges to lake or atmosphere? П X Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower? \boxtimes Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or \boxtimes Modify the design or operation of cooling tower which will change drift characteristics? Ø Install any new transmission lines leading offsite? \boxtimes Change the design or operation of the intake or discharge structures? \boxtimes Discharges any chemicals new or different from that previously discharged? \boxtimes Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water? \Box M Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water? \boxtimes Involve incineration or disposal of any potentially hazardous materials on the ANO site? 図 Result in a change to nonradiological effluents or licensed reactor power level? П M Potentially change the type or increase the amount of non-radiological air emissions from the

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FORM ITTE:	10CFR50.59 EVALUATION		FOR : NO. 1000.131B	REV. , 003-04-0
	PAGEREV. (10CFR50	0.59 Eval. No. <u>#\d</u> Assigned by PSC)	± 00-084
Document No. ER 00279	5N201	Rev./Change No.	<u>o</u>	
Title Leak Repair of Pre	ssurizer Heater Nozzles		_	
THE PROPERTY OF THE PROPERTY O	PROVIDING THE BASIS FOR STION MUST BE ANSWERE FFICIENT. ATTACHMENT:	D SEDADATELV A	CIMBI E CTATEME	NT 65
of the pressurizer vessel. sleeve nozzies do not hous Fe Alloy 600 heater sleeve	ed change: This ANO-2 Nucle lozzies that have developed I The repair consists of removing the active heaters) and permain is will be partially removed by ations will be partially covere	eaks where the sleeving 8 backup heaters to nently plugging all 12	res are welded to the from service (the ren	e interior cladding naining 4 heater
	will be in conformance with the purpose of the purp			

The resulting configuration will be in conformance with the ASME Section III, 1989 edition of the code. It will be qualified and structurally equivalent or stronger than the original configuration with respect to RCS pressure boundary considerations, fatigue cycles, seismic qualification, etc. A minor change is introduced in that the repair moves the pressure boundary between the heater sleeve and the pressurizer to the outside surface of the shell, thereby permitting RCS fluid to come into contact with the shell material. This type of contact was intentionally avoided in the original design as noted in SAR Section 5.2.3.2 and Table 5.2-3. However, as discussed in FTI Document 51-5007187-00 (ANO Calculation 86-E-0074-143), "Corrosion Evaluation for Hot Leg Level Tap Nozzle Repair ANO-1," the exposure will not result in adverse rates of corrosion that would compromise the integrity of the vessel or repair site. This document cites a repair to pressurizer heater nozzles at Calvert Cliffs Unit 2 in 1994 that resulted in similar contact. Further, this document has been reviewed, and is equally applicable to ANO Unit 2 as well.

The removal of 8 backup heaters will have no impact upon the ANO-2 safety analyses since they are not credited for preventing or mitigating the consequences of any analyzed accident scenario. The proportional heaters are credited in some analyses, but these are not affected by the proposed changes. The backup heater capacity and control settings are associated with plant maneuverability or load following characteristics as discussed in SAR Section 5.3.5, but the elimination of the 8 heaters, or roughly 100 kW of capacity, will have no significant detrimental impact upon plant's existing capabilities as documented in the NCP.

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 o	f an accident previously evaluated in the SAR be	
	increased?		Yes 🗌 No 🛛

The proposed repairs to the identified 12 heater sleeve nozzles will restore the integrity of the pressurizer in accordance with ASME code. As discussed above, previous corrosion analysis has determined that the exposure of pressurizer shell material to RCS fluid will not result in adverse rates of corrosion that would compromise the integrity of the vessel or repair site. As such, there is no adverse impact upon the RCS pressure boundary, and the probability of an accident such as a SBLOCA is not increased. Integrated plant operation and maneuvering capabilities are not significantly altered by the removal of the 8 backup heaters; therefore, the likelihood of initiating or preventing a plant transient is also not significantly increased.

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

The proposed repairs will not degrade the capability of the RCS to act as a fission product barrier because the pressure boundary is not compromised by the changes, and the pressurizer backup heaters are not credited for any purpose in the accident analyses that would mitigate offsite dose consequences.

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FO	FORM NO.	Page │ REV.						
<u> </u>	1000.131/	A 003-04-0						
Do	Document No. <u>ER 002796N201</u> Rev./Change No. <u>0</u>							
Titl	Leak Repair of Pressurizer Heater Nozzles	·						
The hea par will	ef description of proposed change: This ANO-2 NCP authorizes a code repair of 12 press zles that have developed leaks where the nozzles are welded to the interior cladding of the repair consists of removing 8 backup heaters from service (the remaining 4 nozzles do noters) and permanently plugging all 12 heater sleeve nozzles. The existing Alloy 600 heater is ally removed by cutting, new Alloy 690 heater plugs will be inserted, and the 12 heater she covered by weld overlay. the proposed Activity:	ne pressurizer vessel. ot house active						
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) bein (a) no longer true or accurate, or (b) violate a requirement stated in the document:	ng						
	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:	_						
	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 TITLE:	1005DE0 SO DETE		FORM NO.	REV.
	10CFR50.59 DETE	RMINATION	1000.131A	003-04-0
Document No. ER 00)2796N201	Rev./Change No.	<u>o</u>	
Basis for Determinat	ion (Questions 1,	2 & 3):		
be operable in Modes	1. 2. & 3. Renair o	Operating License, and Confirmator kup heaters. T.S. 3.4.4 does require of the leaking nozzles in accordance or Coolant Systern Leakage* and T.S	that both proportional	heater banks
2. The change affects material contrary to Ta	the ANO-2 SAR in	n that (a) RCS fluid will now come int the installed number and maximum educed from what is described in Sec	o contact with pressuri	zer sheil
The activity is limite number of active press the SAR.	d to ASME code re urizer backup heat	epair of the pressurizer heater sleeve ters. As such, it does not constitute	e nozzies and a reducti a test or experiment no	on in the ot described in
Proposed change note appropriate item	does not require #, send LDCR to	10 CFR 50.59 Evaluation per Atta Licensing).	chment 1, Item #, ((If checked,
Search Scope:				
parentheses. Controlle	ed hard copies of the	nsis Documents specified in Question should be entered under "Section" vone documents shall be reviewed (LRS) distribute a completed LDCR per	vith the search stateme	ent(s) used in
<u>Document</u>		Section		
LRS:	50.59 – Unit 2 (pr PWSCC; "corrosic heater or sleeve)	ressurizer w/50 heater or nozzle; slee	eve w/50 heater; "alloy leeve; leak w/50 pressi	600°; Jrizer or
MANUAL SECTIONS:	ANO-2 SAR: Sec 3.4.10.1	tion 5 (all including tables), 7.7, Tabl	e 8.3-1; ANO-2 T.S. 3.	<u>4.4, 3.4.6.2,</u>
FIGURES:	ANO-2 SAR: Sec	tion 5 figures (all)		
Certified Reviewer's Sig	Sully nature	Edward Paul Blackard	8/3.	
Reviewer's certification	· ·	Printed Name	Da	ate
Assistance provided by:		3/22/01		
Printed Name		Scope of Assistance		ate
Search Scope Review Acceptability (NA, if performed by Technical Review per 1000.006)				
Certified Reviewer's Sig	mature	Joe King Printed Name	8/1	100
•	•	od Hamo	•	(Date

	P 002796N201 REV 0	P	RKANSAS NUCLEAR ONE		Page
FO	RM TITLE:	10CFR50.59 EVALUA	ATION	FORM NO. 1000.131B	REV. , 003-04-0
3.	Will the probability o increased?	f a maifunction of	equipment important to safety t	De .	Yes ☐ No 🏻
	their likelihood of malfi	Inction. The back	important to safety, but the ba operability of the pressurizer or up heaters are electrically sepa eater sleeve plugs installed, the de.	the proportional hea	ters or increase
4.	Will the consequence be increased?	es of a malfunction	of equipment important to safe	ety	Yes ☐ No ⊠
	The second of th	ile hen ohes hish i	y of an existing RCS pressure to could worsen the consequence ne of the safety analyses, and t	6 66 68 68 68 6 6 6 6 6 6 6 6 6 6 6 6 6	modify existing
5.	Will the possibility of evaluated in the SAF	an accident of a di	ifferent type than any previousl	y	Yes ☐ No ⊠
			ackup pressurizer heaters from r to the outside surface on eac bounded by the existing SBLC		the pressure eves. Complete
6.	Will the possibility of different type than an	a malfunction of ed by previously evalu	quipment important to safety of ated in the SAR be created?		Yes □ No ⊠
	corrosion that would	compromise the in	potential interactions are creat surizer shell material to RCS flu tegrity of the pressure vessel of nan the original design of the h	id will not result in ac	iverse rates of
7.	Will the margin of saf specification be reduce	ety as defined in th ced?	ne basis for any technical	,	Yes ☐ No ⊠
	the backup heaters. Th	e proposed repairs re boundary leaka	requires a water volume of ≤ leither the technical specification restore compliance with Tech ge and structural integrity of As	on nor its basis credit	s operation of
Cert	ified Reviewer's Signatu	lulut Ire	Edward Paul Blackard		8/3/00
	iewer's certification expi		Printed Name		Date
	stance provided by:	iduon uale:3	<u>1/22/01</u>		
	Printed Name		Scope of Assistance		Date
	review by:	Nukal	Date:	8/4/00)

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FOR	M TITLE:	10CFR50.59 DETERMINATION	FORM NO. 1000.131A	RE\ 0	V. 03-04-0		
		PAGEREV_O	This Document cor	ntains 3	Pages.		
Docu	ment No.	ER002796N202 Rev./Change No	0				
Title		PRESSURIZER HEATER REPAIR					
Brief	description	n of proposed change:					
of I bac bac -U3	During the recent 2P2K outage, eight (8) pressurizer heaters and four (4) dummy heaters were plugged because of leaks. This Modification authorizes the restoration of the remaining twelve (12) dummy heaters to active backup heaters and repair one (1) active heater in the backup heater banks. This will restore all the original backup pressurizer heaters to active status. These heaters are 2EHTR-AA2, -C2, -L1, -L2, -M1, -P3, -T1, -T3 -U3, -V2, -W3, -Y2 and -Y3. This modification also updates WMS for heaters plugged per ER002796N201 and deletes 2EHTR-A2, -AA3, -AA4, -B1, -B2, -B3, -B4, -C3, -D2, -D3, -D4, and -G2.						
Will 1	he propose	ed Activity:					
1.	Require a	change to the Operating License including:					
	Technical	Specifications (excluding the bases)?		Yes□	No⊠		
	Operating	License?		Yes□	No⊠		
	Confirmat	tory Orders?		Yes□	No⊠		
2.		information in the following SAR documents (including drawing ger true or accurate, or (b) violate a requirement stated in the					
	SAR (mul	ti-volume set for each unit)?		Yes⊠	No□		
	Core Ope	rating Limits Report?		Yes□	No⊠		
	Fire Haza	ords Analysis?		Yes□	No⊠		
	Bases of t	the Technical Specifications?		Yes□	No⊠		
	Technical	Requirements Manual?		Yes□	No⊠		
	NRC Safe	ety Evaluation Reports?		Yes□	No⊠		
3.		test or experiment not described in the SAR? Attachment 2 for guidance)		Yes□	No⊠		
4.		a potential impact to the environment? (Complete Environment etermination of this form.)	ental	Yes[No⊠		
5.	Result in t	the need for a Radiological Safety Evaluation per section 6.1	.5?	Yes[No⊠		
6.		any potential impact to the equipment or facilities r Ventilated Storage Cask activities per Section 6.1.6?		Yes□	No⊠		
7.	Involve a per Section	change under 10CFR50.54 for the following SAR documents on 6.1.7?	5				
	QAPM?			Yes⊡	No⊠		
	E-Plan?			Yes□	No⊠		
8.		review depend on future NRC approval of other actions? R, Relief, etc)? (forward change to PSC per 6.3.8 or 6.3.9)		Yes⊡	No⊠		

FORM TITLE: 10CFR50.59 DETERMIN	IATION	FORM NO. 1000.131A	REV. 003-04-0		
Document NoER002796N202	Rev./Change No.				
Basis for Determination (Questions 1, 2, & 3	3):	REV O			
This modification will electrically restore and re-connect twelve (12) backup pressurizer heaters and repair one (1) backup pressurizer heater. A review of the Plant Operating License documents found no impact associated with this package. A review of the Safety Analysis documents found mention of the total number of Pressurizer Heaters and available heating capacity in Section 5.5.10.2 and Tables 5.3-2 and 5.5-6. This number had been reduced by 9 to (69) per LDCR for ER002796E201. A Licensing Document Changer Request is submitted to increase this number to (82) with the restoration of (12) backup heaters, and the repair of one (1) heater. Since this modification only adds (12) backup heaters, repairs one (1) and deletes twelve (12) from the WMS database, the proportional (safety related) heaters remain unchanged, and remain thoroughly bound by SAR accident analysis. Additionally, this change does not constitute a test nor an experiment not already described in the Safety Analysis Report.					
Proposed change does not require 10CFRs appropriate item #, send LDCR to Licensing	50.59 Evaluation per Attachme g).	ent 1, Item # (If ch	ecked, note		
Search Scope:					
List sections reviewed in the Licensing Basis Deperformed on LRS, the LRS search index shou parentheses. Controlled hard copies of the doctext, not figures or drawings). Attach and dist required.	ld be entered under "Section" : cuments shall be reviewed (LR	with the search statem S is not verified and s	ent(s) used in earches only		
Document Section					
LRS: <u>Unit 2 - 50.59</u> , All Correspondence (2EH) backup heaters, heater capacity)	TR, pressurizer heater, pressu	rizer backup, pressuriz	er capacity.		
MANUAL SECTIONS: 5.5.10.2, 7.7.1.1.2, Ta	ble 5.3-2, Table 5.5-6				
FIGURES: <u>8.3-20</u>					
Certified Reviewer's Signature	Douglas A. Bruce Printed Name		9/11/00 Date		
Reviewer's certification expiration date: 2/2	5/01				
Assistance provided by:	• .				
Printed Name	Scope of Assistance		Date		
Search Scope Review Acceptability (NA, if p	erformed by Technical Review	ver per 1000.006)	101/00		
Certified Reviewer's Signature	Printed Name		Date		

ARKANSAS NUCLEAR ONE

FORM TITLE:

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ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

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		llowing Determination. If the section 6.1.4 for additional gu	answer to any item below is "Yes", an Er idance.	nvironmental Evaluation is
Will the	Activity	being evaluated:		
<u>Yes</u>	<u>No</u>			
	\boxtimes	buildings, creation or ren	nd that initially disturbed during construct noval of ponds, or other terrestrial impact y to areas outside the protected area.	ion (i.e., new construction of)? See Unit 2 SAR Figure
	\boxtimes	Increase thermal dischar	ges to lake or atmosphere?	
	\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\ti}\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\texi{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\texi{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\texi}\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\texi}\text{\text{\text{\texi}\tex{\text{\text{\text{\text{\text{\texi}\tiex{\tiin}\tint{\tiint{\text{\text{\text{\texi}\text{\text{\texi}\text{\texit{\text{\texi}	Increase concentration o tower?	f chemicals to cooling lake or atmosphere	e through discharge canal or
	\boxtimes	Increase quantity of cher tower?	micals to cooling lake or atmosphere thro	ugh discharge canal or
	\boxtimes	Modify the design or ope	eration of cooling tower which will change	drift characteristics?
	\boxtimes	Install any new transmiss	sion lines leading offsite?	
	\boxtimes	Change the design or op	eration of the intake or discharge structu	res?
	\boxtimes	Discharges any chemica	ls new or different from that previously di	ischarged?
	\boxtimes	Potentially cause a spill water or ground water?	or unevaluated discharge which may effe	ect neighboring soils, surface
	\boxtimes	Involve burying or placer surface water or ground	ment of any solid wastes in the site area water?	which may effect runoff,
	\boxtimes	Involve incineration or di	isposal of any potentially hazardous mate	erials on the ANO site?
	\boxtimes	Result in a change to no	nradiological effluents or licensed reactor	r power level?
	\boxtimes	Potentially change the ty ANO site.	pe or increase the amount of non-radiolo	ogical air emissions from the

ER00279			Domo 4
FORM	TITLE: 10CFR50.59 SAFETY EVALUATION	FORM NO. 1000.131B	REV. 003-04-0
	PAGEREV. O	This Document co	ntains 2 Pages.
Docume	ent No. <u>ER002796N202</u> Rev./Change No. <u>0</u>	10CFR50.59 Eval	. No. FEN# 00-
Title _F	PRESSURIZER HEATER REPAIR	(Assigned by F	-SC)
CONCL	TEN RESPONSE PROVIDING THE BASIS FOR THE ANSWER TO HED. EACH QUESTION MUST BE ANSWERED SEPARATELY. A USION IS NOT SUFFICIENT. ATTACHMENT 2 PROVIDES GUIDAI	SIMPLE STATEM NCE FOR RESPO	ENT OF NSE.
If the an to all qu	swer to any question on this form is "Yes," then an unreviewed safety estions is "No," then the proposed change does not involve an unrevi	question is involve wed safety questi	ed. If the answer on.
1.	Will the probability of an accident previously evaluated in the SAR increased?	be Yes □	No 🖂
	The accident analysis for Unit 2 SAR does not consider the Pressuri. Backup Heaters. The accident initiators evalued in the SAR accident analyses are not affected by the restoration of the Backup Heaters. This modification does not invalidate the failure modes outlined in the SAR, nor does this activity increase the frequency of any accident initiator. Therefore, the probability of an accident previously evaluate in the SAR is not increased.	et 9	
2.	Will the consequences of an accident previously evaluated in the S. be increased?	AR Yes 🗌	No 🖾
	The restoration and addition of Backup Heaters does not affect the consequences of any previously evaluated accident. This ER does r invalidate any accident assumption nor consequences outlined in the SAR. Offsite dose rates are unaffected by this modification. Therefore the consequences of an accident previously evaluated in the SAR and not increased by this modification.	e ore	
3.	Will the probability of a malfunction of equipment important to safet be increased?	y Yes □	No 🖂
	This modification does not alter nor affect the function or capability of any equipment required to perform a safety related function. The restoration of Backup heaters previously removed and evaluated per FFN#00-085 does not affect the operation of any existing safety equipment as the proportional heaters remain unaffected. This modification has no impact on system reliability, separation, seismic features, specification or safety loads. Therefore, the probability of a malfunction of equipment important to safety remains unchanged.		
4.	1 a 4111 · ·	Yes 🗌	No 🖾
	This modification adds and restores backup heaters in the Unit 2 pressurizer within the pressure boundary, and as such has no impact potential radiological releases. This modification does not impact equipment such that offsite dose rates are increased. Therefore, the consequences of a malfunction of equipment important to safety are increased.		
5.	Will the possibility of an accident of a different type than any previous evaluated in the SAR be created?		No 🖾
	Restoration of backup pressurizer heaters cannot become initiators o any new type of accident previously evaluated in SAR. The system to	f nas	

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FORM T			FORM NO.	REV.
	10CFR50.59 SAFETY	/ EVALUATION	1000.131B	003-04-0
	previously evaluated. Therefor different type than any previous by this modification.	is bounded by existing accident analge, the possibility of an accident of a sly evaluated in the SAR is not created.	ed	garangan kanangan Seria.
6.	a different type than any previo	ction of equipment important to safe ously evaluated in the SAR be created	ed?	No 🛚
	safety related functions are not restoration of backup heaters of failure scenarios. The existing bounds this condition to where	proportional heaters to perform their compromised by this modification. reates no new equipment failures no Unit 2 SAR failure analysis therefore the possibility of a malfunction of of a different type than any previousle ated.	The or e	
7.	• • • • • • • • • • • • • • • • • • • •	efined in the basis for any technical	Yes 🗌	No 🗵
	The backup pressurizer heaters Tech Spec reviewed. Restoring	s are not discussed in the bases for a g these heaters will not impact any T margin of safety is not reduced.	any Fech	
Al.	da. a Ba	Douglas A. Brud	:e	9-11-00
Ce	ertified Reviewer's Signature	Printed Name		Date
Reviewe	er's certification expiration date:	2/25/01		
Assistan	ce provided by:			
F	Printed Name	Scope of Assistance		Date
PSC rev	riew by: Show		Date: _	9/25/00

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

				I his Document com	ains 3 P	ages.
Docui	ment No.	ER002804E203 R	tev./Change No.	0		
Title		Evaluate Balance Drum and Sleeve for Ma	terial Substitutior	1		
Brief	description	of proposed change:				
thar	s evaluation n that origin erial.	n concerns the replacement of certain HPSI particularly provided. The change is necessary due	oump wetted con to obsolescence	nponents with a mat and unavailability o	erial diff of the ori	erent ginal
Will t	he propose	ed Activity:				
1.	, .	change to the Operating License including:				
	·	Specifications (excluding the bases)?			Yes□	No⊠
	Operating	License?			Yes⊡	No⊠
	Confirmat	ory Orders?			Yes□	No⊠
2.		information in the following SAR documents ger true or accurate, or (b) violate a requirem				
	SAR (mu	ti-volume set for each unit)?			Yes⊠	No
	Core Ope	rating Limits Report?			Yes□	No⊠
	Fire Haza	rds Analysis?			Yes□	No⊠
	Bases of	the Technical Specifications?			Yes 🗌	No⊠
	Technica	Requirements Manual?			Yes□	No⊠
	NRC Safe	ety Evaluation Reports?			Yes□	No⊠
3.		test or experiment not described in the SAR Attachment 2 for guidance)	?		Yes□	No⊠
4.		a potential impact to the environment? (Cometermination of this form.)	plete Environme	ental	Yes□	No⊠
5.	Result in	the need for a Radiological Safety Evaluation	n per section 6.1	.5?	Yes 🗌	No⊠
6.		any potential impact to the equipment or fac or Ventilated Storage Cask activities per Sect			Yes□	No⊠
7.	Involve a per Secti	change under 10CFR50.54 for the following on 6.1.7?	SAR documents	3		
	QAPM?				Yes□	No⊠
	E-Plan?				Yes□	No⊠
8.		review depend on future NRC approval of o R, Relief, etc)? (forward change to PSC per	6 2 8 or 6 3 0)	02 804E203	Yes□	No⊠

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FORM TITLE:	10CFR50.59 DETER	MINATION	FORM NO. 1000.131A	REV. 003-04-0
Document No	ER002804E203	Rev./Change No.	0	
•				
	mination (Questions 1, 2,			
license is requ	ired.	not describe pump construction d		
changes would martensitic sta austenitic stair	d cause certain SAR statem inless steel in contrast to the	reviewed and information was disc nents to be untrue or inaccurate. he description of existing compon already been addressed via an L	Certain replacement in ents in contact with the	materials are ne RCS as
Question 3 – N maintenance t	No test or experiment not d esting will consist of previous	escribed in the SAR will be introdously established test methods and	uced by this change. d procedures.	Post
	hange does not require 100 item #, send LDCR to Lice	CFR50.59 Evaluation per Attachm nsing).	nent 1, Item # (If checked, note
Search Scope:				
parentheses. C	controlled hard copies of the	should be entered under "Section e documents shall be reviewed (L distribute a completed LDCR p	RS is not verified and	searches only
		austenitic, martensitic, high pressu	ure safety injection, 2F	P-89A, 2P-89B,
2P-89C)	<u> </u>			
MANUAL SECT	TIONS: Section 6			
Stephen	le 6,3-1 and Figures 6.3-3 wer's gignature	and 6.3-4 Stephen J. Lynn Printed Name		<i> 0-3 -00</i> Date
Reviewer's cert	tification expiration date:	5/26/01		
Assistance prov	vided by:			
Printed	Name	Scope of Assistance		Date
Randall	S. Smith LRS			10/11/00
Coarab Caara	Poviow Accontability (N	A, if performed by Technical Rev	iewer ner 1000 006\	
M. 16	A	Michael Keith But		10-31-00
	ewer's Signature	Printed Name		Date

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	ARKANSAS NUCLEAR ONE		Page 3
FORM TITLE:		FORM NO.	REV.
	10CFR50.59 DETERMINATION	1000.131A	003-04-0

ENVIRONMENTAL IMPACT DETERMINATION (UNIT 1 and UNIT 2)

Docume	nt No.	ER002804E203
		llowing Determination. If the answer to any item below is "Yes", an Environmental Evaluation is section 6.1.4 for additional guidance.
Will the	Activity	being evaluated:
<u>Yes</u>	<u>No</u>	
		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.
	\boxtimes	Increase thermal discharges to lake or atmosphere?
	\boxtimes	Increase concentration of chemicals to cooling lake or atmosphere through discharge canal or tower?
	\boxtimes	Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower?
	\boxtimes	Modify the design or operation of cooling tower which will change drift characteristics?
	\boxtimes	Install any new transmission lines leading offsite?
	\boxtimes	Change the design or operation of the intake or discharge structures?
	\boxtimes	Discharges any chemicals new or different from that previously discharged?
	\boxtimes	Potentially cause a spill or unevaluated discharge which may effect neighboring soils, surface water or ground water?
	\boxtimes	Involve burying or placement of any solid wastes in the site area which may effect runoff, surface water or ground water?
	\boxtimes	Involve incineration or disposal of any potentially hazardous materials on the ANO site?
	\boxtimes	Result in a change to nonradiological effluents or licensed reactor power level?
	\boxtimes	Potentially change the type or increase the amount of non-radiological air emissions from the ANO site.

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FORM TITLE: 10CFR50.59		AFETY EVALUATION		FORM NO. 1000.131B	REV. 003-04-0		
				This Document of	contains 1 Page.		
Documen				10CFR50.59 Eva (Assigned by	ul. No. <i>FFN#00-136</i> PSC)		
Title Ev	valuate Balance Drum an	d Sleeve for Material Substitutio	n				
ATTACH	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 ans to all que	wer to any question on the stions is "No," then the p	nis form is "Yes," then an unrevie roposed change does not involve	ewed safety e an unrevie	question is involved safety quest	ved. If the answer tion.		
1.	Will the probability of an increased?	n accident previously evaluated i	in the SAR i	pe Yes □	No 🖾		
2.	Will the consequences be increased?	of an accident previously evalua	ted in the S	AR Yes □	No 🖾		
3.	Will the probability of a be increased?	malfunction of equipment impor	tant to safet	y Yes 🗌	No 🖾		
4.	Will the consequences safety be increased?	of a malfunction of equipment in	nportant to	Yes □	No 🛚		
5.	•	n accident of a different type than e created?	n any previo	usly Yes 🗌	No 🛚		
6.		malfunction of equipment import y previously evaluated in the SA			No 🛚		
7.	Will the margin of safet specification be reduce	ty as defined in the basis for any d?	technical	Yes 🗌	No 🛚		
Stip	ntified Reviewer's Signati		hen J. Lynn nted Name		/ <u>/0-3/-00</u> Date		
Reviewer's certification expiration date: 5/26/01							
Assistance provided by:							
F	Printed Name	Scope of Assis	stance		Date		
Ra	indall S. Smith	LRS Search					

_____ Date: ________0

		D
ARKANSAS NUCLEAR ONE		Page 1
FORM TITLE:	FORM NO.	REV.
10CFR50.59 REVIEW CONTINUATION PAGE	1000.131C	003-04-0

Document No.	ER002804E203	Rev./Change No.	0

10CFR50.59 Review Continuation Page

Background

The ANO-2 HPSI pumps are Class 2 components which function to inject borated water into the RCS if a break occurs in the RCS pressure boundary. The HPSI pumps are also used during recirculation to maintain a water circulation through the core for extended periods of time following a LOCA.

Modification Scope

This evaluation concerns the replacement of certain HPSI pump wetted components with a material different than that originally provided. The change is necessary due to obsolescence and unavailability of the original material.

Basis for Design Acceptability

The replacement materials meet or exceed the original design criteria for the affected pump components. No limitations or restrictions will be imposed by this change.

The change is internal to the HPSI pump assembly. The HPSI system is affected only in the sense of anticipated reduction in maintenance activities associated with the pump. The electrical supply system is unaffected because the changes are not expected to result in any detectable change in the power consumption levels for starting or operation at any flow point. No other SSC is affected by any of these changes.

Design margin for the ANO-2 HPSI pumps is defined in terms of minimum required hydraulic performance in the ANO-2 Technical Specifications and the ANO-2 SAR.

Materials Discussion

SAR section 6.3.2.4, "Materials Specifications and Compatibility", states that "Basically all materials in contact with radioactive coolant are austenitic stainless steel... ", while section 6.3.2.19, "Materials" states "....the components of the SIS are fabricated of austenitic stainless steel...". The use of the word austenitic causes the need for a SAR change to accommodate the martensitic steel to be substituted for the original material of the subject pump components. That SAR change has previously been initiated via an LDCR associated ER002804N201.

Additionally, Section 6.3.2.2.4, "High Pressure Safety Injection Pumps", states "The pressure containing parts of the pump are stainless steel with internals selected for compatibility with boric acid solutions. The materials selected are analyzed to ensure that differential expansion during the design transients can be accommodated." Finally, Table 6.3-1 identifies the pump material as Stainless Steel, ASTM-A-351 Gr CF8M. These sections will not require revision to accommodate new materials.

Operational Considerations

- No change to emergency and abnormal operating modes is created by this change.
- ♦ The ANO-2 HPSI pumps do not serve any function related to ANO-1. No shared systems and interfaces between Unit 1 and Unit 2 are affected by this change.
- The change in no way impacts single failure criteria for the HPSI pumps or their ability to meet that criteria. All three pumps will continue to be available for normal and emergency operation via either train of the HPSI system.
- The pump characteristic curve for any HPSI pump will not be affected. Power consumption also will not be affected by the changes described in this package.

 ER002804E203
- No new failure modes are introduced by this change.

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FORM TITLE:

10CFR50.59 REVIEW CONTINUATION PAGE

Determination of Unreviewed Safety Question

Question 1 Response:

This change affects specific HPSI pump components. No accident previously evaluated in the SAR is promulgated to a failure of a HPSI pump. The HPSI pumps are normally in a standby condition and are activated in response to accident conditions. Therefore, the probability of an accident previously evaluated in the SAR will not be increased.

Question 2 Response:

The hydraulic performance of the pump is not affected in terms of discharge head and pressure, nor are net positive suction head (NPSH) requirements increased. Therefore, the consequences of an accident previously evaluated in the SAR will not be increased.

Question 3 Response:

The modified pumps will continue to meet the operational aspects of the original design specification and the design margin as defined by the ANO-2 Technical Specifications and SAR documents. No other aspect of system operation is affected. Therefore, the probability of a malfunction of equipment important to safety will not be increased.

Question 4 Response:

The modifications are restricted to the pump itself with no impact or effect on any other SSC. The failure modes of a HPSI pump equipped with this component material is the same as those for a pump with the original pump (no flow, degraded flow, leakage). Therefore the consequences of a malfunction of equipment important to safety will not be increased.

Question 5 Response:

The HPSI pumps are not presently assigned any role in the initiation of any accident evaluated in the SAR. They are and will continue to be utilized strictly in a reactive mode as a tool in accident mitigation. Auto-start setpoints and criteria for securing a HPSI pump also remain unchanged. The change per this evaluation will be transparent to all HPSI and ECCS system functions. Therefore, the possibility of an accident of a different type than any previously evaluated in the SAR will not be created.

Question 6 Response:

The location, orientation, hydraulic performance, NPSH requirements/availability, power requirements and system interface remain unchanged. The ability to start and operate during a seismic event or at reduced motor supply voltages is not degraded as a result of this change. The debris passing capability is not reduced. 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.

Question 7 Response:

Start and run capability (including operation at reduced voltage and during seismic events), hydraulic performance (including operation at available NPSH), debris passing capability, tolerance to thermal transients, operation at vibration levels sufficiently low to ensure required mission time capability, internals resistance to corrosion and limited leakage (with or without a temporary loss of cooling water) are all implicit criteria serving to establish the margin of safety provided by the HPSI pumps. System requirements for limiting runout flow and providing proper flow splits and pump requirements for providing adequate flow are specifically addressed in the applicable Tech Spec bases. In each area, either a positive impact or no impact will be caused by this change. In all aspects, both specified and implied, the margin of safety as defined in the bases for any technical specification will not be reduced.

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_			ARKANSAS NUCLEAR ONE		Page 1		
FOF	RM TITLE:	10CFR50.59 R		FORM NO. 1000.131D	REV. 003-04-0		
				This Document cont	ains 1 Page.		
Doc	ument No.	ER002804E203	Rev./Change No1_	10CFR50.59 Eval. No.	FFN-00-136		
				Revision No.	1		
Eva	This form is to be used to document Revisions to 10CFR50.59 Evaluations. Revisions to a 10CFR50.59 Evaluation after PSC review may become necessary due to SRC review, changes to the original document, etc. Refer to section 6.2.4 of this procedure for additional guidance.						
Rea	son for revi	sion to 10CFR50.59 Eva	luation:				
whii sim the cree	This revision was requested by the SRC 50.59 evaluation subcommittee. Revision 0 of this 50.59 evaluation, while not specifically stating so, relied upon the 50.59 evaluation generated for ER002804N201 which related to similar material substitution. Revision 0 of this evaluation therefore did not attempt to re-address the specifics of the material change in the evaluation. The LDCR generated as a result of ER002804N201 was specifically credited and remains so. This revision to FFN-00-136 still references that LDCR, but provides a stand alone evaluation with respect to the material substitution.						
Wil	I the propos	ed revision result in any	additional:				
1)	Change	to the Operating License	?	Yes ☐ No 🏻			
2)	Change	to other Licensing Basis	Document?	Yes ☐ No 🏻			
3)	Conduct	of test or experiment?		Yes ☐ No 🏻			
4)	Impact t	o the environment?		Yes ☐ No 🛭			
5)	Need fo	r a Radiological Safety E	valuation?	Yes ☐ No 🗵			
6)	Impact \	المرابعة Ventilated Storage Cask المرابعة	Activities	Yes ☐ No 🗵			
7)		he QAPM or E-Plan?		Yes 🗌 No 🗵			
lf y	yes, describ	e below and take approp	riate action as per initial Dete	mination:			
N/	Α						
pa ex fr	age of the fo ktensive cha ont of previous Light Reviews	orm(s). Changes should langes new forms may be		e margin denoting changes. A view. Printed Name	3-/3-01 Date		
Р	SC review:	1,200			ate: 5/15/01		

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FORM TITLE:

10CFR50.59 REVIEW CONTINUATION PAGE

FORM NO. 1000.131C Page 2 REV. 003-04-0

Determination of Unreviewed Safety Question

Question 1 Response:

This nuclear change modifies specific HPSI pump components. No accident previously evaluated in the SAR is postulated due to a failure of a HPSI pump. The HPSI pumps are normally in a standby condition and are activated in response to accident conditions. The vendor recommended change in material for the subject pump internal components does not introduce any possibility to cause a change to that condition. Therefore, the probability of an accident previously evaluated in the SAR will not be increased.

Question 2 Response:

The hydraulic performance of the pump is not affected in terms of discharge head and pressure, nor are net positive suction head (NPSH) requirements increased. The change in balance sleeve and drum material introduces no new failure modes or effects for the HPSI pumps and will be transparent in terms of pump capability. Therefore, the consequences of an accident previously evaluated in the SAR will not be increased.

Question 3 Response:

The modified pumps will continue to meet the operational aspects of the original design specification and the design margin as defined by the ANO-2 Technical Specifications and SAR documents. No other aspect of system operation is affected. The subject pump internal components are not pressure boundary components. The replacement material is vendor recommended (previous material is obsolete) and has been evaluated by ANO for acceptability. ANO has concurred with the vendor assessment that the components constructed of the replacement material do not affect form, fit or function of the components. Therefore, the probability of a malfunction of equipment important to safety will not be increased.

Question 4 Response:

The modifications are restricted to the pump itself with no impact or effect on any other SSC. The form, fit or function of the balance drum and sleeve is unaffected by the change and the failure modes of a HPSI pump equipped with this component material are the same as those for a pump with the original materials. (no flow, degraded flow, leakage). Therefore the consequences of a malfunction of equipment important to safety will not be increased.

Question 5 Response:

The HPSI pumps are not assigned any role in the initiation of any accident evaluated in the SAR. They are and will continue to be utilized strictly in a reactive mode as a tool in accident mitigation. Auto-start setpoints and criteria for securing a HPSI pump also remain unchanged. The change per this evaluation will be transparent to all HPSI and ECCS system functions. Therefore, the possibility of an accident of a different type than any previously evaluated in the SAR will not be created.

Question 6 Response:

The location, orientation, hydraulic performance, NPSH requirements /availability, power requirements and system interface remain unchanged. The ability to start and operate during a seismic event or at reduced motor supply voltages is not degraded as a result of this change. The debris passing capability is not reduced. Form, fit and function are unaffected by this vendor recommended material substitution. 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.

Question 7 Response:

Start and run capability (including operation at reduced voltage and during seismic events), hydraulic performance (including operation at available NPSH), debris passing capability, tolerance to thermal transients, operation at vibration levels sufficiently low to ensure required run time capability, internals resistance to corrosion and limited leakage (with or without a temporary loss of cooling water) are all implicit criteria serving to establish the margin of safety provided by the HPSI pumps. System requirements for limiting runout flow and providing proper flow splits and pump requirements for providing adequate flow are specifically addressed in the applicable Tech Spec bases. In each area, either a positive impact or no impact will be caused by this change. In all aspects, both specified and implied, the margin of safety as defined in the bases for any technical specification will not be reduced by use of the new balance sleeve and drum material.

FORM TITLE:

10CFR50.59 REVIEW CONTINUATION PAGE

FORM NO. 1000.131C Page 2 REV. 003-04-0

Determination of Unreviewed Safety Question

Question 1 Response:

This change affects specific HPSI pump components. No accident previously evaluated in the SAR is promulgated to a failure of a HPSI pump. The HPSI pumps are normally in a standby condition and are activated in response to accident conditions. Therefore, the probability of an accident previously evaluated in the SAR will not be increased.

placecl

Question 2 Response:

The hydraulic performance of the pump is not affected in terms of discharge head and pressure, nor are net positive suction head (NPSH) requirements increased. Therefore, the consequences of an accident previously evaluated in the SAR will not be increased.

Question 3 Response:

The modified pumps will continue to meet the operational aspects of the original design specification and the design margin as defined by the ANO-2 Technical Specifications and SAR documents. No other aspect of system operation is affected. Therefore, the probability of a malfunction of equipment important to safety will not be increased.

Question 4 Response:

The modifications are restricted to the pump itself with no impact or effect on any other SSC. The failure modes of a HPSI pump equipped with this component material is the same as those for a pump with the original pump (no flow, degraded flow, leakage). Therefore the consequences of a malfunction of equipment important to safety will not be increased.

Question 5 Response:

The HPSI pumps are not presently assigned any role in the initiation of any accident evaluated in the SAR. They are and will continue to be utilized strictly in a reactive mode as a tool in accident mitigation. Auto-start setpoints and criteria for securing a HPSI pump also remain unchanged. The change per this evaluation will be transparent to all HPSI and ECCS system functions. Therefore, the possibility of an accident of a different type than any previously evaluated in the SAR will not be created.

Question 6 Response:

The location, orientation, hydraulic performance, NPSH requirements/availability, power requirements and system interface remain unchanged. The ability to start and operate during a seismic event or at reduced motor supply voltages is not degraded as a result of this change. The debris passing capability is not reduced. 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.

Question 7 Response:

Start and run capability (including operation at reduced voltage and during seismic events), hydraulic performance (including operation at available NPSH), debris passing capability, tolerance to thermal transients, operation at vibration levels sufficiently low to ensure required mission time capability, internals resistance to corrosion and limited leakage (with or without a temporary loss of cooling water) are all implicit criteria serving to establish the margin of safety provided by the HPSI pumps. System requirements for limiting runout flow and providing proper flow splits and pump requirements for providing adequate flow are specifically addressed in the applicable Tech Spec bases. In each area, either a positive impact or no impact will be caused by this change. In all aspects, both specified and implied, the margin of safety as defined in the bases for any technical specification will not be reduced.

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