

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

5N 157B Lookout Place

SEP 12 1988

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

Gentlemen:

In the Matter of
Tennessee Valley Authority

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)

Docket Nos. 50-259
50-260
50-296

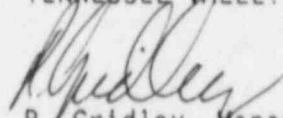
BROWNS FERRY NUCLEAR PLANT (BFN) - RESPONSE TO REQUEST FOR ADDITIONAL
INFORMATION - AUTOMATIC DEPRESSURIZATION SYSTEM (ADS) ACTUATION MODIFICATION
(TAC NO. 45681)

This letter provides TVA's response to NRC request for additional information
on the above subject dated August 10, 1988. Enclosed for your review is the
engineering change notice package (including the safety evaluation), and
applicable drawings for the ADS actuation modification. Please note that the
timer is set per our Technical Specification # 248 (TAC 00090) submittal of
July 29, 1988.

Please refer any questions concerning this submittal to Patrick Carrier at
(205) 729-2689.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



R. Gridley, Manager
Nuclear Licensing and
Regulatory Affairs

Enclosures
cc: See page 2

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PDR ADOCK 05000259
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DRAWINGS TO
REG FILE

U.S. Nuclear Regulatory Commission

SEP 12 1988

cc (Enclosures):

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Browns Ferry Resident Inspector
Browns Ferry Nuclear Plant
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Athens, Alabama 35611

Section A (QA Record)	Plant/Project and Unit BENP-UNT ' 2		ECN Number E-2-P7116 RO		RIMS Accession Number B22 '98 0617 503	
	References (Authorizing Document) DCR# 3478					
	Description of Change Automatic Depressurization System (ADS) Logic Changes- See Continuation Sheet #2.					
	Justification/Reason for Change To comply with NUREG-0737 Item II.K.3.18- See Continuation Sheet #3.					
Section B	Signature of Proposer and Date <i>[Signature]</i> 6/14/88			Signature of Principal Engineer and Date <i>[Signature]</i> 6/14/88		
	Discipline Involved? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no			Discipline Involved? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no		
	Materials <input type="checkbox"/> no			Nucle <input type="checkbox"/> no		
	Civil/ <input type="checkbox"/> yes			Civil Eng <input type="checkbox"/> no		
	Structural <input checked="" type="checkbox"/> no			I&C <input checked="" type="checkbox"/> yes		
	Elect <input checked="" type="checkbox"/> no			Other <input type="checkbox"/> no		
Section C	Mech <input type="checkbox"/> yes			Other <input type="checkbox"/> yes		
	Mech <input checked="" type="checkbox"/> no			Other <input type="checkbox"/> no		
	Manhour Estimate			Material Costs		
	Overall Schedule Impact					
Data Physical Work to Be Completed BY		Prooperational Test Number		Vendor Backcharges <input type="checkbox"/> yes <input type="checkbox"/> no		
Overall Cost Impact						
Section D	USDO Complete or Approval Review <input type="checkbox"/> yes <input type="checkbox"/> no		EQ Impact? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no		Appendix R? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	
	Safety Related? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no		SAR Change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no		NUREG 0612? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
	MPL Signature and Date <i>[Signature]</i> 6/14/88		MPL Design Verif (IF REQUIRED) N/A		Nuc Signature and Date <i>[Signature]</i> 6-14-88	
	Nuc Design Verif (IF REQUIRED) N/A		Civil/Structural Signature and Date <i>[Signature]</i> 6/14/88		Civil Eng Mech Group signature and date <i>[Signature]</i> 6/14/88	
	Civil Design Verif (IF REQUIRED) N/A		Civil Eng Design (IF REQUIRED) N/A		Electrical-Signature <i>[Signature]</i> 6/14/88	
	Elect Design Verif (IF REQUIRED) N/A		Other-Signature and date I&C <i>[Signature]</i> 6/15/88		I&C Design Verif <i>[Signature]</i> 6-14-88	
	Mechanical-Signature and Date <i>[Signature]</i> 6/14/88 for HVACHAM		Mech Design Verif (IF REQUIRED) N/A		Other-Signature and date EOP M.W. <i>[Signature]</i> 6/15/88 for R.S. MARTIN	
	Mech Design Verif (IF REQUIRED) N/A		Other Design Verif <i>[Signature]</i> 6/15/88		PEs Disposition? <input checked="" type="checkbox"/> ECN Approved <input type="checkbox"/> ECN Disapproved	
	PEs Disposition? <input checked="" type="checkbox"/> ECN Approved <input type="checkbox"/> ECN Disapproved			PEs Signature and Date <i>[Signature]</i> 6/15/88		
	ECN Closed			RIMS Accession Number		
Section E	cc: RIMS, SL 26 C-K					

ENGINEERING CHANGE NOTICE
COVER CONTINUATION SHEET
IYA-BENT

NO: E-2-P7116
REV#: 0
SH #: 2 OF 3

DESCRIPTION OF CHANGE:

This ECN (E-2-P7116) modifies Automatic Depressurization System (ADS) Logic by addition of:

1. Four Time Delay pick-up relays (Two for logic Bus A and two for Logic Bus B) in control Panel 9-30 which bypass high drywell pressure signal on 12.5 minutes sustained low reactor water level 1. (Refer Calc #ED-Q2001-88257 for Bypass Timer Setting).
2. Two keylock control switches (one for Logic Bus A and the other for Logic Bus B) on control Panel 9-3 to allow operator to inhibit the ADS initiating logic.
3. Annunciation on window #31, Annunciator YA-55-3C Control Panel 9-3 to indicate operator that ADS logic Bus A or B is inhibited.

This ECN replaces the existing timers 2E-K34 and 2E-K35 (120 sec setting) with Class 1E timers (105 sec setting). (Refer Calc # ED-Q2001-88262 for 105 sec. timer setting).

This ECN also reallocates the Annunciation "RCIC Relay logic power failure" from annunciation window #31 to window #1, annunciator YA-55-3C, Control Panel 9-3.

ENGINEERING CHANGE NOTICE
COVER CONTINUATION SHEET
TVA-BFNP

ECN#: E-2-P7116

REV#: 0

SB #: 3 OF 2

JUSTIFICATION FOR CHANGE:

The subject NUREG-0737, Item II.K.3.18 calls for modification of the ADS Logic in order to eliminate the need for manual action to depressurize the reactor during certain accidents and transients.

TVA elected to bypass the high drwell pressure signal after a sustained low reactor water level and add manual inhibit switch. (Reference-Letter from J A Damer (TVA) to D R Muller (NRC) dated 3-5-87, RIMS# L44870305803).

ECN PACKAGE INDEX SHEET
SECTION A
TVA-RFNP

ECN #: E-2-P7116
REV#: 0
SB #: 1 OF 3

DISCIPLINE: ALL

UNIT	DOCUMENT TRANSMITTED (DESCRIPTION/TITLE)	DOCUMENT NUMBER/ RIMS ACCESSION NO	REV	DWG TYPE	AFFECTED PARENT DOCUMENT NUMBER	REV	PAGES TRANS	ISSUED REV NO
2	# ECN Cover Sheet		-		N/A		3	0
2	# Index Sheets and Continuation Sheets		0				3	0
	# Revision Log (Excluding Rev. 0)	N/A			N/A			
2	# Screening Review SAFETY EVALUATION OF ECN		0				6	0
	# DCA(s), Primary & Critical Dyes Only							
2	E-2-P7116-023		000	CCD	2-47W611-1-1	000	1	0
2	E-2-P7116-007		000	CCD	2-47W611-1-1	000	1	0
2	E-2-P7116-008		000	CCD	2-730E929-1	000	1	0
2	E-2-P7116-009		000	CCD	2-730E929-2	000	1	0
2	E-2-P7116-010		000	CCD	2-45N620-2	000	1	0
2	E-2-P7116-024 # OTHER		000	CCD	2-730E929-2	000	1	0
2	Panel 9-3 ADC Input details Switch mg. details	N/A			N/A			

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JRC
6-17-88

0 Denotes minimum ECN Package contents
OTHER: May include Functional and Post Mod Test Requirements/Acceptance Criteria,
Tech Spec Change Request, Special Installation Instructions, Inspection
Requirements/Acceptance Criteria, etc.

ECN PACKAGE INDEX SHEET
SECTION B
IVA-BENP

ECN#: E-2-P7116
REV#: 0
SU #: 2 OF 3

DISCIPLINE: ALL

UNIT	DOCUMENT TRANSMITTED (DESCRIPTION/TITLE)	DOCUMENT NUMBER/ RIMS ACCESSION NO	REV	DWG TYPE	AFFECTED PARENT DOCUMENT NUMBER	REV	PAGES TRANS	ISSUED REV NO
	# Impact and Prerequisites List		0		N/A		1	0
	# Associated dwg. List				N/A		1	0
	# DCA(s) Secondary Drawings only							
2	E-2-P7116-001		000	AD	791E345-2	920	1	0
2	E-2-P7116-002		000	AD	791E489-7	910	1	0
2	E-2-P7116-003		000	AD	791E208-1	905	2	0
2	E-2-P7116-004		000	AD	791E208-2	903	1	0
2	E-2-P7116-005		000	AD	920D950	904	1	0
2	E-2-P7116-006		000	AD	45N2641-1	21	1	0
2	E-2-P7116-011		000	AD	136B2649-3	4	1	0
2	E-2-P7116-012		000	AD	791E489-11	914	1	0
2	E-2-P7116-013		000	AD	225A6244-14	18	1	0
2	E-2-P7116-014		000	AD	225A6244-15	0	1	0
2	E-2-P7116-015		000	AD	45DS2655-2	New Dwg	1	0
2	E-2-P7116-016		000	AD	225A6244-45	0	1	0
2	E-2-P7116-017		000	AD	730E483-1	903	1	0
2	E-2-P7116-018		000	CCD	7-478601-001-214	000	1	0
2	E-2-P7116-019		000	CCD	7-478601-001-215	000	1	0
2	E-2-P7116-020		000	B/M	45BM2641-1	New Dwg	1	0
2	E-2-P7116-021		000	B/M	45BM2668-1	New Dwg	1	0
2	E-2-P7116-022		000	AD	791E208-1	905	1	0

0 Denotes minimum ECN Package contents.

- OTHER: May include Associated Drawings List, Specifications, Vendor Manuals, etc.

Sheet 1 of 6

1. To	3. USQ? Yes [X] No
2. From	

4. Safety Evaluation Number SEBFECN880009
9. RIMS Accession No. R 0 B22 '88 0617 503
R 1
R 2
R 3
R 4
R 5

REV No.	Tot PP	5. Prepared	6. Reviewed	7. Approved	8. Date Appd
0	6	TR Reddy T R Reddy	D J Mullane D J Mullane	S F Marschke S F Marschke	6-13-88
1					
2					
3					
4					
5					

10. Project and Affected Unit(s) BFNP Unit 2	11. PMF/DCN Number ECN # E-2-P7116	PMP/DCN Revision RO
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12. FCR/SCR/MCR/DCR/DCN/CAQR Number DCR No. D3478	Date of Document(s)
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13. Other Document Identifier	Date of Document(s)
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14. Special Requirements? Yes [X] No	See Sheet No.	15. Potential Tech Spec Change [X] Yes [] No	See Sheet No. 6
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16. References
1. BFN FSAR Sections 6.4 and 7.4
 2. Technical Specifications 3.2 and 4.2
 3. ECN Data Sheets
 4. GE Report RIMS #B22880519206
 5. Ebasco Speed Letter from Gopal Aravapalli to Stephen Marschke dated 5-5-88
 6. BWR Owners Group evaluation of NUREG-0737, Item II.K.3.18 "Modification of Automatic Depressurization System logic" submitted to the NRC under cover letter dated 10-28-82, BWROG-8260.
 7. ECN E-2-P7116, RO, Appendix R Checklist/Evaluation Sheet

17. Description of Proposed Activity (Change, Test, or Experiment)

This USQD evaluates the "design complete" package for ECN E-2-P7116. This ECN package modifies the Automatic Depressurization System (ADS) initiation logic in response to NRC NUREG 0737, "Clarification of IMI Action Plan Requirements" item II.K.3.18. This IMI Action Item addressed the modification of the ADS initiation logic to include cases where a low reactor water level condition exists in the absence of a high drywell pressure condition. This scenario could arise as a result of a pipe break outside containment.

Currently, four conditions must be met before automatic depressurization will occur, they are: (1) Two coincident signals of high drywell pressure (2.5psig) and low reactor vessel water level (378" above vessel zero inches) (2) A confirmatory low reactor vessel water level signal (+18 inches) (3) Any one of the four RHR pumps or either division of the core spray pumps running (4) A 120 second timer must be timed out.

Therefore, the existing ADS initiation logic would require manual actuation of the ADS for certain transient and accident events which do not directly produce a high drywell pressure and are degraded by the loss of high pressure injection system (Reference 4).

This ECN makes two changes to the ADS initiation logic: (1) Replaces the existing ADS timer relay with a qualified one and changes the trip set point of the 120 second ADS timer from 120 ±5 seconds to 105 ±7seconds in order to meet the BFN FSAR Appendix N, section N.6.5.10

17. Description of Proposed Activity (Continued)

requirement that, with a high drywell pressure condition, the total maximum time delay for ADS initiation and MSR/V movements be 120 seconds.

(2) It adds a new bypass timer which will provide for automatic initiation of ADS without the high drywell pressure after approx 855 seconds. This 855 second time delay is the combination of the revised 105 second ADS timer plus the new (bypass timer) 750 second timer. This change would provide for automatic initiation of ADS for certain scenarios while allowing the operator approximately 14 1/2 minutes to determine if ADS initiation is warranted and to take appropriate actions, including resetting the timer signal if necessary.

Project
BFNP Unit 2

18. System(s), Structure(s), or Component(s) Affected

Automatic Depressurization System (ADS) - System 1

19. Safety Function(s) of System(s) Affected

ADS provides for automatic nuclear system depressurization, if needed, for small breaks in the nuclear system so that the Low Pressure Coolant Injection (LPCI) and the Core Spray System (CSS) can operate to protect the fuel barrier from overheating which would result in the uncontrolled release of fission products from the reactor fuel barrier (Reference FSAR section 4.4.).

20. Effects on Safety

The first part of this ECN involves replacing the existing ADS timer relay with a Class 1E qualified timer and changing the associated setpoint from 120 ± 5 seconds to 105 ± 7 seconds. This will provide assurance that the system time delays assumed in the BFN LOCA accident analysis are met. BFN FSAR Appendix N, section N.6.5.10 states that a time delay of 120 seconds is the maximum practical delay time for ADS initiation. Therefore, this portion of the ECN improves safety by assuring ADS initiation within the time required.

The second part of this ECN, the installation of a high drywell pressure bypass timer, provides a means of assuring adequate core cooling for certain transient and accident events (i.e., pipe break outside primary containment) degraded by the loss of high pressure injection systems. Basically, the delay setting for the bypass timer must allow for (1) avoidance of excess fuel cladding heatup, and (2) sufficient time to allow high pressure makeup systems to recover the RPV water level or to allow the operator sufficient time to prevent automatic depressurization from occurring during an ATWS event (see Reference 4).

The design basis event for the ADS high drywell pressure bypass timer is the main steam-line break outside containment (Ref 4). This event results in the greatest inventory loss prior to break isolation. Following break isolation, it is assumed that all high pressure makeup systems will be lost. The General Electric analysis (Ref 4) concluded that the upper analytical limit for the ADS bypass timer setting is 15 minutes and further concluded that the lower analytical limit for the ADS bypass timer setting is 10 minutes. These limits provide assurance that excessive fuel cladding heatup will be avoided while allowing sufficient time to allow high pressure makeup or operator action to prevent automatic depressurization from occurring during an ATWS event.

This ECN provides for the installation of a new bypass timer with a setpoint of 12 1/2 minutes. This is midway between the upper and lower analytical limits provided by General Electric.

To meet NUREG 0737, item II.K.3.18, the ADS modification also includes a manual inhibit switch to the ADS initiation circuit. This change to the physical plant will help prevent inadvertent ADS actuation due to operator error. The new manual inhibit is a key-lock switch, so two separate actions are required to install the inhibit. This decreases the possibility of inadvertent operator action to inhibit the ADS. It will have negligible impacts on ADS reliability since it is already possible for the operator to inhibit ADS. However, this feature has several advantages over the current mechanism for manually inhibiting ADS actuation. Presently, the 120 second (to be 105 seconds) must be reset before it times out (i.e., every two minutes, not just one time) in order to prevent ADS initiation. The new manual inhibit frees the operator for other duties since the timer circuit does not require resetting once the new inhibit is selected. The present method of resetting the ADS 120 second (to be 105 seconds) timer will still be available. Another means presently available for inhibiting ADS initiation is to pull the fuses of the ADS Control Circuitry; however this method of inhibiting ADS initiation is still available.

Based on Reference 7, ECN P7116 will not affect the operation of any of the MSRVS nor the core analysis performed for an Appendix R fire event.

The wiring and components for the circuit modification are similar to or better than those presently used so reliability of the new circuit is the same as the present circuit. Although this modification provides more paths for ADS initiation (i.e., high drywell pressure or bypass timer timed out) the probability of an unnecessary RPV depressurization is not significantly affected by the proposed modification because any slight increase in the probability of spurious actuation is approximately offset by a decrease in the probability of inadvertent manual depressurization as described in the preceding paragraph (BWKOG report, page 56, Reference 6).

In summary, this ECN increases the safety and reliability of the Core Standby Cooling System by eliminating the need for operator action during an off-normal event currently requiring manual depressurization and decreasing the possibility for unintended depressurizations caused by operator error. This modification satisfies the requirements of NUREG 0737, "Clarification of TMI Action Plan Requirements" item II.K.3.18.

SAFETY EVALUATION FORM

Project BFNP Unit 2	Safety Evaluation Number SEBFJCN880009
<p>21. Would the proposed activity increase the probability of an accident previously evaluated in the FSAR?</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p><u>Justification:</u></p> <p>The current modification of the ADS logic eliminates the need for operator action to depressurize the reactor for certain scenarios (i.e., pipe break outside containment) where depressurization is warranted. This modification allows sufficient time (approximately 14 1/2 minutes) for the operator to inhibit ADS initiation for those situations where ADS initiation is not desired (i.e., ATWS event). The probability of inadvertent manual initiation is higher for the current ADS logic because the operator, knowing that for some events he is responsible for manual depressurization, may be more apt to err in what he believes is the conservative direction by depressurizing the RPV to allow low pressure cooling (Reference 6)</p>	
<p>22. Would the proposed activity increase the consequences of an accident previously evaluated in the FSAR?</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p><u>Justification:</u></p> <p>Although this modification of the ADS initiation logic provides the automatic initiation of the ADS for certain scenarios where a high drywell pressure condition does not exist, it does not change the function of the ADS. The consequences of inadvertent initiation of ADS are the same as previously evaluated.</p>	
<p>23. Would the proposed activity increase the probability of a malfunction of equipment important to safety previously evaluated in the FSAR?</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p><u>Justification:</u></p> <p>Although this modification provides more paths for ADS initiation (i.e., high drywell pressure or bypass timer) the probability of inadvertent initiation of ADS is essentially the same as previously analyzed. This is because four high drywell pressure bypass timers are to be installed, one in each channel of the ADS initiation logic. Channels A and C comprise Trip System I, while channels B and D comprise Trip System II. Both channels of one division are required to energize to initiate ADS. Considering that other signals must be present in each channel for ADS initiation (i.e., low water level, confirmatory low water level, 105 second timer, availability of low pressure ECCS), the failure of any one bypass timer will not cause inadvertent initiation. Multiple failures in each channel of a division is necessary to provide inadvertent initiation. Based on the above the probability of a malfunction of equipment important to safety (ADS initiation logic) is essentially the same as previously analyzed.</p>	
<p>24. Would the proposed activity increase the consequences of a malfunction of equipment important to safety previously evaluated in the FSAR?</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p><u>Justification:</u></p> <p>Several coincident signals are required for ADS initiation (i.e., high drywell pressure or bypass timer, low water level, confirmatory low water level, 105 second timer, ECCS availability) as well as the energization of both channels in a Trip System. The failure of any component in a logic channel will not result in inadvertent initiation of ADS. Also, the failure of any component (relay to close) will not result in the loss of ADS as the other Trip System is still available. Therefore, the consequences of the failure or malfunction of equipment important to safety is not increased.</p>	

SAFETY EVALUATION FORM

REV # 0
Sheet 5 of 6

Project BFNP Unit 2	Safety Evaluation Number SERFECN880009
25. Would the proposed activity create a possibility for an accident of a different type than any evaluated previously in the FSAR?	
[] Yes [X] No	
<u>Justification:</u>	
Modification of the ADS initiation logic does not create the possibility of an accident of a different type. The possibility of inadvertent ADS initiation existed before and will still exist after this modification. This modification provides automatic initiation of ADS where warranted while allowing sufficient time for the operator to inhibit ADS initiation when it is not desired. This change also provides a keylock switch to free the operator from having to continuously inhibit ADS initiation (i.e., every two minutes) as was previously required for situations where ADS initiation is not desired.	
26. Would the proposed activity create a possibility for a malfunction of equipment of a different type than any evaluated previously in the FSAR?	
[] Yes [X] No	
<u>Justification:</u>	
The possibility of the failure of the ADS initiation logic existed before and still exist after this modification. Several coincident signals are required for ADS initiation, the failure of any one relay will not result in ADS initiation.	
27. Would the proposed activity reduce any margin of safety as defined in the basis for any technical specification?	
[] Yes [X] No	
<u>Justification:</u>	
Addition of a drywell high pressure bypass timer increases the reliability of the system for certain scenarios (i.e., pipe break outside containment) while providing sufficient time for operator action for situations where ADS initiation is not warranted. The addition of a keylock switch to inhibit ADS initiation assist the operator for these situations. Based on the above the margin of safety as defined in any tech spec is not reduced. (See Reference 2)	

SAFETY EVALUATION FORM

Project BFNP Unit 2	Safety Evaluation Number SEBFECN880009
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Check below (x) the subject for this page.	
28a.	Special Requirement(s) or Precaution(s)
28b.	<input checked="" type="checkbox"/> Safety Evaluation
28c.	<input checked="" type="checkbox"/> Additional Information

29.

SAFETY EVALUATION

Based upon the discussion provided under "Effects on Safety" and the response to the questions in Blocks 21 through 27 the changes contained in this ECN do not constitute an unreviewed safety question.

ADDITIONAL INFORMATION

This ECN involves a change to the Technical Specifications, this Tech Spec change and associated justification are being handled separate from this USQD.

ECN IMPACT AND PREREQUISITES LIST
TVA-BENP

ECN/DCN#: E-2-P7116

REV#: 0

SH #: 1 OF 1

DISCIPLINE: ALL

THIS ECN/DCN

IMPACTS No existing: ECNs, DCNs, DDs, LDCRs, TACFs or FCRs

THIS ECN/DCN

IS IMPACTED BY No existing: ECNs, DCNs, DDs, LDCRs, CAQRs, TACFs or FCRs

ECNs/DCNs WHICH
ARE PREREQUISITES
TO THIS ECN/DCN

No existing ECNs, DCNs, DDs, LDCRs, CAQRs, TACFs or FCRs are

pre-requisites to this ECN.

PREPARED BY: David Sims

DATE: 6-2-88

CHECKED BY: Spalding

DATE: 6-13-88

QA Record

MODIFICATION CRITERIA DOCUMENT
COVER SHEET
IYA-BEMP

ECN#: E-2-P7116
REV#: 0
SH #: 1 OF 8

DISCIPLINE: ALL

UNIT: 2 SYSTEM NUMBER: 1

ECN TITLE: Automatic Depressurization System (ADS) Logic Changes

ABSTRACT:

At present, the automatic depressurization system (ADS) can only be initiated in the presence of all of the following signals:

- (1) High Drywell Pressure
- (2) Low Reactor Water Level (Level 1)
- (3) Confirmatory Low Reactor Water Level (Level 3)
- (4) Low Pressure Coolant injection available (RHR/LPCI or CS)

A modification is needed to reduce dependence on operator action and to satisfy the intent of the NRC Requirement NUREG-0737 Item II.K.3.18.

This ECN revises the ADS logic by bypassing high drywell pressure permissive on 12.5 minute sustained low reactor water level (level 1) and adding inhibit control switch to manually inhibit ADS logic.

This ECN replaces the existing timers (120 sec setting) with 1E qualified timers (105 sec setting).

REVISION NO	R1	R2	R3	R4	R5	R6
DATE 6/13/88						
CREATED BY: James E. Dill III						
CHECKED BY: Gerald A. ...						

MODIFICATION CRITERIA DOCUMENT
DESIGN BASIS/BASES
IVA-BFNP

ECN/DCN#: E-2-P7116
REV#: 0
SH #: 2 OF 3

1.0 SCOPE:

1.1 System(s) Main Steam System

1.2 Feature(s) Addition of Time Delay Pick-up relays and control switches

1.3 Scope of Criteria This modification revises the control circuit of Automatic Depressurization System (ADS)

1.4 Is Quality Assurance Required? yes

1.5 List existing design criteria document(s) with revision number that cover this modification BFN-50-727 R0, BFN-50-728 R0, BFN-50-736 R0, BFN-50-C-7105 R1

2.0 DESIGN BASIS/BASES

(Provide the following information if it applies to this modification
NOTE: If the required information can be found in existing design input documents, give the document number and revision number only.

2.1 Functional Requirements This modification enables to bypass high drywell pressure permissive in ADS logic on 12.5 minutes sustained low reactor water level and inhibit ADS logic manually

2.2 Design Basis Events As referred in design criteria BFN-50-7001 R1 and General Electric Analysis for ADS bypass analytical limits (DRF-A00-03088)

2.3 Environmental Requirements N/A

MODIFICATION CRITERIA DOCUMENT
DESIGN BASIS/BASES
IVA-BENP

ECN/DCN#: E-2-P7116
REV#: 0
SH #: 3 OF 8

2.0 DESIGN BASIS/BASES; (Continuation)

2.4 Instrumentation Requirements N/A

2.5 Electrical Requirements The added TDPU relays are Class IE and powered from 250VDC. Electrical system load or diesel generator load not affected.

2.6 Mechanical Requirements N/A

2.7 Civil Requirements This modification provides seismic analysis of component mounting.

2.8 Regulatory Requirements NUREG-0737 Item I.L.K.3.18

2.9 Special Logic for Operation This modification revises the existing AND logic

2.10 Special Maintenance N/A

2.11 Installation Requirements As specified by this ECN

2.12 Other None

MODIFICATION CRITERIA DOCUMENT
DESIGN BASIS/BASES
TVA-8FNT

ECN/DCN#: E-2-P7116
REV#: 0
SH #: 4 OF 8

3.0 TEST AND INSPECTION REQUIREMENTS:

NOTE: If the required information can be found in existing TVA documents, give the document number and revisions only.

3.1 Component Testing This modification initiates a post modification test scoping document PMT #188

3.2 System Testing This modification initiates a post modification test scoping document PMT #188

3.3 Inservice Inspection N/A

4.0 OPERABILITY, RELIABILITY, MAINTAINABILITY, PERFORMANCE ANALYSIS:

Unreviewed safety question determination for this ECN covers the analysis.

5.0 COMMENTS:

The keys of the Key-lock control switches added by this modification should be under proper administrative control.

MODIFICATION CRITERIA DOCUMENT
DESIGN DOCUMENTS CHECKLIST
IVA-BENT

ECN/DCN#: E-2-P7116
REV#: 0
SH #: 5 OF 8

	AFFECTED Y/N/NA	Reference Document (if applicable)
6.0 DESIGN DOCUMENTS CHECKLIST:		FSAR SECTIONS 6.4.2, 6.5.3.1, 7.4.3.3.2 & 7.4.3.3.4 TABLE 7.4-2
6.1 Safety Analysis Report affected? If yes Figure # _____ Sect. # _____	Y	
6.2 Tech. Spec. Change? Section No. _____ Is this equipment covered by, or will change affect Tech. Specs.?	Y	TABLE 3.2.B PAGES 3.2/4.2-14-15 and 17
6.3 Seismic analysis required? Does this change have to be seismically qualified?	Y	CALC#CD-Q2030-882553 and #CD-Q2030-882554
6.4 Are electrical calculations affected?	N	
6.5 Human factor review required? Control Room modifications only.	Y	HED REPORT #200 and #150
6.6 Impacts other analyses or calculations? Will this ECN require a revision to existing analyses or calculations?	Y	CALC#ED-Q2001-88262 Supercedes Calc # BFEP-E1-86003
6.7 Revision to Environmental Impact Statement required? Does this ECN affect any existing commitments?	N	
6.8 OSHA considerations? Should you have guards on rotating equipment and/or does a procedure require revising?	N	

MODIFICATION CRITERIA DOCUMENT
 DESIGN DOCUMENTS CHECKLIST
 IVA-BENT

ECN/DCN#: E-2-P7116
 REV#: 0
 SB #: 6 OF 8

	AFFECTED Y/N/NA	Reference Document (if applicable)
6.0 DESIGN DOCUMENTS CHECKLIST: (Continuation)		
6.9 Revision to state and/or Federal licenses or permits? Does this ECN impact existing plant licenses or permits?	N	
6.10 Environmental analysis affected (including data drawings).	N	
6.11 Essentially mild environment calculations, EQ binders, and /or LOGFER50.49 list affected?	N	
6.12 EQ category and operating times affected (MCEL)?	N	
6.13 Vendors involved? If yes, reference Manuals or drawings.	Y	AGASTAT Catalog EMD-1 and Amerace Corp DOC #E7012/ E7022
6.14 New or existing bills of materials affected?	Y	45BM2641 and 45BM2668
6.15 Construction specifications affected?	N	
6.16 Setpoint affected?	Y	CALC#EDQ2001-88257 ; and #EDQ2001-88262
6.17 Revision to design input documents required?	Y	BFN-50-7001 R1
6.18 Non-IE load isolators affected?	N	
6.19 Electrical penetration protective devices affected?	N	
6.20 Fuse Identification Program affected?	N	

MODIFICATION CRITERIA DOCUMENT
 DESIGN DOCUMENTS CHECKLIST
 IVA-BENP

ECN/DCN#: E-2-P7116
 REV#: 0
 SH #: 7 OF 8

	AFFECTED Y/N/NA	Reference Document (if applicable)
6.0 DESIGN DOCUMENTS CHECKLIST: (Continuation)		
6.21 Other protective devices affected?	N	
6.22 Instrument tabulations affected?	Y	47B601-001
6.23 Protective Relay Setting Sheets to be revised?	N	
6.24 Pipe stress analysis/evaluation required? Does this ECN have an impact on the piping stress analysis?	N	
6.25 Does this ECN have an impact on piping vibration and/or testing requirements?	N	
6.26 Pipe rupture analysis required? Does rerouting of conduit, piping, etc. require a review for effects of a pipe break, pipe whip, etc.	N	
6.27 Component/Equipment seismic qualification required? Does this change increase the equipment nozzle allowables or components qualifications	Y	By Vendor
6.28 Does the ECN involve requirements for cleanliness as specified in ANSI standards?	N	
6.29 Are protective coatings inside containment affected?	N	
6.30 Flooding evaluation required? Will this modification increase the possibility of flooding? Does it require flood protection?	N	

MODIFICATION CRITERIA DOCUMENT
 DESIGN DOCUMENTS CHECKLIST
 IVA-BENP

ECN/DCN#: E-2-P7116
 REV#: 0
 SU #: 8 OF 8

	AFFECTED Y/N/NA	Reference Document (if applicable)
6.0 DESIGN DOCUMENTS CHECKLIST: (Continuation)		
6.31 Radiation shielding and/or ALARA considered? Is this a potential or located near a potential radiation source?	N	
6.32 10CFR50 Appendix 'R' required? If yes, Refer to Att. 9.12	Y	
6.33 Post modification scoping document required? If yes, refer to NEP 10.4	Y	This modification initiates PMT#188
6.34 Electrical or physical separation analysis affected?	N	
6.35 Security System modified?	N	
6.36 Heavy Loads considered?	NA	

10.4.850 APPENDIX 'R'
 CHECKLIST/EVALUATION SHEET
 TVA-BENT

ECN#: E-2-77116
 REV#: 0
 SH #: 1 OF 4

DISCIPLINE: ALL

NO	QUESTIONS	Yes	No	Remarks **
1.	Does the change involve equipment on the following Appendix 'R' documents?: a) Mechanical Equipment (Calculation BFN-BFS6-007) b) Electrical Support Equipment (Drawing 45B901)	X X		BFN-BFS6-007 R1 Sh6 45B901 R1 Sh 8, 9, and 10
2.	Does the change involve a cable on the Appendix 'R' Cable List (Drawing 45B900)?		X	
3.	Does the change involve any of the following fire protection systems, (Mechanical or Electrical)?: HPPF/AFFF(26), CO2 (39)		X	
4.	Does the change involve a penetration, degradation, removal or modification of any of the following fire rated barriers?: (Exclude supports/hanger modifications) a) Walls, floors, ceilings, including Reactor Building floors 593, 621.25 and 639 (47W216 Series). b) Dampers (47W216-51, Table 4). c) Doors (47W216-51, Table 3). d) Conduit/Cable fire wrap (45W807 Series).		X X X X	SLB SLB SLB
5.	Does the change affect emergency lighting units or shutdown access paths as shown on emergency lighting Ingress/Egress routes and major shutdown equipment drawings (45W400-RW)?		X	

FRSO APPENDIX 'R'
CHECKLIST/EVALUATION SHEET
TVA-BFNP

ECN#: E-2-P7116
REV#: 0
SH #: 2 OF 4

No.	Questions	Yes	No	Remarks **
6.1	Does the change add or delete any electrical distribution or control equipment (board panels, inverters, etc.) into or out of shutdown board rooms (* fire areas 4 thru 15 and 22 thru 24) or Battery and Battery Board room (fire areas 17, 18, & 19)?		X	
6.2	Does the change add or delete any cable into or out of shutdown board room and battery board room fire areas (4 thru 15, 22, thru 24, 17 thru 19) except cables designated as C, CR, FE, K, LS, CT, SP, T, A & R?		X	
7.1	Does the change affect the pressure boundary of any component within the indicated Appendix 'R' system boundary drawings (47W230 Series).		X	MS
7.2	Does the change affect the electrical logic of any component within the indicated Appendix 'R' system boundary drawings (47W230 Series).	X		47W230-2 RO
8.1	Does the change add or move equipment containing combustible material (e.g. oil, grease, charcoal, electrical panels, etc.) in any of the fire areas as defined on compartmentation Drawings? (see Tables 1 and 2 on (47W216-51). (Exclude cables routed entirely in conduits or in trays without exceeding the fill capacity. Also exclude equipment with less than 0.5 gallons of oil, 4 pounds of plastic, 4 pounds of grease or an equivalent amount of other combustible material).		X	MS

No.	Questions	Yes	No	Remarks **
8.2	Does the change add cable trays in any of the fire areas listed in drawing series 47W216 Table-1?		X	
9	Does the change involve security access system in Reactor Building, Control Building, Diesel Generator Building, or Intake Pump Station? (Question to be deleted when security access control system design criteria is issued).		X	SUS

EVALUATION

A "Yes" answer to any question on the check list will be evaluated for Appendix 'R' impact, by the disciplines designated as follows:

- Electrical - Questions # 1.b, 2, 3, 4, 5, 6.1, 6.2, 7.2, and 8.2
- Mechanical - Questions # 1.a, 3, 4, 7.1, 8.1, and 9
- Nuclear - Questions # 1.a, 6.1 and 6.2

During the evaluation, consideration must be given to any changes to the fire protection section of the FSAR. If necessary, use additional sheets for Appendix R evaluation.

* All fire areas/zones are defined in Drawings 47W216-51 through -62.

** Additional information/justification should be included in this column when necessary. Additional sheets can be used if required. Questions which cannot be answered should be marked 'Later', but shall be resolved before plant modification is authorized.

Electrical/Mechanical/Nuclear Evaluation:

Automatic Depressurization System (ADS) affects Six Main Steam Relief Valves of tag nos. 2-PCV-1-5, 2-PCV-1-19, 2-PCV-1-22, 2-PCV-1-30, 2-PCV-1-31 and 2-PCV-1-34 to relieve the high pressure steam to the suppression pool.

To meet NUREG 0737 Item II.k.3.18, this ECN revises the ADS logic by passing high drywell pressure on 12.5 minute sustained low reactor water level (level 1)

and adding keylock control switches to allow operator to inhibit the ADS initiating logic. The existing timers (120 sec setting) with 1E qualified

timers (120 sec setting) the wiring and components for the circuit modifications are located in Panels 9-3 and 9-30.

Control Panel are located in the Fire Area 16. This ECN neither adds

nor modifies the existing cables.

Per calculation BFN-BFS6-013 Rev. 1, the operation of the UNIT 2 MSRVs for Safe Shutdown would require the manual operation from the Main Control Room, at the Backup Control Panel (2-25-32), and at 250V RMOV Bd 2B. This ECN does not affect the manual Control of any of the MSRVs from either of these locations.

Although the BFN Appendix R submittal does not rely on the automatic depressurization feature of the MSRVs, a complete blowdown via ADS significantly earlier than 20 minutes upon an Appendix R fire event (time at which manual blowdown and manual injection of RHR System occurs) could cause too much RPV inventory loss and possibly exceed the BFN Appendix R fuel peak cladding temperature (PCT) limit of 1500° F (refer NEDC 31119 dated January 1986, section 3.0). A review of the RPV water level response curves for the worst case Appendix R fire events (See Section 6.1 of NEDC 31119) indicates that a level 1 condition would not be reached any earlier than approximately 10 minutes. The new high drywell pressure bypass timer is set at 12 1/2 minutes and the existing (in series) timer will be set at 105 seconds (1 3/4 minutes). Thus, over 20 minutes would be required before an automatic blowdown occurred provided all circuits were operating properly. If a spurious level 1 signal initiated the new high drywell pressure bypass timer, then 1) assuming all circuits worked automatically, ADS would blowdown and RHR would inject adequate water into the RPV or 2) assuming no circuits worked automatically then ADS would not actually initiate since additional interlocks (low water level permissive, RHR/ Core Spray pumps running) would not allow the circuit to be made up. The above discussion of spurious operation criteria is contained in calculation BFN-BFS6-013 R1 as well as NEDC 31119. Based on the above, ECN E-2-P7116 will not affect the operation of any of the MSRVs or the core analyses performed for an Appendix R fire event.

RA
6/14/88
TCT
6/14/88

Prepared By: James E. Delle III Date: 3/13/88
Checked By: Joseph A. ... Date: 6/13/88

10CFR50.49 ENVIRONMENTAL QUALIFICATION

CHECKLIST/EVALUATION SHEET
TVA-BENT

ECN#: E-2-P7116

REV#: 0

SB #: 1 OF 2

DISCIPLINE(S): ALL

RMS # _____

- | | Yes | No |
|---|-----|-----|
| 1. Could the change affect, add, or delete equipment within the scope of 10CFR50.49 (10CFR50.49 List)? | [] | [X] |
| 2. Could the change affect the basic function of a device or system that performs or supports the performance of a safety function (such as accuracy or setpoint; or interaction between a IE and non-IE circuit)? | [X] | [] |
| 3. Could the change affect design conditions or requirements such as process pressure, process temperature, fluid chemistry, device heating, voltage, and operating cycles which could impact QMS requirements or invalidate test data? | [] | [X] |
| 4. Could the change affect environmental conditions in either harsh or mild areas such as pressure, temperature, humidity, flooding, corrosiveness, site elevation, nuclear radiation (both rate and total integrated dose), and duration of exposure? | [] | [X] |
| 5. Could the change affect location or operation of high energy piping systems, location or operation of radioactive piping systems, operation of environmental controls systems, or environmental barriers such as walls, doors, relief panels, ducts, etc. (which could affect environmental conditions in either harsh or mild areas)? | [] | [X] |
| 6. Could the change involve relocating or reorienting a device or system which could impact location-specific or shielding analyses or place the device or system in an area with different environmental conditions? | [] | [X] |

10CFR50.49 ENVIRONMENTAL QUALIFICATION
CHECKLIST/EVALUATION SHEET
TVA-BEMP

ECN#: E-2-P7116
REV#: 0
SB #: 2 OF 2

- | | Yes | No |
|--|--------------------------|-------------------------------------|
| 7. Could the change affect materials such as lubricants, seals, etc., which could impact QMS requirements, qualification analyses, and invalidate test data? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 8. Does the change involve non-1E or 1E non-50.49 devices/circuits which have credible interaction failure modes with 50.49 devices/circuits? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

EVALUATION

Remarks (Provide justification for each item marked "Yes"):

2. This change will not change the basic function of the ADS initiation logic although it does change the time setting of two existing time delay relays (one for each Logic) and adds four time delay relays (two per Logic; one per channel). The additional time delay relays allow for the initiation of the ADS without the high drywell pressure signal. The time setting change to the two existing relays (Tag #s 2E-K34 and 2E-K35) is to insure that the relays can function within the system upper analytical limit 120 sec. and lower analytical limit 90 sec. considering all the inaccuracies.

All the modifications of this ECN are in the mild environment and do not affect 10CFR50.49 list.

Prepared By:

James E. Dalke III
Ralph Nelson

Date 6/13/88

Checked By:

Date 6/13/88

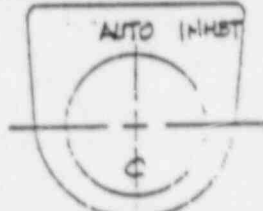
DRAWING CHANGE AUTHORIZATION

ECN E-2-P7116

DCN NA

REVISION 0

REVISION NA

CONTRACT REFERENCE OR REQUISITION NO	ITEM	CLASSIFICATION	DESCRIPTION	QUANTITY	UNITS	MARK NO																	
BFP-8083 R2		IE	Key-lock 2-position maintained selector switch. Key removable from auto position only. Key teeth pointed down when inserted. GE type CR2940UN203D1	2	EA																		
			<table border="1"> <thead> <tr> <th rowspan="2">CONTACTS</th> <th colspan="2">POSITION</th> </tr> <tr> <th>AUTO</th> <th>INHBT</th> </tr> </thead> <tbody> <tr> <td>1-2</td> <td>X</td> <td></td> </tr> <tr> <td>3-4</td> <td>X</td> <td></td> </tr> <tr> <td>5-6</td> <td></td> <td>X</td> </tr> <tr> <td>7-8</td> <td></td> <td>X</td> </tr> </tbody> </table>	CONTACTS	POSITION		AUTO	INHBT	1-2	X		3-4	X		5-6		X	7-8		X			
CONTACTS	POSITION																						
	AUTO	INHBT																					
1-2	X																						
3-4	X																						
5-6		X																					
7-8		X																					
BFP-8083 R2		NC	 <p>3 SPACES →</p>	2	EA																		
BFP-8083 R2		NC	<p>Nameplate for Item 1 Engraving as follows:</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>XS-1-159A ADS LOGIC A INHIBIT SW</p> </div> <p>Plate size: 0.75" x 3"</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>XS-1-161A ADS LOGIC B INHIBIT SW</p> </div> <p>Character Size: 0.12"</p>	2	EA																		
BFP-8083 R2		NC	<p>Control Room Annunciator Window #31</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>ADS LOGIC BUS A OR B INHIBITED</p> </div> <p>Window Engraving as left</p>	1	EA																		

000 ECN-E-2-P7116 R0 ADDED NEW SHEET OF B/M FOR CONTROL RM (U2) PNL 9-3 *Roman Kokolakyj* 6-9-88 *David Sun* 6/10/88

REV. DRAFTED BY CHECKED BY

THIS CHANGE IS SAFETY RELATED NOT RELATED TO NUCLEAR SAFETY

BASE DRAWING	REV.	DCA NUMBER	REV.
453M 2641 - 1	NEW DWG	E-2-P7116-020	000

DRAWING CHANGE AUTHORIZATION

ECN E-2-P7116

DCN NA

REVISION 0

REVISION NA

CA
6/16/83

SHEET 1 OF 1

CONTRACT REFERENCE OR REQUISITION NO.	ITEM	CLASSIFICATION	DESCRIPTION	QUANTITY	UNITS	MARK NO.
C		1E	NO 14 S/C Type SIS, 600V 41 Strand, 90° cross-linked polyethylene.	200	FT	WJC-6
BFP - 8083R2		1E	Time Delay Pick-up Relay Agastat E7012 SH, 3 to 30 min. 250V DC. DPDT.	4	EA	PS
BFP - 8083R2		1E	Time Delay Pick-up Relay Agastat E7012SE, 20 to 200 Sec. 250V DC. DPDT.	2	EA	PS
C		NC	3'-3 1/2" Unistrut Channel P-4000 Size, 1 5/8" x 1 3/16" x 16 Gauge cold enameled.	10	FT	RKB
C		NC	Machine screw Hex slotted, 1/4" x 3/4" Hex Head Galvanized, Unistrut HSHS025075EG.	8	EA	
C		NC	Unistrut, 1/4" 20 UNF Spring Nut P-4006-1420.	8	EA	
C		NC	Unistrut, #8-32 UNF Spring Nut P-4006-0832.	24	EA	
C		NC	Unistrut, #8-32 UNF Standard Screw, HRT S008087 CP.	24	EA	
BFP8-194 R1		NC	Flat Plate Fitting, Bolt size 5/16", 1 1/32" Hole Size, Unistrut P-1062.	24	EA	RKN
BFP8-194 R1		NC	Splice Plate, 2 holes, Galvanized, Unistrut P-1065	4	EA	RKN-1
C		1E-LOCA	Cable 2/C, twisted, stranded, No. 10 Awg. polyethylene insulation, color coded, shielded, and 90° c, minimum black light stabilized chlorosulfonated, type MS.	25	FT	WVA-1

Q

000 ECN-E-2-P7116 R0 ADDED NEW SHEET OF B/M FOR AUX INTR RM (U 2) PNL 9-30 *Roman Kokoloff* 6-9-83 *Dan L. Sun* 6/10/83

REV. DRAFTED BY CHECKED BY

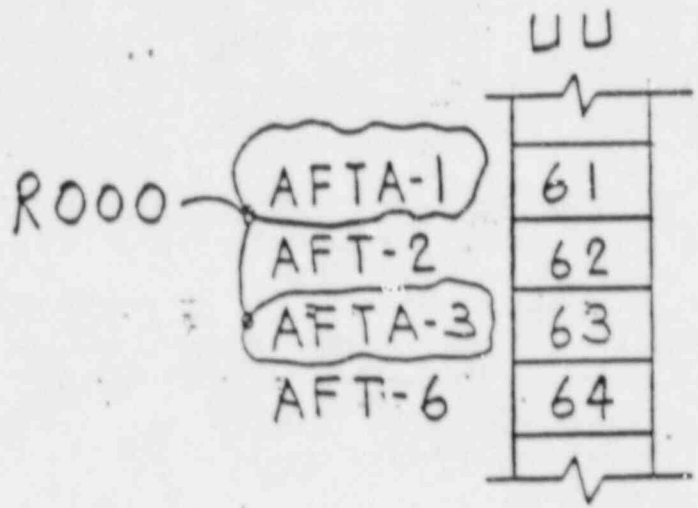
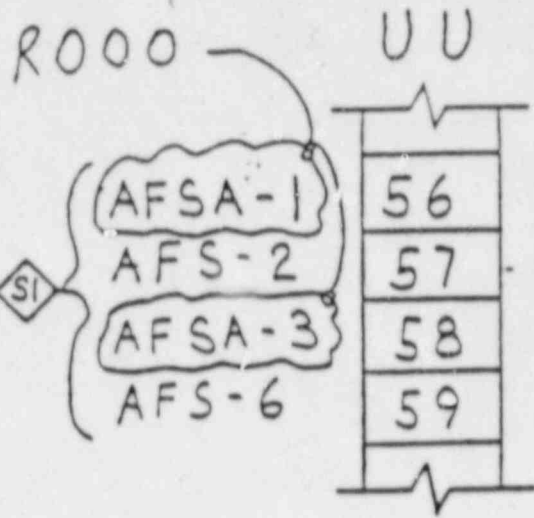
THIS CHANGE IS SAFETY RELATED NOT RELATED TO NUCLEAR SAFETY

BASE DRAWING	REV.	DCA NUMBER	REV.
45 BM 2668-1	NEW DWG	E-2-P7116-021	000

DRAWING CHANGE AUTHORIZATION

ECN E-2-P7116 DCN NA
 REVISION AO REVISION NA

8/3 6/2/88 SH # 1 of 1
GA
6/16/88



NOTES/ECN IDENTIFICATION
 THE FOLLOWING NOTES
 APPLICABLE TO ECN: P7

NONE

Q

000	ECN E-2-P7116 RO REVISED WIRING	<i>Roman Kolesky</i> 5-17-88	<i>David S. Sun</i> 5/18
REV.		DRAFTED BY	CHECKED BY
THIS CHANGE IS <input checked="" type="checkbox"/> SAFETY RELATED <input type="checkbox"/> NOT RELATED TO NUCLEAR SAFETY			
BASE DRAWING	REV.	DCA NUMBER	REV.
791E489-11	919	E-2-P7116-012	OC

DRAWING CHANGE AUTHORIZATION

ECN E-2-P7116 DCN NA
 REVISION 00 - REVISION JA. 011
8/2/88

AGASTAT TYPE E7012SH RELAY TABULATION (TDPU)

L1	L2	1	5	3	2	6	4
2-1-58A2	2E-K5 2E-K34 SH.2	/		SP	SP		
2-1-58B2	2E-K9 2E-K10 SH.2			SP	SP		
2-1-2E-K25	2E-K16 2E-K35 SH.2	/		SP	SP		
2-1-2E-K26	2E-K20 2E-K21 SH.2			SP	SP		



GE TYPE CR294
 KEY LOCK 2-POS
 MAINTAINED
 SELECTOR
 SWITCH

CONTACTS	POSITION	
	AUTO	INHBT
1-2	X	
3-4	X	
5-6		X
7-8		X

R000

SWITCH DESIGN	CONT	SH NO.
TYPICAL FOR XS-1-159A	1-2	2
XS-1-161A	3-4	2
	5-6	2
	7-8	SP

NOTES/ECN IDENTIFICATION
 THE FOLLOWING NOTES ARE APPLICABLE TO ECN: P7116

NONE

000	ECN E-2-P7116 R0 ADDED 2 SELECTOR SWITCHES AND 4 TDPUI RELAYS.	<i>Korman Ko.oley</i> 5-17-88	<i>David...</i> 5-17-88
REV.		DRAFTED BY	CHECKED BY

THIS CHANGE IS SAFETY RELATED NOT RELATED TO NUCLEAR SAFETY

BASE DRAWING	REV.	DCA NUMBER	REV.
2-730E929-1	000	E-2-P7116-008	000

DRAWING CHANGE AUTHORIZATION

ECN E-2-P7116 DCN NA
REVISION AO REVISION NA

8/3 6/2/88 SH# 1 OF 1
GA
6/16/88

AFSA XS-1-161A

1□	5□
2□	6□
3□	7□
4□	8□

- 1-UU-56
- 2-AFS-1
- 3-UU-58
- 4-AFS-5
- 5
- 6

AFTA XS-1-159A

1□	5□
2□	6□
3□	7□
4□	8□

- 1-UU-61
- 2-AFT-1
- 3-UU-63
- 4-AFT-5
- 5-NM20C
- 6-2M71

TO ANN XA-55-3C
(45N620-2)

AFS 2E-S2B..

1□	5□
2□	6□
3□	7□
4□	8□

- 1-AFSA-2
- 2-UU-57
- 5-AFSA-4
- 6-UU-59

AFT 2E-S2A

1□	5□
2□	6□
3□	7□
4□	8□

- 1-AFTA-2
- 2-UU-62
- 5-AFTA-4
- 6-UU-64

R000

R000

NOTES/ECN IDENTIFICATION
THE FOLLOWING NOTES ARE
APPLICABLE TO ECN: P7116

NONE

Q

000 ECN E-2-P7116 R0 ADDED ADS LOGIC A & B
INHIBIT SWITCHES XS-1-159A & XS-1-161A.

Roman K...
5-17-88

David S...
5-17-88

REV.

DRAFTED BY

CHECKED BY

THIS CHANGE IS SAFETY RELATED NOT RELATED TO NUCLEAR SAFETY

BASE DRAWING

REV.

DCA NUMBER

REV.

791E489-7

910

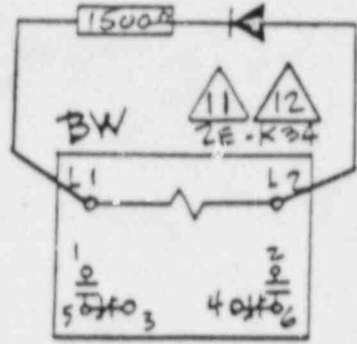
E-2-P7116-002

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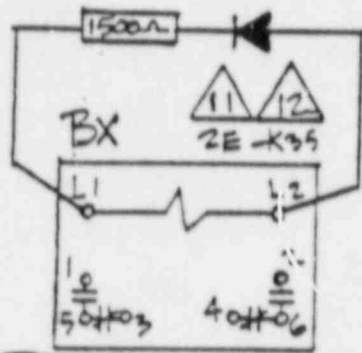
DRAWING CHANGE AUTHORIZATION

ECN E-2-P7116 DCN -NA
 REVISION A0 REVISION NA

836/2/88 SH# 2 OF 2
 GA 6/16/88



L1 -- BT-L1, BW-1
 L2 -- BT-L2, BC-6
 1 -- BW-L1.
 5 -- AH-13.



L1 -- BS-L1, BX-1
 L2 -- BS-L2, BL-6
 1 -- BX-L1,
 5 -- AP-13

R000

NOTES/ECN IDENTIFICATION
 THE FOLLOWING NOTES ARE APPLICABLE TO ECN:

NOTE:

RELAYS ZE-K34 AND ZE-K35 ARE AGASTAT TDPJ CATALOG NO E7012SE

R000

000	ECN E-2-P7116 R0 REPLACED AGASTAT TDPJ RELAYS WITH E7012SE RELAYS.	<i>Roman Kocak</i> 5-17-88	<i>David Sun</i> 5-17-88
REV.		DRAFTED BY	CHECKED BY
THIS CHANGE IS <input checked="" type="checkbox"/> SAFETY RELATED <input type="checkbox"/> NOT RELATED TO NUCLEAR SAFETY			
BASE DRAWING	REV.	DCA NUMBER	REV.
791 E 208 - 1	905	E-2-P7116- 203 ⁰²²	000

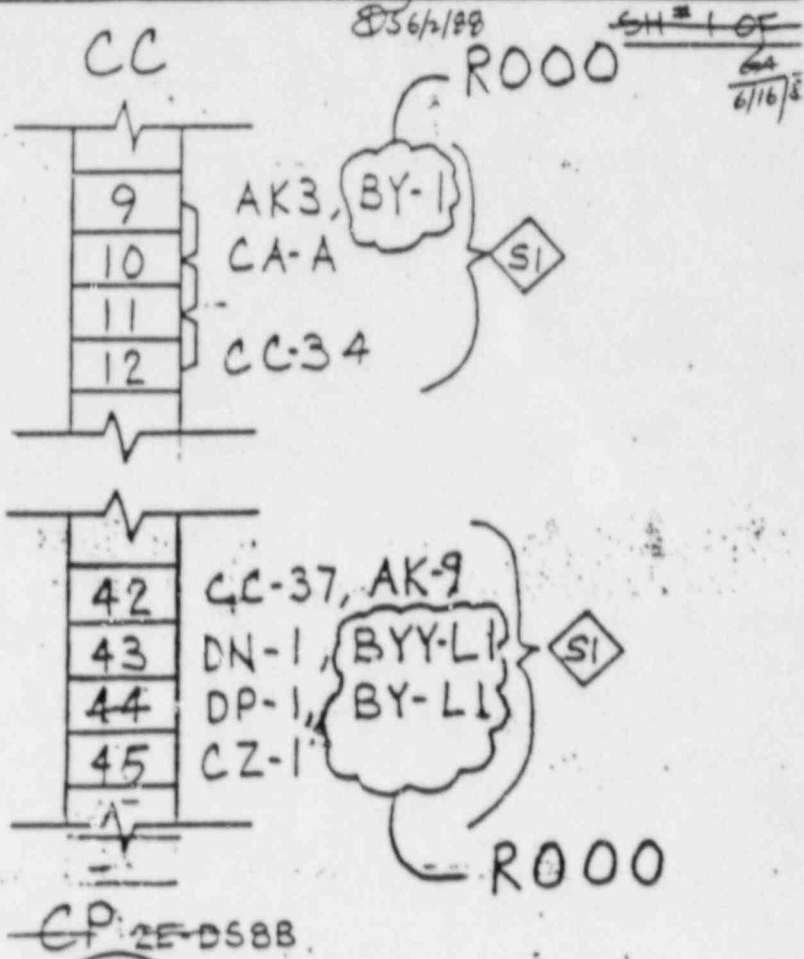
DRAWING CHANGE AUTHORIZATION

ECN E-2-P7116

DCN NA

REVISION 0A

REVISION NA



NOTES/ECN IDENTIFICATION
THE FOLLOWING NOTES ARE
APPLICABLE TO ECN: P7116

NONE

000	ECN E-2-P7116 R0 REVISED WIRING	<i>Thomas P. K. [Signature]</i> 5-17-88	<i>David L. [Signature]</i> 5-17-88
REV.		DRAFTED BY	CHECKED BY

THIS CHANGE IS SAFETY RELATED NOT RELATED TO NUCLEAR SAFETY

BASE DRAWING	REV.	DCA NUMBER	REV.
791E208-2	903	E-2-P7116-004	000

DOCUMENT LOCATION NOTICE

ECM/DCM Number

E-2-P7116

Revision

0

The following original Drawing Change Authorization's (DCA's) are located in C-Module, Engineering Design Building and are filed by DCA number. The master DCA has been filmed as an oversized document in the Records and Information Management System (RIMS) and can be retrieved by ECM/DCM number.

DCA	<u>E-2-P7116-001</u>	Revision	<u>000</u>
DCA	<u>003</u>	Revision	<u> </u>
DCA	<u>005</u>	Revision	<u> </u>
DCA	<u>006</u>	Revision	<u> </u>
DCA	<u>007</u>	Revision	<u> </u>
DCA	<u>023</u>	Revision	<u> </u>
DCA	<u>009</u>	Revision	<u> </u>
DCA	<u>024</u>	Revision	<u> </u>
DCA	<u>010</u>	Revision	<u> </u>
DCA	<u>011</u>	Revision	<u> </u>
DCA	<u>013</u>	Revision	<u> </u>
DCA	<u>014</u>	Revision	<u> </u>
DCA	<u>015</u>	Revision	<u> </u>
DCA	<u>016</u>	Revision	<u> </u>
DCA	<u>017</u>	Revision	<u> </u>
DCA	<u>018</u>	Revision	<u> </u>
DCA	<u>019</u>	Revision	<u> </u>
DCA	<u> </u>	Revision	<u> </u>
DCA	<u> </u>	Revision	<u> </u>

ERCU Clerk

Luella A. Allen

Date

6/22/88

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