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This problem is not only a safety concern but also includes potential equipment damage and needs to be considered on both basis of Industrial Safety and operational impact for an emergency situation."

30501-WBN-03

"DCR 633 has been issued and approved by CCB (Change Control Board) to relocate accumulator upper level transmitters (SIS system). Westinghouse has agreed with this change.

DNE to issue a change to the contract 54114 for Westinghouse to issue a FCN for revision of applicable vendor drawings. Upon receiving of dwgs. from Westinghouse, DNE will issue ECN(s), to reflect these changes. DNC will relocate transmitters in accordance with design drawings.

The piping modifications mentioned in the CATD for the SIS/RHR/UHI letdown tests are for leakage testing of check valve in the respective systems. This is the subject that will be addressed in our proposed corrective action plan for this CATD.

Design Change Request WB-DCR-364 proposed changes to the SIS/RHR/UHI check valve leak testing system. The subject DCR was approved by DNE as a category 4, Industrial Safety or ALARA modification. The design modifications required by this DCR are being incorporated by ECN-3164 for unit 1 and ECN-4194 for unit 2. Both ECN's have a milestone for completion of before fuel loading for their respective unit.

Since DCR-364 was written, it has been decided to delete the UHI system (Ref. WB-DCR-591 and ECN-6429 for unit 1 and ECN-5549 for unit 2). Accordingly, the portion of DCR-364 pertaining to valves on the UHI system will not be implemented".

6.2 Corrective Action at the Subcategory Level

CATDs 30500-NPS-01 and 02 were issued to TVA corporate management to address the two root causes of the subcategory as presented in section five of this report.

CATD 30500-NPS-01 states that a lack of corporate control over the initial design process resulted in insufficient attention to access considerations during the design and construction of WBN and SQN. It was requested of corporate TVA that this finding be addressed for all sites.

CATD 30500-NPS-02 states that a lack of corporate control over the modifications process has resulted in recurring accessibility problems at WBN and SQN. It was requested of corporate TVA that this finding be addressed for all sites.

TVA corporate management responded to each of these CATDs stating:

"Accessibility is addressed in the NEPs (Nuclear Engineering Procedures). NEP-3.2 (Design Input) Attachment 1, Item 21, points out that design input shall include, where applicable, accessibility and maintenance requirements. In addition, question 12 of attachment 5 to NEP-5.2 (Review) asks... 'Are accessibility and other design provisions adequate for performing needed maintenance and repair?', as part of the design verification process."

Additionally, the corporate response for CATD-30500-NPS-01 is as follows:

"As construction is either complete or essentially complete at BFN, SQN, WBN, further corrective action is addressed in 30500-NPS-02. Additional corrective action required for Bellefonte is as follows: Engineering changes resulting from the accessibility program task force and the workplace hazard assessment program have sufficiently corrected the plant access problems for unit 1 and common areas. Unit 2 is currently scheduled and engineering changes will be initiated when results of the unit 2 evaluation is completed."

The additional corporate response for CATD 30500-NPS-02 is as follows:

"Even with appropriate procedural controls of the design process, accessibility problems will continue to occur due to the application of approved construction tolerances by construction personnel. Changing regulatory requirements, especially after TMI, have also added to accessibility problems by requiring changes to existing equipment or the addition of new equipment into areas of the plant where space was already at a premium. There will continue to be a need for operations and maintenance personnel to request design changes to provide greater access in certain areas. Even with this approach, there will be areas where acceptable but not the preferred accessibility will be all that is obtainable."

"Each onsite design organization is responsible for developing the appropriate method to implement the requirements of DNE procedures. Due to the difference in sites (licensed vs. non licensed, past operating experience, radiation exposure and ALARA considerations) the methods to assess accessibility must vary. Thus DNE is unable to issue blanket requirements and must rely on the individual onsite organizations to implement the procedures as appropriate."

**7.0 ATTACHMENTS**

- Attachment A - Subcategory Summary Table**
- Attachment B - List of Concerns by Issue**
- Attachment C - Checklist for Root Cause Analysis**
- Attachment D - Summary of Symptoms and Root Causes**
- Attachment E - Graph of Symptoms versus Root Cause**
- Attachment F - Bar Charts of Symptoms**
- Attachment G - Bar Charts of Root Cause**
- Attachment H - Corrective Action Tracking Documents (CATDs)**
- Attachment I - List of Evaluators by Element/Plant**

| R1

Attachment A  
Subcategory Summary Table

REFERENCE - ECP5152J-ECP5152C  
 FREQUENCY - REQUEST  
 ONP - 1555 - ROOM

TENNESSEE VALLEY AUTHORITY  
 OFFICE OF NUCLEAR POWER  
 EMPLOYEE CONCERN PROGRAM SYSTEM (ECP5)  
 EMPLOYEE CONCERN INFORMATION BY CATEGORY/SUBCATEGORY  
 SUBCATEGORY: 305 ACCESSIBILITY PROBLEMS

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CATEGORY: OP PLANT OPER. SUPPORT

CONCERN NUMBER	CAT	SUB CAT	S M R D	PLT LOC	1 REPORT APPL				HISTORICAL REPORT	CONCERN ORIGIN	CONCERN DESCRIPTION	REF. SECT.	
					2	SAF	RELATED						
					BF	BL	SQ	NB			SUBCAT -		
											SECTION		
EX -85-087-00101 T50192	OP	30501	N	NBN	1	N	N	N	Y	EX-85-087-001	QTC	CI IS CONCERNED ABOUT THE LACK OF SPACE PROVIDED IN THE ACCUMULATOR ROOMS OF REACTOR 02 FOR THE INSTALLATION OF PIPING, VALVES, SUPPORTS, INSTRUMENTATION, CONDUIT, ETC. THE UNFORTUNATE OPERATOR WILL HAVE TO CRAWL THROUGH MANY OBSTACLES TO BE ABLE TO MAINTAIN THE EQUIPMENT. CONSTRUCTION DEPT. CONCERN. CI HAS NO FURTHER INFORMATION.	3.1.2
IN -85-023-00101 T500	OP	30501	N	NBN	1	N	N	N	Y	IN-85-023-001	QTC	ACCUMULATOR 04, REACTOR BLDG, UNIT 1 & 2 IS CONGESTED; MAY BE DIFFICULT TO PERFORM INSERVICE WORK WITH PROTECTIVE CLOTHING	3.1.2
IN -85-082-00101 T50114	OP	30501	N	NBN	1	N	N	N	Y	IN-85-906-001	QTC	IN CERTAIN AREAS OF THE PLANT, FOR INSTANCE THE REACTOR BUILDINGS BOTH UNITS 1 & 2 ACCUMULATOR ROOMS, ESPECIALLY ACCUMULATOR ROOM 4, SPACE IS AT A MINIMUM. THESE AREAS ARE CONGESTED WITH PIPING, HANGERS AND FLOOR MOUNTED INSTRUMENT PANELS MAKING IT DIFFICULT TO GET IN & OUT OF THESE AREAS AS QUICKLY. CI IS CONCERNED THAT PERSONNEL WORKING IN THESE AREAS DRESSED OUT IN PROTECTIVE CLOTHING WILL HAVE DIFFICULTY MANEUVERING IN THESE AREAS. CI HAD NO FURTHER INFORMATION.	3.1.2
IN -85-115-00801 T50164	OP	30501	N	NBN	1	N	N	N	Y		QTC	NBNP UNIT 1, INSTRUMENTATION LOCATION FOR LEVEL TRANSMITTER TO THE VOLUME CONTROL TANK ON ELEV 713 HAS MOVED TO AN AREA OF QUESTIONABLE SAFETY DURING OPERATIONAL PHASE OF PLANT. AREA HAS SHARP EDGES PRESENT AND POSSES DANGER OF TEARING ANTI-C'S AND HIGH CONTAMINATION. CI HAS NO FURTHER INFORMATION. NUCLEAR POWER CONCERN. NO FOLLOWUP REQUIRED.	3.1.2

CONCERNS ARE GROUPED BY FIRST 3 DIGITS OF SUBCATEGORY NUMBER.

REFERENCE - ECPS132J-ECPS132C  
 FREQUENCY - REQUEST  
 ONP - ISSS - RHM

TENNESSEE VALLEY AUTHORITY  
 OFFICE OF NUCLEAR POWER  
 EMPLOYEE CONCERN PROGRAM SYSTEM (ECPS)  
 EMPLOYEE CONCERN INFORMATION BY CATEGORY/SUBCATEGORY  
 SUBCATEGORY: 305 ACCESSIBILITY PROBLEMS

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 RUN DATE - 04/24

CATEGORY: OP PLANT OPER. SUPPORT

CONCERN NUMBER	CAT	SUB CAT	S H R PLT D LOC	1 REPORT APPL				HISTORICAL REPORT	CONCERN ORIGIN	CONCERN DESCRIPTION	REF. SECT:	
				2	SAF	BL	SQ				WB	CAT
										SECTION		
IN -85-189-00101 T50088	OP	30501	N WBN	1	N	N	Y	Y		QTC	WBNP UNIT #2, ONCE SCAFFOLDING IS RE MOVED, SOME VALVES WOULD BE HARD TO GET TO, EG. 15 FEET OFF FLOOR, TO MA NUALLY OPEN OR CLOSE VALVE. CI COUL D NOT PROVIDE SPECIFIC VALVE #'S, SY STEMS, BUILDINGS OR ELEVATIONS. CI STATED THIS CONDITION EXIST THROUGH OUT THE PLANT.	3.1.1 3.2.1
IN -85-189-00201 T50089	OP	30501	N WBN	1	N	N	Y	Y	I-85-210-WBN	QTC	VALVES LOCATED IN WBNP #2 SOUTH VALV E ROOM ARE VERY CONGESTED AND INACCE SSIBLE. ONLY A SMALL PERSON WOULD B E ABLE TO GET TO THEM. CI STATED ON E EXAMPLE IS DRAIN VALVE ON MAIN STE AM SYSTEM IN SOUTH VALVE ROOM UNIT # 2. CI COULD NOT PROVIDE ANY ADDITIO NAL DETAILS.	3.1.2 3.2.2
IN -85-220-00101 T50157	OP	30501	N WBN	1	N	N	Y	Y		QTC	DUE TO EXCESSIVE NUMBER OF HANGERS A ND OVERCROWDING IN UNIT 2 REACTOR BU ILDING, ESPECIALLY ACCUMULATOR ROOM #4, HEALTH PHYSICS PROBLEMS (ALARA C ONCERNS) DURING PLANT OPERATIONS ARE ANTICIPATED. CI FEELS THAT NOT ENO UGH CONCERN WAS SHOWN REGARDING THE NUMBER OF HANGERS BEING USED. CONST R. DEPT. CONCERN. CI COULD NOT PROV IDE ANY ADDITIONAL DETAILS/SPECIFICS . NO FOLLOWUP REQUIRED.	3.1.2 3.2.2
IN -85-286-00201 T50020	OP	30501	N WBN	1	N	N	N	Y	IN-85-286-002	QTC	IN THE UNIT 2 REACTOR BUILDING AZ 30 0 DEGREES 716' EQUIPMENT IS CROWDED INTO THE AREA MAKING ACCESS TO EQUIP MENT DIFFICULT.	3.1.2

CONCERNS ARE GROUPED BY FIRST 3 DIGITS OF SUBCATEGORY NUMBER.

REFERENCE - ECPS132J-ECPS132C  
 FREQUENCY - REQUEST  
 OMP - ISSS - RHM

TENNESSEE VALLEY AUTHORITY  
 OFFICE OF NUCLEAR POWER  
 EMPLOYEE CONCERN PROGRAM SYSTEM (ECPS)  
 EMPLOYEE CONCERN INFORMATION BY CATEGORY/SUBCATEGORY  
 SUBCATEGORY: 305 ACCESSIBILITY PROBLEMS

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 RUN DATE - 04/24

CATEGORY: OP PLANT OPER. SUPPORT

CONCERN NUMBER	CAT	SUB CAT	S H R D	PLT LOC	1 2	REPORT SAF	APPL RELATED	HISTORICAL REPORT	CONCERN ORIGIN	CONCERN DESCRIPTION	REF. SECT CAT - SUBCAT -
IN -85-364-00201 T500101	OP	30501	N	WBN	1	N	N N Y	IN-85-364-002	QTC	PLATFORM AND LADDERS NOT PROVIDED WHERE NEEDED FOR ACCESS TO VALVES AND EQUIPMENT. SOME LOCATIONS INCLUDE: (A) NO ACCESS TO VALVES 2FCV63 & 47 SIS AT PUMP AA (B) NO ACCESS TO VALVE 2CKV-63.524 IN THE SIS PUMP DISCHARGE CHECK ROOM AT A-19 ON 692' ELEVATION. (C) NO ACCESS TO VALVES IN ROOM 692-A22 OR TO 21SC62A-527, CENT. CHG. PUMP DISCHARGE VALVES 2-15V-62 A-256 AND 2-THV TO-554-A (D) NO ACCESS TO CCS-CVC CONTROL CHARGE PUMPS 2 A/A RETURN THV ROOM 692-A23. OPERATORS MUST HAUL STEPLADDERS TO THE	SECTION 3.1.2
IN -85-430-00101 T50016	OP	30501	N	WBN	1	N	N N Y	IN-85-430-001	QTC	DESIGN CHANGES HAVE MADE VARIOUS PARTS OF THE REACTOR BUILDING AND AUXILIARY BUILDING TOO CONGESTED TO PROPERLY AND EFFICIENTLY MAINTAIN OR REPAIR. GENERIC CONCERN WITH NO FURTHER DETAILS AVAILABLE.	3.1.1
IN -85-615-00101 T50058	OP	30501	N	WBN	1	N	N N Y	IN-85-615-001	QTC	ACCESS TO SOME VALVES AND ELECTRICAL CONTROL PANELS IS OBSTRUCTED BY THE CONGESTION OF OTHER EQUIPMENT (EG SOUTH VALVE ROOM UNIT #2)	3.1.1 3.1.2
IN -85-617-00101 T50059	OP	30501	N	WBN	1	N	N Y Y		QTC	THE BUILDING OF HANGERS & PIPE SUPPORT SYSTEMS TO THE POINT OF ACCESSIBILITY BEING MADE IMPOSSIBLE. THIS CONCERN INVOLVES BOTH UNIT 1&2. THE PRIMARY PLACES OF INTEREST ARE: ROOF, AUX BLDG. ELV. 737, THE ERCH VENT VALVES, CCS VALVES TO HEAT EXCHANGERS, #4 ACCUMULATOR ROOM, NORTH & SOUTH STEAM VALVE ROOMS & ELV. 713 BIT TANK ROOM. ACCESSABILITY IS NONEXISTANT DUE TO POTENTIALLY HOT PIPES & CONGESTED AREAS. PRESENTLY THERE ARE SCAFFOLDS TO SOME INACCESSABLE AREAS, WHEN SCAFFOLDS ARE REMOVED, NO	3.1.2 3.2.2

CONCERNS ARE GROUPED BY FIRST 3 DIGITS OF SUBCATEGORY NUMBER.

REFERENCE - ECPS132J-ECPS132C  
 FREQUENCY - REQUEST  
 ONP - ISSU - RWM

TENNESSEE VALLEY AUTHORITY  
 OFFICE OF NUCLEAR POWER  
 EMPLOYEE CONCERN PROGRAM SYSTEM (ECPS)  
 EMPLOYEE CONCERN INFORMATION BY CATEGORY/SUBCATEGORY  
 SUBCATEGORY: 305 ACCESSIBILITY PROBLEMS

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CATEGORY: OP PLANT OPER. SUPPORT

CONCERN NUMBER	CAT	SUB CAT	S H R D	PLT LOC	1 REPORT APPL 2 SAF RELATED BF BL SQ WB	HISTORICAL REPORT	CONCERN ORIGIN	CONCERN DESCRIPTION	REF. SECTI CAT - SUBCAT - SECTION
IN -85-643-00101 T50061	OP	30501	N	WBN	1 N N N Y 2 NA NA NA NO	IN-85-643-001	QTC	CASK DECONTAMINATION UNIT, IF EVER USED NEEDS ACCESS PANEL ON SIDE OF UNIT FOR REMOVING EQUIPMENT FROM INSIDE AND FOR INSPECTION. THE OIL SIGHT GAUGES NEED TO BE PLACED ON THE SIDE OF THE UNIT FOR INSPECTION PURPOSES, ETC. UNIT 1 AUX BLDG APPROXIMATELY 729' ELEVATION. THE PRESENT DESIGN POSES A SAFETY HAZZARD TO MAINTENANCE PERSONNEL AND THIS ENTIRE UNIT WAS SUPPOSED TO BE REMOVED OR NOT USED PER KNOXVILLE.	3.1.2
IN -85-746-00101 T50072	OP	30501	S	WBN	1 N N N Y 2 NA NA NA NO	IN-85-746-001	QTC	EXCESSIVE AND UNNECESSARY SUPPORT BRACING INSTALLED IN AREAS WHICH PRODUCE A SAFETY HAZARD FOR PERSONNEL WHO MUST ENTER TO WORK IN THESE AREAS. EXAMPLES: #4 ACCUMULATOR ROOM, BIT TANK ROOM, ANNULUS AREA, MOTOR DRIVEN AUX. FEED WATER PUMPS. GAUGES AND VALVES CANNOT BE REACHED IN ADDITION, AN INJURED PERSON COULD NOT BE EVACUATED.	3.1.2
	02	SF		90701	S WBN	1 N N N Y 2 NA NA NA NO			
	03	SF		90806	S WBN	1 N N N Y 2 NA NA NA NO			
IN -85-889-00301 T50189	OP	30501	N	WBN	1 N N N Y 2 NA NA NA NO		QTC	ALL FOUR ACCUMULATORS HAVE BORON LEVEL INDICATORS THAT ARE LOCATED IN THE WORST POSSIBLE SPOT SUCH THAT AN INSTRUMENT MECHANIC CAN HARDLY GET TO THEM. DURING PLANT OPERATIONS, THE ACCUMULATORS WILL BE RADIOACTIVELY HOT AND THE CURRENT DESIGN IS A POOR ONE. CONSTRUCTION DEPT CONCERN. CI HAS NO FURTHER INFORMATION.	3.1.2

CONCERNS ARE GROUPED BY FIRST 3 DIGITS OF SUBCATEGORY NUMBER.

REFERENCE - ECPS132J-ECPS132C  
 FREQUENCY - REQUEST  
 ONP - ISSS - RWM

TENNESSEE VALLEY AUTHORITY  
 OFFICE OF NUCLEAR POWER  
 EMPLOYEE CONCERN PROGRAM SYSTEM (ECPS)  
 EMPLOYEE CONCERN INFORMATION BY CATEGORY/SUBCATEGORY  
 SUBCATEGORY: 305 ACCESSIBILITY PROBLEMS

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CATEGORY: OP PLANT OPER. SUPPORT

CONCERN NUMBER	CAT	SUB CAT	S H R D	PLT LOC	1 REPORT APPL				HISTORICAL REPORT	CONCERN ORIGIN	CONCERN DESCRIPTION	REF. SECTI		
					2	SAF	BL	SQ				WB	CAT - 0	
											SUBCAT - 3			
											SECTION			
IN -86-306-00101 T50161	OP	30501	N	WBN	1	N	N	Y	Y	QTC	VARIOUS EQUIPMENT THAT COULD BE NEED ED DURING AN EMERGENCY IS NOT READIL Y ACCESSIBLE TO APPLICABLE PERSONNEL . EXAMPLE: AUX BUILDING 713' ELEV (C ALSO CONTAINEMENT BUILDING) THE INST RUMENT PANELS AND THE AUX FEEDWATER PUMPS ARE SO CONGESTED IT IS VERY TI ME CONSUMING TO GET IN THERE TO READ THE INSTRUMENTS. NUCLEAR POWER CON CERN. CI HAS NO FURTHER INFORMATION . NO FOLLOWUP REQUIRED.	3.1.1		
					2	NA	NA	SR	SR			3.1.3		
PH -85-003-00601 T50106	OP	30501	N	WBN	1	N	N	Y	Y	QTC	WATTS BAR INSTRUMENTATION IS NOT PRO PERLY DESIGNED FOR ACCESSIBILITY. C I HAS NO MORE ADDITIONAL INFORMATION AVAILABLE NO FOLLOW UP REQUIRED	3.1.1		
					2	NA	NA	SR	SR			3.2.1		
RII-86-A-0116 01	OP	30501	N	NPS	1	N	N	Y	Y	NRC	THE ALLEGER STATED THAT AT WATTS BAR AND SEQUOYAH, CONTROL PANELS OR STA TIONS ARE PHYSICALLY LOCATED SUCH TH AT THERE IS NO WAY TO GET TO THEM TO OPERATE THE EMERGENCY EQUIPMENT. A S AN EXAMPLE, A PANEL WAS OBSERVED TO BE LOCATED SIX TO EIGHT INCHES FROM A WALL, FACING THE WALL, SO THAT TH ERE WAS NO PHYSICAL WAY TO EVEN READ THE TAGS ON THE PANEL. THE ALLEGER SAID THAT THERE WERE A "LOT" OF AWKW ARDLY LOCATED PANELS AT WATTS BAR. HIS ALLEGATION APPLIES TO WATTS BAR AND SEQUOYAH; HOWEVER. IT MAY HA	3.1.3		
					2	NA	NA	SR	SR			3.2.3		
WBN-0284	01	OP	30108	S	WBN	1	N	N	N	Y	OECP	DIFFICULT ENTRY/EGRESS FROM MANWAYS.	3.1.2	
	02	OP	30501	S	WBN	1	N	N	N	Y				
											2	NA	NA	NO

CONCERNS ARE GROUPED BY FIRST 3 DIGITS OF SUBCATEGORY NUMBER.

REFERENCE - ECPS132J-ECPS132C  
 FREQUENCY - REQUEST  
 ONP - ISSS - RWM

TENNESSEE VALLEY AUTHORITY  
 OFFICE OF NUCLEAR POWER  
 EMPLOYEE CONCERN PROGRAM SYSTEM (ECPS)  
 EMPLOYEE CONCERN INFORMATION BY CATEGORY/SUBCATEGORY  
 SUBCATEGORY: 305 ACCESSIBILITY PROBLEMS

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 RUN TIME - 13:36:  
 RUN DATE - 04/24/

CATEGORY: OP PLANT OPER. SUPPORT

CONCERN NUMBER	CAT	SUB CAT	S H R D	PLT LOC	1 REPORT APPL				HISTORICAL REPORT	CONCERN ORIGIN	CONCERN DESCRIPTION	REF. SECTI	
					2 SAF RELATED	BF	BL	SQ				WB	CAT - 0
											SUBCAT - 3		
											SECTION		
WBN-225	01	OP	30501	S	WBN	1	N	N	N	Y	OECP	NEED SCAFFOLDS BUILT TO GAIN ACCESS TO VALVES ON SIS ACCUMULATORS. THESE VALVES ARE DIFFICULT TO GET TO WHEN INDIVIDUAL IS DRESSED OUT. CI RECOMMENDS RELOCATING VALVES TO DECREASE SAFETY HAZARD AND REDUCE RADIATION EXPOSURE (ALARA)	3.1.2
	02	OP	31105	S	WBN	1	N	N	N	Y			
						2	NA	NA	NA	SR			

20 CONCERNS FOR CATEGORY OP SUBCATEGORY 305

CONCERNS ARE GROUPED BY FIRST 3 DIGITS OF SUBCATEGORY NUMBER.

Attachment B

List of Concerns By Issue

The Accessibility Subcategory (30500) is comprised of 20 concerns grouped into one element addressing the single issue of difficult or limited access to plant systems and equipment. The concerns may be grouped into specific plant areas and equipment as shown below.

Element 305.01 - Accessibility Problems Affecting Normal Operation, Maintenance, Testing or Inspection

Issue 305.01-1 - Difficult or Limited Access to Plant Systems and Equipment

Emergency equipment

(RII-86-A-0116, IN-86-306-001)

Accumulator rooms

(IN-85-617-001, IN-85-889-003, IN-85-023-001,  
IN-85-082-001, IN-85-220-001, IN-85-746-001,  
EX-85-087-001, WBN-0225)

Main Steam valve rooms

(IN-85-615-001, IN-85-617-001, IN-85-189-002)

Valves/Instrumentation

(PH-85-003-006, IN-85-189-001, IN-85-364-002,  
IN-85-115-008, IN-86-306-001, IN-85-615-001)

Miscellaneous (Modifications, Reactor Building, Cask  
Decon Unit, Manways)

(IN-85-430-001, IN-85-286-002, IN-85-643-001, WBN-0284)

Attachment C  
Checklist for Root Cause Analysis

1. Procedure lacks specifics to perform task.
2. Personnel lack sufficient training in the applicability/use of procedure.
3. Lack of understanding regulatory requirements or commitments.
4. Lack of adequate system, process, or administrative controls to ensure commitments are reflected in procedures or processes.
5. Inadequate communication within functional group.
6. Inadequate communication between functional groups.
7. Management Assumed Risk.
8. Procedures incomplete or failed to incorporate all technical requirements.
9. Error in judgment by qualified individual.
10. Unqualified individual performing the task.
11. Insufficient time to perform task.
12. Inadequate prerequisite defined to ensure satisfactory completion of task.
13. Personnel performed task knowingly in violation of procedure/process.
14. Personnel error in following procedures.
15. Failed to identify root cause of previous deficiencies.
16. Failed to take appropriate action to preclude reoccurrence.
17. Inadequate process to detect adverse trends.
18. Inadequate acceptance criteria defined to ensure satisfactory task completion.
19. Management attentiveness to trends.
20. Lack of accessibility to documentation.
21. Inadequate controls for review of results to ensure compliance with commitments.
22. Timeliness of changes to commitments or changes to licensing/regulatory requirements.
23. Isolated incident.
24. Random error.
25. Other - i.e., equipment related failure.

ATTACHMENT D

Summary of Symptoms and Root Causes

Element 305.01, Problems in Normal Operation, Maintenance, Testing, and Inspection Due to Inaccessibility

For this element, there was the potential for negative findings at the category level exhibited by the following symptoms: (a) inadequate initial design (accessibility as an input criterion), and (b) inadequate design control (accessibility considerations for modifications). Each of these symptoms appeared in the evaluation for WBN and SQN. As these symptoms were tested for root cause, the following root causes were judged to be applicable at WBN and SQN:

- a. Procedures incomplete or failed to incorporate all technical requirements
- b. Lack of understanding regulatory requirements or commitments
- c. Failure to take appropriate action to preclude recurrence
- d. Inadequate acceptance criteria defined to ensure satisfactory task completion
- e. Inadequate controls for review of results to ensure compliance with commitments

The analysis of the symptoms and root causes for these elements is depicted graphically in Attachment E, F, and G. Attachment E is a plot of the symptoms versus the root causes pointed out by the symptoms. Root cause numbers on the horizontal axis correspond to the 25 items on the "Checklist for Root Cause Analysis" found in Attachment C. Attachment F contains bar graphs showing the number of times each of the symptoms in this subcategory occurs for the various plants. Attachment G contains bar graphs showing the number of times each root cause appears in the subcategory for the various plants.

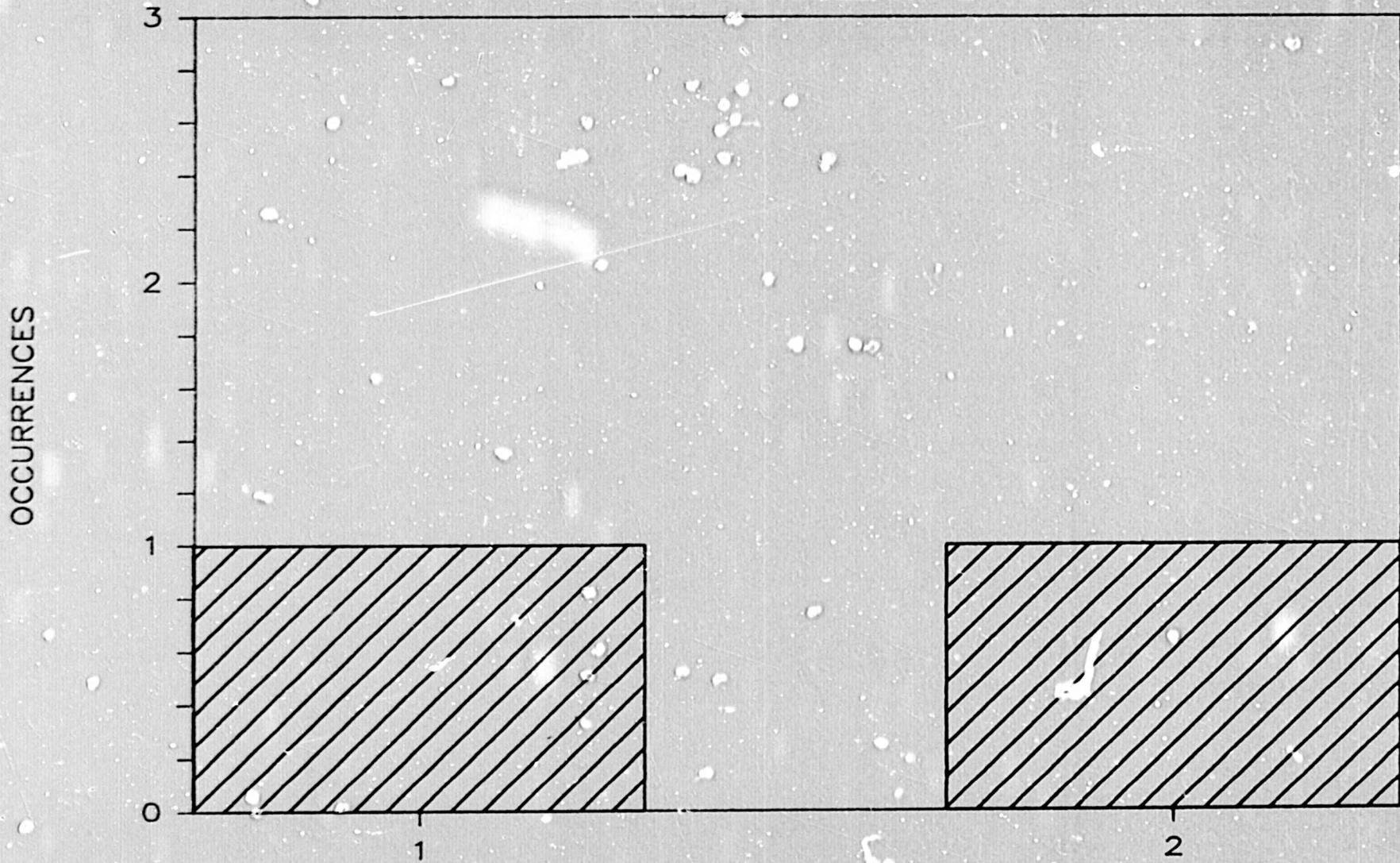
A review and analysis of these root causes taken collectively points to two subcategory root causes as follows.

- a. Inadequate initial design and lack of adequate acceptance criteria have resulted in insufficient attention to access considerations during the design and construction of WBN and SQN.
- b. Inadequate design and work controls in the modification process have resulted in recurring accessibility problems at WBN and SQN. This deficiency is due in part to a lack of understanding of regulatory requirements or commitments dealing with accessibility such as ANSI N45.2.11 and a failure to incorporate all technical requirements pertaining to accessibility.



# OCCURRENCES VS SYMPTOMS

WATTS BAR NUCLEAR PLANT

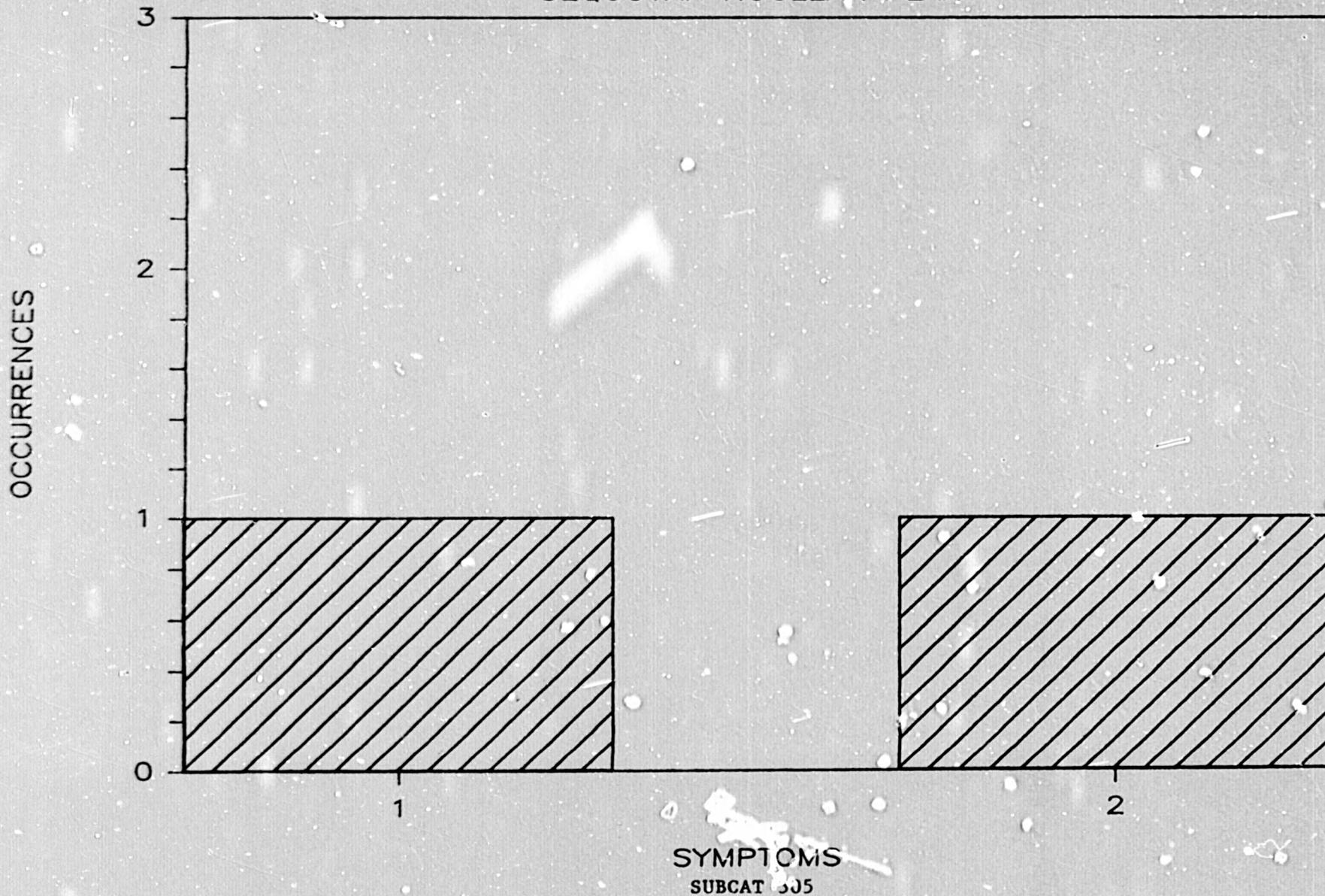


SYMPTOMS

SUBCAT 305

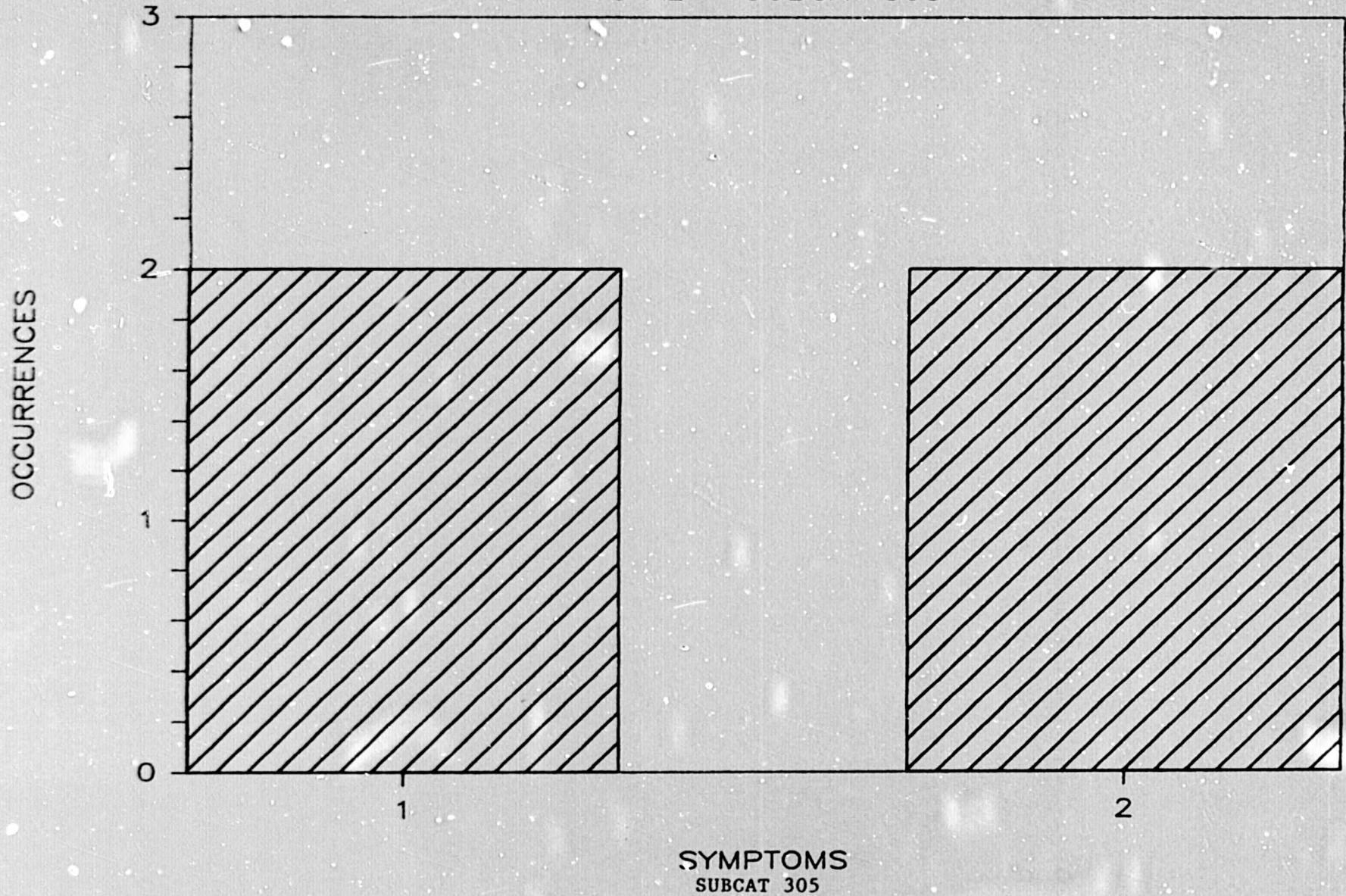
# OCCURRENCES VS SYMPTOMS

SEQUOYAH NUCLEAR PLANT



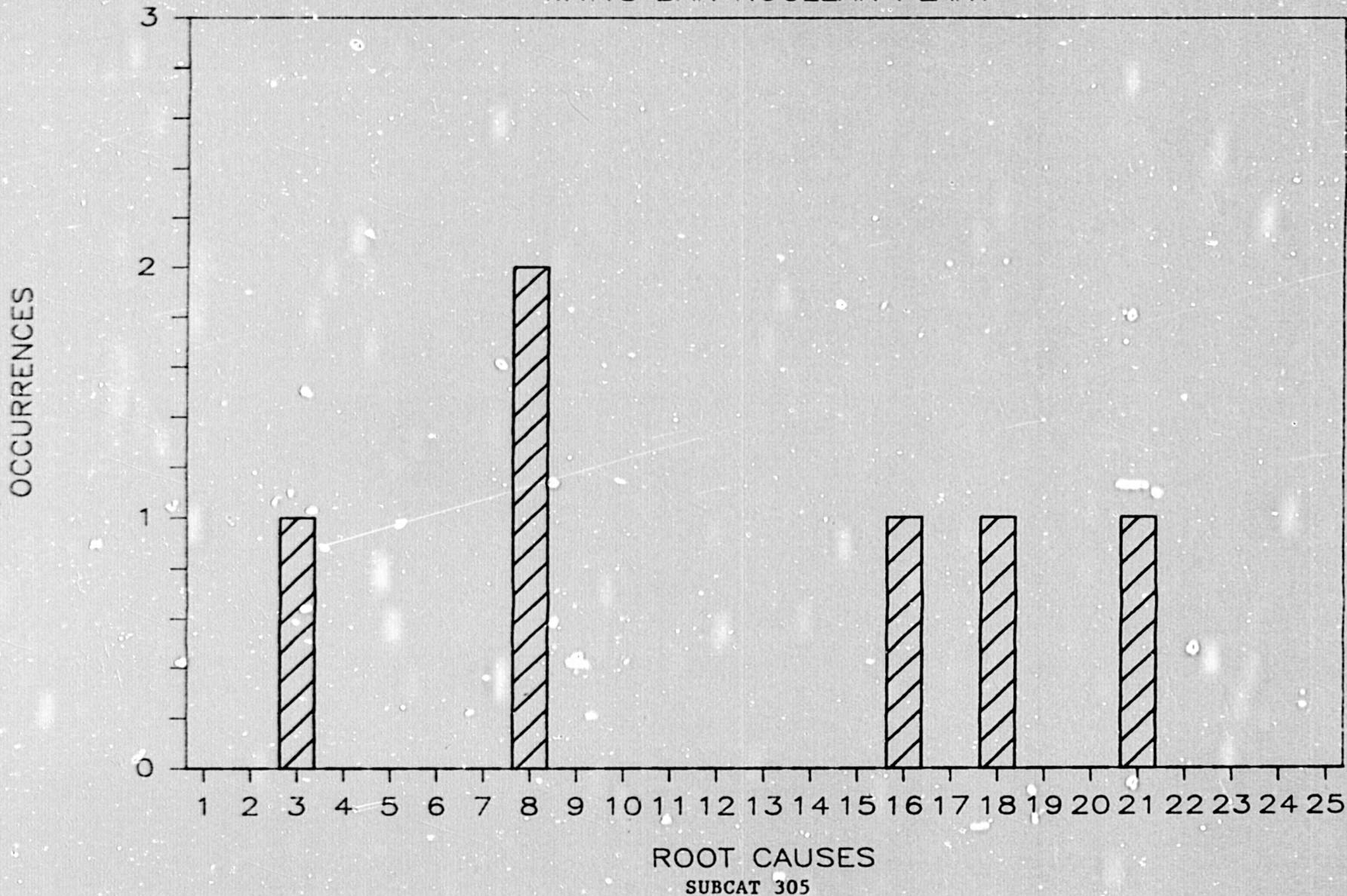
# OCCURRENCES VS SYMPTOMS

TOTAL - SUBCAT 305



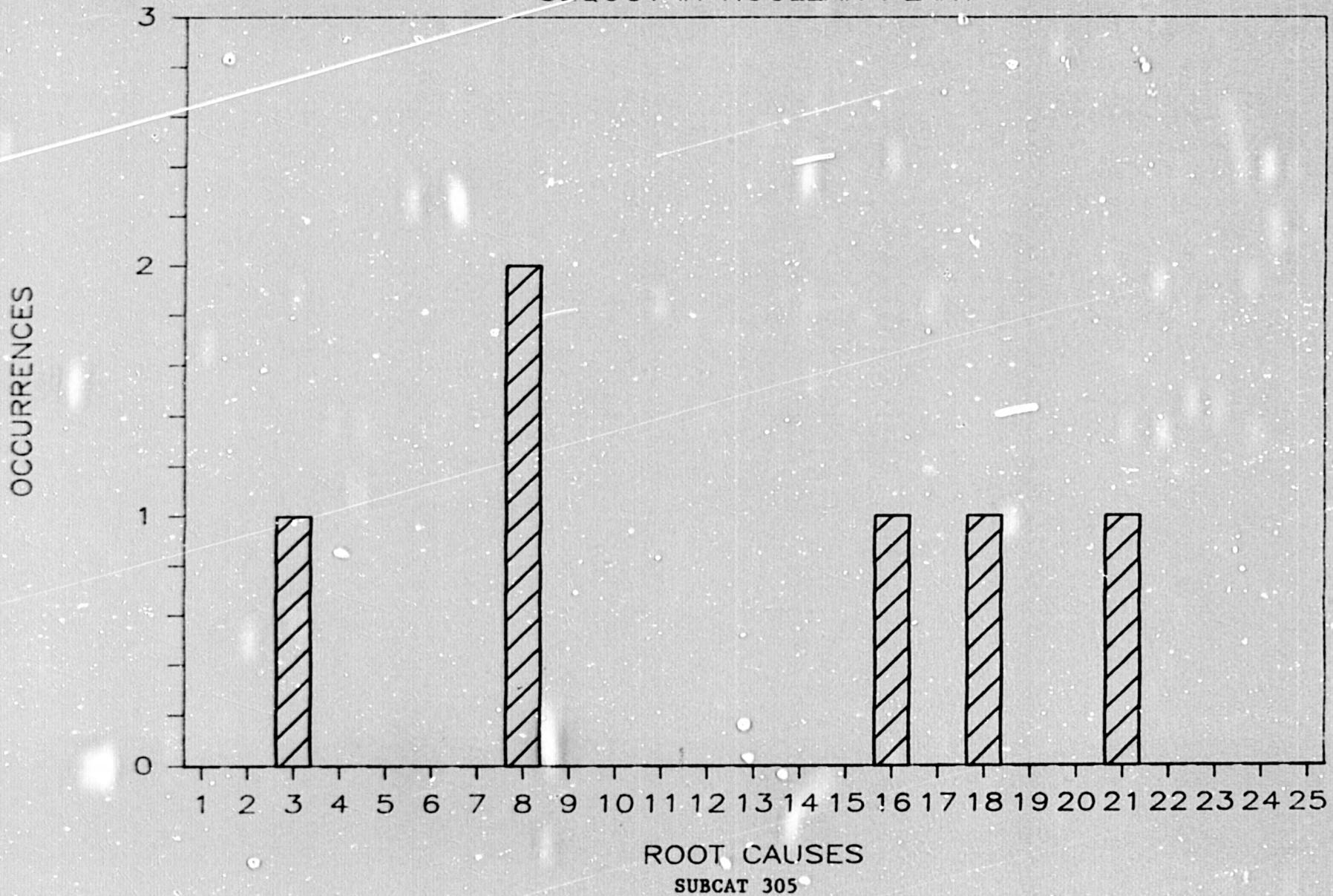
# OCCURRENCES VS ROOT CAUSES

WATTS BAR NUCLEAR PLANT



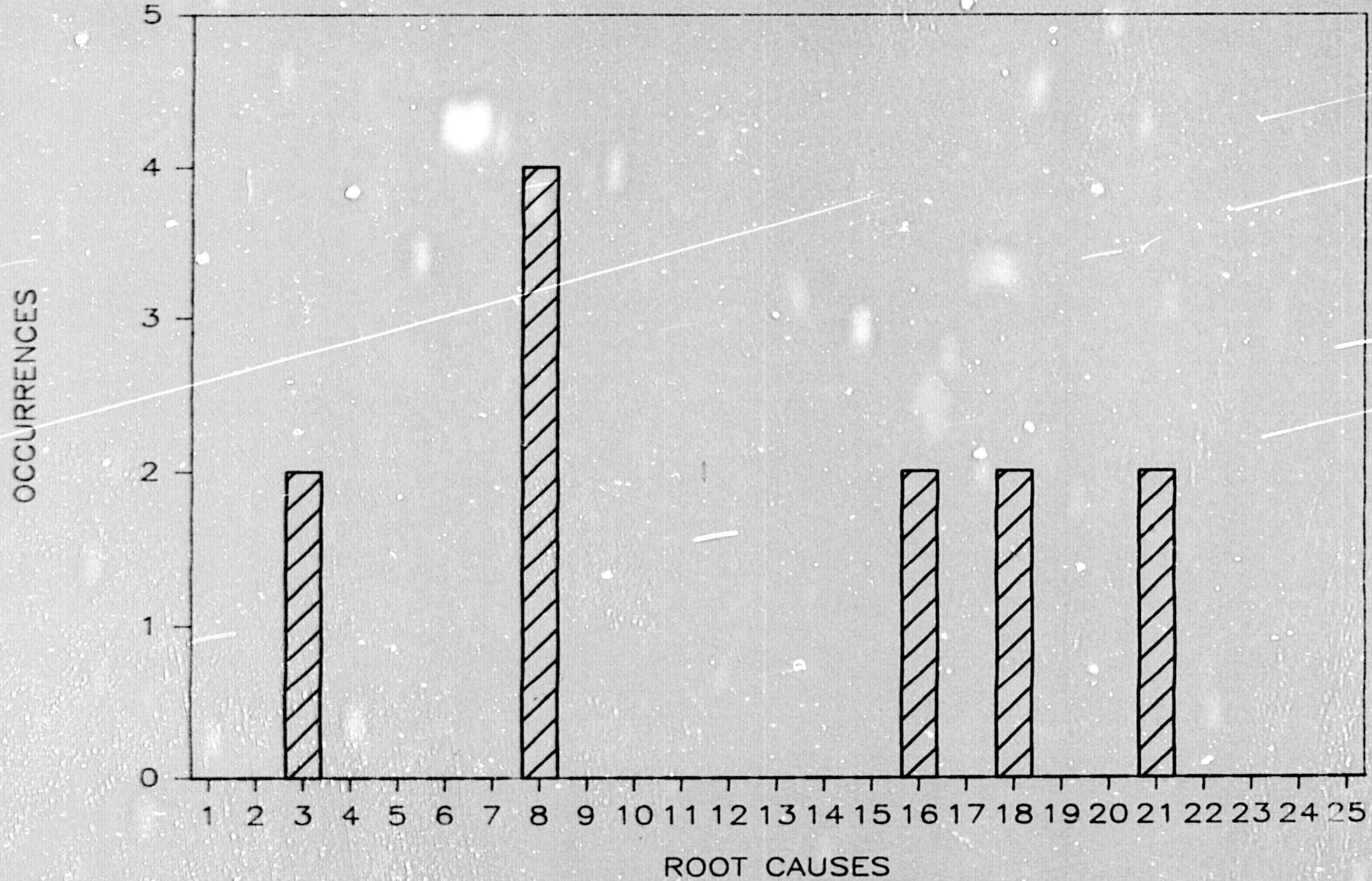
# OCCURRENCES VS ROOT CAUSES

SEQUOYAH NUCLEAR PLANT



# OCCURRENCES VS ROOT CAUSES

TOTAL - SUBCAT 305



ATTACHMENT H

Corrective Action Tracking Documents (CATDs)

<u>CATD Number</u>	<u>Corrective Action Plan Approved</u>
30500-NPS-01	Yes
30500-NPS-02	Yes
30501-WBN-01	Yes
30501-WBN-02	Yes
30501-WBN-03	Yes
30501-SQN-01	Yes
30501-SQN-02	Yes

ECSP Corrective  
Action Tracking Document  
(CATD)

INITIATION

Applicable ECSP Report No.: 30500

1. Immediate Corrective Action Required:  Yes  No
  2. Stop Work Recommended:  Yes  No
  3. CATD No. 30500-NPS-01
  4. INITIATION DATE 04-09-87
  5. RESPONSIBLE ORGANIZATION: DNE
  6. PROBLEM DESCRIPTION:  QR  NQR As noted in the findings and collective significance sections of Report 30500, lack of corporate control over the initial design and lack of adequate acceptance criteria have resulted in insufficient attention to access considerations during the design and construction of WBN and SQN. This condition may exist at BFN and BLN as well, and should therefore be evaluated at the corporate level for all sites.
- ATTACHMENTS
7. PREPARED BY: NAME C. W. Touchstone WT DATE: 4-13-87
  8. CONCURRENCE: for CEG-H Thomas F. Huth for WRL DATE: 4-13-87
  9. APPROVAL: ECTG PROGRAM MGR. B.R. Huth for DATE: 4/14/87

CORRECTIVE ACTION

10. PROPOSED CORRECTIVE ACTION PLAN: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

During the close out insure that a CAPR has been generated or that sound justification is available. WRL 6-16-87

- ATTACHMENTS
11. PROPOSED BY: DIRECTOR/MGR: OT 41 870608 889 DATE: \_\_\_\_\_
  12. CONCURRENCE: CEG-H: W.R. Long DATE: 6-16-87  
SRP: \_\_\_\_\_ DATE: \_\_\_\_\_  
NA DATE: \_\_\_\_\_  
ECTG PROGRAM MGR: B.R. Huth for DATE: 6/16/87

VERIFICATION AND CLOSEOUT

13. Approved corrective actions have been verified as satisfactorily implemented.

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
TITLE

\_\_\_\_\_  
DATE

ECSP Corrective  
Action Tracking Document  
(CATD)

INITIATION

Applicable ECSP Report No.: 30500

1. Immediate Corrective Action Required:  Yes  No
2. Stop Work Recommended:  Yes  No
3. CATD No. 30500-NPS-02
4. INITIATION DATE 84-09-27
5. RESPONSIBLE ORGANIZATION: DNE
6. PROBLEM DESCRIPTION:  QR  NQR As noted in the findings and collective significance sections of Report 30500, lack of corporate control over the modification process has resulted in recurring accessibility problems at WPH and SDN. This condition may exist at BFN and BLN as well, and should therefore be evaluated at the corporate level for all sites.

- ATTACHMENTS
7. PREPARED BY: NAME C. W. Touchstone DATE: 4-13-87
  8. CONCURRENCE: f. CEG-H Thomas F. Healy for WPH DATE: 4-13-87
  9. APPROVAL: ECTG PROGRAM MGR. R. A. [unclear] for DATE: 5/11/87

CORRECTIVE ACTION

10. PROPOSED CORRECTIVE ACTION PLAN:

*see attached*

- ATTACHMENTS
11. PROPOSED BY: DIRECTOR/MGR: see attached DATE: \_\_\_\_\_
  12. CONCURRENCE: CEG-H: W.R. [unclear] DATE: 8-9-87
  - SRP: \_\_\_\_\_ DATE: \_\_\_\_\_
  - \_\_\_\_\_ DATE: \_\_\_\_\_
  - \_\_\_\_\_ DATE: \_\_\_\_\_
  - ECTG PROGRAM MGR: \_\_\_\_\_ DATE: \_\_\_\_\_

VERIFICATION AND CLOSEOUT

13. Approved corrective actions have been verified as satisfactorily implemented.

SIGNATURE

TITLE

DATE

ECSP Corrective  
Action Tracking Document  
(CATD)

INITIATION

Applicable ECSP Report No.: 305.01-WBN

- 1. Immediate Corrective Action Required:  Yes  No
- 2. Stop Work Recommended:  Yes  No
- 3. CATD No. 30501-WBN-01 4. INITIATION DATE 01/14/87
- 5. RESPONSIBLE ORGANIZATION: Industrial Safety
- 6. PROBLEM DESCRIPTION:  OR  NQR As noted in the referenced report, access to the S/G PORVs (U1 North Valve Room, elevation 767) is unsafe. One must cross the MSIV and then straddle a ten foot drop from a platform to adjacent ladder. The ladder provides access to elevation 767 and has no protection for a potential fall of forty feet.

ATTACHMENTS

- 7. PREPARED BY: NAME C. W. Touchstone DATE: 1-21-87
- 8. CONCURRENCE: CEG-H: Thomas F. Hunt for WCL DATE: 1-22-87
- 9. APPROVAL: ECTG PROGRAM MGR. Bill Stewart DATE: 1-30-87

CORRECTIVE ACTION

- 10. PROPOSED CORRECTIVE ACTION PLAN: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
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SEE ATTACHED CAPR

ATTACHMENTS

- 11. PROPOSED BY: DIRECTOR/MGR: Quintina D. DeBe DATE: 2/12/87
- 12. CONCURRENCE: CFG-H: W. R. Long DATE: 2-20-87
- SRP: \_\_\_\_\_ DATE: \_\_\_\_\_
- \_\_\_\_\_ DATE: \_\_\_\_\_
- \_\_\_\_\_ DATE: \_\_\_\_\_
- ECTG PROGRAM MGR: \_\_\_\_\_ DATE: \_\_\_\_\_

VERIFICATION AND CLOSEOUT

- 13. Approved corrective actions have been verified as satisfactorily implemented.

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SIGNATURE

\_\_\_\_\_  
TITLE

\_\_\_\_\_  
DATE

ECSP Corrective  
Action Tracking Document  
(CATD)

INITIATION

Applicable ECSP Report No.: 305.01-WBN

- 1. Immediate Corrective Action Required:  Yes  No
- 2. Stop Work Recommended:  Yes  No
- 3. CATD No. 30501-WBN-02
- 4. INITIATION DATE 01/14/87
- 5. RESPONSIBLE ORGANIZATION: Operations
- 6. PROBLEM DESCRIPTION:  OR  NQR As noted in the referenced report access to the MDAFW LCV platforms (Auxiliary Building elevation 737, both units) is restricted. Access to the LGVs and manual isolation valves on the north end of U1 platform and south end of U2 platform requires climbing on control air, drain, and sense lines due to absence of ladders. Evaluate this condition for affect on plant operations.

ATTACHMENTS

- 7. PREPARED BY: NAME C. W. Touchstone DATE: 1-21-87
- 8. CONCURRENCE: CEG-H: *Thomas F. Huth for UEL* DATE: 1-22-87
- 9. APPROVAL: ECTG PROGRAM MGR. *DW Stewart* DATE: 1-30-87

CORRECTIVE ACTION

- 10. PROPOSED CORRECTIVE ACTION PLAN: \_\_\_\_\_  
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ATTACHMENTS

- 11. PROPOSED BY: DIRECTOR/MGR: *Patrick S. Dahl* DATE: 2/11/87
- 12. CONCURRENCE: CEG-H: *D.R. Sapp* DATE: 2-20-87
- SRP: \_\_\_\_\_ DATE: \_\_\_\_\_
- \_\_\_\_\_ DATE: \_\_\_\_\_
- \_\_\_\_\_ DATE: \_\_\_\_\_
- ECTG PROGRAM MGR: \_\_\_\_\_ DATE: \_\_\_\_\_

VERIFICATION AND CLOSEOUT

- 13. Approved corrective actions have been verified as satisfactorily implemented.

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SIGNATURE

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TITLE

\_\_\_\_\_  
DATE



ECSP Corrective  
Action Tracking Document  
(CATD)

INITIATION

Applicable ECSP Report No.: 305.01-SQN R2

1. Immediate Corrective Action Required:  Yes  No
2. Stop Work Recommended:  Yes  No
3. CATD No. 30501-SQN-01
4. INITIATION DATE 12-2-86
5. RESPONSIBLE ORGANIZATION: Operations
6. PROBLEM DESCRIPTION:  QR  NQR As noted in section III.2.C of the attached report, access to the SG #1 PORV local controllers is restricted. Operations in coordination with affected plant sections should determine if corrective action is required for this item.
7. PREPARED BY: NAME C. W. Touchstone  ATTACHMENTS
8. CONCURRENCE: CEG-H W. R. Long DATE: 11-8-86
9. APPROVAL: ECTG PROGRAM MGR. William C. Huth DATE: 12/3/86

CORRECTIVE ACTION

10. PROPOSED CORRECTIVE ACTION PLAN: See attached CAP (553 861212 974) (0790386 1213 802)  
JFH  
2/11/87
11. PROPOSED BY: DIRECTOR/MGR: H. B. Rankin  ATTACHMENTS
12. CONCURRENCE: CEG-H: W. R. Long DATE: 12-15-86  
SRP: \_\_\_\_\_ DATE: 3-12-87  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
ECTG PROGRAM MGR: \_\_\_\_\_ DATE: \_\_\_\_\_

VERIFICATION AND CLOSEOUT

13. Approved corrective actions have been verified as satisfactorily implemented.

SIGNATURE

TITLE

DATE

ECSP Corrective  
Action Tracking Document  
(CATD)

INITIATION

Applicable ECSP Report No.: 305.01-SQN R2

1. Immediate Corrective Action Required:  Yes  No
2. Stop Work Recommended:  Yes  No
3. CATD No. 30501-SQN-02 4. INITIATION DATE 12-2-86
5. RESPONSIBLE ORGANIZATION: Health Physics/Operations
6. PROBLEM DESCRIPTION:  QR  NQR As noted in section III.2.C of the attached report, the control panel for ABSCE ventilation dampers in the CDWE is located in a high radiation area. Please evaluate this situation further and state corrective action required if any.
7. PREPARED BY: NAME C. W. Touchstone  ATTACHMENTS DATE: 12-3-86
8. CONCURRENCE: CEG-H Thomas F. Hunt for LKL DATE: 12/3/86
9. APPROVAL: ECTG PROGRAM MGR. D. Ustick for DATE: 12/3/86

CORRECTIVE ACTION

10. PROPOSED CORRECTIVE ACTION PLAN: See attached CAP (553 861212 974) (OR 503 861213 802) JTB/1/87
11. PROPOSED BY: DIRECTOR/MGR H. C. Rankin / H  ATTACHMENTS DATE: 12-15-86
12. CONCURRENCE: CEG-H: W. K. Dwyer DATE: 8-12-87  
SRP: \_\_\_\_\_ DATE: \_\_\_\_\_  
\_\_\_\_\_ DATE: \_\_\_\_\_  
\_\_\_\_\_ DATE: \_\_\_\_\_  
ECTG PROGRAM MGR: \_\_\_\_\_ DATE: \_\_\_\_\_

VERIFICATION AND CLOSEOUT

13. Approved corrective actions have been verified as satisfactorily implemented.

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
TITLE

\_\_\_\_\_  
DATE

ATTACHMENT I

List of Evaluators by Element/Plant

Element 305.01

WBN - C. W. Touchstone

SQN - C. W. Touchstone