NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Catawba Nuclear Station, Unit 1	0 5 0 0 0 4 1 3	1 OF 0 5

TITLE (4)
Manual Reactor Trip Following Loss of Main Feedwater

EVENT DATE (5)			LER NUMBER (6)					REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR		SEQUENTIAL NUMBER		REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
0 6	2 2	8 5	8 5	—	0 4 3	—	0 0	0 7	2 2	8 5		0 5 0 0 0
												0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)					
POWER LEVEL (10)	0 6 4	20.402(b)	20.405(c)	X	50.73(a)(2)(iv)		73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)		50.73(a)(2)(v)		73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)		50.73(a)(2)(vii)	X	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		50.72(b)(2)(ii)
		20.405(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)		
		20.405(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Roger W. Ouellette, Associate Engineer - Licensing	AREA CODE 7 0 4 — 3 7 3 - 7 5 3 0

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)

		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (Limit to 1400 spaces, i.e. approximately fifteen single-space typewritten lines) (16)

On June 22, 1985, at 0104 hours, manual reactor shutdown was initiated following an automatic trip of Main Feedwater Pump Turbine 1B due to a loss of condenser vacuum. The loss of condenser vacuum was caused by a Nuclear Equipment Operator opening a drain valve associated with Main Feedwater Pump Turbine 1A. The Operator had received instructions from his Supervisor to reposition certain valves to support filling and warming of the non-operating Main Feedwater Pump. After performing a review of the tagout stubs, the Supervisor inappropriately issued to the Operator the tag stub for the drain valve to be repositioned. Unit 1 was at 64% reactor power at the time.

This incident is classified as a Personnel Error. While performing the review of the tagout stubs, the Supervisor did not utilize the procedure enclosure which addresses the evoluation that was to be performed.

This incident is reportable per 10 CFR 50.73, Section (a)(2)(iv) and 10 CFR 50.72, Section (b)(2)(ii).

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TEXT *If more space is required, use additional NRC Form 366A's)* (17)

The Main Feedwater (CF) System takes condensate from the Condensate (CM) System, heats it to improve thermal cycle efficiency and delivers it at the proper flow, temperature, and pressure to the steam generators for unit operating conditions.

The CF Pump turbines are interlocked so that if a low condenser vacuum of 17.5" Hg is reached, the turbines will automatically trip. In the event that the main feedpumps trip, the Motor Driven Auxiliary Feedwater (CA) Pumps will automatically start and feed the Steam Generators (S/G's). If Low Low Level in two S/G's occurs, the Turbine Driven CA Pump will automatically start and feed the S/G's.

Abnormal Procedure AP/1/A/5500/06, Loss of CF Supply to S/G's, requires that the reactor be manuallly tripped on a loss of CF if reactor power is greater than 5%.

On June 17, 1985, Main Feedwater Pump Turbine (CFPT) 1A's inboard bea. ng had been observed to be operating at a high temperature. A Work Request was originated to investigate and repair the cause of the high temperature problem. Tagout Removal and Restoration Record (R&R) Sheet 15-2194 was issued on June 18, 1985, to isolate CFTP 1A for this work request.

Difficulties in returning a CF Pump to service had been encountered previously. For this reason, a new enclosure for the Condensate and Feedwater Operating Procedure (OP/1/A/6250/01) was originated. This enclosure provides guidelines for the isolation of CFPT 1A, as well as returning that pump to service.

Maintenance on CFPT 1A was expected to be completed on the evening shift of June 21, 1985. The Operations daily worklist originated that day contained an item (#23) which addressed the activities associated with CFPT 1A. The item stated that "When the work is completed on 1A CF Pump, please clear the tags and put the pump in service per enclosure 4.16 of OP/1/A/6250/01...". The worklist is reviewed at the start of each shift by the Shift Supervisor, and is generally the guideline by which the Unit Supervisor plans work activities during the shift.

During the evening of June 21, 1985, maintenance activities had progressed to the point where refilling and warming CF Pump 1A was desired prior to checking pump alignment. Maintenance turned the tag stubs in to the Shift S. pervisor. The tagout for CFPT 1A consisted of valves from the CM (Condensate), SP (Main Steam Supply to FWPT), CF (Main Feedwater), ZJ (Condenser Steam Air Ejector Vacuum), TF (FWP Steam Seal), CL (FWP Condensate Seal), and LF (FWP Turbine Lube Oil) Systems. The Shift Supervisor instructed the Unit Supervisor to review the stubs prior to issuing them to an Operator for the associated valve repositioning. The Unit Supervisor was aware of the worklist item, but concluded that, since the tags were going to be lifted temporarily, and then replaced, Enclosure 4.16 did not apply. This was due to the wording of the worklist item which referred to "putting the pump in service...".

To accomplish the review, the valve checklist of procedure OP/1/A/6250/01 (Condensate and Feedwater System) was used by the Unit Supervisor. From the valve checklist, the effects of opening 1CM187 (CFPT 1A Drain to Main Condenser) were not recognized by the Unit Supervisor. The normal position of this valve in the valve checklist is locked open. After selecting the stubs which he felt were sufficient to fill and warm CF Pump 1A, the Unit Supervisor issued the stubs to a Nuclear Equipment Operator (NEO) with instructions to clear them. The NEO then reviewed the R&R sheet for the return position of the valves that he had been instructed to reposition.

The NEO then proceeded to reposition the valves associated with the stubs received from the Unit Supervisor. When 1CM187 (CFPT 1A Drain to Main Condenser) was opened, the established vacuum on CFPT 1B decreased to the trip setpoint of 17.5" Hg. CFPT 1B then tripped on low vacuum. A trip of the main turbine immediately followed. Both motor driven CA pumps started automatically, following the loss of both CF pumps. The condenser dump valves opened following the trip of the main turbine. Pressurizer Power Operated Relief Valves (PORV's) 1NC32B, 1NC34A, and 1NC36B each opened and closed twice prior to the reactor being manually tripped by the Nuclear Control Operator. PORV's 1SV1 (S/G D) and 1SV7 (S/G C), and S/G B Code Safety Relief Valve 1SV14 also opened and reclosed.

Following the manual reactor trip, low low level alarms were received on S/G's B, C, and D. The turbine driven CA pump started as expected after low low levels in two S/G's were received. All S/G low low level signals cleared within 44 seconds.

The turbine driven CA pump was secured after the low low S/G level alarms cleared. CFPT 1B was later restarted and the motor driven CA pumps were secured. Safety Parameter Display System (SPDS) subcriticality and heat sink alarms were received during this transient. These alarms have also been received during previous transients, and when compared with other parameters, have been determined to be false indications.

S/G A steam pressure increased to 1174.5 psig. S/G A PORV 1SV19 should have opened at the setpoint of 1125 psig. That valve did not open as expected. The code safety relief valve for S/G A did not open as the 1175 psig setpoint was not reached. A Work Request was originated to investigate the response of 1SV19. The valve was found to respond within 15 psig of the setpoint.

S/G B steam pressure increased to 1189.5 psig. S/G B PORV 1SV13 should have opened at the setpoint of 1125 psig. The valve did not open as expected. S/G B Code Relief Valve 1SV14 opened as expected at the 1175 psig setpoint. A Work Request was originated to investigate the response of 1SV13. The controller was found to be about 60 psig high. The setpoint was reset and the valve responded within 10 psig of the setpoint.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

This incident is classifed as a Personnel Error. The failure of the Unit Supervisor to utilize the new enclosure of the Condensate and Feedwater Operating Procedure, which pertained to isolating and returning CFPT 1A to service, led to an inadequate review of the tag stubs. This was due to unfamiliarity with the new enclosure, as it had been issued during the previous shift. However, the worklist item contained sufficient information so that the new enclosure should have been referred to. Had the new enclosure been utilized, the tag stub for 1CM187 would not have been issued, and CFPT 1B vacuum would not have been lost.

Sequence of valve repositioning was required in an evolution of this nature. The R&R sheet will contain restoration remarks in the form of applicable procedures, or in the Restoration Sequence column. R&R 15-2194's "Restoration Remarks" section indicated the tagged equipment should be restored per the Main Vacuum Operating Procedure, which would have provided the required sequence. However, since the tags were to be lifted temporarily and later replaced, the R&R was not to be signed off at this time. Previous problems with temporarily lifted tags have been encountered.

CORRECTIVE ACTION

1. CFPT 1B restarted, and the CA Pumps were secured.
2. Response of 1SV13 was investiaged and the setpoint recalibrated.
3. Response of 1SV19 was investigated per the Work Request.
4. A Station Problem Report was submitted to modify the loss of load interlock from 50% of full load to 29% of full load, and also to change the program for banks 4 and 5 of the Load Rejection Controller so that all valves are fully open on 20.3 degree F Tave deviation.
5. This incident was discussed at the Shift Supervisors meeting and with the personnel involved.
6. A request for a program change will be submitted to address problems with SPDS Subcriticality and Heatsink Indications.
7. Station Directive 3.1.1 will be revised so that lifting tags temporarily will be limited to simple tasks at the discretion of the Shift (or Operationally responsible) Supervisor.

SAFETY ANALYSIS

Following the trip of CFPT 1B, Pressurizer pressure increased to 2356 psig and PORV's 1NC32B, 1NC34A, and 1NC36B opened and reclosed as expected prior to the manual reactor trip. The reactor was manually tripped 26 seconds following the trip of CFPT 1B. Pressurizer level decreased to 21% and later stabilized at about 29%. Reactor Coolant Tave stabilized at 557 F within 30 minutes. Pressurizer Pressure stabilized at 2230 psig within 30 minutes. S/G's C and D PORV's opened and reclosed to revlieve high steam pressure in those S/G's. S/G A's PORV did not open as expected, but steam pressure did not reach the Code Safety Relief Valve opening setpoint during the transient. S/G B's PORV did not open as expected, but that S/G's Code Safety Relief Valve opened and reclosed as required. S/G B, C, and D reached low low level setpoints (lowest 14.7%) prior to being restored by the CA Pumps. Adequate core heat removal was available via the S/G's at all times. S/G levels were stabilized within 30 minutes posttrip.

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TEXT *(If more space is required, use additional NRC Form 366A's)* (17)

The health and safety of the public were not affected by this incident.

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HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

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July 22, 1985

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

Subject: Catawba Nuclear Station, Unit 1
Docket No. 50-413

Gentlemen:

Pursuant to 10 CFR 50.73 Section (a) (1) and (d), attached is Licensee Event Report 413/85-43 concerning a manual reactor trip upon loss of Main Feedwater. This event was considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

H.B. Tucker /BH

Hal B. Tucker

RWO:slb

Attachment

cc: Dr. J. Nelson Grace, Regional Administrator
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