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DESCRIPTION OF EVENT:

On 13 April 1986, St. Lucie Unit 1 was in Mode 2 (critical, <5% power) preparing to return the unit to service after having repaired a condenser tube leak. At 0134 hours the turbine generator was synchronized to the grid. Mismatches in reactor power, steam loads, and steam generator (S/G) feed rates caused S/G levels to exceed the Hi-Hi trip setpoint and caused the turbine generator and S/G feed pump to trip automatically. The reactor automatically tripped on loss of load when the turbine generator tripped at 0140 hours. The S/G feed pump was restarted and the unit was stabilized in Mode 3 (hot standby) by 0150 hours.

Manual control of primary and secondary systems during startup is difficult: A cognitive personnel error among the utility licensed operators led to the reactor trip.

The Nuclear Plant Supervisor counseled the licensed operators on evolutions made during the event. In addition, the plant training group will evaluate this item to determine appropriate training requirements and methods.

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NRC Form 368A 19-83) LICENSEE E	LICENSEE EVENT REPORT (LER) TEXT CONTINUATION APPROVED OM8 NO. 3150-0104 EXPIRES: 8/31/86									
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DESCRIPTION OF EVENT:

On 13 April 1986, St. Lucie Unit One was in mode 2 (critical, <5% thermal power) preparing to return the unit to service after having repaired a condenser (SG) tube leak. Steam Generator (S/G) Feed Flow (JB) and the Steam Bypass Control System (JI) (SBCS) were both in manual due to the low power level. Primary temperature and S/G levels were slowly oscillating as a result of this manual control.

At 0134 hours the turbine generator (TB) was synchronized to the grid. Mismatches in reactor power, steam loads, and S/G feed rates were causing an increase in the primary temperature and S/G level oscillation frequency. At approximately 15 percent power, the RCO controlling S/G feed attempted to switch to automatic S/G feed control (JB). This resulted in an excessive S/G feed rate and S/G levels rapidly increased. The RCO returned to manual control and secured feed flow to the S/G's.

Primary temperatures decreased rapidly due to the large volume of relatively cool feed water added to the S/G's. Reactor power increased as a result of the cooler primary temperature, and subsequently caused primary temperature to increase.

By the time primary temperature began to increase, the S/G levels peaked and were lowering. The RCO, unaware of the increasing primary temperature, had restored feed flow to the S/G's. As primary temperature continued to increase it caused the S/G level to swell as the feed water heated up and expanded. The RCO secured S/G feed flow but S/G levels continued to increase. When the S/G level reached the Hi-Hi level setpoint the turbine generator and S/G feed pump were automatically tripped. Because the reactor was greater than 15 percent power, it automatically tripped on loss of load when the turbine generator tripped at 0140 hours.

The trip was observed to be normal. The S/G feed pump was restarted and the unit was stabilized in mode 3 (hot standby) by 0150 hours.

CAUSE OF EVENT:

Manual control of primary and secondary systems during startup is difficult: A cognitive personnel error among the licensed utility operators led to the reactor trip.

ANALYSIS:

Both the Hi-Hi S/G level turbine generator trip and the loss of load reactor trip are equipment protective trips and are not required for reactor protection. At no time was there a challenge to the safety of the reactor. The S/G feed pump was restarted promptly after being automatically tripped on Hi-Hi S/G level. Had that feed pump failed to start, the other S/G feed pump or one of the three auxiliary feed pumps could have been started to supply S/G feed water.

LICENSEE EVENT REPOR	(LER) TEXT CONTINUATION
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U.S. NUCLEAR REGULATORY COMMISSION APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)	PAGE (3)	
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TEXT III more space is required, use additional NRC Form 308A's/ (17)

NRC Form 366A

At no time during this event were the health and safety of the public endangered.

This report is submitted in accordance with the requirements of the Code of Federal Regulations 10 CFR 50.73 (a) (2) (iv) due to the unplanned automatic reactor trip.

CORRECTIVE ACTIONS

1. The NPS counseled the onshift operators on evolutions made during the event.

2. The plant training group will evaluate this item to determine appropriate training requirements and methods.

ADDITIONAL INFORMATION:

See LER 389-85-4 for a previous automatic reactor trip due to high S/G level.



MAY 1 3 1988 L-86-202

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

Gentlemen:

Re: Reportable Event 86-4 St. Lucie Unit 1 Date of Event: April 13, 1986 Loss of Load Reactor Trip Due to High Steam Generator Level Caused By Personnel Error

The attached Licensee Event Report is being submitted pursuant to the requirements of 10 CFR to provide notification of the subject event.

Very truly yours,

Cale body

C. O. Woody Group Vice President Nuclear Energy

COW/SAV:de

Attachment

cc: Dr. J. Nelson Grace, Region II, USNRC Harold F. Reis, Esquire PNS-LI-86-156