FPL.

August 2, 2012

L-2012-291
10 CFR 50.73

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

Re: St. Lucie Unit 1
Docket No. 50-335
Reportable Event: 2012-007
Date of Event: June 2, 2012

Unit 1 Reactor Trip on Turbine Trip

The attached Licensee Event Report 2012-007 is being submitted pursuant to the requirements of 10 CFR 50.73 to provide notification of the subject event.

Very truly yours,

Joseph Jensen
Site Vice President
St. Lucie Plant

JJ/dlc
Attachment



IE22
NRR

NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION
(10-2010)

LICENSEE EVENT REPORT (LER)



| 1. FACILITY NAME | 2. DOCKET NUMBER | 3. PAGE |
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**4. TITLE**
Unit 1 Reactor Trip on Turbine Trip

| 5. EVENT DATE | | | 6. LER NUMBER | | | 7. REPORT DATE | | | 8. OTHER FACILITIES INVOLVED | |
|---|---|---|---|---|---|---|---|---|---|---|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REV NO. | MONTH | DAY | YEAR | FACILITY NAME | DOCKET NUMBER |
| | | | | | | | | | NA | |
| 6 | 02 | 2012 | 2012 | - 007 - | 00 | 08 | 02 | 2012 | FACILITY NAME | DOCKET NUMBER |

**9. OPERATING MODE**
1

**10. POWER LEVEL**
100%

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

| | | | |
|---|---|---|---|
| ☐ 20.2201(b) | ☐ 20.2203(a)(3)(i) | ☐ 50.73(a)(2)(i)(C) | ☐ 50.73(a)(2)(vii) |
| ☐ 20.2201(d) | ☐ 20.2203(a)(3)(ii) | ☐ 50.73(a)(2)(ii)(A) | ☐ 50.73(a)(2)(viii)(A) |
| ☐ 20.2203(a)(1) | ☐ 20.2203(a)(4) | ☐ 50.73(a)(2)(ii)(B) | ☐ 50.73(a)(2)(viii)(B) |
| ☐ 20.2203(a)(2)(i) | ☐ 50.36(c)(1)(i)(A) | ☐ 50.73(a)(2)(iii) | ☐ 50.73(a)(2)(ix)(A) |
| ☐ 20.2203(a)(2)(ii) | ☐ 50.36(c)(1)(ii)(A) | ☒ 50.73(a)(2)(iv)(A) | ☐ 50.73(a)(2)(x) |
| ☐ 20.2203(a)(2)(iii) | ☐ 50.36(c)(2) | ☐ 50.73(a)(2)(v)(A) | ☐ 73.71(a)(4) |
| ☐ 20.2203(a)(2)(iv) | ☐ 50.46(a)(3)(ii) | ☐ 50.73(a)(2)(v)(B) | ☐ 73.71(a)(5) |
| ☐ 20.2203(a)(2)(v) | ☐ 50.73(a)(2)(i)(A) | ☐ 50.73(a)(2)(v)(C) | ☐ OTHER |
| ☐ 20.2203(a)(2)(vi) | ☐ 50.73(a)(2)(i)(B) | ☐ 50.73(a)(2)(v)(D) | Specify in Abstract below or in NRC Form 366A |

**12. LICENSEE CONTACT FOR THIS LER**

| NAME | TELEPHONE NUMBER (Include Area Code) |
|---|---|
| Don Cecchett - Principal Engineer, Licensing | 772-467-7155 |

**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

| CAUSE | SYSTEM | COMPONENT | MANU-FACTURE | REPORTABLE TO EPIX | CAUSE | SYSTEM | COMPONENT | MANU-FACTURE | REPORTABLE TO EPIX |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

**14. SUPPLEMENTAL REPORT EXPECTED**
☒ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☐ NO

**15. EXPECTED SUBMISSION DATE**

| MONTH | DAY | YEAR |
|---|---|---|
| 11 | 01 | 12 |

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On June 2, 2012 at 1935 with St. Lucie Unit 1 in Mode 1 at 100% power the reactor automatically tripped from normal full power operation due to a loss of load following a failure of the turbine control system (TCS). The reactor trip was uncomplicated and all control rod assemblies (CEAs) fully inserted. No automatic safety system actuations were required and none occurred. The reactor coolant system (RCS) heat removal was maintained with main feedwater (MFW) and steam bypass to the condenser. The Offsite power grid was available and stable.

The reactor trip on turbine trip was caused by loss of communications of the Drop 3 and Drop 53 controllers in the recently installed Ovation turbine control system (TCS). The direct cause for the Drop 3 controller was a fiber optic (FO) connection with a high decibel (Db) loss due to a failed connector and the cause for Drop 53 is indeterminate. A root cause evaluation (RCE) for the connector failures is in progress and the results will be provided in a supplement to this LER.

Immediate corrective actions taken included removing all questionable control modules and the controllers. Corrective actions to prevent reoccurrence are under development and will be provided in a supplement to this report.

# LICENSEE EVENT REPORT (LER)
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NARRATIVE

**Description of the Event**

On June 2, 2012 at 1935 St. Lucie Unit 1 reactor automatically tripped from normal full power operation due to a loss of load following a failure of the turbine control system (TCS) [EIIS:JI]. No automatic safety system actuations were required and none occurred. The reactor coolant system (RCS) heat removal was maintained with main feedwater (MFW) and steam bypass to the condenser.

**Cause**

The reactor trip on turbine trip was caused by loss of communications of the Drop 3 and Drop 53 controllers in the Ovation turbine control system (TCS). The direct cause for Drop 3 controller failure was a failed fiber optic (FO) connection. The cause for Drop 53 is indeterminate. A root cause evaluation (RCE) for the connector failures is in progress and the results will be provided in a supplement to this LER.

**Analysis of the Event**

The primary function of the recently installed TCS is to control the proper speed and load of turbine, the TCS consists of five controller cabinets each containing redundant controllers identified as "Drops." Failed Drops 3 and 53 are redundant Drops in one of the five controller cabinets. Prior to the event, Unit 1 was in Mode 1 and stable at 100% reactor power with no evolutions in progress or abnormal plant indications. At 1453, Drop 53 failed and transferred to Drop 3. At 1935, Drop 3 failed with no back-up causing the turbine / reactor trip. The direct cause for Drop 3 controller failure was a failed fiber optic (FO) connection. The cause for Drop 53 is indeterminate.

A complete analysis of the event will be provided at the conclusion of the ongoing analysis as a supplement to this report.

**Safety Significance**

At the time of the event the plant was in Mode 1 at 100% power with no evolutions in progress. The trip was uncomplicated and all CEAs fully inserted when the reactor was manually tripped. No automatic safety system actuations were required and none occurred. The reactor coolant system (RCS) heat removal was maintained with main feedwater (MFW) and steam bypass to the condenser.

A Risk assessment associated with Unit 1 automatic reactor trip event due to failure of TCS was developed. The conditional core damage probability (CCDP) and conditional large early release probability (CLERP) values were evaluated for the stated event and were found to be significantly below the thresholds required by RG-1.174 for the risk to be "Small", where CCDP is below 1.0E 06 and CLERP is below 1.0E-07. Therefore, it is concluded that the risk impact of the stated event is not risk-significant.

This licensee event report is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A) as "an event or condition that resulted in manual or automatic actuation of the Reactor Protection System including reactor scram or reactor trip."

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NARRATIVE

**Prompt Corrective Action**

All questionable control modules and the controllers were replaced.

**Corrective Actions**

The corrective actions will be provided upon completion of the root cause evaluation.

**Similar Events**

To be provided with a supplemental LER

**Failed Component(s)**

To be provided with a supplemental LER

**Manufacture: Model:**

To be provided with a supplemental LER