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**FPL Energy.**  
**Duane Arnold Energy Center**

June 1, 2006

NG-06-0375

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555-0001

Duane Arnold Energy Center  
Docket 50-331  
License No. DPR-49

Voluntary Licensee Event Report #2006-002-00

Please find attached the subject Voluntary Licensee Event Report (LER) submitted in accordance with 10 CFR 50.73.

This letter contains the following new commitment:

Complete actions to determine if any past operability concerns existed for the 15 drywell penetrations that have been modified. The past operability evaluations are to be completed by October 31, 2006.

Gary D. Van Middlesworth  
Vice President, Duane Arnold Energy Center  
FPL Energy Duane Arnold, LLC

cc: Administrator, Region III, USNRC  
Project Manager, DAEC, USNRC  
Resident Inspector, DAEC, USNRC

IE22

# LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME Duane Arnold Energy Center		2. DOCKET NUMBER 05000 331	3. PAGE 1 OF 3
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4. TITLE  
Drywell Penetrations Calculations Do Not Account For Thermal Movement

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
03	18	2005	2006	02	00	06	01	2006		05000
										05000

9. OPERATING MODE  1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)			
	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(I)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
10. POWER LEVEL  84	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input checked="" type="checkbox"/> OTHER
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(I)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME Robert J. Murrell, Licensing Engineering Analyst	TELEPHONE NUMBER (Include Area Code) 319-851-7900
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED		15. EXPECTED SUBMISSION DATE		MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO					

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

On March 18, 2005, while operating at 84% power, it was determined that a piping calculation for the Containment Vent Purge Exhaust line, did not account for thermal movement of the Drywell. Specifically, the stress model did not start at the Drywell shell and thermal anchor movements were not applied. The failure to account for thermal movement did not meet the design requirements for Drywell penetrations. As a result of the identified discrepancy, an immediate operability determination was completed that concluded that the Drywell penetration was operable based on meeting ASME Section III, Appendix F operability criteria. As a result of an extent of condition review into this issue, all Drywell penetrations were reviewed. This review identified 14 other Drywell penetrations, for a total of 15, requiring modifications to restore them to original design requirements and 16 requiring further analysis. The 15 penetrations requiring modifications were modified during Refueling Outage (RFO) 19, which concluded on May 3, 2005. Of the 16 Drywell penetrations requiring further analysis, 8 were identified that required modifications to reestablish design margins. Operability calculations performed on these 8 Drywell penetrations identified no current or past operability concerns.

As of the date of this LER, no past operability concerns have been identified concerning the 15 Drywell penetrations that were modified during RFO 19. Therefore, this LER is being submitted as a Voluntary Report.

**LICENSEE EVENT REPORT (LER)**  
TEXT CONTINUATION

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TEXT (If more space is required, use additional copies of NRC Form 366A)

**I. Description of Event:**

On March 18, 2005, while operating at 84% power, it was determined that the installed configuration of the Containment Vent Purge Exhaust line did not account for thermal movement of the Drywell. Specifically, the calculation associated with the Containment Vent Purge Exhaust line did not account for the thermal or pressure related movement of the Drywell in its stress model. The model did not start at the Drywell shell and there were no thermal anchor movements (TAM) or pressure anchor movements (PAM) applied. The failure to account for TAM or PAM did not meet the design requirements for Drywell penetrations. As a result of the identified discrepancy, an immediate operability determination was made that concluded that the penetration was operable based on ASME Section III, Appendix F acceptance criteria. As a result of an extent of condition review into this issue, all Drywell penetrations were reviewed. This review resulted in 14 other Drywell penetrations, for a total of 15, being identified requiring modifications to restore the Drywell penetrations to their original design requirements and 16 Drywell penetrations requiring further analysis. The 15 Drywell penetrations requiring modifications were modified during RFO 19, which concluded on May 3, 2005.

As of the date of this LER, of the 16 Drywell penetrations requiring further analysis, 8 were subsequently identified as requiring modifications. Formal operability determinations for these 8 drywell penetrations have concluded that no current or past operability concerns exist.

As of the date of this LER, no past operability concerns with the first 15 Drywell penetrations that were modified during RFO 19 have been identified. However, as noted below, additional actions are underway to determine if any past operability concerns existed with these 15 Drywell penetrations. As documented in FPL Energy Duane Arnold's letter to the NRC, dated April 3, 2006, these additional actions are being taken based on the conclusion that the original basis for operability was non-conservative due to the fact that they utilized Appendix F of Section III of the ASME Code (1977 Edition/1978 Summer Addenda) for determination of past operability. However, we have concluded that past operability reviews of the affected Drywell penetrations need to utilize a newer version of ASME Section III, Appendix F which would require consideration of TAM and PAM.

There was no other inoperable equipment at the start of this event that affected this event.

**II. Assessment of Safety Consequences:**

Since there are no current or past operability issues identified associated with the Drywell penetrations, there are no safety consequences associated with this event. This conclusion could change based on the results of the past operability analysis currently being performed as discussed in the corrective actions section of this LER.

**LICENSEE EVENT REPORT (LER)**  
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TEXT (If more space is required, use additional copies of NRC Form 366A)

**III. Cause of Event:**

Plant design documents did not adequately account for TAM or PAM for mechanical piping systems interfacing with Drywell penetrations. Since the calculations were performed as long ago as 25 or more years, it is not possible to determine an exact cause of this event.

**IV. Corrective Actions:**

As stated above, the first 15 Drywell penetrations that were identified were modified during RFO 19 to restore them to their original design requirements. For the 8 penetrations identified subsequent to RFO 19 that require modifications, a modification plan is currently being developed. These modifications are scheduled to be completed prior to the completion of RFO 20 which is scheduled to commence in February 2007.

To preclude further occurrences similar to what caused this event; Engineering Design Guide DGC-M100 "Stress Analysis and Support Design of Seismic Category I Piping System" was revised to include guidance to account for Drywell shell movement due to thermal and pressure loading at accident conditions.

Additionally, actions are underway to determine if any past operability concerns existed for the 15 drywell penetrations that have already been modified. The past operability evaluations are to be completed by October 31, 2006.

**V. Additional Information:**

**Previous Similar Occurrences:**

A review of LERs at the DAEC over the last 3 years identified no LERs with similar events.

**EIIS System and Component Codes:**

N/A

**Reporting Requirements:**

This report is being submitted as a voluntary LER.