



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 29, 2010

Mr. Christopher R. Costanzo
Vice President
Duane Arnold Energy Center
3277 DAEC Road
Palo, IA 52324-9785

SUBJECT: DUANE ARNOLD ENERGY CENTER - EXEMPTION FROM THE
REQUIREMENTS OF TITLE 10 OF THE CODE OF FEDERAL REGULATIONS
PART 50, APPENDIX J (TAC NO. ME0789)

Dear Mr. Costanzo:

The Commission has approved the enclosed exemption from specific requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Appendix J, for the Duane Arnold Energy Center. This action is in response to your application dated March 4, 2009, that requested exclusion of main steam isolation valve leakage from the overall integrated leakage rate test measurements required by Section III.A of Appendix J, Option B.

A copy of the exemption is enclosed. The exemption has been forwarded to the Office of the *Federal Register* for publication.

Sincerely,

A handwritten signature in cursive script that reads "Karl Feintuch".

Karl Feintuch, Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-331

Enclosure:
Exemption

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
NEXTERA ENERGY DUANE ARNOLD, LLC
DUANE ARNOLD ENERGY CENTER
DOCKET NO. 50-331
EXEMPTION

1.0 BACKGROUND

NextEra Energy Duane Arnold, LLC, formerly FPL Energy Duane Arnold, LLC (the licensee) is the holder of Facility Operating License No. DPR-49, which authorizes operation of the Duane Arnold Energy Center (Duane Arnold). The facility consists of a boiling-water reactor located in Linn County in the State of Iowa. The licensee was authorized to change its name by Amendment No. 275, dated November 13, 2009, to the Facility Operating License. The license provides, among other things, that the facility is subject to all rules, regulations, and orders of the Nuclear Regulatory Commission (NRC, the Commission) now or hereafter in effect. In a letter dated March 4, 2009, FPL Energy Duane Arnold, LLC requested exemption from certain requirements of 10 CFR Part 50, Appendix J.

2.0 REQUEST/ACTION

Title 10 of the *Code of Federal Regulations* (10 CFR), Appendix J specifies the leakage test requirements, schedules, and acceptance criteria for tests of the leak-tight integrity of the primary reactor containment and systems and components which penetrate the containment. Option B of Appendix J is entitled "Performance-Based Requirements." Option B, Section III.A., "Type A Test," requires, among other things, that the overall integrated leakage rate must not

exceed the allowable leakage rate (L_a) with margin, as specified in the Technical Specifications (TSs).

The overall integrated leak rate, is defined in 10 CFR Part 50, Appendix J as "the total leakage rate through all tested leakage paths, including containment welds, valves, fittings, and components that penetrate the containment system." This includes the contribution from main steam isolation valve (MSIV) leakage. The licensee has requested exemption from Option B, Section III.A requirements to permit exclusion of MSIV leakage from the overall integrated leak rate test measurement. Main steam leakage includes leakage through all four main steam lines and the main steam drain line.

Option B, Section III.B of 10 CFR Part 50, Appendix J, "Type B and C Tests," requires, among other things, that the sum of the leakage rates at accident pressure of Type B tests and pathway leakage rates from Type C tests be less than the performance criterion (L_a) with margin, as specified in the TSs. The licensee also requests exemption from this requirement, to permit exclusion of the main steam pathway leakage contributions from the sum of the leakage rates from Type B and Type C tests.

The licensee requests this exemption because the main steam pathway leakage is treated separately from the remainder of the assumed leakage from primary containment in the design basis loss-of-coolant accident (DBA LOCA) analysis. The MSIV leakage effluent has a different pathway to the environment, when compared to a typical containment penetration. The licensee has analyzed the MSIV and main steam pathway leakage separately from the overall containment integrated leakage, local leakage across pressure retaining, leakage limiting boundaries, and containment isolation valve leakage in its dose consequence analysis. By currently including the main steam pathway leakage in with the rest of the primary containment leakage actual test results, it is essentially being accounted for twice in the dose analysis.

In summary, by application dated March 4, 2009, the licensee requested an exemption for the Duane Arnold Energy Center (Duane Arnold). The proposed change will exempt Duane Arnold from certain requirements of Appendix J to 10 CFR Part 50. Specifically, the licensee is requesting a permanent exemption to permit exclusion of the main steam pathway leakage contributions from the overall integrated leakage rate (Type A) test measurement and from the sum of the leakage rates from local leakage rate (Type B and Type C) tests.

3.0 DISCUSSION

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 50 when (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security; and (2) when special circumstances are present. Special circumstances are present whenever, according to 10 CFR Part 50.12(a)(2)(ii), "Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule. . . ."

Authorized by Law

The exemption would permit exclusion of the main steam pathway leakage contributions from the overall integrated leakage rate (Type A) test measurement and from the sum of the leakage rates from local leakage rate (Type B and Type C) tests.

As stated above, 10 CFR 50.12 allows the NRC to grant exemptions from the requirements of 10 CFR 50 Appendix J. The NRC staff has determined that granting of the licensee's proposed exemption will not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations. Therefore, the exemption is authorized by law.

No Undue Risk to Public Health and Safety

The underlying purposes of 10 CFR 50 Appendix J is to assure that containment leak-tight integrity is maintained (a) as tight as reasonably achievable, and (b) sufficiently tight so as to limit effluent release to values bounded by the analyses of radiological consequences of design-basis accidents.

In License Amendments 237 (regarding secondary containment OPERABILITY during movement of irradiated fuel and core alterations, dated April 16, 2001) and Amendment 240 (regarding Alternative Source Term (AST), dated July 31, 2001), the NRC approved the use of the AST (10 CFR 50.67) in the calculations of the radiological dose consequences of design basis accidents (DBAs) for the Duane Arnold Energy Center. The reactor design basis accident of concern is the design basis loss-of-coolant accident (LOCA). The NRC Staff Safety Evaluation accompanying Amendment 240 accepted that the main steam pathway leakage is treated separately from the remainder of the assumed leakage from primary containment in the LOCA analysis and once dispersed in the primary containment, the release to the environment is assumed to occur through three pathways: (1) the leakage of primary containment atmosphere (i.e., design leakage); (2) the leakage of primary containment atmosphere via design leakage through main steam isolation valves (MSIVs); and (3) the leakage from emergency core cooling systems (ECCS) that recirculate suppression pool water outside of the primary containment (i.e., design leakage). Since Amendment 237 was specifically for the Fuel Handling Accident (FHA), which occurs during refueling when primary containment is not required, the main steam pathway leakage is not part of the release pathway for this reactor accident. Thus, no new accident precursors are created by exempting Duane Arnold from certain requirements of Appendix J to 10 CFR Part 50.

Further, based on the above the determination that no new accident precursors are created by the proposed exemption, the probability of postulated accidents is not increased.

Additionally, based on the above based on the way the main steam pathway leakage has previously been evaluated and accepted in the Duane Arnold radiological dose analysis for DBAs separately from the overall leakage associated with the primary containment boundary (Type A) and local leakage rate total (Type B and C), the consequences of postulated accidents are not increased. Therefore, there is no undue risk, since risk is probability multiplied by consequences, to public health and safety.

Consistent with Common Defense and Security

The exemption would permit exclusion of the main steam pathway leakage contributions from the overall integrated leakage rate (Type A) test measurement and from the sum of the leakage rates from local leakage rate (Type B and Type C) tests. This change to accounting for leakage rate measurement has no relation to security issues. Therefore, the common defense and security is not impacted by this exemption.

Special Circumstances

Special circumstances, in accordance with 10 CFR 50.12(a)(2), are present whenever application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule. The underlying purpose of 10 CFR Part 50, Appendix J, Option B, Paragraphs III.A and III.B is to ensure the actual radiological consequences of reactor accidents remain below those previously evaluated and accepted, as demonstrated by the actual, periodic measurement of containment leakage (Type A) and local leakage rate measurement (Type B and C).

Although Type A, and Type B and C, leakage tests are defined as a measurement of those leakages, inclusion of the main steam pathway leakage results in double counting at the Duane Arnold Energy Center, once as a part of the actual containment leakage and again as part of main steam pathway leakage used in dose calculations. This is because Duane Arnold's revised design-basis radiological consequence analysis, reviewed and approved in

Amendments 237 and 240 to Duane Arnold's operating license, address MSIV leakage as individual factors, exclusive of primary containment leakage. Therefore, requiring inclusion of main steam pathway leakage in the Type A, and Type B and C, leakage is not necessary to achieve the underlying purpose of the rule.

Because compliance with 10 CFR 50, Appendix J, Option B, Paragraphs III.A and III.B is not necessary to achieve the underlying purposes of the requirements, the special circumstances required by 10 CFR 50.12(a)(2), for the granting of an exemption from 10 CFR 50, Appendix J, Option B, Paragraphs III.A and III.B exist.

4.0 CONCLUSION

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, the exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security. Also, special circumstances are present. Therefore, the Commission hereby grants to NextEra Energy Duane Arnold, LLC a permanent exemption from the requirements of 10 CFR 50, Appendix J, Option B, Paragraphs III.A and III.B for the Duane Arnold Energy Center.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will not have a significant effect on the quality of the human environment [75 FR 13318; dated March 19, 2010].

This exemption is effective upon issuance.

Dated at Rockville, Maryland, this 21st day of March 2010

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read 'Robert A. Nelson', with a long horizontal line extending to the right.

Robert A. Nelson, Acting Director
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

March 29, 2010

Mr. Christopher R. Costanzo
Vice President
Duane Arnold Energy Center
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Sincerely,

/RA/

Karl Feintuch, Project Manager
Plant Licensing Branch III-1
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*transmitted by memo

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