

August 7, 2009

Mr. Richard L. Anderson  
Vice President, Duane Arnold Energy Center  
FPL Energy Duane Arnold, LLC  
3277 DAEC Road  
Palo, IA 52324

SUBJECT: ISSUANCE OF THE ENVIRONMENTAL SCOPING SUMMARY REPORT  
FOR THE STAFF'S REVIEW OF THE LICENSE RENEWAL APPLICATION FOR  
DUANE ARNOLD ENERGY CENTER (TAC NO. MD9770)

Dear Mr. Anderson:

The U.S. Nuclear Regulatory Commission (NRC) conducted a scoping process, from March 24, 2009 through May 25, 2009, to determine the scope of the NRC staff's environmental review of the application for renewal of the operating license for Duane Arnold Energy Center (DAEC). As part of the scoping process, the NRC staff held two public environmental scoping meetings at the Hiawatha City Hall, Hiawatha, Iowa, on April 22, 2009, to solicit public input regarding the scope of the review. The scoping process is the first step in the development of a plant-specific supplement to NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS)," for the DAEC.

The NRC staff has prepared the enclosed environmental scoping summary report identifying comments received at the April 22, 2009 license renewal environmental scoping meetings. The transcripts of the scoping meetings are publicly available at the NRC Public Document Room (PDR), located at One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852, or from the NRC's Agencywide Documents Access and Management System (ADAMS).

The ADAMS Public Electronic Reading Room is accessible at <http://adamswebsearch.nrc.gov/dologin.htm>. The transcripts for the afternoon and evening meetings are listed under accession numbers ML091870099 and ML091870229, respectively.

The next step in the environmental review process is the issuance of a draft supplement to the Generic Environmental Impact Statement (GEIS) scheduled for January 29, 2010. Notice of the availability of the draft supplement to the GEIS and the procedures for providing comments will be published in an upcoming *Federal Register* notice.

R. Anderson

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If you have any questions concerning the NRC staff review of this license renewal application, please contact Mr. Charles Eccleston, Project Manager, at 301-415-8537 or by e-mail at [Charles.Eccleston@nrc.gov](mailto:Charles.Eccleston@nrc.gov).

Sincerely,

*/RA/*

David L. Pelton, Chief  
Projects Branch 1  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket No. 50-331

Enclosure:  
As stated

cc w/encl: See next page

R. Anderson

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Duane Arnold Energy Center

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**Environmental Impact Statement  
Scoping Process**

**Summary Report**

**Duane Arnold Energy Center  
Palo, Iowa**

**July 2009**



**U.S. Nuclear Regulatory Commission  
Rockville, Maryland**

ENCLOSURE

## INTRODUCTION

The U.S. Nuclear Regulatory Commission (NRC) received an application from FPL Energy Duane Arnold, LLC, dated September 30, 2008, for renewal of the operating license for the Duane Arnold Energy Center (DAEC). The DAEC is located in Palo, Iowa.

As part of the application, FPL Energy Duane Arnold, LLC submitted an environmental report (ER) prepared in accordance with the requirements of 10 CFR Part 51. 10 CFR Part 51 contains the NRC requirements for implementing the National Environmental Policy Act (NEPA) of 1969 and the implementing regulations promulgated by the Council on Environmental Quality (CEQ). Section 51.53 outlines requirements for preparation and submittal of environmental reports to the NRC.

Section 51.53(c)(3) was based upon the findings documented in NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants," (GEIS). The GEIS, in which the staff identified and evaluated the environmental impacts associated with license renewal, was first issued as a draft for public comment. The staff received input from Federal and State agencies, public organizations, and private citizens before developing the final document. As a result of the assessments in the GEIS, a number of impacts were determined to be small and to be generic to all nuclear power plants. These were designated as Category 1 impacts. An applicant for license renewal may adopt the conclusions contained in the GEIS for Category 1 impacts, absent new and significant information that may cause the conclusions to fall outside those of the GEIS. Category 2 impacts are those impacts that have been determined to be plant-specific and are required to be evaluated in the applicant's ER. The Commission determined that the NRC does not have a role in energy planning decision-making for existing plants, which should be left to State regulators and utility officials. Therefore, an applicant for license renewal need not provide an analysis of the need for power, or the economic costs and economic benefits of the proposed action. Additionally, the Commission determined that the ER need not discuss any aspect of storage of spent fuel for the facility that is within the scope of the generic determination in 10 CFR 51.23(a) and in accordance with 10 CFR 51.23(b). This determination was based on the Nuclear Waste Policy Act of 1982 and the Commission's Waste Confidence Rule, 10 CFR 51.23.

On March 24, 2009, the NRC published a notice of intent (NOI) in the *Federal Register* (74 FR 12399), to notify the public of the staff's intent to prepare a plant-specific supplement to the GEIS regarding the renewal application for the DAEC operating license. The NRC invited the applicant, Federal, State, and local government agencies, local organizations, and individuals to participate in the scoping process by providing oral comments at the scheduled public meetings and/or submitting written suggestions and comments by May 25, 2009. The plant-specific supplement to the GEIS will be prepared in accordance with NEPA, CEQ guidelines, and 10 CFR Part 51.

ENCLOSURE

Publication of the NOI in the *Federal Register* initiated the scoping process for preparing this plant-specific supplemental environmental impact statement (SEIS). The NRC conducted the public scoping process, from March 24, 2009 through May 25, 2009, to determine the scope of the staff's environmental review of the application for renewal of the operating license for the DAEC. The purpose of the scoping process is to provide an opportunity for the public to identify issues to be addressed in the plant-specific supplement to the GEIS and highlight public concerns and issues.

The scoping process included two public scoping meetings, which were held at the Hiawatha City Hall, Hiawatha Iowa, on April 22, 2009. The NRC issued press releases, placed an ad in the local newspaper, and distributed flyers locally. Three members of the public registered to speak prior to the scoping meetings. One additional member of the public registered to speak before the afternoon meeting began but declined to submit comments when called upon.

Approximately 30 people attended the meetings. Both sessions began with NRC staff members providing a brief overview of the license renewal and NEPA process. Following the NRC's prepared statements, the meetings were open for public comments. One attendee provided oral comments during the afternoon session that were recorded and transcribed by a certified court reporter. This comment primarily focused on the economic advantages of wind energy and technical safety issues associated with operations and the license renewal application. When called, a second member of the public who had registered at the door indicated that he did not wish to submit any comments.

The scoping meeting summary is available for public inspection in the NRC Public Document Room (PDR), located at One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852, or from the NRC's Agencywide Documents Access and Management System (ADAMS). The ADAMS Public Electronic Reading Room is accessible at <http://www.nrc.gov/reading-rm/adams/web-based.html>. The ADAMS accession number for the scoping meeting summary is ML091910012. The transcripts for the afternoon and evening meetings are also available in ADAMS under accession numbers ML091870099 and ML091870229, respectively. Persons who do not have access to ADAMS, or who encounter problems in accessing the documents located in ADAMS, should contact the NRC's PDR reference staff by telephone at 1-800-397-4209, or 301-415- 4737, or by e-mail at [PDR.Resource@nrc.gov](mailto:PDR.Resource@nrc.gov).

As indicated earlier, the scoping process provides an opportunity for public participation to identify issues to be addressed in the plant-specific supplement to the GEIS and highlight public concerns and issues. The NOI identified the following objectives of the scoping process:

- Define the proposed action
- Determine the scope of the supplement to the GEIS and identify significant issues to be analyzed in depth
- Identify and eliminate peripheral issues
- Identify any environmental assessments and other environmental impact statements being prepared that are related to the supplement to the GEIS

- Identify other environmental review and consultation requirements
- Indicate the schedule for preparation of the supplement to the GEIS
- Identify any cooperating agencies
- Describe how the supplement to the GEIS will be prepared

At the conclusion of the scoping period, the NRC staff evaluated the transcripts and prepared a response to the comments. Table 1 identifies the individuals who registered to provide comments. The public scoping summary comments received is reprinted below. The transcripts for the afternoon and evening meetings are in ADAMS listed under accession numbers ML091870099 and ML091870229, respectively.

**TABLE 1 - Individuals Providing Comments During Scoping Comment Period**

<b>Commenters ID</b>	<b>Commenter</b>	<b>Affiliation (If Stated)</b>	<b>Comment Source</b>
DAEC-1	Mr. Bennett Brown	Member of the public	Afternoon Scoping Meeting Session
DAEC-2	Mr. Richardson	No comment provided	Afternoon Scoping Meeting Session

To the extent practical, preparation of the plant-specific supplement to the GEIS (which is the SEIS) will take into account all the reasonable and relevant issues raised during the scoping process. The SEIS will address both Category 1 and 2 issues, along with any new information identified as a result of scoping. The SEIS will rely on conclusions supported by information in the GEIS for Category 1 issues, and will include the analysis of Category 2 issues and any new and significant information. The draft plant-specific supplement to the GEIS will be made available for public comment. The comment period will offer the next opportunity for the applicant, interested Federal, State, and local government agencies, local organizations, and members of the public to provide input to the NRC's environmental review process. The comments received on the draft SEIS will be considered in the preparation of the final SEIS. The final SEIS, along with the staff's Safety Evaluation Report (SER), will provide much of the basis for the NRC's decision on the DAEC license renewal application.

**DUANE ARNOLD ENERGY CENTER  
PUBLIC SCOPING MEETING  
COMMENT AND RESPONSE**

**Comment DAEC-1:** I'd like to mention what I'd like to see in the SEIS include in terms of impacts and alternatives.

Specifically, the Department of Natural Resources and the state of Iowa assessed the state's wind resource and concluded that the state of Iowa developing only class 4 Jacobs sites. These are currently developable at two and-a-half cents a kilowatt hour, would produce six times as much electricity as needed by the state of Iowa.

The Midwest Independent Systems Operators as well as other utility grid operators have studied how much wind penetration the grid could sustain given the variability of the wind and concluded that we could provide 15 to 25 percent of our electricity from wind without any alterations in the existing grid. So the percentage of electricity produced in the state of Iowa from Duane Arnold could easily be replaced by wind turbines with existing technology and existing market support.

The second thing that I'd like to see that the SEIS addresses is the effect on employment decommissioning. As I see it, this is not a question of whether to extend the life of the plant by 20 years but rather a question as to whether to decommission it in 2014 or 2034. And so the question is when would we rather have the jobs provided necessary to decommission this plant and construct a renewable source, or at least some other source of electricity whether that's a new nuclear plant or a new coal plant or wind plants. And the Congress requires that the operators of this nuclear plant provide \$359,000,000 in a trust fund by 2014.

That money spent beginning in 2014 to provide job decommissioning in this plant would be a boon to the local economy and the 2.4 billion, and there that's really a number off the top of my head there just saying, well, 800 megawatts times three per wind because of the name plate issue, I don't know how familiar you are with wind, but an 800 megawatt nuclear plant takes 2400 megawatts of wind to replace it. So that's roughly \$2.4 billion in construction of wind turbines and the associated jobs that come with that construction on top of some 300 full time jobs maintaining that wind energy. That would be a significant boon to the state of Iowa and I would encourage the NRC to look at the economic impact on the state of replacing this nuclear plant with wind as distributed around the state.

The third point that I'd like to make has to do with the environmental impact of a severe accident. And I understand that you also have a safety review portion of the process and I also understand that the 9th Circuit Court has ruled that your SEIS must include an analysis of accidents in the jurisdiction of the 9th Circuit Court. So in lack of ruling from this Circuit Court, I believe that that ruling has precedence and I would ask that you include accidents and the impacts of accidents in the SEIS.

Specifically on this point I would refer to the Sandia Lab Study commissioned by the NRC in 1982 which calculated the impacts of a severe accident with core damage estimating 3,000 peak fatalities immediately after the accident within a 25 mile radius, and 12,000 radiation injuries in the early aftermath of an accident within a 35 mile radius. And calculate the plant operators, calculate at any given time if all equipment is operating correctly, that the core damage frequency is one in

3,000,000 per reactor year. But sometimes parts are out of operation and the possibility that there's a severe accident under their calculations go up.

I would ask for this SEIS that the NRC address the likelihood of an accident taking into account more than the plant operators include in their calculation of the CDF, particularly their probabilistic risk assessment assumes that all parts operate as though they were new and have not been subjected to problems of radiation exposure, heat exposure, fluctuation of temperature, pressure exposure and embrittlement.

In this regard, I'd specifically point out that the CDF excludes vessel failure. This is a Mark 1 reactor. It's one of 18 Mark 1 reactors in the country. A study published by the Union of Concerned Scientists in 1995 looked at the vessel internals aging in the 18 Mark 1 reactors in the country as a result of discoveries of major fissures and cracks in Mark 1 core shrouds and found that at about 20 years of operation the exposure to radiation and heat fluctuation caused moderate or extensive cracking in seven out of the 18 Mark 1 reactors.

Duane Arnold at that time had no cracking evident and I would encourage the NRC to consider the possibility that a 40 year license that was initially granted to this reactor has allowed the investors to recoup their losses and that we are lucky today that the aging of the parts has not resulted in an accident. But a 20 year extension of the license represents too great a risk to this site specific plan for an accident.

If the core shroud detailed in the UCS report is one of just 21 vessel internal components subject not only to the cracking that is described in that report, but also to erosion, embrittlement, fatigue, creep, as well as stress corrosion cracking. So if these vessel internal parts were to prevent an insertion of the control rods, then the consequences of an accident could be quite severe.

In addition, the secondary containment which is meant to control the impact and mitigate the impact of such an accident in this particular reactor, was discovered to be faulty in the early days of operation of this reactor and the 17 other reactors like it in the country.

In fact, in 1986 Harold Denton, at that time a Chief Safety Officer with the NRC, in leading a meeting of Mark 1 operators declared that the taurus, as it is known, a million gallon tank of water to suppress heat in the event that the reactor was unable to be shut down and no where for the heat to go because of a loss of connectivity to the grid for instance, that there was a 90 percent probability that that taurus would fail at a meeting of Mark 1 operators.

And so as a result of that assessment, Mark 1 operators were instructed to install a bypass system that instead of trying to contain the pressure from the reactor using secondary containment, would simply bypass secondary containment and vent the taurus directly to the atmosphere through a butterfly valve operated in the control room. And Duane Arnold officials here today verify that, in fact, that is the situation at Duane Arnold, that it's not different than the other 17 Mark 1's.

And I think that I can understand why you would let a plant live out its 40 year operating license knowing that it had a design deficiency off by a factor of 10 in the size of the secondary containment in order to allow investors to recoup their investment. But to extend the plant's life for another 20 years when a viable alternative exists that would be a boon to the state's economy, I think is something that should be viewed with skepticism.

Finally, I think that the NRC should look at the history of scrams. Every scram at this reactor significantly ages the components. It subjects the components to significant changes in temperature, just like when you take a hot glass and submerge it suddenly in cold water. It can shatter parts inside a reactor every time you scram the reactor or suddenly subject it from one pressure extreme to another, from one temperature extreme to another and this significantly ages parts.

If the reactor, for instance, had in the non-radiation side, had a metal part break off at a fillet weld simply because it had been cycled between hot and cold, and that metal part found its way through the system, scored open a number of tubes. Finally, the problem was turned up because water leaked first into one part and then overflowed into another part of the plant, and it was only once the plant was shut down and people investigated that they found tubes slashed open and eventually found the metal part that worked its way loose. That sort of risk is simply unnecessary and there's a viable alternative to the nuclear plant's continued operation.

The final point that I'd like to make concerning the reactor itself is this plant's specific risk to a terrorist attack. The plant is in proximity to the Rockwell Collins plant that used to be in the Soviet Union's top three list of targets because of its role in our nation's nuclear arsenal, missile guidance and intelligence. That means that both an attack on Rockwell Collins would have an impact on the plant, on its safety, on its ability to evacuate and so on.

It also means that there could be an indirect threat to the plant because a terrorist attack might find the plant a useful target in order to move military protection away from Rockwell Collins or the further strategic air command in Omaha in order to free up the vulnerability of SEC. So the specific location of this plant represents a hazard that needs to be looked at from the perspective of a terrorist attack.

And in addition, the Mark 1 design has a spent fuel pool that's on top of a building that is essentially unprotected, that various studies have concluded that a piece of weaponry that can be moved around in the trunk of a car and launched from somebody's shoulder, a howitzer, could penetrate that building and create a fire in the spent fuel pool. In addition, that spent fuel pool would be committed to use for five years beyond decommissioning because if we were to decommission the plant even today, then we would need to store the spent fuel for a minimum of five years on that local site.

So we're looking at a terrorist threat, a target, an attractive target for five years beyond decommission and I think it needs to be considered whether in this day and age it's really necessary to continue maintaining such an attractive target.

**Response:**

Chapter 8 of the supplemental environmental impact statement (SEIS) for the Duane Arnold license renewal application will screen, review, and, if appropriate, consider the environmental and socioeconomic impacts in detail of a range of alternatives to renewing Duane Arnold operating license, including the potential option of wind power.

Chapter 8 of the SEIS will consider the alternative of taking no action, i.e., not renewing the Duane Arnold operating license. The environmental impacts of decommissioning will be included in Chapter 7 of the SEIS.

The impacts of postulated accidents will be addressed in Chapter 5 of the SEIS. Impacts of design basis accidents were evaluated in the Nuclear Regulatory Commission's (NRC) generic environmental impact statement GEIS (GEIS, 1996). The impacts of design basis accidents were found to be small (Category 1 issue). Design basis accidents will be reviewed in the SEIS to determine if any new information is identified that would effect the GEIS determination that these impacts are a Category 1 issue. The GEIS also assessed the impacts of severe accidents and determined that they are a Category 2 issue, and therefore subject to a site specific evaluation in the SEIS. Severe accident mitigation alternatives (SAMA) will be assessed in Chapter 5 of the SEIS.

The NRC license renewal effort is composed of two interrelated components: (1) preparation of an SEIS which evaluates potentially significant impacts, and (2) preparation of a safety evaluation report, which evaluates aging related effects. The license renewal application will not be approved unless it can be demonstrated that the plant can be safely operated for an additional 20-year licensing extension. Additionally, the NRC performs rigorous ongoing inspections of this plant.

With respect to potential terrorist-related incidents, the GEIS performed a discretionary analysis of terrorist acts and concluded that the core damage and radiological release from such acts would be no worse than the damage release expected from internally initiated events. The GEIS concluded that such risks are small and that the risks from other external events are adequately addressed by a generic consideration of internally initiated severe accidents (NRC 1996). In addition, the U.S. Court of Appeals for the Third Circuit has ruled that NEPA imposes no duty on the NRC to consider intentional malevolent acts. See *NJDEP v. NRC and AmerGen Energy Co., LLC*, 561 F.3d 132 (3<sup>rd</sup> Cir. 2009).

Consistent with the goals of NEPA, the NRC staff is committed to the goal of informing the public and obtaining comments regarding the Duane Arnold license application. As part of this effort, we invite you to submit comments on the draft SEIS which is currently scheduled to be issued for public review on January 29, 2010. Moreover, a public meeting is currently scheduled for March 3, 2010 to accept public comments on the adequacy of the EIS. The NRC staff thanks you for your comments.

**Comment DAEC-2:** No comments at this time.