

50-317/318



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

February 13, 1997

MEMORANDUM TO: David B. Matthews, Chief
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Division of Reactor Program Management
Office of Nuclear Reactor Regulation

FROM: Claudia M. Craig, Senior Project Manager *Claudia M. Craig*
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Division of Reactor Program Management
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF MEETING WITH BALTIMORE GAS & ELECTRIC (BGE) TO
DISCUSS LICENSE RENEWAL ENVIRONMENTAL REPORT (ER) TEMPLATE
PROCESS

The subject meeting was held at the Nuclear Regulatory Commission (NRC) offices in Rockville, Maryland on February 5, 1997, between representatives of BGE and the NRC staff. The purpose of the meeting was to discuss the license renewal ER template process proposed by BGE. Attachment 1 is a list of meeting participants, Attachment 2 is a copy of both the BGE and NRC non-proprietary presentation material.

BGE proposed the ER template process in order to develop a format and content guide for the ER to be submitted in support of a license renewal application. Existing NRC guidance is currently being updated to reflect the revised 10 CFR Part 51. The revised rule includes the environmental requirements of a license renewal application. BGE anticipates completing their ER prior to final guidance being issued by the Commission, thus, the effort on the template to determine an acceptable format and content. It is the staff and BGE's objective that the completed environmental template outline a format and content such that if the ER follows the template, sufficient information will be contained in the report to accept the report for review.

BGE provided a status of the BGE Calvert Cliffs ER. It is BGE's intention that an ER be completed by May 1997. The template process would occur in parallel with the completion of the ER. BGE also provided a status of NEI activities with regard to development of industry standards for the ER portion of a license renewal application. There is an attempt to take the BGE template and "genericize" it for industry use (include issues for both PWRs and BWRs etc.). BGE could not speak to what NEI will do, but it appears that NEI may opt to comment on the draft NRC regulatory guide (RG) using the "generic" template versus developing separate industry standards or guidance. BGE stated that NEI would contact NRC separately to discuss their activities.

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The NRC staff provided comments on the assumptions it used to develop a draft schedule for review of the template and the status of development of the RG and the environmental standard review plan (ESRP). The staff agreed with the BGE objective that the final template would outline an acceptable format and content for an ER that would be acceptable to begin a review. The staff stated its preference to select examples that will be more detailed than just format and content after the initial round of comments on the template. The staff believes that the template should be essentially set before the examples are selected and that the examples should provide a wide range of ease and difficulty to provide insights for future license renewal application reviews. The staff also noted that the RG and ESRP work is the top priority and the template work is seen as a benefit, as long as consistency between all the efforts is maintained.

BGE then discussed each section of the template (the template is included in Attachment 2 to this summary). Attachment 1 to the template is a cross reference which provides the 10 CFR 51 requirement and the ER section and BGE action. The template was developed in the format of an NRC environmental impact statement and BGE stated that it did not use the guidance in RG 4.2, "Preparation of Environmental Reports for Nuclear Power Stations" to develop the template. BGE provided their proposed schedule while NRC proposed their schedule. Discussion ensued about how to combine dates and milestones. The agreed upon draft schedule is as follows:

2/5/97 - receive first draft of template

wk of 3/10/97 - NRC to provide comments on template, BGE and NRC to decide on examples, and discuss issues concerning severe accident mitigation alternatives (SAMA) and transportation

wk of 4/1/97 - BGE to provide revised template and draft examples

wk of 5/6/97 - NRC to provide comments on revised template and draft examples

wk of 5/20/97 - BGE to incorporate comments on template/examples and NRC/BGE senior management meeting to discuss progress/issues on template process

It was discussed that the draft schedule outlined above is optimistic. The tentative dates are based on the premise that the template is close to what would be acceptable and extensive revisions will not be needed such that the template is in relatively good shape after the first round of comments. Discussions were held that the other guidance work, the ESRP and RG, have firm commitment dates to the Commission and that the template work is still voluntary on the part of BGE and the NRC.

BGE and the staff also discussed scheduling specific meetings to discuss four distinct issues where BGE would like the NRC to provide additional guidance as to what the format and content should be for SAMA, transportation, environmental justice, and electric shock. It was tentatively decided that the first two issues would be addressed in the 3/10/97 time frame and the latter two would be addressed at some later point.

BGE also provided the staff with some issues that may be used as examples. These include: ground water, socioeconomic, electric shock, transportation (specifically Table S-4), and alternatives. BGE and the staff agreed to discuss the selection of examples after the staff has had a chance to review the draft template.

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Attachments: As stated

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Attachments: As stated

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BGE / NRC MEETING
ENVIRONMENTAL REPORT TEMPLATE PROCESS

FEBRUARY 5, 1997

MEETING PARTICIPANTS

<u>NAME</u>	<u>ORGANIZATION</u>
Claudia Craig	NRC/NRR/PGEB
Ralph Architzel	NRC/NRR/PGEB
Jim Wilson	NRC/NRR/PGEB
Barry Zalcman	NRC/NRR/PGEB
Scott Flanders	NRC/NRR/PDLR
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Tricia Heroux	for EPRI
David Lewis	Shaw Pittman
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Robert Tucker	BGE
Barth Doroshuk	BGE
Dave Matthews	NRC/NRR/PGEB



License Renewal Discussions
10CFR Part 51

February 5, 1997

Barth W. Doroshuk
Principal Engineer

Slide 1

Objectives of Discussions

- Provide NRC with status of BGE ER activities
- Provide NRC with BGE objectives of this effort
- Present 2/5/97 version of ER template
- Provide overview of template contents
- Discuss/agree to schedule reviews/discussions
- Establish need to discuss particular sections of Part 51

Status of BGE Environmental Report

- Draft Environmental Report prepared to 2/5/97 template requirements due 2/14/97
 - Will not include SAMA, EJ or Yucca Mountain generic and cumulative effects analyses
- BGE "Core Team" review complete by end of February
- Need to begin SAMA, EJ and transportation analysis soon
- ER to be completed, including site reviews, by May 1997

BGE Objectives of Environmental Template Effort

- Achieve agreement between NRC and BGE on format and content of an ER so that, should BGE submit LRA, NRC would find ER Section sufficient to begin review.
- BGE recognizes NRC is developing regulatory guide and standard review plan.
- BGE is a participating member of the NEI Working Group for license renewal and both the Part 54 and Part 51 task forces.

Template Overview

- Template provides comprehensive linkages from 10CFR Part 51 requirements to Environmental Report.
- Template provides both descriptive elements and requirements for the format and content of an Environmental Report.
- Template will provide a basis, if implemented properly, for BGE to meet NRC expectations such that formal reviews can begin.

Template Overview

Sections

- Introduction
- Section 1 - Purpose and Need for Action
- Section 2 - Alternatives Including Proposed Action
- Section 3 - Affected Environment
- Section 4 - Environmental Consequences and Mitigating Actions
- Section 5 - Compliance Status
- Section 6 - References
- Appendices - Currently A through H



Proposed Template Schedule

<u>Activity</u>	<u>Date</u>
• BGE submits initial draft of template for NRC review and comment	2/5/97
• NRC provides concurrence and/or comments to BGE	2/19/97
• BGE and NRC agree on four ER topics for exercise	2/19/97
• BGE submits template portions of selected topics for NRC review and revised template	3/5/97
• NRC provides BGE comments on exercises	3/26/97
• BGE reviews NRC comments and submits response/corrected exercises	4/16/97
• BGE and NRC meet to close out any remaining items and prepare for Senior Management Meeting	5/14/97
• Senior Management Meeting	5/21/97

10CFR Part 51 Issue Specific Exchanges

- BGE requests clarification on four specific issues required to be evaluated by 10CFR51:
 - Severe Accident Mitigation Alternatives
 - Environmental Justice
 - Transportation
 - Electric Shock
- BGE has provided NRC with four papers containing “current thinking” and “needs” regarding clarification
- BGE proposes to conduct several focus meetings regarding these issues



10CFR Issue Specific Exchanges

- Initial Severe Accident Mitigation Alternatives Exchange..... 2/19/97
- Initial Transportation Exchange..... 2/19/97
- Initial Environmental Justice Exchange..... 3/5/97
- Initial Electric Shock Exchange..... 3/5/97

Template for the Calvert Cliffs Nuclear Power Plant License Renewal Environmental Report

Introduction

This template provides an outline of the Baltimore Gas and Electric Company (BGE) environmental report (ER) for Calvert Cliffs Nuclear Power Plant (CCNPP) license renewal. The Template is annotated to describe the contents of each section and to identify the regulatory requirement being addressed.

BGE has based the contents of the outline on U.S. Nuclear Regulatory Commission (NRC) regulatory requirements found at Title 10, Code of Federal Regulations, Part 51, Section 53, Paragraph (c) *Operating license renewal stage* [10 CFR 51.53(c)].¹ Attachment 1 provides cross-references from regulatory requirements to ER sections that this Template identifies.

Regulation 10 CFR 51.53 does not specify a format for an ER. However, NRC would use the ER as input when preparing a CCNPP license renewal environmental impact statement in accordance with National Environmental Policy Act requirements. To expedite NRC usage of the ER, BGE has formatted it to follow NRC format for presentation of materials in an environmental impact statement.²

Environmental Report Template

Summary [format from 10 CFR 51.70(b) and 10 CFR 51 Subpart A, Appendix A, Section 3]

Summarize ER, stressing major issues; identify any unresolved issues; and present major conclusions and recommendations.

1. Purpose of and need for action [required by 10 CFR 51.45(b) as incorporated by 10 CFR 51.53(c)(2)]

Describe the purpose of the proposed action as that of providing an option that allows for power generation capability beyond the term of the plant's current operating license to meet future system generating needs (input from 61 FR 109, 6/5/96, p 28472)

2. Alternatives including the proposed action

2.1 Proposed action [required by 10 CFR 51.53(c)(2) and 10 CFR 51.45(b) as referenced in 10 CFR 51.53(c)(2)]

- § 2.1 would provide sufficient information about CCNPP to facilitate an understanding of the applicable § 4.1 issues and mitigation alternatives
- To facilitate NRC review, references to background information provided in previous CCNPP documents (e.g., Final Environmental Statement) would be provided

2.1.1 General plant information

- Describe CCNPP location, site, plant. Use figures to illustrate
- Identify FES. Use table to list post-FES National Environmental Policy Act documentation

¹ *Federal Register*, Vol. 61, No. 244, December 18, 1996, pages 66537-66554; *Federal Register*, Vol. 61, No. 109, June 5, 1996, pp. 28467-28496; and *Federal Register*, Vol. 61, No. 147, July 30, 1996, pp. 39555-39556.

² 10 CFR 51.70(b) and 10 CFR 51 Subpart A, Appendix A, Section 1(a).

2.1.2 Nuclear fuel and radioactive waste (input to ER § 4.1.18)

- Describe unirradiated fuel shipments to CCNPP
- Describe fuel form and enrichment
- Describe reactor core thermal power level
- Describe irradiated fuel burnup rate, handling
- Describe irradiated fuel and other radioactive solid waste shipments from CCNPP

2.1.3 Heat dissipation system (input to ER §§ 4.1.2, 4.1.3, and 4.1.4)

- Describe CCNPP cooling system (e.g., once-through heat dissipation system)

2.1.4 Groundwater use (input to ER § 4.1.5)

- Describe CCNPP wells. Use table to summarize characteristics (e.g., depth, aquifer, capacity) and figure to illustrate locations relative to site boundary
- Identify historical pumping rates (show greater than 100 gallons per minute). Use table to summarize data. Discuss any trend and use figure to illustrate

2.1.5 Transmission facilities (input to ER § 4.1.9)

- Describe CCNPP transmission facilities and changes since original licensing. Use figure to illustrate locations
- Describe change in use of the lines since original licensing

2.1.6 Modifications [required by 10 CFR 51.53(c)(2)] (input to ER §§ 2.1.7, 4.1.6, 4.1.7, and 4.1.16)

- Summarize CCNPP physical modifications as result of integrated plant assessment (IPA)
- Summarize changes to (or addition of) administrative control procedures from IPA

2.1.7 Employment (input to ER §§ 4.1.8, 4.1.10, 4.1.11, 4.1.12, 4.1.13, 4.1.14, 4.1.15)

- Describe number of CCNPP workers during routine operations and during refueling outages and the portion estimated living in Calvert County
- Predict total refurbishment manpower requirements
- Describe any projected increase in staffing number during license renewal term
- Explain differences in CCNPP employment projections versus GEIS estimates

2.2 Alternatives [required by 10 CFR 51.53(c)(2)]

If the CCNPP licenses were not renewed, the plant would be decommissioned and an alternative power supply would be considered to meet the demand for power. This section will present various power supply alternatives to meet the demand. Feasible alternatives considered will be presented. For each feasible alternative, a general description would be provided with manpower estimates, emission discussion, description of cooling water system, delivery systems, and technology alternatives within the alternatives. Impacts will be summarized in § 2.3.

2.2.1 Feasible Alternatives

2.2.1.1 Example - Coal-fired plant construction at Calvert Cliffs site

- Provide general description of plant, including acreage and manpower needed
- Describe construction, manpower
- Describe coal delivery system (barge dock, coal pile), maintenance dredging
- Describe cooling water system including potential use existing system.
- Describe air emissions
- Describe ash handling

2.2.2 Other Alternatives

- Briefly discuss non-feasible alternatives
- For each alternative, provide basis for concluding non-feasible

2.3 Proposed action/Alternatives summary comparison

- Discuss differences in environmental impacts from proposed action (ER § 4.1) and alternatives (ER § 4.2)
- Provide tabular comparison between proposed action and alternatives for each Category 2 issue applicable to CCNPP and any other Category 2 or 1 issue applicable to an alternative(s) for which impact is moderate or large

3. Affected environment

Provide sufficient information to support each of the below § 4.1 analyses of Category 2 issues and any new and significant information, if any.

3.1 Biological resources

3.1.1 Aquatic ecology (input to ER § 4.1.2, 4.1.3, and 4.1.4)

- Describe CCNPP aquatic ecology
- Describe any Maryland Department of Natural Resources efforts to restore or increase fish and shellfish populations or habitat in CCNPP vicinity

3.1.2 Terrestrial Ecology (input to ER § 4.1.6)

- Describe CCNPP terrestrial ecology (if affected by refurbishment activities)

3.1.3 Special Status Species (input to ER § 4.1.7)

- Describe CCNPP special status (threatened and endangered) aquatic species
- Describe CCNPP special status (threatened and endangered) terrestrial species

3.2 Geology and groundwater hydrology (input to ER § 4.1.5)

- Describe CCNPP and area geology as it applies to groundwater aquifers affected by CCNPP. Use a figure to graphically illustrate the geology
- Describe CCNPP and area groundwater hydrology. Use a table to summarize information about aquifers and a figure to illustrate potentiometric surface trending
- Identify offsite wells and groundwater usage. Use a table to summarize data and a figure to illustrate location of nearest well finished in the aquifer that CCNPP uses

3.3 Air quality (input to ER § 4.1.8)

- Describe National Ambient Air Quality Standards (NAAQS) status of CCNPP area
- Identify closest nonattainment and maintenance area for vehicle emissions

3.4 Housing (input to ER § 4.1.10)

- Describe historical growth rate and the percent attributable to the CCNPP work force
- Describe current CCNPP-area housing availability (permanent and temporary)

3.5 Public services (input to ER §§ 4.1.11, 4.1.12, and 4.1.15)

- Identify CCNPP-area public water supply systems (input to ER § 4.1.11)
- Describe any systems having problems meeting base or peak demand
- For any system having supply problems, estimate percent of demand attributable to CCNPP staff and indirect multiplier
- Describe the adequacy of the County's educational system (input to ER § 4.1.12)
- Describe adequacy of local level of services for transportation (input to ER § 4.1.15).

3.6 Offsite land use (input to ER §§ 4.1.13 and 4.1.14)

- Describe trends in land use
- Describe land use with regard to residential and commercial development in Calver County
- Use figures to illustrate location and general features

3.7 Cultural resources (input to ER § 4.1.16)

For plant site and transmission line right-of-way:

- Describe past cultural resource investigations
- Describe prehistoric and historic resources
- Describe current cultural resource protection activities

3.8 Demography (input to ER §§ 4.1.10, 4.1.11, 4.1.12, 4.1.13, 4.1.14, 4.1.15, and 4.1.17)

- Describe population size and distribution around CCNPP
- Use figure to identify sectors and tables to summarize data

4. Environmental consequences and mitigating actions

4.1 Proposed action

For each issue in §§ 4.1.2 through 4.1.18 (except as specifically noted), discuss the bulleted items below plus the issue specific information listed within each section.

- State the issue
- Identify GEIS reason for not making Category 1 and discuss how reason applies in case of CCNPP
- Identify and discuss alternative mitigation measures [required by 10 CFR 51.53(c)(3)(iii)]
- Identify whether impact, after intended mitigation, is small, moderate, or large, as defined below (10 CFR 51 Subpart A, Appendix B, Table B-1, footnote 3):

Small- for the issue, environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource

Moderate- for the issue, environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource

Large- for the issue, environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource

4.1.1 Introduction

- Adopt by reference NRC GEIS conclusions for Category 1 issues
- Indicate the Category 2 issues that are not applicable to CCNPP and provide basis for conclusion
- Reference Appendix A for identification of ER sections that address specific Category 2 issues

4.1.2 Entrainment [required by 10 CFR 51.53(c)(3)(ii)(B); Table B-1 Issue Number 25]

In addition to the general information called for above in § 4.1 include the following:

- Reference ER § 2.1.3 for description of the heat dissipation system
- Reference ER § 3.1.1 to support discussion of mitigation alternatives
- Describe 316(b) requirement and history of CCNPP compliance
- Use Appendix B to provide copy of pages from CCNPP 1982 discharge permit that references 316(b) study

4.1.3 Impingement [required by 10 CFR 51.53(c)(3)(ii)(B); Table B-1 Issue Number 26]

In addition to the general information called for above in § 4.1 include the following:

- Reference ER § 2.1.3 for description of the heat dissipation system
- Reference ER § 4.1.2 for discussion of CCNPP 316(b) study
- Reference ER § 3.1.1 to support discussion of mitigation alternatives

4.1.4 Heat shock [required by 10 CFR 51.53(c)(3)(ii)(B); Table B-1 Issue Number 27]

In addition to the general information called for above in § 4.1 include the following:

- Describe 315(a) requirement and applicability to CCNPP
- Use Appendix B to provide copy of pages from CCNPP 1982 discharge permit that document compliance

4.1.5 Groundwater use [required by 10 CFR 51.53(c)(3)(ii)(C); Table B-1 Issue Number 33]

In addition to the general information called for above in § 4.1 include the following:

- Reference ER § 3.2 discussion of geology and groundwater hydrology
- Calculate current drawdown at CCNPP site boundary attributable to CCNPP withdrawal
- Project drawdown attributable to withdrawal during license renewal period. Include calculations as Appendix C
- Provide basis for conclusions regarding impacts to a hypothetical site boundary well

4.1.6 Refurbishment impacts (to terrestrial resources) [required by 10 CFR 51.53(c)(3)(ii)(E); Table B-1 Issue 40]

In addition to the general information called for above in § 4.1 include the following:

- Reference ER § 3.1.2 discussion of terrestrial ecology and § 2.1.6 for discussion of refurbishment scope
- Describe effect of refurbishment activities on plant operations and the outside environment or effluents

4.1.7 Threatened and endangered species [required by 10 CFR 51.53(c)(3)(ii)(E); Table B-1 Issue 49]

In addition to the general information called for above in § 4.1 include the following:

- Reference ER § 3.1.3 discussion of special status species and ER § 2.1.6 for discussion of plant modifications
- Describe effect of refurbishment activities on important plant and animal habitats
- Describe effect of plant modifications on threatened and endangered species
- Describe status of consultation with Maryland Heritage Program, U.S. Fish and Wildlife Service, and National Marine Fisheries Service. Include as Appendix D copies of BGE request for consultation and agencies' responses

4.1.8 Air quality during refurbishment (nonattainment and maintenance areas) [required by 10 CFR 51.53(c)(3)(ii)(F); Table B-1 Issue 50]

In addition to the general information called for above in § 4.1 include the following:

- Reference ER § 3.3 discussion of air quality and ER § 2.1.7 for refurbishment work force
- Provide basis for calculation of increased staff vehicles' emissions

4.1.9 Electric shock [required by 10 CFR 51.53(c)(3)(ii)(H); Table B-1 Issue 59]

- Present issue statement and categorization as described above in § 4.1 (exclude discussion of mitigation alternatives and impact extent)
- Reference ER § 2.1.5 discussion of transmission lines
- Explain inapplicability of this issue to the proposed action due to changes in transmission line use since original licensing

4.1.10 Housing impacts [required by 10 CFR 51.53(c)(3)(ii)(I); Table B-1 Issue 63]

In addition to the general information called for above in § 4.1 include the following:

- Reference ER § 3.4 discussion of housing, ER § 3.8 discussion of demography, and ER § 2.1.7 discussion of refurbishment and license renewal term work force
- Compare increase in staff to normal operations and refueling outage staff numbers
- Project impacts to housing from increased number of staff during refurbishment and license renewal term

4.1.11 Public services: public utilities [required by 10 CFR 51.53(c)(3)(ii)(I); Table B-1 Issue 65]

In addition to the general information called for above in § 4.1 include the following:

- Reference ER § 3.5 discussion of public services, ER § 3.8 discussion of demography, and ER § 2.1.7 discussion of refurbishment and license renewal term work force
- Compare increases in staff to normal operations and refueling outage staff numbers
- Project impacts to public water supply from increased number of staff during refurbishment and license renewal term

4.1.12 Public services, education (refurbishment) [required by 10 CFR 51.53(c)(3)(ii)(I); Table B-1 Issue 66]

In addition to the general information called for above in § 4.1 include the following:

- Reference ER § 3.5 discussion of public services, ER § 3.8 discussion of demography, and ER § 2.1.7 discussion of refurbishment work force
- Compare increase in staff number from refurbishment to normal operations and refueling outage staff numbers
- Project impacts to education system from increased number of staff during refurbishment

4.1.13 Offsite land use (refurbishment) [required by 10 CFR 51.53(c)(3)(ii)(I); Table B-1 Issue 68]

In addition to the general information called for above in § 4.1 include the following:

- Reference ER § 3.6 discussion of offsite land use, ER § 3.8 discussion of demography, and ER § 2.1.7 discussion of refurbishment work force
- Compare increase in staff number from refurbishment to normal operations and refueling outage staff numbers
- Project impacts to offsite land use from increased number of staff during refurbishment

4.1.14 Offsite land use (license renewal term) [required by 10 CFR 51.53(c)(3)(ii)(I); Table B-1 Issue 69]

In addition to the general information called for above in § 4.1 include the following:

- Reference ER § 3.6 discussion of offsite land use, ER § 3.8 discussion of demography, and ER § 2.1.7 discussion of license renewal term work force
- Compare increase in staff number during license renewal term to normal operations staff numbers
- Project impacts to offsite land use from increased number of staff during license renewal term

4.1.15 Public services, transportation [required by 10 CFR 51.53(c)(3)(ii)(J); Table B-1 Issue 70]

In addition to the general information called for above in § 4.1 include the following:

- Reference ER § 3.5 discussion of offsite land use, ER § 3.8 discussion of demography, and ER § 2.1.7 discussion of refurbishment work force
- Compare increase in staff number during refurbishment to normal operations and refueling outage staff numbers
- Project impacts to transportation from increased number of staff during refurbishment

4.1.16 Historic and archaeological resources [required by 10 CFR 51.53(c)(3)(ii)(K); Table B-1 Issue 71]

In addition to the general information called for above in § 4.1 include the following:

- Reference ER § 3.7 discussion of cultural resources and ER § 2.1.6 discussion of refurbishment scope
- Describe refurbishment and license renewal term impact to cultural resources
- Describe status of consultation with Maryland Historic Trust (State Historic Preservation Officer). Include as Appendix E copies of BGE request for consultation and agency response

4.1.17 Severe accident mitigation alternatives [required by 10 CFR 51.53(c)(3)(ii)(L); Table B-1 Issue 76]

- Approach TBD

4.1.18 Transportation [uranium fuel cycle and waste management] [required by 10 CFR 51.53(c)(3)(ii)(M); Table B-1 Issue 85]

In addition to the general information called for above in § 4.1 include the following:

- Reference ER § 2.1.2 for discussion of CCNPP fuel enrichment and burnup
- Discuss how CCNPP fuel characteristics differ from Table S-4 criteria
- Describe NRC generic and CCNPP-specific analyses for higher enrichment and burnup rates
- Provide bounding analysis of Table S-4 generic impacts and NRC sensitivity analysis in the GEIS
- Include Federal Register notices of NRC transportation assessments in Appendix G
- Approach to cumulative and synergistic impacts at Yucca Mountain [TBD]

4.1.19 New and significant information [required by 10 CFR 51.53(c)(3)(iv)]

If new and significant information exists, the following would be presented:

- Describe any CCNPP-specific information that would make a GEIS analysis or conclusion for a Category 1 issue not applicable for CCNPP (none known now)

4.2 Alternatives [required by 10 CFR 51.53(c)(2)]

For each of the feasible Alternatives to meet the power demands (ER § 2.2), discuss the following:

- Reference applicable discussion of Alternatives in the GEIS Chapter 8, Alternatives to License Renewal
- Describe significant issues addressed in § 4.1 plus any other applicable Category 2 or 1 issue for which impact would be moderate or large
- Provide sufficient detail for NRC to determine whether or not environmental impacts of license renewal are so great, compared to the Alternatives, that preserving the option of license renewal for future decision makers would be unreasonable [10 CFR 51.95(c)(4)].

4.3 Committed resources

4.3.1 Unavoidable adverse impacts [required by 10 CFR 51.45(b)(2) as referenced in 10 CFR 51.53(c)(2)]

- Summarize adverse impacts that § 4.1 identifies for the proposed action (i.e., license renewal) as unavoidable after minimization by proposed mitigative measures
- Note that Category 1 adverse impacts covered by GEIS

4.3.2 Irreversible or irretrievable resource commitments [required by 10 CFR 51.45 (b)(5) as referenced in 10 CFR 51.53(c)(2)]

- Identify subset of § 4.3.1 impacts that are permanent or of such long-term impact as to be considered permanent.
- Note that discussion does not include Category 1 commitments covered by GEIS

4.4 Short-term use versus long-term productivity [required by 10 CFR 51.45 (b)(4) as referenced in 10 CFR 51.53(c)(2)]

- Describe GEIS Category 1 impacts and § 4.1 Category 2 impacts as local short-term uses of man's environment (or identify any that are not short-term).
- Identify any ways that these short-term uses affect the maintenance and enhancement of long-term productivity of man's environment.

5. Compliance status [required by 10 CFR 51.45(d) as referenced in 10 CFR 51.53(c)(2)]

5.1 Proposed action

- List approvals Federally required for license renewal. Identify compliance status
- Include, as Appendix H, copy of any approvals received and applicable State regulations
- Discuss status of compliance with Federal, State, and local environmental protection requirements. Use table to illustrate compliance status

5.2 Alternatives

- Identify whether the feasible Alternatives would comply with Federal, State, and local environmental protection requirements

6. References

Appendix A NRC NEPA Issues for License Renewal of Nuclear Power Plants

- List and number each issue from 10 CFR 51 Table B-1
- For each issue, identify where in the ER the issue is discussed
- Identify issues not applicable to CCNPP (e.g., due to physical characteristics of the plant)

Note: Referred to in ER § 4.1.1

Appendix B 316(a) and 316(b) documentation

- Provide copy of pages from CCNPP 1982 discharge permit that mention 316(b) study and that documents 316(a) compliance

Note: Referred to in ER § 4.1.2 and 4.1.4

Appendix C Offsite well impact calculation

- Include well impact calculation

Note: Referred to in ER § 4.1.5

Appendix D Special status species consultation

- Include copies of BGE request for consultation and agencies' responses

Note: Referred to in ER § 4.1.7

Appendix E Cultural resources consultation

- Include copies of BGE request for consultation and agency response

Note: Referred to in ER § 4.1.16

Appendix F Severe accidents

- Include detailed severe accidents discussion

Note: Referred to in ER § 4.1.17

Appendix G NRC Transportation Assessments

- Include copies of relevant NRC Transportation Assessments published in the *Federal Register*

Note: Referred to in ER § 4.1.18

Appendix H Approvals

- Provide copies of any other agency approvals

Note: Referred to in ER § 5.1

RULE - ER CROSS REFERENCE TABLE

Attachment 1.

No.	10 CFR 51.53 Requirement	Environmental Report Action
1.	<p>(c) <i>Operating license renewal stage.</i> (1) Each applicant for renewal of a license to operate a nuclear power plant under part 54 of this chapter shall submit with its application the number of copies specified in § 51.55 of a separate document entitled "Applicant's Environmental Report--Operating License Renewal Stage."</p> <p>[§ 51.55 included below for ease of reference]</p> <p>§ 51.55 Environmental report - number of copies; distribution</p> <p>(a) Each applicant for a license to construct and operate a production or utilization facility covered by paragraphs (b)(1), (b)(2), (b)(3), or (b)(4) of § 51.20, <u>each applicant for renewal of an operating license for a nuclear power plant</u>, each applicant for a license amendment authorizing the decommissioning of a production or utilization facility covered by § 51.20, and each applicant for a license or license amendment to store spent fuel at a nuclear power plant after expiration of the operating license for the nuclear power plant <u>shall submit to the Director of the Office of Nuclear Reactor Regulation or the Director of the Office of Nuclear Material Safety and Safeguards, as appropriate, 41 copies of an environmental report</u> or supplement to an environmental report. <u>The applicant shall retain an additional 109 copies of the environmental report or any supplement to the environmental report for distribution to parties and Boards in the NRC proceedings; Federal, State, and local officials; and any affected Indian tribes, in accordance with written instructions issued by the Director of the Office of Nuclear Reactor Regulation or the Director of the Office of Nuclear Material Safety and Safeguards, as appropriate.</u> [underlined highlights added for emphasis]</p>	<p>BGE would submit 41 copies of the "Applicant's Environmental Report--Operating License Renewal Stage" to the Director of the Office of Nuclear Reactor Regulation and would retain 109 copies pending written distribution instructions from the Director.</p>
2.	<p>(2) The report must contain a description of the proposed action, including the applicant's plans to modify the facility or its administrative control procedures as described in accordance with § 54.21 of this chapter. This report must describe in detail the modifications directly affecting the environment or affecting plant effluents that affect the environment.</p>	<p>§ 2.1 would describe the proposed action. § 2.1.6 would describe modifications.</p>
3.	<p>In addition, the applicant shall discuss in this report the environmental impacts of alternatives,</p>	<p>§ 2.2.1 would identify feasible Alternatives, and § 4.2 would analyze their environmental impacts.</p>
4.	<p>and any other matters described in § 51.45.</p> <p>[§ 51.45 included below for ease of reference]</p> <p>§ 51.45 Environmental report.</p> <p>(a) <i>General.</i> <u>As required by §§ 51.50, 51.53, 51.54 51.60, 51.61, 51.62 or 51.68, as appropriate, each applicant or petitioner for a rulemaking shall submit with its application or petition for rulemaking one signed original of a separate document entitled "Applicant's" or "Petitioner's Environmental Report," as appropriate and the number of copies specified in §§ 51.55, 51.66, or § 51.69.</u> An applicant or petitioner for rulemaking may submit a supplement to an environmental report at any time. [underlined highlights added for emphasis]</p>	<p>BGE would submit signed original and copies as described above in Item No. 1.</p>
5.	<p>(b) <i>Environmental considerations.</i> The environmental report shall contain a description of the proposed action,</p>	<p>§2.1 would describe the proposed action.</p>
6.	<p>a statement of its purposes,</p>	<p>Chapter 1 would identify the purpose.</p>
7.	<p>a description of the environment affected,</p>	<p>Chapter 3 would describe the affected environment.</p>

RULE - ER CROSS REFERENCE TABLE

Attachment 1. continued.

No.	10 CFR 51.53 Requirement	Environmental Report Action
8.	and discuss the following considerations: (1) The impact of the proposed action on the environment. Impacts shall be discussed in proportion to their significance;	§4.1 would discuss environmental impacts from the proposed action. §4.1.1 would adopt by reference, as appropriate, GEIS conclusions for Category 1 issues.
9.	(2) Any adverse environmental effects which cannot be avoided should the proposal be implemented	§4.1 would discuss adverse effects. §4.3.1 would summarize unavoidable adverse impacts.
10.	(3) Alternatives to the proposed action. The discussion of alternatives shall be sufficiently complete to aid the Commission in developing and exploring, pursuant to section 102(2)(E) of NEPA, "appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." To the extent practicable, the environmental impacts of the proposal and the alternatives should be presented in comparative form;	§2.2.1 would discuss feasible Alternatives, and § 2.2.2 would discuss non-feasible Alternatives. § 2.3 would present impacts from the proposed action and feasible Alternatives in comparative fashion.
11.	(4) The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and	§4.4 would address short-term versus long-term issues.
12.	(5) Any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.	§4.3.2 would address resource commitments.
13.	(c) <i>Analysis</i> . The environmental report shall include an analysis that considers and balances the environmental effects of the proposed action, the environmental impacts of alternatives to the proposed action, and alternatives available for reducing or avoiding adverse environmental effects. Except for environmental reports prepared at the license renewal stage pursuant to § 51.53(c), the analysis in the environmental report should also include consideration of the economic, technical, and other benefits and costs of the proposed action and of alternatives. Environmental reports prepared at the license renewal stage pursuant to § 51.53(c) need not discuss the economic or technical benefits and costs of either the proposed action or alternatives except insofar as such benefits and costs are either essential for a determination regarding the inclusion of an alternative in the range of alternatives considered or relevant to mitigation. In addition, environmental reports prepared pursuant to § 51.53(c) need not discuss other issues not related to the environmental effects of the proposed action and alternatives. The analyses for environmental reports shall, to the fullest extent practicable, quantify the various factors considered. To the extent that there are important qualitative considerations or factors that cannot be quantified, those considerations or factors shall be discussed in qualitative terms. The environmental report should contain sufficient data to aid the Commission in its development of an independent analysis.	Chapter 4 would be an analysis of impacts, including mitigative alternatives. The chapter would not address economic, technical, and other benefits and costs not related to the environment except for mitigation. § 2.2 would use economic and technical factors in rejecting, as non-feasible, alternatives from further analysis.
14.	(d) <i>Status of compliance</i> . The environmental report shall list all Federal permits, licenses, approvals and other entitlements which must be obtained in connection with the proposed action and shall describe the status of compliance with these requirements.	§ 5.1 would include list of Federal and other permits, etc., for the proposed action, and Appendix H would provide agency approvals.
15.	The environmental report shall also include a discussion of the status of compliance with applicable environmental quality standards and requirements including, but not limited to, applicable zoning and land-use regulations, and thermal and other water pollution limitations or requirements which have been imposed by Federal, State, regional, and local agencies having responsibility for environmental protection.	§ 5.1 would discuss compliance status of proposed action.
16.	The discussion of alternatives in the report shall include a discussion of whether the alternatives will comply with such applicable environmental quality standards and requirements.	§ 5.2 would discuss compliance of the feasible Alternatives.

RULE - ER CROSS REFERENCE TABLE

Attachment 1. continued.

No.	10 CFR 51.53 Requirement	Environmental Report Action
17.	(e) <i>Adverse information.</i> The information submitted pursuant to paragraphs (b) through (d) of this section should not be confined to information supporting the proposed action but should also include adverse information.	BGE would include adverse information, as applicable.
18.	The report is not required to include discussion of need for power or the economic costs and economic benefits of the proposed action or of alternatives to the proposed action except insofar as such costs and benefits are either essential for a determination regarding the inclusion of an alternative in the range of alternatives considered or relevant to mitigation. The environmental report need not discuss other issues not related to the environmental effects of the proposed action and the alternatives.	The ER would not discuss need for power. Chapter 4 would discuss economic costs and economic benefits only in relation to mitigation.
19.	In addition, the environmental report need not discuss any aspect of the storage of spent fuel for the facility within the scope of the generic determination in § 51.23(a) and in accordance with § 51.23(b).	The ER would not discuss spent fuel storage in the spent fuel pool or Independent Spent Fuel Storage Installation after the license renewal term.
20.	(3) For those applicants seeking an initial renewal license and holding either an operating license or construction permit as of June 30, 1995, the environmental report shall include the information required in paragraph (c)(2) of this section subject to the following conditions and considerations: (i) The environmental report for the operating license renewal stage is not required to contain analyses of the environmental impacts of the license renewal issues identified as Category 1 issues in appendix B to subpart A of this part.	The ER would not contain analyses of Category 1 issues unless, pursuant to 51.53(c)(3)(iv), new and significant information made an NRC GEIS analysis inapplicable to CCNPP. Consistent with the regulatory preamble (61 FR 109, 6/5/96, pp 28467-28496, at p 28483), § 4.1.1 would adopt by reference NRC GEIS analyses (contra new and significant information).
21.	(ii) The environmental report must contain analyses of the environmental impacts of the proposed action, including the impacts of refurbishment activities, if any, associated with license renewal and the impacts of operation during the renewal term, for those issues identified as Category 2 issues in appendix B to subpart A of this part. The required analyses are as follows: (A) If the applicant's plant utilizes cooling towers or cooling ponds and withdraws make-up water from a river whose annual flow rate is less than 3.15×10^{12} ft ³ /year (9×10^{10} m ³ /year), an assessment of the impact of the proposed action on the flow of the river and related impacts on instream and riparian ecological communities must be provided. The applicant shall also provide an assessment of the impacts of the withdrawal of water from the river on alluvial aquifers during low flow.	The ER would not include this analysis because CCNPP does not have cooling towers or cooling ponds. Appendix A would indicate this for the underlying issues (13 and 34).
22.	(B) If the applicant's plant utilizes once-through cooling or cooling pond heat dissipation systems, the applicant shall provide a copy of current Clean Water Act 316(b) determinations and, if necessary, a 316(a) variance in accordance with 40 CFR part 125, or equivalent State permits and supporting documentation. If the applicant can not provide these documents, it shall assess the impact of the proposed action on fish and shellfish resources resulting from heat shock and impingement and entrainment.	§ 2.1.3 would describe the CCNPP heat dissipation system and § 3.1.1 would describe aquatic ecology; § 4.1.2 would provide CCNPP 316(b) documentation and § 4.1.3 would show impingement trending to demonstrate that Chesapeake Bay improvements have not resulted in increasing problem at CCNPP. § 4.1.4 would document that a 316(a) variance was not necessary for CCNPP. Appendix B would provide portions of the CCNPP 1982 discharge permit relative to 316(b) and 316(a), respectively.

RULE - ER CROSS REFERENCE TABLE

Attachment 1. continued.

No.	10 CFR 51.53 Requirement	Environmental Report Action
23.	(C) If the applicant's plant uses Ranney wells or pumps more than 100 gallons of ground water per minute, an assessment of the impact of the proposed action on ground-water use must be provided.	Appendix A would indicate that, because CCNPP does not use Ranney wells, the underlying issue (35) is not applicable to CCNPP. § 2.1.4 would demonstrate that CCNPP pumps more than 100 gallons of groundwater per minute, § 3.2 would describe the pertinent geology and hydrogeology, and § 4.1.5 would assess impacts. Appendix C would provide well impact calculations.
24.	(D) If the applicant's plant is located at an inland site and utilizes cooling ponds, an assessment of the impact of the proposed action on groundwater quality must be provided.	Appendix A would indicate that, because CCNPP does not utilize cooling ponds, the underlying issue (39) is not applicable to CCNPP.
25.	(E) All license renewal applicants shall assess the impact of refurbishment and other license-renewal-related construction activities on important plant and animal habitats. Additionally, the applicant shall assess the impact of the proposed action on threatened or endangered species in accordance with the Endangered Species Act.	§ 3.1.2 would describe terrestrial ecology, and § 4.1.6 would assess refurbishment impacts to terrestrial resources. § 3.1.3 would identify special status species, and § 4.1.7 would address impacts to special status species, and Appendix D would provide special status species consultations.
26.	(F) If the applicant's plant is located in or near a nonattainment or maintenance area, an assessment of vehicle exhaust emissions anticipated at the time of peak refurbishment workforce must be provided in accordance with the Clean Air Act as amended.	§ 3.3 would describe air quality of CCNPP area, and § 4.1.8 would address vehicle exhaust emissions.
27.	(G) If the applicant's plant uses a cooling pond, lake, or canal or discharges into a river having an annual average flow rate of less than 3.15×10^{12} ft ³ /year (9×10^{10} m ³ /year), an assessment of the impact of the proposed action on public health from thermophilic organisms in the affected water must be provided.	Appendix A would indicate that, because CCNPP does not use a cooling pond, lake, or canal and does not discharge into a river, the underlying issue (57) is not applicable to CCNPP.
28.	(H) If the applicant's transmission lines that were constructed for the specific purpose of connecting the plant to the transmission system do not meet the recommendations of the National Electric Safety Code for preventing electric shock from induced currents, an assessment of the impact of the proposed action on the potential shock hazard from the transmission lines must be provided.	§ 2.1.5 would describe the CCNPP transmission lines and changes since original licensing, and § 4.1.9 would provide basis for concluding that the underlying issue (59) is not applicable to CCNPP.
29.	(I) An assessment of the impact of the proposed action on housing availability, land-use, and public schools (impacts from refurbishment activities only) within the vicinity of the plant must be provided. Additionally, the applicant shall provide an assessment of the impact of population increases attributable to the proposed project on the public water supply.	§ 3.4 would describe CCNPP area housing availability, and § 3.5 would describe public services. §§ 4.1.10, 4.1.12, and 4.1.11 and would assess housing, schools, and water supply impacts, respectively. § 3.6 would describe offsite land use, and §§ 4.1.13 and 4.1.14 would assess refurbishment and renewal-term impacts, respectively.

RULE - ER CROSS REFERENCE TABLE

Attachment 1. continued.

No.	10 CFR 51.53 Requirement	Environmental Report Action
30.	(J) All applicants shall assess the impact of the proposed project on local transportation during periods of license renewal refurbishment activities.	§ 3.5 would describe local transportation, and § 4.1.15 would assess impacts.
31.	(K) All applicants shall assess whether any historic or archaeological properties will be affected by the proposed project.	§ 3.7 would describe CCNPP cultural resources, § 4.1.16 would describe impacts, and Appendix E would provide cultural resources consultations.
32.	(L) If the staff has not previously considered severe accident mitigation alternatives for the applicant's plant in an environmental impact statement or related supplement or in an environmental assessment, a consideration of alternatives to mitigate severe accidents must be provided.	§ 3.8 would provide demographic information, § 4.1.17 would discuss severe accident mitigation alternatives, and Appendix F would provide detailed severe accident discussion.
33.	<p>(M) The environmental effects of transportation of fuel and waste shall be reviewed in accordance with § 51.52. [§ 51.52 included below for ease of reference] The review of impacts shall also discuss the generic and cumulative impacts associated with transportation operation in the vicinity of a high-level waste repository site. The candidate site at Yucca Mountain should be used for the purpose of impact analysis as long as that site is under consideration for licensing.</p> <p>§ 51.52 Environmental effects of transportation of fuel and waste - Table S-4</p> <p>Every environmental report prepared for the construction permit stage of a light-water-cooled nuclear power reactor, and submitted after February 4, 1975, shall contain a statement concerning transportation of fuel and radioactive wastes to and from the reactor. That statement shall indicate that the reactor and this transportation either meet all of the conditions in paragraph (a) of this section or all of the conditions in paragraph (b) of this section.</p> <p>(a)(1) The reactor has a core thermal power level not exceeding 3,800 megawatts;</p> <p>(2) The reactor fuel is in the form of sintered uranium dioxide pellets having a uranium-235 enrichment not exceeding 4% by weight, and the pellets are encapsulated in zircaloy rods;</p> <p>(3) The average level of irradiation of the irradiated fuel from the reactor does not exceed 33,000 megawatt-days per metric ton, and no irradiated fuel assembly is shipped until at least 90 days after it is discharged from the reactor;</p> <p>(4) With the exception of irradiated fuel, all radioactive waste shipped from the reactor is packaged and in a solid form;</p> <p>(5) unirradiated fuel is shipped to the reactor by truck; irradiated fuel is shipped from the reactor by truck, rail, or barge; and radioactive waste other than irradiated fuel is shipped from the reactor by truck or rail; and</p> <p>(6) The environmental impacts of transportation of fuel and waste to and from the reactor, with respect to normal conditions of transport and possible accidents in transport, are as set forth in Summary table S-4 in paragraph (c) of this section; and the values in the table represent the contribution of the transportation to the environmental costs of licensing the reactor.</p> <p>(b) For reactors not meeting the conditions of paragraph (a) of this section, the statement shall contain a full description and detailed analysis of the environmental effects of transportation of fuel and wastes to and from the reactor, including values for the environmental impact under normal conditions of transport and for the environmental risk from accidents in transport. The statement shall indicate that the values determined by the analysis represent the contribution of such effects to the environmental costs of licensing the reactor.</p>	<p>CCNPP does not meet conditions in paragraph (a), because CCNPP fuel enrichment is 5% and average level of irradiation for irradiated fuel can be up to 60,000 megawatt-days per metric ton. Therefore, § 2.1.2 would describe CCNPP fuel enrichment and average level of irradiation, and § 4.1.18 would analyze transportation impacts. Appendix G would provide relevant NRC transportation assessments.</p>

RULE - ER CROSS REFERENCE TABLE

Attachment 1. continued.

No.	10 CFR 51.53 Requirement	Environmental Report Action																				
	(c) Summary Table S-4 - Environmental Impact of Transportation of Fuel and Waste to and from One Light-Water-Cooled Nuclear Power Reactor ¹ Normal Conditions of Transport																					
	<table><tr><td></td><td>Environmental impact</td></tr><tr><td>Heat (per irradiated fuel cask in transit).....</td><td>250,000 Btu/hr.</td></tr><tr><td>Weight (governed by Federal or State restrictions).....</td><td>73,000 lbs. per truck; 100 tons per cask per rail car</td></tr><tr><td>Traffic density:</td><td></td></tr><tr><td>Truck.....</td><td>Less than 1 per day</td></tr><tr><td>Rail.....</td><td>Less than 3 per month</td></tr></table>		Environmental impact	Heat (per irradiated fuel cask in transit).....	250,000 Btu/hr.	Weight (governed by Federal or State restrictions).....	73,000 lbs. per truck; 100 tons per cask per rail car	Traffic density:		Truck.....	Less than 1 per day	Rail.....	Less than 3 per month									
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	<table><tr><td>Exposed population</td><td>Estimated number of persons exposed</td><td>Range of doses to exposed individuals² (per reactor year)</td><td>Cumulative doses to exposed population (per reactor year)³</td></tr><tr><td>Transportation workers.....</td><td>200</td><td>0.01 to 300 millirem.....</td><td>4 man-rem</td></tr><tr><td>General public</td><td></td><td></td><td></td></tr><tr><td>Onlookers.....</td><td>1,100</td><td>0.003 to 1.3 millirem.....</td><td>3 man-rem</td></tr><tr><td>Along route.....</td><td>600,000</td><td>0.0001 to 0.06 millirem.....</td><td></td></tr></table>	Exposed population	Estimated number of persons exposed	Range of doses to exposed individuals ² (per reactor year)	Cumulative doses to exposed population (per reactor year) ³	Transportation workers.....	200	0.01 to 300 millirem.....	4 man-rem	General public				Onlookers.....	1,100	0.003 to 1.3 millirem.....	3 man-rem	Along route.....	600,000	0.0001 to 0.06 millirem.....		
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	Accidents in Transport																					
	<table><tr><td></td><td>Environmental risk</td></tr><tr><td>Radiological effects.....</td><td>Small⁴</td></tr><tr><td>Common (nonradiological) causes.....</td><td>1 fatal injury in 100 reactor years; 1 nonfatal injury in 10 reactor years; \$475 property damage per reactor year</td></tr></table>		Environmental risk	Radiological effects.....	Small ⁴	Common (nonradiological) causes.....	1 fatal injury in 100 reactor years; 1 nonfatal injury in 10 reactor years; \$475 property damage per reactor year															
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	¹ Data supporting this table are given in the Commission's "Environmental Survey of Transportation of Radioactive Materials to and from Nuclear Power Plants," WASH-1238, December 1972, and Supp. 1 NUREG-75/038 April 1975. Both documents are available for inspection and copying at the Commission's Public Document Room, 2120 L Street NW., Washington, DC and may be obtained from National Technical Information Service, Springfield, VA 22161. WASH-1238 is available from NTIS at a cost of \$5.45 (microfiche, \$2.25) and NUREG-75/038 is available at a cost of \$3.25 (microfiche, \$2.25).																					
	² The Federal Radiation Council has recommended that the radiation doses from all sources of radiation other than natural background and medical exposures should be limited to 5,000 millirem per year for individuals as a result of occupational exposure and should be limited to 500 millirem per year for individuals in the general population. The dose to individuals due to average natural radiation is about 130 millirem per year.																					
	³ Man-rem is an expression for the summation of whole body doses to individuals in a group. Thus, if each member of a population group of 1,000 people were to receive a dose of 0.001 rem (1 millirem), or if 2 people were to receive a dose of 0.5 rem (500 millirem), the total man-rem in each case would be 1 man-rem.																					
	⁴ Although the environmental risk of radiological effects stemming from transportation accidents is currently incapable of being numerically quantified, the risk remains small regardless of whether it is being applied to a single reactor or a multi-reactor site.																					
34.	(iii) The report must contain a consideration of alternatives for reducing adverse impacts, as required by § 51.45(c), for all Category 2 license renewal issues in Appendix B to Subpart A of this part. No such consideration is required for Category 1 issues in Appendix B to Subpart A of this part. [for text of § 51.45(c), see Item No. 13, above]	Chapter 4 would include consideration of mitigation alternatives.																				
35.	(iv) The environmental report must contain any new and significant information regarding the environmental impacts of license renewal of which the applicant is aware.	§ 4.1.19 would address new and significant information.																				

Severe Accident Mitigation Alternatives

Requirement: Consideration of alternatives to mitigate severe accident impacts¹

Implementation Options:

1. Follow approach used in precedent Limerick analysis²;
 - a. Use Individual Plant Examination (IPE) probabilistic risk assessment source terms and release rates, site meteorology, and site population data to model individual and cumulative dose from unmitigated accidents
 - b. Perform design review and literature search to identify preliminary mitigation alternatives
 - c. Rerun IPE code using each preliminary mitigation alternative to identify source term and release rate reduction. Alternatives that effect reductions become candidate mitigation alternatives
 - d. Evaluate cost of implementing candidate mitigation alternatives
 - e. Re-model individual and cumulative doses for each candidate mitigation alternative
 - f. Identify implementation cost per person-rem averted for each candidate mitigation alternative. Compare to NRC standard of \$2,000 per averted person-rem (i.e., if cost is greater than standard, implementation is not justified).³
 - g. Treat externally-initiated events qualitatively
2. Follow Limerick approach except remain silent on externally-initiated events. When BGE completes CCNPP IPEEE (approximately one year), submit an environmental report revision that contains a quantitative analysis of externally-initiated events severe accidents mitigation alternatives (SAMAs).
3. Perform bounding analysis that demonstrates applicability of Limerick and Comanche Peak analyses⁴ to CCNPP (Limerick population density twice CCNPP; Comanche Peak a pressurized water reactor like CCNPP).
4. Other.

¹ 10 CFR 51.53(c)(3)(ii)(L).

² *Final Environmental Statement Related to the Operation of Limerick Generating Station*, NUREG-0974 Supplement, August 1989.

³ At time of Limerick evaluation, standard was \$1,000 per averted person-rem.

⁴ *Final Environmental Statement Related to the Operation of Comanche Peak Steam Electric Station*, NUREG-0775 Supplement, October 1989.

1 **Severe Accident Mitigation Alternatives, Continued**
2
3

4 **Question:**
5

- 6 1. Would NRC use input from a BGE site-specific analysis (e.g., Option 1) or does NRC intend to
7 perform its own general analysis (e.g., bounding analysis similar to Option 3)?
8
9 2. Does NRC have another approach for consideration?
10

11 **Need:** Discussion, during template efforts, of NRC expectations.
12

Transportation

Requirement: Evaluation of environmental effects from transporting fuel and waste, including comparison to Table S-4 and generic and cumulative transportation operation impacts at Yucca Mountain.⁵

Implementation Issues:

1. Table S-4 - CCNPP fuel enrichment (5%) and burnup rate (60,000 MWd/MTU) exceed Table S-4 fuel enrichment (4%) and burnup rate (33,000 MWd/MTU) criteria. NRC has performed an environmental assessment of the higher CCNPP enrichment and burnup rate and has determined that Table S-4 still bounds CCNPP transportation impacts.⁶
2. Table S-4 - Preamble to final rule states that applicant can incorporate in analysis the discussion presented in GEIS Section 6.2.3 "Sensitivity to Recent Changes in the Fuel Cycle."⁷
3. Yucca Mountain - Predicting industry cumulative impacts could require input on schedules and source terms for all utility and DOE shipments to and from Yucca Mountain and the adjacent Nevada Test Site. BGE does not believe that it or any single utility can obtain the required input or perform such an analysis.
4. Yucca Mountain - The CCNPP Unit 1 license expires July 31, 2014, which would be the earliest that BGE could ship license renewal term spent fuel to Yucca Mountain. DOE anticipates that it will complete its Yucca Mountain environmental impact statement (EIS) in the year 2003⁸ and that the EIS will cover transportation impacts.⁹

Implementation Options:

1. Table S-4 - Explain that CCNPP is outside of Table S-4 fuel enrichment and burnup-rate criteria but that NRC has determined that resultant transportation impacts are bounded by the Table S-4 analysis. Demonstrate how this conclusion is consistent with GEIS sensitivity discussion.
2. Yucca Mountain - Defer discussion of generic and cumulative transportation impacts to DOE EIS.

Question: Does NRC have any comments on BGE approaches?

Need: NRC position on how to address requirement.

⁵ 10 CFR 51.53(c)(3)(ii)(M).

⁶ 54 FR 4352, January 30, 1989.

⁷ 61 FR 66538, December 18, 1996, Column 3.

⁸ 60 FR 40164, et seq., August 7, 1995, at page 40164.

⁹ Ibid. at page 40167.

Environmental Justice

Requirement: Analysis of impacts on minority and low-income populations not required but "will be addressed in individual license renewal reviews."¹⁰

Questions:

1. Would NRC Office of Nuclear Reactor Regulation follow the environmental justice policy that the NRC Office of Nuclear Material Safety and Safeguards (NMSS) has implemented?¹¹
2. What input does NRC need from BGE:
 - a. Demographic information on minority and low-income populations (NMSS policy would require only if significant environmental impacts)?
 - b. Evaluation for disproportionate impacts (NMSS policy would require only if local minority population percentage significantly exceeds county and state percentages)? For Category 1 and 2 issues?

Need: NRC identification of input needed from BGE.

¹⁰ 10 CFR 51 Subpart A, Appendix B, Table B-1, Footnote 6.

¹¹ Memorandum, Linehan to NMSS Division Directors, Branch Chiefs, and Section Leaders, 4/21/95, *NMSS Policy & Procedures Letter 1-50, Revision 1, "Environmental Justice in NEPA Documents."*

Electric Shock

Requirement: Assessment of impact of proposed action on potential transmission line induced shock hazard or demonstration that lines meet National Electric Safety Code (NESC) recommendations for preventing induced shock.¹²

Background: Implicit in the regulation and the supporting GEIS analysis¹³ appears to be the assumption that, if the transmission lines were used (i.e., energized) during the license renewal term, the usage would be attributable to license renewal and that, conversely, the lines would not be used (i.e., would be de-energized) if license renewal was not granted. This assumption might not be correct. If, for example, a plant has two transmission lines that go to separate substations, intertie operations might dictate that the lines remain in use (i.e., energized) as a way of transferring current between the substations even if the plant ceased to generate. In such a case, the proposed action, license renewal, has no effect on whether the lines remained in use, and impacts caused by line usage would not be attributable to the proposed action. In other words, the proposed action would have no impact on the potential shock hazard.

Implementation Options:

1. If CCNPP transmission line usage is no longer dependent on CCNPP operation, include in environmental report an explanation that, because the transmission lines would remain energized regardless of license renewal, the proposed action would have no impact and that demonstration of NESC compliance is not needed.
2. If CCNPP transmission line usage is dependent on CCNPP operation, include in the environmental report a demonstration of NESC compliance.

Need: Verification of NRC expectation.

¹² 10 CFR 51.53(c)(3)(ii)(H).

¹³ Generic Environmental Impact Statement for License Renewal of Nuclear Plants, NUREG-1437, Section 4.5, *Transmission Lines*.



United States Nuclear Regulatory Commission

BGE TEMPLATE PROCESS MEETING

February 5, 1997

Claudia Craig
Generic Issues and Environmental Projects Branch
Division of Reactor Program Management
Office Of Nuclear Reactor Regulation

MAJOR MILESTONES

- Receive draft template
- NRC review and comment on template
- Technical meetings on selected issues to provide guidance
- Select examples
- NRC review and comment on examples
- Complete template process

NRC ASSUMPTIONS FOR TEMPLATE PROCESS

- Template process does not constitute formal NRC review and approval
- BGE template represents, for the most part, industry view
Need to understand what is unique to BGE
- Examples will come from a spectrum: easy, hard with a given success path, hard with unknown success path
- Examples will provide estimates for resources and will provide insights for future application review
- Other work going on at same time - ESRP, RG

Template seen as a benefit to ensure consistency, but also added resource commitments

Have a commitment to Commission regarding ESRP and RG - no similar commitment for template

NRC STATUS

- SECY-96-259
- Regulatory Guide
 - 7/97 - issue draft RG for public comment
 - 3/98 - issue final RG
- ESRP Update
 - 2/97 - staff review of draft
 - 6/97 - ACRS/CRGR review (if requested)
 - 8/97 - issue draft for public comment
 - 1/98 - resolve public comments
 - 8/98 - issue updated ESRP

PROPOSED NRC SCHEDULE FOR TEMPLATE REVIEW

2/5/97 - NRC receives first draft of template

2/6/97 - 3/7/97 - NRC review/comment on first draft (3 wks)

2/97 and 3/97 - technical meetings (as needed)

wk of 3/10/97 - meet with BGE on first draft of template (optional)

3/17/97 - 4/4/97 - BGE to revise template (3 wks)

4/7/97 - 5/2/97 - NRC review/comment on revised template (3 wks)
- BGE and NRC decide on examples

5/5/97 - 5/16/97 - NRC review/comment on revised template
- BGE to work on examples (2 wks)

PROPOSED NRC SCHEDULE FOR TEMPLATE REVIEW

(Continued)

5/23/97 - NRC receives draft examples

5/27/97 - 6/13/97 - NRC review/comment on draft examples
(3 wks)

wk of 6/16/97 - meet with BGE to discuss comments (optional)

6/23/97 - 7/11/97 - BGE to incorporate comments (2 wks)

7/14/97 - NRC review/comment on revised examples

7/25/97 - Complete template and example process