May 2, 2003

MEMORANDUM TO: Chairman Diaz
Commissioner Dicus
Commissioner McGaffigan
Commissioner Merrifield

FROM: William D. Travers ***/RA/***
Executive Director for Operations

SUBJECT: SEMIANNUAL STATUS REPORT ON POWER UPRATES

PURPOSE:

To provide the Commission an update on the status of power uprate activities. The staff provided its last update by a memorandum dated October 28, 2002. This memorandum summarizes the staff's accomplishments and current challenges since the last update. The staff will continue to keep the Commission informed of the status of the power uprate program by providing semiannual status reports and by other means as appropriate. This status report is generated in response to a staff requirements memorandum dated February 8, 2002.

SUMMARY:

Since the last status update of October 28, 2002, the staff has completed several program enhancements, nine reviews of plant-specific power uprate applications, and two reviews of General Electric Nuclear Energy (GENE) topical reports for power uprates. The staff also maintained an ongoing dialogue with domestic and foreign stakeholders.

Specifically, during the period covered by this memorandum, the staff: (1) issued a draft review standard for extended power uprates (EPUs), (2) completed a survey of licensees regarding future power uprate applications, (3) developed detailed models for the review of power uprate applications, (4) projected resource needs for future work on power uprates, and (5) implemented the use of periodic reports to monitor milestones and hours expended on individual power uprate reviews and to monitor and trend overall program performance. In addition, the staff kept the Advisory Committee on Reactor Safeguards (ACRS) informed of activities related to power uprates, participated in a safety information exchange meeting with the Korean Institute of Nuclear Safety, provided input to the Department of Energy on the contribution of power uprates to the nation's electrical generating capacity and the relationship of power uprates to the outlook for nuclear power, continued to provide monthly input to Congressional reports, and continued to maintain the Nuclear Regulatory Commission's (NRC's) power uprates Web site.

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The staff is preparing a summary of the results of its review of requests for additional information (RAIs) issued during the review of several EPU applications and will make this summary available to internal and external stakeholders. In addition, the staff is evaluating comments received on the EPU review standard in its continuing efforts to finalize the review standard. The staff is also continuing to monitor its performance related to reviewing power uprate applications to identify areas for further improvement.

BACKGROUND:

Power uprates can be classified in three categories. Measurement uncertainty recapture (MUR) power uprates are less than 2 percent and are achieved by implementing enhanced techniques for calculating reactor power. Stretch power uprates are typically up to 7 percent and do not generally involve major plant modifications. EPUs are greater than stretch power uprates and have been approved for increases as high as 20 percent. EPUs usually require significant modifications to major balance-of-plant equipment.

DISCUSSION:

PROGRAM ENHANCEMENTS

Development of the Review Standard for EPUs

In December 2002, the staff issued draft Review Standard (RS)-001, "Review Standard for Extended Power Uprates." Issuance of draft RS-001 met a commitment the staff made in SECY-02-0106, "Review of ACRS Recommendation for the Staff to Develop a Standard Review Plan for Power Uprate Reviews," dated June 14, 2002. The staff believes that use of the review standard will provide a greater level of standardization and will improve the effectiveness of EPU reviews. As described in SECY-02-0106, the draft review standard covers technical and procedural guidance, including (1) a clearer definition of the review scope for EPUs, (2) references to existing review criteria, and (3) two template safety evaluations (one for boiling-water reactor plants and one for pressurized-water reactor plants). The public comment period for the draft review standard closed on March 31, 2003. The staff has received comments and is currently evaluating them in its efforts to finalize the review standard. The staff will seek endorsement from the ACRS and the Committee to Review Generic Requirements (CRGR) before finalizing the review standard.

Effectiveness and Efficiency Plan for Power Uprates

In SECY-02-0115, "Effectiveness and Efficiency Plan for Power Uprates," dated June 27, 2002, the staff provided an effectiveness and efficiency plan for the power uprate program to the Commission. The plan included initiatives to (1) enhance planning and scheduling tools, (2) more effectively utilize resources, (3) enhance techniques for managing the power uprate program, (4) perform assessments of past reviews and lessons learned, (5) further standardize the power uprate application and review processes, and (6) develop a communication plan for the power uprate program. The staff completed these initiatives at the end of 2002, with exception of sharing the results of the RAI review with external stakeholders as part of the assessment of past reviews and lessons learned. The plan included consideration of areas highlighted by the ACRS for improvements during the ACRS' reviews of past power uprates. Consistent with the plan described in SECY-02-0115, the staff completed the development of

detailed models for the review of power uprate applications and has implemented the use of these models for planning power uprate reviews and monitoring progress of these reviews. The staff has also started to project resource needs for reviewing future power uprate applications. Based on the results of a January 2003 survey and the models the staff developed for reviewing power uprate applications, approximately 30 full-time equivalent staff will be used for reviewing power uprate applications over the next 2 years. These resources are budgeted and no additional resources will be required for power uprate reviews. The staff has implemented the use of periodic reports to monitor milestones and hours expended on individual power uprate reviews and to trend and monitor performance of the overall power uprate program.

Establishment of Performance Goals

Maintaining safety remains the staff's highest priority when conducting power uprate reviews and the staff intends to take the time necessary to ensure that safety is maintained. The staff has established performance goals of 6 months and 960 staff hours for completing the review of an MUR power uprate application, 9 months and 1800 staff hours for completing the review of a stretch power uprate application, and 12 months and 3900 staff hours for completing the review of an EPU application. The staff will ensure that the goal to maintain safety is not compromised in order to meet these timeliness and resource expenditure goals. The timeliness and resource expenditure goals are predicated on licensees' submittals being consistent with established guidelines; licensees' submittals not including other non-power uprate related requests; licensees' submittals not resulting in substantive RAIs; licensees responding to RAIs within established schedules; and licensees being able to implement power uprates consistent with established completion schedules. The staff will continue to closely monitor power uprate reviews and inform the Commission via semiannual updates of instances where the performance goals are exceeded.

POWER UPRATE APPLICATIONS

Completed Plant-Specific Reviews

This update covers power uprate applications completed since October 28, 2002 (Attachment 1). During this period, the staff completed reviews of nine power uprate applications, resulting in a combined increase of 368 megawatts thermal (MWt) or about 123 megawatts electric (MWe). This brings the total number of power uprate applications approved since 1977 to 92, resulting in a combined increase of approximately 12,067 MWt or 4022 MWe to the nation's electric generating capacity.

Completed Reviews of Topical Reports

The staff also completed its review of GENE's thermal power optimization and constant pressure power uprate (CPPU) topical reports. Completion of these reviews was a significant accomplishment for the staff because of the issues that arose during the reviews. The staff determined that GENE's requests to withhold certain information in these topical reports from public disclosure under 10 CFR 2.790 were unacceptable. In addition, after approving the CPPU topical report, the staff withdrew its approval because of significant issues related to how the topical report was to be applied. Subsequently, the issues with GENE's requests to withhold information from public disclosure and the issues related to the application of the CPPU topical report were resolved to the staff's satisfaction and both topical reports were

approved.

Ongoing Reviews of Power Uprate Applications

The staff is currently reviewing eight power uprate applications (seven MUR power uprates and one stretch power uprate) (Attachment 2). Power uprates currently under review could add an additional 130 MWe to the nation's electric generating capacity, if approved. Consistent with all of the staff's efforts related to power uprates, the staff has assigned the review of these power uprate applications high priority.

Expected Power Uprate Applications

In January 2003, the staff conducted a survey of all licensees to obtain information regarding their plans for submitting power uprate applications over the next 5 years (Attachment 3). Based on this survey and information obtained since the survey, 35 additional power uprate applications are expected over the next 5 years. These power uprates are expected to result in an increase of about 2270 MWe. The staff will utilize this information for future planning.

INTERACTION WITH INTERNAL AND EXTERNAL STAKEHOLDERS

Advisory Committee on Reactor Safeguards Briefings

The staff briefed the ACRS on the status of the development of the review standard in December 2002, prior to issuing the review standard for interim use and public comment. The ACRS provided informal feedback during the meeting and agreed to conduct its formal review of the review standard following the resolution of public comments.

Assessment of Past RAIs

During the development of draft RS-001, the staff completed a review of RAIs issued during the review of recently completed EPUs to ensure that the review standard addressed the issues identified as a result of the staff's reviews of those EPUs. The staff believes that making the results of this summary available to licensees could aid licensees in preparing high quality applications. Therefore, the staff is preparing a summary of this review and plans to make it available to internal and external stakeholders.

Interaction with Department of Energy on Outlook for Nuclear Power

The staff reviewed Congressional testimony prepared by the Department of Energy related to the outlook of nuclear power in the United States and provided input related to the contribution of power uprates to the nation's electrical generating capacity of nuclear power plants.

INTERNATIONAL ACTIVITIES

In March 2003, the staff participated in a safety information exchange meeting with the Korean Institute of Nuclear Safety. During this meeting, the staff presented NRC activities related to power uprates in the United States and obtained information regarding Korean plans for power uprates. The meeting resulted in agreements to exchange further information regarding the NRC's power uprate program with Korean Institute of Nuclear Safety. The staff will continue to

stay abreast of international activities related to power uprates to ensure that the NRC power uprate program benefits from experience gained by foreign regulators and plants.

CHALLENGES

The public comment period for the draft review standard for EPUs closed on March 31, 2003. The staff is currently evaluating the comments that were received. Other actions required to complete the review standard include obtaining endorsement of the ACRS and CRGR. The staff plans to complete these actions and issue a final review standard by early 2004. The staff plans to monitor the use of the review standard by internal and external stakeholders to determine its impact on the effectiveness and efficiency of EPU reviews.

The staff continues to monitor its performance related to reviews of power uprate applications to identify areas for further improvement. The nine power uprate reviews completed this period include eight MUR power uprates and one stretch power uprate. Of the eight MUR power uprate reviews, five were completed within the goals of 6 months and 960 hours. Licensees' applications for two of the eight power uprates did not meet established guidelines and the staff's review took longer than 6 months and more than 960 hours to complete. The licensee for one power uprate did not provide responses to staff RAIs in time to allow completion within 6 months. However, the staff completed its review within the goal of 960 hours and prior to the licensee's planned date of implementation. Therefore, implementation of this power uprate was not delayed. One MUR power uprate review resulted in substantive RAIs and as a result, required additional hours to complete. The review of this power uprate was still completed within the 6-month goal. The stretch power uprate was completed well within the established goals of 9 months and 1800 hours.

CONCLUSION:

The staff has completed many actions since the October 28, 2002, status update. Surveys continue to show significant interest by licensees in power uprates. The staff has completed many initiatives to improve the effectiveness and efficiency of power uprate reviews and continues to work on others. The staff will keep the Commission informed of the status of power uprate activities.

Attachments: 1. Table 1 - Power Uprates Approved Since October 28, 2002
2. Table 2 - Power Uprate Applications Currently Under Staff Review
3. Table 3 - Expected Power Uprate Applications

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DISTRIBUTION

PUBLIC	JZwolinski	JLamb
PDIII-1 Reading	LMarsh	RBouling
EDO Reading	WRuland	NRR Mailroom (WITS 200200020)
SCollins	LRaghavan	*Previously Concurred
BSheron	MShuaibi	**Concurred via telephone

OFFICE	PDIII-1/PM	PDIII-1/PM	PDIII-1/LA	TECH ED*	PDIII-1/SC**	PDIII/D**	DLPM/D*	ADPT*	NRR/D*	EDO
NAME	MShuaibi	JLamb	RBouling	PKleene	LRaghavan	WRuland *(LRaghavan for)*	JZwolinski	BSheron	SCollins *(BSherson for)*	WTravers
DATE	04/15/03	04/15/03	04/15/03	03/31/03	04/15/02	04/15/02	04/14/03	04/10/03	04/16/03	05/02/03

TABLE 1 - Power Uprates Approved Since October 28, 2002

NO.	PLANT	% UPRATE	MWt	APPLICATION DATE	APPROVAL DATE	TYPE[1]
1	H. B. Robinson	1.7	39	5/16/2002	11/5/2002	MUR
2	Peach Bottom 2	1.62	56	5/24/2002	11/22/2002	MUR
3	Peach Bottom 3	1.62	56	5/24/2002	11/22/2002	MUR
4	Indian Point 3	1.4	42.4	5/30/2002	11/26/2002	MUR
5	Point Beach 1	1.4	21.5	4/30/2002	11/29/2002[2]	MUR
6	Point Beach 2	1.4	21.5	4/30/2002	11/29/2002[2]	MUR
7	Crystal River	0.9	24	6/5/2002	12/4/2002	S
8	D. C. Cook 1	1.66	54	6/28/2002	12/20/2002[3]	MUR
9	River Bend	1.7	52	5/14/2002	1/31/2003[4]	MUR

Power uprates approved since October 28, 2002, have added an additional 368 MWt or 123 MWe to the nation's electric generating capacity.

[1] TYPE -- S = Stretch; MUR = Measurement Uncertainty Recapture

[2] The review of the Point Beach 1 and 2 MUR power uprate application took longer than 6 months and more than 960 hours to complete because the application did not meet the guidance in Regulatory Issue Summary (RIS) 2002-03, "Guidance on the Content of Measurement Uncertainty Recapture Power Uprate Applications."

[3] The review of the D. C. Cook 2 MUR power uprate application required more than 960 hours to complete because the review resulted in substantive requests for additional information. However, the review of this power uprate application was completed within the 6-month goal.

[4] The review of the River Bend MUR power uprate application took longer than 6 months to complete because the licensee did not respond to the staff's requests for additional information in time to allow completion within the 6-month goal. However, the staff completed the review of this application within the goal of 960 hours and prior to the licensee's planned date of implementation.

ATTACHMENT 1

TABLE 2 - Power Uprate Applications Currently Under Staff Review

NO.	PLANT	% UPRATE	MWt	SUBMITTAL DATE	PROJECTED COMPLETION DATE	TYPE[1]
1	Davis-Besse	1.63	45	10/12/2001	TBD[2]	MUR
2	Palo Verde 2	2.9	114	12/21/2001	June 2003[3]	S
3	Pilgrim	1.5	30	7/5/2002	May 2003[4]	MUR
4	D.C. Cook 2	1.66	54	11/15/2002	May 2003	MUR
5	Indian Point 2	1.4	42.4	12/12/2002	June 2003	MUR
6	Hatch 1	1.5	41	12/19/2002	June 2003	MUR
7	Hatch 2	1.5	41	12/19/2002	June 2003	MUR
8	Kewaunee	1.4	23	1/13/2003	July 2003	MUR

Power uprates currently under review could add an additional 390.4 MWt or 130 MWe to the nation's electric generating capacity if approved.

[1] TYPE -- S = Stretch; MUR = Measurement Uncertainty Recapture

[2] The review of the Davis Besse MUR power uprate is currently on hold due to the licensee and the staff dealing with other higher priority issues for Davis Besse.

[3] The projected completion date of the review of the Palo Verde 2 stretch power uprate application is beyond the established goal of 9 months for stretch power uprates. The licensee has stated that its power uprate is not needed until the Fall of 2003; therefore, the licensee did not respond to requests for additional information in time for the staff to complete its review in 9 months. In addition, late in the review, the staff identified other areas where additional information was needed. The staff's projected completion date for the review of this power uprate application would not delay implementation.

[4] The projected completion date of the review of the Pilgrim MUR power uprate is beyond the established goal of 6 months for MUR power uprates. In its application for this power uprate, the licensee included changes to analysis methodologies used in several technical areas, including the use of a nonapproved code analysis methodology. The licensee also did not address all issues identified in Regulatory Issue Summary (RIS) 2002-03, "Guidance on the Content of Measurement Uncertainty Recapture Power Uprate Applications." As a result, the review of this application required additional review time. Staff personnel changes during later part of the review was also a contributing factor.

TABLE 3 - Expected Power Uprate Applications

Fiscal Year	Total Power Uprates Expected	Measurement Uncertainty Recapture Power Uprates	Stretch Power Uprates	Extended Power Uprates	Megawatts Thermal	Megawatts Electric
2003	10	2	1	7	2801	934
2004	10	3	3	4	1962	654
2005	5	2	0	3	481	160
2006	6	6	0	0	279	93
2007	4	0	0	4	1286	429
TOTAL	35	13	4	18	6809	2270