May 11, 2001

MEMORANDUM TO: William D. Travers
Executive Director for Operations

FROM: Samuel J. Collins, Director ***/RA/***
Office of Nuclear Reactor Regulation

Ashok C. Thadani, Director ***/RA/***
Office of Nuclear Regulatory Research

SUBJECT: STEAM GENERATOR ACTION PLAN REVISION TO ADDRESS DIFFERING PROFESSIONAL OPINION ON STEAM GENERATOR TUBE INTEGRITY (WITS ITEM 200100026)

By memorandum dated February 1, 2001 (Reference 1), an Ad Hoc Subcommittee of the Advisory Committee for Reactor Safeguards (ACRS) issued its report to you on matters pertaining to a differing professional opinion (DPO) on steam generator (SG) tube integrity issues. The ACRS report, NUREG-1740, "Voltage-Based Alternative Repair Criteria," included conclusions and recommendations regarding the issues associated with the DPO.

In a memorandum dated March 5, 2001 (Reference 2), you requested that the Office of Nuclear Reactor Regulation (NRR) and the Office of Nuclear Regulatory Research (RES) develop a joint action plan to address the conclusions and recommendations contained in the ACRS report. NRR and RES have reviewed the ACRS report and have jointly developed an action plan with specific milestones that address the concerns detailed by the ACRS Ad Hoc Subcommittee. Schedules and responsibilities for each of the milestones have also been agreed upon by NRR and RES. In order to enhance staff efficiency and effectiveness, the staff decided to incorporate the joint action plan into the existing SG Action Plan which was issued by memorandum from the Associate Directors of NRR to the Director of NRR dated November 16, 2000, and subsequently revised by memorandum dated March 23, 2001 (References 3 and 4). The new SG Action Plan milestones, schedules, and responsibilities that were developed as part of the joint NRR/RES effort are shown in Attachment 1. Consistent with our current practice of providing updates to the SG Action Plan, the information in Attachment 1 will be added to the next scheduled monthly update of the Commission Tasking Memorandum, the next scheduled quarterly update of the NRR Director's Quarterly Status Report, and the next scheduled update of the RES Operating Plan.

The milestones shown in Attachment 1 have been reviewed by the staff to determine issues that represent "new work" versus work that is currently budgeted. Resource estimate information for the new work is provided in Attachment 2. All of the RES work, which constitutes a significant portion of the work in Attachment 1, was not identified as new work because the work will be addressed by research that is already planned and budgeted for FY 2001 and beyond. A considerable portion of the RES work was planned either in response

to previous identified NRR User Needs, Generic Safety Issue (GSI) 163, “Multiple Steam Generator Tube Leakage,” or GSI 188, “Steam Generator Tube Leaks/Ruptures Concurrent with Containment Bypass.” In addition, portions of the RES work was undertaken on an anticipatory basis by RES. The initiating source for the previously planned work is indicated by notes in the “Milestone” column of Attachment 1. The items in Attachment 1 that were identified as new work and that require additional resources average approximately 0.9 FTE/year over the next six years in addition to approximately $40K of contract support in FY 2003. NRR staff will prioritize this newly identified work through the Planning, Budget, and Performance Management process.

As discussed in the November 16, 2000, memorandum that issued the SG Action Plan (Reference 3), to ensure that adequate documentation is maintained and to promote public confidence, the final product for each major milestone will be a memorandum provided by the lead NRR division to the Associate Directors in NRR documenting the disposition of the milestone. This guidance will continue to apply for those items for which NRR has lead responsibility. For those major milestones for which RES has the lead responsibility, documentation will be by a memorandum provided by the lead RES division to the Deputy Director of RES. These milestone closeout memoranda and other pertinent action plan-related information (e.g., correspondence, public meeting notices and meeting summaries) will be added to the existing SG Action Plan external web page consistent with our current practice of keeping the public informed of action plan status and activities. The web page is located at http://www.nrc.gov/NRC/REACTOR/SGAP/index.html.

As can be seen by the schedules in Attachment 1, completion of the SG Action Plan milestones relative to previously identified RES work and to address new work as a result of the ACRS recommendations will take a considerable amount of time. However, with respect to existing alternate repair criteria (ARC), the ACRS Ad Hoc Subcommittee found that “alternative repair criteria are needed and that the general features of the criteria and the condition monitoring program that the staff has endorsed provide such alternative repair criteria that can adequately protect public health and safety.” The staff therefore plans to continue to allow implementation of the 1- and 2-volt ARC, as endorsed by the staff in Generic Letter (GL) 95-05, “Voltage-Based Repair Criteria for Westinghouse Steam Generator Tubes Affected by Outside Diameter Stress Corrosion Cracking,” while the specific ACRS recommendations related to GL 95-05 are pursued. However, the ACRS clearly challenged the staff’s basis for accepting ARC that go beyond the confines of GL 95-05. Therefore, while we pursue these issues to resolution per the attached action plan, we will evaluate any newly proposed ARC with due consideration of the issues raised in the ACRS report to ensure that unacceptable risks are not introduced. Consistent with guidance in Regulatory Issue Summary 2001-02, “Guidance on Risk-Informed Decisionmaking in License Amendment Reviews,” the staff will request that industry provide the data and analyses necessary to show that risk would remain at acceptable levels under any new ARC proposal. Until many of the milestones identified in Attachment 1 are completed, the review of new ARCs may pose significant challenges.

Many of the ACRS recommendations were not specific to ARC but instead were related to the generic evaluation of the risk profile of nuclear power plants, regardless of the SG tube repair criteria that have been adopted. In fact, these issues were previously identified by the staff in GSIs 163 and 188. The ACRS report recognized the relationship between several of the SG

DPO issues and this ongoing work thus reemphasizing the need for continued staff effort to bring those GSIs to resolution in a technically-defensible way and in a more timely manner. Because these issues are very complex, they will not be resolved in the short term. In the meantime, our operational experience and technical analyses indicate that the plants are safe to continue operation. This judgement includes the consideration that all plants are designed and operated with defense-in-depth. Licensees follow tube inspection and maintenance procedures intended to ensure that safety margins against tube burst and leakage are maintained. In addition, licensees continually monitor primary-to-secondary leakage to ensure that plants experiencing significant leakage are shut down. We acknowledge that these inspections and monitoring programs cannot guarantee that a tube will not fail, and for this reason, plants are designed with safety systems and procedures to bring the reactors to a safe shutdown condition should a SG tube failure occur.

NRR and RES staff will continue to work together and interact with other stakeholders as needed (e.g., the Regions, Nuclear Energy Institute, Electric Power Research Institute, the public) on the issues addressed in the SG Action Plan in order to: maintain safety from a SG tube integrity standpoint; increase public confidence in the SG tube integrity area; and enhance the effectiveness and efficiency of NRC resources for work on these important issues. Meetings between NRR and RES will be held as needed to coordinate completion of the action plan milestones. Overall management of the plan will continue to be the responsibility of NRR's Division of Licensing Project Management (DLPM). The NRR DLPM Lead Project Manager, Mr. Rick Ennis, will interface with the RES Lead Contact, Dr. Joseph Muscara, to coordinate the staff efforts on the action plan milestones.

If you need any additional information or would like to be briefed on this matter, please contact Mr. Rick Ennis at (301) 415-1420.

References:

1. Memorandum from D. Powers to W. Travers, dated February 1, 2001, "Differing Professional Opinion on Steam Generator Tube Integrity," ADAMS Accession No. ML010780125.

2. Memorandum from W. Travers to S. Collins and A. Thadani, dated March 5, 2001, "Differing Professional Opinion on Steam Generator Tube Integrity," ADAMS Accession No. ML010670217.

3. Memorandum from B. Sheron and J. Johnson, thru R. Zimmerman to S. Collins, dated November 16, 2000, "Steam Generator Action Plan," ADAMS Accession No. ML003770259.

References (continued):

4. Memorandum from J. Zwolinski, J. Strosnider, B. Boger, and G. Holahan to B. Sheron and R. Borchardt, dated March 23, 2001, “Steam Generator Action Plan Revision and Completion of Item Nos. 1.1, 1.2, 1.3, 1.4, 1.7, 1.8, 1.15, 2.1 and 2.2,” ADAMS Accession No. ML010820457.

Attachments: 1. SG Action Plan Milestones Associated With the SG DPO
2. Resource Estimates

References (continued): May 11, 2001

4. Memorandum from J. Zwolinski, J. Strosnider, B. Boger, and G. Holahan to B. Sheron and R. Borchardt, dated March 23, 2001, "Steam Generator Action Plan Revision and Completion of Item Nos. 1.1, 1.2, 1.3, 1.4, 1.7, 1.8, 1.15, 2.1 and 2.2," ADAMS Accession No. ML010820457.

Attachments: 1. SG Action Plan Milestones Associated With the SG DPO
2. Resource Estimates

DISTRIBUTION

PUBLIC	NRR	RES
JCraig, EDO	JClifford	AThadani/RZimmerman
WKane, EDO	REnnis	FEltawila
CPaperiello, EDO	PMilano	TKing
JShea, EDO	MFields	JFlack
HBell, OIG	GHolahan/SBlack	JRosenthal
JLarkins, ACRS	MReinhart	CTinkler
DPowers, ACRS	SLong	JUhle
	JHayes	RLee
NRR	JWermiel	MMayfield
SCollins/Johnson	WJensen	NChokski
TJCarter	WLyon	JMuscara
BSheron	JStrosnider/TCollins	EHackett
RBorchardt	WBateman	EThornsbury
BBoger/WDean	TSullivan	MCunningham
DMatthews/FGillespie	SCoffin	CBoyd
JZwolinski/CCarpenter	EMurphy	JHopenfeld
EAdensam		

Accession Number: ML011300073 *See previous concurrence

OFFICE	NRR/DLPM	NRR/DLPM	NRR/DLPM/D	NRR/DSSA/D
NAME	REnnis	PMilano*	JZwolinski*	SBlack for GHolahan*
DATE	5/10/01	5/9/01	5/10/01	5/9/01

OFFICE	NRR/DE/D	NRR/ADPT	RES/DET/MEB	RES/DET/D
NAME	JStrosnider*	BSheron*	JMuscara*	MMayfield*
DATE	5/9/01	5/10/01	5/7/01	5/7/01

OFFICE	RES/DSAR/D	RES/DRAA/D	RES/D	NRR/D
NAME	FEltawila*	TKing*	AThadani	BSheron for SCollins
DATE	5/7/01	5/3/01	5/11/01	5/11/01

OFFICIAL RECORD COPY

ATTACHMENT 1
SG ACTION PLAN MILESTONES ASSOCIATED WITH THE SG DPO

Item No.	Milestone	Date (T=Target) (C=Complete)	Lead	Support
3.1	In order to address ACRS comments on current risk assessments, develop a better understanding of the potential for damage progression of multiple steam generator (SG) tubes due to depressurization of the SGs (e.g., during a main steam line break (MSLB) or other type of secondary side design basis accident). (Pgs. 46, 8-12) (See Notes 4, 5, and 6) Specific tasks include:			
	a) Perform thermal-hydraulic (T-H) calculations and sensitivity studies using the 3-D hydraulic component of TRAC-M to assess the loads on the tube support plate and SG tubes during main steam line break (MSLB). Perform sensitivity studies on code and model parameters including numerics. Develop conservative estimate of loads and evaluate against similar analyses.	12/31/02 (T)	RES J. Uhle	
	b) Perform T-H assessment of flow-induced vibrations during MSLB. Using the T-H conditions calculated during the transient, generate a conservative estimate of flow-induced vibration displacement and frequency assuming steady state behavior.	12/31/02 (T)	RES J. Uhle	
	c) Perform additional sensitivity studies as needed.	06/30/03 (T)	RES J. Uhle	
	d) Obtain information from existing analyses related to loads and displacements (axial, bending, cyclic) experienced by SG structures under MSLB conditions.	12/31/02 (T)	RES J. Muscara	
	e) Using information from tasks 3.1a, 3.1b, and 3.2d, estimate upper bound loads and displacements.	12/31/02 (T)	RES J. Muscara	DE E. Murphy

ATTACHMENT 1
SG ACTION PLAN MILESTONES ASSOCIATED WITH THE SG DPO

Item No.	Milestone	Date (T=Target) (C=Complete)	Lead	Support
3.1 (continued)	f) Estimate crack growth, if any, for a range of crack types and sizes using bounding loads from task 3.1e in addition to the pressure stresses. Include the effects of TSP movement in these evaluations and any effects from cyclic loads.	12/31/02 (T)	RES J. Muscara	DE E. Murphy
	g) Estimate the margins to crack propagation for a range of crack sizes for MSLB types loads and displacements in addition to the pressure stress.	12/31/02 (T)	RES J. Muscara	DE E. Murphy
	h) Based on the margins calculated in task 3.1g over and above the bounding loads, decide if more refined TH analyses need to be conducted to obtain forces and displacements of structures under MSLB conditions.	12/31/02 (T)	RES J. Muscara	DE E. Murphy
	i) Conduct tests of degraded tubes under pressure and with axial and bending loads to validate the analytical results from above tasks.	06/30/03 (T)	RES J. Muscara	DE E. Murphy
	j) Conduct analyses similar to above with refined load estimates if necessary.	06/30/04 (T)	RES J. Muscara	DE E. Murphy
	k) Use information developed in tasks 3.1a through 3.1j to evaluate the conditional probabilities of multiple tube failures for appropriate scenarios in risk assessments for SG tube alternate repair criteria (ARC).	02/28/05 (T)	DSSA S. Long	DE E. Murphy RES J. Muscara E.Thornsbury

ATTACHMENT 1
SG ACTION PLAN MILESTONES ASSOCIATED WITH THE SG DPO

Item No.	Milestone	Date (T=Target) (C=Complete)	Lead	Support
3.2	Confirm that damage progression via jet cutting of adjacent tubes is of low enough probability that it can be neglected in accident analyses. (Pgs. 10-11) (See Notes 3 and 5) Specific tasks include: a) Complete tests of jet impingement under MSLB conditions. b) Conduct long duration tests of jet impingement under severe accident conditions. c) Document results from tasks 3.2a and 3.2b.	 12/31/01 (T) 12/31/01 (T) 12/31/01 (T)	 RES J. Muscara RES J. Muscara RES J. Muscara	 DE E. Murphy DE E. Murphy DE E. Murphy
3.3	When available, use data from the ARTIST program (planned in Switzerland) to develop a better model of the natural mitigation of the radionuclide release that could occur in the secondary side of the SGs. (Pgs. 12-13) (See Notes 3 and 5)	09/30/04 (T) See Note 2	RES R. Lee	
3.4	In order to address ACRS criticism of current risk assessments, develop a better understanding of RCS conditions and the corresponding component behavior (including tubes) under severe accident conditions in which the RCS remains pressurized. (Pgs. 46-47, 12-15) (See Notes 3 and 5) Specific tasks include: a) Perform system level analyses to assess the impact of plant sequence variations (e.g., pump seal leakage and SG tube leakage). b) Re-evaluate existing system level code assumptions and simplifications.	 09/31/01 (T) 12/31/01 (T)	 RES C. Tinkler RES C. Tinkler	 SRXB W. Jensen SRXB W. Jensen

ATTACHMENT 1
SG ACTION PLAN MILESTONES ASSOCIATED WITH THE SG DPO

Item No.	Milestone	Date (T=Target) (C=Complete)	Lead	Support
3.4 (continued)	c) Examine 1/7 scale data to assess tube to tube temperature variations and estimate variations for plant scale.	08/31/02 (T)	RES C. Tinkler	SRXB W. Jensen
	d) Perform more rigorous uncertainty analyses with system level code to address inlet plenum mixing by developing distribution functions for mixing parameters based on available data. Peer review.	12/31/02 (T)	RES C. Tinkler	SRXB W. Jensen
	e) Examine SG tube severe accident T-H conditions using computational fluid dynamics (CFD) methods. This includes the following:			
	e.1) Benchmark CFD methods against 1/7 scale test data.	08/31/01 (T)	RES C. Boyd	SRXB W. Jensen
	e.2) Perform full scale plant calculations (hot leg and SG) for a 4 loop Westinghouse design. Evaluate scale effects.	12/31/01 (T)	RES C. Boyd	SRXB W. Jensen
	e.3) Perform plant analysis to address the effects on inlet plenum mixing resulting from tube leakage and hot leg orientation (CE design impact).	07/31/02 (T)	RES C. Boyd	SRXB W. Jensen
	f) Examine the uncertainty in the T-H conditions associated with core melt progression.	01/31/03 (T)	RES C. Tinkler	SRXB W. Jensen
	g) Perform experiments to develop data on inlet plenum mixing impacts due to SG tube leakage and hot leg/ inlet plenum configuration.	03/31/03 (T)	RES C. Tinkler	SRXB W. Jensen
	h) Perform a systematic examination of the alternate vulnerable locations in the RCS that are subject to failure due to severe accident conditions. This includes the following:			

ATTACHMENT 1
SG ACTION PLAN MILESTONES ASSOCIATED WITH THE SG DPO

Item No.	Milestone	Date (T=Target) (C=Complete)	Lead	Support
3.4 (continued)	h.1) Evaluate the creep failure of primary system passive components such as pressurizer surge line and the hot leg taking into account the material properties of the base metal, welds, and heat affected zones in the presence of residual and applied stresses, in addition to the presure stress, and the presence of flaws.	11/30/03 (T)	RES J. Muscara	DE E. Murphy
	h.2) Evaluate the failure of active components such as PORVs, safety valves, and bolted seals based on operability and "weakest link" considerations for these components.	11/30/03 (T)	RES J. Muscara	DE E. Murphy
	h.3) Conduct large scale tests if needed.	11/30/05 (T)	RES J. Muscara	DE E. Murphy
	i) Develop data and analyses for predicting leak rates for degraded tubes in restricted areas under design basis and severe accident conditions.	12/31/03 (T)	RES J. Muscara	DSSA S. Long DE E. Murphy
	j) Put the information developed in task 3.4i into a probability distribution for the rate of tube leakage during severe accident sequences, based on the measured and regulated parameters for ARCs applied to flaws in restricted places (e.g., drilled-hole TSPs and the unexpanded sections of tubes in tube sheets).	06/30/04 (T)	DSSA S. Long	DE E. Murphy RES J. Muscara
	k) Integrate information provided by tasks 3.4a through 3.4j and 3.5 to address ACRS criticisms of risk assessments for ARCs that go beyond the scope and criteria of GL 95-05 (e.g., ARCs that credit "indications restricted against burst") as well as dealing with other SG tube integrity and licensing issues (e.g., relaxation of SG tube inspection requirements).	02/28/05 (T)	DSSA S. Long	DE E. Murphy RES J. Muscara C. Tinkler E.Thornsbury

ATTACHMENT 1
SG ACTION PLAN MILESTONES ASSOCIATED WITH THE SG DPO

Item No.	Milestone	Date (T=Target) (C=Complete)	Lead	Support
3.5	Develop improved methods for assessing the risk associated with SG tubes under accident conditions. (Pgs. 47, 16-20) (See Note 5) Specific tasks include:			
	a) Development of an integrated framework for assessing the risk for the high-temperature/high-pressure accident scenarios of interest.	03/29/02 (T)	RES E. Thornbury	DSSA S. Long
	b) Development of improved methods for identifying accident scenarios (including MSLB) that lead to challenges on the reactor coolant pressure boundary.	06/28/03 (T)	RES E. Thornbury	DSSA S. Long
	c) Development of improved PRA models of the scenarios identified above, including the impact of operator actions and appropriate treatment of uncertainty.	06/28/03 (T)	RES E. Thornbury	DSSA S. Long
3.6	To address an ACRS report conclusion that improvements can be made over the current use of a constant probability of detection (POD) for flaws in SG tubes, RES has recently completed an eddy current round robin inspection exercise on a SG mock-up as part of NRC's research to independently evaluate and quantify the inservice inspection reliability for SG tubes. This research has produced results that relate the POD to crack size, voltage, and other flaw severity parameters for stress corrosion cracks at different tube locations using industry qualified teams and procedures. Complete analysis of research results and prepare topical report to document the results. (Pgs. 47, 33)	12/31/01 (T)	RES J. Muscara	DE E. Murphy

ATTACHMENT 1
SG ACTION PLAN MILESTONES ASSOCIATED WITH THE SG DPO

Item No.	Milestone	Date (T=Target) (C=Complete)	Lead	Support
3.7	Assess the need for better leakage correlations as a function of voltage for 7/8" SG tubes. (Pgs. 48, 28-29) (See Note 5)	04/30/03 (T)	DE E. Murphy	RES J. Muscara
3.8	Develop a program to monitor the prediction of flaw growth for systematic deviations from expectations. (Pg. 48) (See Note 5)	01/31/02 (T)	DE S. Coffin	
3.9	Develop a more technically defensible position on the treatment of radionuclide release to be used in the safety analyses of design basis events. (Pgs. 48, 38-44) (See Note 5)		DSSA J. Hayes	
	Specific tasks include:			
	a) Assess Adams and Atwood and Adams and Sattison spiking data with respect to the ACRS comments.	10/31/01 (T)		
	b) Based upon the assessment performed in task 3.9a, develop a response to the ACRS comments.	12/31/01 (T)		
	c) Publish in the Federal Register for public comment, the response to ACRS' comments.	2/15/02 (T)		
	d) Complete review of public comments.	6/30/02 (T)		
	e) Based upon task 3.9d, determine if additional work needs to be performed.	8/15/02 (T)		

ATTACHMENT 1
SG ACTION PLAN MILESTONES ASSOCIATED WITH THE SG DPO

Item No.	Milestone	Date (T=Target) (C=Complete)	Lead	Support
3.10	To address concerns in the ACRS report regarding our current level of understanding of stress corrosion cracking, the limitations of current laboratory data, the difficulties with using the current laboratory data for predicting field experience (crack initiation, crack growth rates), and the notion that crack growth should not be linear with time while voltage growth is, the following tasks will be performed: (Pgs. 20-29) (See last sentence in Note 3) Specific tasks include: a) Conduct tests to evaluate crack initiation, evolution, and growth. Tests to be conducted under prototypic field conditions with respect to stresses, temperatures and environments. Some tests will be conducted using tubular specimens. b) Using the extensive experience on stress corrosion cracking in operating SGs, and results from laboratory testing under prototypic conditions, develop models for predicting the cracking behavior of SG tubing in the operating environment. c) Based on the knowledge accumulated on stress corrosion cracking behavior and the properties of eddy current testing, attempt to explain the observed relationship between changes in eddy current signal voltage response and crack growth.	12/31/05 (T) 12/31/06 (T) 12/31/05 (T)	RES J. Muscara RES J. Muscara RES J. Muscara	DE E. Murphy DE E. Murphy DE E. Murphy

ATTACHMENT 1
SG ACTION PLAN MILESTONES ASSOCIATED WITH THE SG DPO

Item No.	Milestone	Date (T=Target) (C=Complete)	Lead	Support
3.11	In order to resolve GSI 163, it is necessary to complete the work associated with tasks 3.1 through 3.5 and 3.7 through 3.9. Upon completion of those tasks, develop detailed milestones associated with preparing a GSI resolution document and obtaining the necessary approvals for closing the GSI, including ACRS acceptance of the resolution.	12/31/06	DLPM R. Ennis	DE E. Murphy DSSA S. Long

ATTACHMENT 1
SG ACTION PLAN MILESTONES ASSOCIATED WITH THE SG DPO

Notes:

1. For SG Action Plan milestones associated with the SG DPO (i.e., Item Nos. 3.1 - 3.11), the page numbers referenced in the milestone description indicate the source of the milestone as described in ACRS Report NUREG-1740, "Voltage-Based Alternative Repair Criteria." The ACRS report was included as an enclosure to a memorandum from D. Powers to W. Travers dated February 1, 2001 (ADAMS Accession No. ML010780125).

2. With respect to milestone Item No. 3.3, the ARTIST program plan is being finalized for implementation. A firm testing schedule is not currently available but testing is expected to commence in 2002.

3. The work described in this milestone is related, in part, to previously planned work associated with an NRR User Need request dated February 8, 2000 (ADAMS Accession No. ML003682135), and the associated RES response to the request dated September 7, 2000 (ADAMS Accession No. ML003714399). In addition, portions of this work were undertaken on an anticipatory basis by RES.

4. The work described in this milestone is related, in part, to previously planned work associated with GSI 188, "Steam Generator Tube Leaks/Ruptures Concurrent with Containment Bypass."

5. The work described in this milestone is related, in part, to previously planned work associated with GSI 163, "Multiple Steam Generator Tube Leakage."

6. The thermal-hydraulic analyses (items 3.1a through 3.1c) will provide input into the tube integrity analyses (items 3.1d through 3.1j) on an on-going basis. The end dates for these two areas coincide because of the close integration between these two RES efforts. Also, the end dates reflect the target date for the final report documenting the RES findings.

ATTACHMENT 2
RESOURCE ESTIMATES

1.0 BACKGROUND

This attachment provides resource estimate information as developed by NRR and RES staff for the SG Action Plan milestones associated with the SG DPO. The RES work was already planned and budgeted as discussed in the cover memorandum and Section 2.1 below. For the new NRR work, this information will be reviewed by NRR management as part of the planning, budgeting, and performance management (PBPM) process. The resource estimate information was developed as follows:

1) The ACRS Ad Hoc Subcommittee report (NUREG-1740) was reviewed by the NRR and RES staff. Based on this review, milestones were developed to address the ACRS conclusions and recommendations as well as actions required to address other ACRS concerns within the body of the report.

2) The NRR and RES staff evaluated the work associated with each milestone to determine if it represented "new work" or work that was currently budgeted.

3) For new work, the staff developed resource estimates as shown in Section 2.0 of this attachment.

2.0 RESOURCE ESTIMATES

2.1 Resource Estimates for RES

The RES staff has evaluated the work requirements associated with the milestones in Attachment 1 and determined that this work will be addressed by research that is already planned and budgeted for FY 2001 and beyond. Some of this work was planned as anticipatory activities to improve understanding of the conditions seen by tubes and their subsequent behavior while the balance of work was planned in response to the NRR user need letter of February 8, 2000, GSI 163, "Multiple Steam Generator Tube Leakage," or GSI 188, "Steam Generator Tube Leaks/Ruptures Concurrent with Containment Bypass."

2.2 Resource Estimates for NRR

The NRR staff determined that there is new work associated with the milestones in Attachment 1. Estimates were developed by the affected branches in each Division of the number of full-time equivalents (FTEs) required to perform the new work based on the estimated hours for the respective fiscal year divided by 1460 hours per year. The resource estimates for each Division for FY 2001 through FY 2006 are as follows:

Division	FY01	FY02	FY03	FY04	FY05	FY06
DE	0.1	0.3	0.4	0.1	0.2	0.1
DSSA	0.5	0.8	0.7	1.8	0.2	0.0

2.2.1 Impact on NRR/DE

ATTACHMENT 2
RESOURCE ESTIMATES

Based on the resource estimates as shown above and the priorities associated with the “new work” and with currently budgeted work, NRR/DE staff concluded that additional staffing will be needed to perform the work associated with the milestones shown in Attachment 1. Some technical assistance will also be required in FY03 on the order of $40K to support Milestone Item No. 3.7. The schedule and resource estimates do not displace existing work. Any acceleration of the proposed schedule would require delaying the continued review and implementation of the NEI 97-06 SG initiative, which would not be in the interest of NRC performance goals.

Milestone Item No. 3.8 involves the development of a new program. The resources for development of the program are included in the resource estimates shown above. However, the resources associated with the ongoing program support (i.e., after program development) will be considered in a future add/shed/defer budgeting process. In addition, other NRR/DE staffing needs have recently been identified as a result of additional work resulting from resolution of SG Action Plan Item Nos. 1.10, 1.11a, and 1.12. This additional work will also be considered in a future add/shed/defer budgeting process.

2.2.2 Impact on NRR/DSSA

Based on the number of FTE estimated above it has been concluded that, for NRR/DSSA, the "new work" identified in Attachment 1 can be accommodated through the add/shed/defer budgeting process.