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Activity	Accomplishment
Reactor Oversight Process (ROP)	Based on its assessment of stakeholder feedback and the results and lessons learned from annual self-assessments, the staff has developed a much greater level of confidence that the ROP has met the Commission's direction to develop an oversight process that is more objective, risk-informed, understandable, and predictable. The most recent self-assessment concluded that the risk-informed ROP continues to focus resources on areas of the most safety significance. The staff continues improvement initiatives on performance indicators and the significance determination process (SDP). SDP timeliness for inspection findings determined to be potentially greater than Green continues to challenge the staff. For these cases, the 90-day SDP timeliness goal is being met about 75% of the time. The staff continues to work initiatives on the SDP Task Action Improvement Plan to address the timeliness issue and other improvements to the SDP. Additionally, important changes are being incorporated into the containment, shutdown, and fire protection SDPs to provide a better methodology to assess findings. A Mitigating Systems Performance Index (MSPI) was developed by the NRC staff and piloted by the industry.
ROP Support - Mitigating Systems Performance Index	As part of the ROP Support program, RES developed improved performance indicators (PIs) for the Reactor Safety cornerstones by developing and piloting the MSPI with the PIs for use in a risk-informed regulatory framework. As part of this ROP support, a draft report presenting the results of independent verification of MSPI for the ROP pilot plants was provided to NRR in February 2004.
ROP Support - Significance Determination Process	As part of the ROP Support program, RES provides risk-informed improvements to the SDP by verifying SDP inputs, results, and findings and comparing Accident Sequence Precursor (ASP) results to SDP findings. As part of this activity, a final report on SDP/ASP differences was completed in September 2003 and issued to NRR.
Special Treatment Requirements	The Commission issued an SRM on March 28, 2003, directing the staff to publish a proposed rule for comment. The proposed rule, 10 CFR 50.69, was subsequently published with a 75-day comment period. As part of the proposed rule, a draft regulatory guide (DG-1121), providing staff comments on and clarifications of the industry-proposed implementation guidance contained in draft Revision C of NEI 00-04, was published in June 2003 with a 60-day comment period. The staff received 26 sets of comments containing hundreds of individual comments. Additionally, in November 2003, the staff received draft Revision D of NEI 00-04. The staff is currently reviewing this latest draft of the industry guidance document with the objective of endorsing this guidance in a regulatory guide with a minimum of exceptions.
10 CFR 50.44	The staff has completed a detailed technical review that provides the basis for proposed risk-informed changes to the rule. The improved realism supports the agency's decision to eliminate requirements for equipment that is not important to safety. On August 2, 2002, the proposed rule was published in the <i>Federal Register</i> (67 FR 50374.) Many letters were received during the public comment period that closed on October 16, 2002. The final rule to change 10 CFR 50.44 was sent to the Commission for approval on July 24, 2003. In an August 28, 2003, SRM for SECY-03-0090, the Commission approved the final rule. The final rule was published in the <i>Federal Register</i> on September 16, 2003 (68 FR 54123).
PRA Quality	The staff has been working closely with ASME, ANS, NFPA, and NEI to develop standards for PRA quality and PRA review. Since the October 2003 version of the RIRIP, the staff issued Regulatory Guide 1.200 to provide guidance to licensees on the quality needed for PRA information used in risk-informed applications. This guide also addresses the staff's positions on the ASME PRA standard (including Appendix A) and the industry's guidance on PRA peer reviews. The guide has been issued for trial use.

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10 CFR 50.46	The staff completed their preliminary estimates of LOCA frequencies and has forwarded them to the Commission for their consideration. It is anticipated that, once finalized, these frequencies will help form the basis for a new risk-informed maximum break size. In a joint NRR-RES SECY paper (SECY-04-0037), the staff requested Commission guidance on technical aspects of the proposed rulemaking along with approval for a revised schedule. RES staff also developed a draft integrated action plan to address technical issues raised in the responses to the rulemaking initiative. The action plan elements are being evaluated at this time.
Risk Management Technical Specifications	The staff continues to work on the risk-informed technical specification initiatives. The staff performed an acceptance review and issued RAI questions on the industry Risk Management Guide, TSTF-424 (CE pilot) and the STP pilot for Initiative 4, Flexible Allowed Outage Times.
RG 1.174/SRP Chapter 19	Revisions 1 to RG 1.174 and SRP Chapter 19 were issued in November 2002. The Commission has agreed to eliminate the annual reporting requirements for these documents so that from now on necessary revisions will be discussed as part of the broader risk-informed initiative under consideration. The same also applies to the other risk-informed regulatory guides, 1.175, 1.176, 1.177, and 1.178.
Effectiveness of USI A-45 Resolution	The staff completed its effectiveness evaluation of the resolution of Unresolved Safety Issue (USI) A-45, "Decay Heat Removal Reliability," and issued the supporting document, NUREG/CR-6832, "Regulatory Effectiveness of Unresolved Safety Issue (USI) A-45." The effectiveness study found that all plants generally met USI A-45 resolution expectations without the imposition of generic hardware fixes to improve decay heat removal (DHR) reliability. The overall conclusion of the study indicated that the approach to resolve USI A-45 was reasonable and effective, and in most cases, the associated risk from DHR was found to be consistent with the NRC safety goals and defense-in-depth principles.
Pressurized Thermal Shock	In December 2002, the staff issued a draft NUREG report, "Technical Basis for Revision of the Pressurized Thermal Shock (PTS) Screening Criteria in the PTS Rule (10 CFR 50.61)." This report documents the results of a multiyear study reevaluating the technical basis of 10 CFR 50.61. The draft report is currently being subjected to a peer review, and will be modified to reflect the comments. The final results will be published as a NUREG.
Feasibility study for NMSS HRA Needs	RES completed a feasibility/scoping study to identify human reliability analysis (HRA) development needs for the wide range of situations encountered and activities performed by NMSS licensees. Two reports were completed and delivered by December 2003: (1) the final report on the feasibility study results for byproduct materials applications and (2) the draft report on the feasibility study results for waste applications (which will change only trivially in the final report). Both feasibility study reports are currently being reviewed by NMSS staff. Review inputs will be used by NMSS management to prioritize overall NMSS needs. Based on these NMSS priorities, NMSS and RES staff will work together to determine the scope of Phase 2.
Probabilistic Risk Assessment of a Dry Cask Storage System	The staff completed a revised draft pilot PRA with integrated risk results (February 2003). A peer review of the report has been completed and RES is updating it. Additional studies will be performed as appropriate to help risk-inform NRC's inspection programs and other regulatory activities for dry cask storage.

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NMSS Risk Training Program	NMSS has instituted training courses to advance the use of risk assessment and risk management in its day-to-day operations. TTC regularly offers overview training courses on risk assessment. A quantitative frequency analyses course is offered through TTC. A course on byproduct materials system risk analysis and evaluation has been developed and six instructor-led sessions were conducted (two in HQ and one in each region). A course on human reliability assessment for materials and waste regulatory applications has been developed. A pilot was offered in the second quarter of FY 2003. Staff feedback is being evaluated to improve the course before it is officially offered to the NMSS staff in FY 2004.
Geological and Seismological Characteristics for the Siting and Design of Dry Cask ISFSIs	The final rule amending the licensing requirements in 10 CFR Part 72 for dry storage of spent nuclear fuel, high-level radioactive waste, and power reactor waste greater than Class C in an independent spent fuel storage installation (ISFSI) or in a U.S. Department of Energy monitored retrievable storage (MRS) installation became effective on October 16, 2003. The final rule updates the seismic siting and design criteria, including geologic, seismic, and earthquake engineering considerations. The final rule allows certain ISFSI or MRS license applicants to use a design earthquake level commensurate with the risk associated with those facilities.
Multiphase Review of the Byproduct Materials Program (Implementation of Phase I and II Recommendations)	The staff evaluated 13 recommendations to improve the effectiveness and efficiency. Action was completed for four of the recommendations (i.e., promoting the use of the NUREG-1556 series by licensees, providing guidance to staff for the technical assistance request (TAR) process, revising the event evaluation policy (P&P letter 1-57), and promoting broader use of flexiplace by the staff). Further actions were not needed for three of the recommendations (i.e., delegation of Severity Level III cases to the regional offices, revision of allegation referral procedures for the States and licensees, and periodic counterpart meetings for regional and IMNS staff). Six recommendations were tested under Temporary Instruction 2800/033, Revised Materials Inspection Program, and have been incorporated into IMC 2800.
High-level Waste Program	In December 2003, the staff completed the pre-decisional draft of the Risk Insights Baseline Report. The staff used the risk insights to focus its independent assessments of DOE's pre-licensing program on the more risk-significant issues. The staff has also increased the use of risk information in the issue resolution process by explicitly considering the risk insights in its review of DOE's agreement submittals. Version 5.0 of the NRC's Total-system Performance Assessment (TPA) computer code was received from the Center for Nuclear Waste Regulatory Analysis in September 2003. The TPA code is the staff's primary tool for generating risk information and insights related to post-closure repository performance.
License Termination Rule Analysis	The staff completed the LTR Analysis (SECY-03-0069), which recommended that the Commission: (1) apply a risk-informed graded approach for using institutional controls to restrict the future use of a site; (2) select more realistic exposure scenarios using a risk-informed approach; and (3) risk-rank operating sites and activities to focus NRC inspections and licensee monitoring and reporting to avoid creating future "legacy" sites that would have difficult and costly decommissioning problems. The Commission approved these staff recommendations.
Decommissioning Program Evaluation	The staff completed the Decommissioning Program Evaluation, which recommended that NMSS senior management further risk-inform the program to (1) implement the Consolidated Decommissioning Guidance and explain the risk-informed approach to staff and licensees by developing examples, case histories, and lessons learned approach; and (2) define and manage all decommissioning sites using a graded approach to prioritize, allocate, and track both licensing and inspection resources based on site-specific risk insights and decommissioning challenges. Management approved the staff's proposal to develop an implementation plan for these recommendations.

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Determination of Probability Distributions for Human Failure Events	The staff completed the development of a formalized expert elicitation process for determining probability distributions for human failure events. This improved quantification technique has the unique feature (among the current HRA methods) of allowing an explicit treatment of uncertainties. It can be used in conjunction with any HRA method and in particular with ATHEANA (A Technique for Human Event Analysis). The staff has also finished developing lessons learned from using ATHEANA in performing HRA as part of the PTS PRA.
Population Estimator for Offsite Consequence Assessments	The staff has completed and issued a revision to the 1990 Sector Population program (SECPOP90) to use the 2000 census data (SECPOP2000). The revision has been published as NUREG/CR-6525, Revision 1, "SECPOP2000: Sector Population, Land Fraction, and Economic Estimation Program." This program provides the population distribution around any point in the continental United States and produces the MELCOR Accident Code Consequences System (MACCS2) site input file, among other types of output files. SECPOP2000 is available from the Oak Ridge National Laboratory RSICC Library.
Advanced Reactors - ACR-700	The staff has completed the initial tool development for ACR-700 to support other areas of research, such as thermal/hydraulics (success criteria) and severe accident progression (accident sequences and source term identification). In support of NRR's pre-application review of the ACR-700 PRA methodology and at NRR's request, RES has reviewed the AECL PRA methodology for the CANDU6 and CANDU9, anticipating that the AECL PRA methodology for the ACR-700 will be similar. A report on the strengths and weaknesses of the AECL PRA methodology was prepared and forwarded to NRR in March 2004.
Industry Trends Support	As part of the Industry Trends Support program, RES (1) provides trends for initiating events, systems reliabilities, components reliabilities, common-cause failures (CCFs), and fire events; (2) develops thresholds for the above trends for use in a risk-informed regulatory framework; and (3) provides reactor operating experience information on systems, components, initiating events, CCF events, and fire events. As part of this support, a report on the integrated industry initiating event indicator was completed in September 2003. Also as part of this support, updated trends, graphs, and charts for system studies, component studies, common-cause failure evaluations, and initiating event evaluations through FY 2002 have been added to the RES Web page.
Reactor Performance Data Collection Program	RES is improving the efficiency and usefulness of the Reactor Performance Data Collection Program by developing a new and more efficient database system called the Integrated Data Collection and Coding System. The new system will integrate all LER data coding and analysis programs into a single system. It will consolidate the features of several existing NRC operational experience database systems, eliminating duplicative and unnecessary features. This database will capture operational data from various sources to support a variety of studies and will incorporate the prime search features of the Sequence Coding and Search System (SCSS). As part of this effort, the consolidated data collection and coding system, including key features from SCSS, was completed and a 1-year trial use period was started. Also, the consolidated data collection and coding system has been maintained and updated with the latest quarterly data and the data are available for use in the Industry Trends Program updates.

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Reactor Performance Data Collection Program	As part of the Reactor Performance Data Collection Program, RES received a letter from INEEL in September 2003 documenting completion of final version of the OERAB data and analysis Web pages. The Web pages can be accessed on the RES internal Web site. The pages contain updates of key reliability and risk-related analyses for reactor accident initiating events, risk-significant systems, important components, common-cause failure information (parameter estimates and failure insights), and frequently used risk-related information derived from reactor operating experience data. Currently the Web pages are only available to NRC staff. There is a plan to make portions of this information available to the public.
Accident Sequence Precursor (ASP) Program	Under the Accident Sequence Precursor (ASP) Program, RES reviews and evaluates operational experience to identify precursors to potential severe core damage sequences. This work includes (1) documenting precursors, (2) categorizing precursors by plant-specific and generic implications, (3) providing a measure for trending nuclear plant core damage risk, and (4) providing a partial check on failure combinations identified in PRAs and IPEs. As part of this effort, a document was prepared in October 2003 to provide input for OCFO on (1) significant precursors through June 2003, (2) significant radiation overexposures from nuclear reactors for FY 2003, and (3) significant releases to the environment in FY 2003. Also, the staff has completed preliminary ASP analyses of the August 2003 loss of offsite power events in the northeast U.S. and has provided these analyses for licensee and other stakeholder review.
SPAR Model Development Program	As part of the Standardized Plant Analysis Risk (SPAR) Model Development Program, RES is developing SPAR models to permit the NRC staff to independently analyze the risk significance of inspection findings and operational events and/or conditions. The SPAR models that are being developed include (1) Level 1 models for full-power operation, (2) models for the low-power and shutdown (LP/SD) mode of operation, (3) models for performing large early release frequency (LERF) calculations, and (4) an SDP front-end interface for SPAR models, for use with the SAPHIRE and GEM codes. As part of this activity, all 72 Level 1 Revision 3 SPAR models have been completed, including internal and onsite QA reviews. In addition, 10 LP/SD models were completed and are ready for onsite QA review. Finally, the first LERF model has been completed and ready for onsite QA review.
Risk Communication Project	RES is continuing development of the Risk Communication Project, coordinating with several other offices, which develops guidance to improve the communication of risk insights and information to all NRC stakeholders. "Guidelines for External Risk Communication" (NUREG/BR-0308), released October 2003, contained practical, how-to guidance for NRC staff and management on NRC-specific communication topics and situations that deal with risk. "The Technical Basis for the NRC's Guidelines for External Risk Communication" (NUREG/CR-6840), released December 2003, included suggestions on how NRC staff can use the risk communication principles in the Guidelines for their communications with external stakeholders. This report discussed the development of the Guidelines and included a comparison of the NRC's needs to the state-of-the-art in risk communication practices. RES has also released a web page for use by NRC staff.
HRA Good Practices Document	The staff completed a draft version of the Human Reliability Analysis (HRA) Good Practices. This provided a lower level guidance than the guidance in the ASME PRA standards on HRA. This document will go through public review and comment and be finalized by December 2004.

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HRA Data Development	The staff completed the data structure for the Human Event Repository and Analysis (HERA). This is a major first step because it represents an agreement among NRC and national laboratory experts on what information needs to be collected for performing HRA regardless of the quantification approach used. Human event information from NPP reportable events is currently being extracted and stored and the software's interface is being developed according to identified user needs.