
INSPECTION PROCEDURE 83537

PART 52, MAINTAINING OCCUPATIONAL EXPOSURES ALARA

PROGRAM APPLICABILITY: IMC 2504 B

83537-01 INSPECTION OBJECTIVE

01.01 Assess the readiness of the licensee's procedures and program for maintaining individual and collective radiation exposures As Low As Reasonably Achievable (ALARA). This inspection will determine whether the licensee's ALARA program, including administrative, operational, and engineering controls, will be effective for maintaining occupational exposure ALARA.

01.02 To determine how the licensee has implemented their program objectives from their functional program description provided to the NRC staff during the application review process, related to maintaining occupational radiation exposures ALARA.

83537-02 INSPECTION REQUIREMENTS

General Inspection Guidance

If the unit being constructed is at a site with existing operational units for which the same program will be used at all units, then this program may not require the same level of inspection as that required for units being constructed at sites with no operational units. This is consistent with the baseline inspection program requirements identified in Inspection Manual Chapter 2506, "Construction Reactor Oversight Process General Guidance and Basis Document." At sites with an operating unit where the licensee has chosen to take credit for similar operational programs as those that are already in use, the inspectors shall focus on the differences between the program already in use and the newly developed program. The operational program inspection should focus on those steps in the IMC 2504 inspection procedures where the inspectors cannot verify that the operational program, equipment, and components are the same as, or substantially similar to, that of the operating unit. If the operational program, equipment, and components are the same, or substantially similar to, the operating unit, then the following minimum inspection requirements shall be completed, and all other inspection requirements may be omitted:

Part 52 Licensees Collocated with an Existing Operational Unit

Minimum Inspection Requirements:

- a. Verify that the 10 CFR Part 52 licensee has incorporated the operational plant's procedures for maintaining occupational exposures ALARA into their program.

Inspection Guidance: Verification of procedure incorporation should include a review of procedure cover sheet information (e.g., procedure titles and site applicability, management approvals, revision history, etc.), and a limited review of the procedure itself for applicability to the 10 CFR Part 52 site. The licensee may have developed specific procedures due to differences in plant design or layout. If so, review the site-specific design differences for conformance with the Final Safety Analysis Report (FSAR) and review procedures for adequate inclusion of the site-specific design differences. Applicable guidance can be found throughout IP 83537. Where applicable, these inspection activities should be reviewed for compliance with 10 CFR Part 20, 10 CFR Part 52, and the FSAR.

Requirements for 10 CFR Part 52 Programs or Programs Significantly Different from an Existing Operating Unit

02.01 Verify that the licensee's radiation protection and ALARA program is appropriately established and that it will be ready for full implementation at initial fuel load.

02.02 Verify that the licensee's ALARA plans identify appropriate dose reduction techniques and will be integrated into work procedures and/or radiation work permit (RWP) documents for radiologically significant work activities.

02.03 Verify licensee dose estimates for radiologically significant work activities are reasonable and that the licensee has established measures to track and trend occupational doses for planned work.

02.04 Verify adequate ALARA and radiological work controls have been and will be appropriately communicated and implemented.

83537-03 INSPECTION GUIDANCE

General Guidance

Plan this inspection so that the inspector can discuss the licensee's ALARA program and activities with the licensee.

Focus on the licensee's radiation protection and ALARA program and focus on the licensee's program for planning, implementation of radiological work controls, execution of work activities, and ALARA review of work-in-progress. The ALARA program is evaluated with respect to whether the licensee has taken appropriate measures to track and, if necessary, reduce exposure. This does not mean that the licensee has used all possible methods to reduce exposures. For those licensees who have committed in their combined license (COL) application to following the guidance in NEI 07-03A, "Generic FSAR Template Guidance for Radiation Protection Program Description," key aspects of the ALARA program such as implementation, organization, facilities, instrumentation and equipment, training, and procedures are implemented by the radiation protection program procedures described. In addition, NEI 07-08A, "Generic FSAR Template Guidance for Ensuring that Occupational Radiation Exposures are as Low as is Reasonably Achievable (ALARA)," presents an acceptable template for assuring that the ALARA program meets applicable NRC regulations and guidance, provided it is used in conjunction with NEI 07-03A. NEI 07-03A describes a radiation protection program that will be implemented in stages consistent with the following milestones:

- Prior to initial receipt of by-product, source, or special nuclear materials (excluding Exempt Quantities as described in 10 CFR 30.18).
- Prior to receiving reactor fuel.
- Prior to initial loading of fuel in the reactor.
- Prior to initial transfer, transport or disposal of radioactive materials.

NEI 07-08A and NEI 07-03A fully describe the ALARA program. For those licensees that have elected to demonstrate compliance to the requirements of 10 CFR Part 20 via alternate methods, SECY-04-0032, "Programmatic Information Needed for Approval of a Combined License Application Without Inspections, Tests, Analyses, and Acceptance Criteria" noted that in the absence of inspection, test, analysis, and acceptance criteria (ITAAC), "fully described" means that the program is clearly and sufficiently described in terms of the scope and level of detail to allow a reasonable assurance finding of acceptability at the COL stage.

Inspectors should review site-specific procedures associated with maintaining occupational exposures ALARA, including a review of the processes used to estimate and track exposures from specific work activities.

Licensee must incorporate measures in site-specific procedures to track exposures and ensure that exposures are ALARA as required by 10 CFR 20.1101(b).

For new units in which the radiation protection program is being expanded from a program at an existing co-located site, the inspected should ensure that lessons learned at the existing site are being appropriately incorporated for the new unit, when applicable.

Problems with planning and execution of work as related to ALARA outcomes should be entered into the licensee's corrective action program for a determination of whether these dose overruns were avoidable, and the appropriate licensee organization(s) should be held accountable for these breakdowns in work execution versus planning.

Inspection Planning - Review the originating documents submitted by the licensee to determine correlations to maintaining exposures ALARA:

- a. Review the current FSAR for a description of the applicable functional program and any updates or commitments made to meet licensing requirements, including information required to be provided in accordance with the NEI 07-03A and NEI 07-08A templates, if applicable.
- b. Determine any license requirements that must be met prior to fuel load, and review the Manual Chapter for Program Applicability.
- c. Determine the specific actions that will be needed to verify the readiness and acceptability of the program as developed and implemented, in comparison with the program description provided in the application. If applicable, review inspections of other licensees with the same or similar designs to determine if ongoing issues at those plants could inform the scope of this inspection. ALARA is not design-specific, so if

there are ongoing issues at plants of similar design, consider the applicability of those issues in developing the scope of the inspection.

- d. Review the corrective action program for related entries that could have an impact on operational radiation exposure (e.g., defects with structural materials that could impact radiation shielding, installation or design problems with systems or components that are expected to contain radioactive material).
- e. Review any departures by the licensee from the certified design committed to by the licensee, consistent with the provisions of 10 CFR 52.63(b)(2), to identify those changes to the plant design that may affect public or occupational radiation exposure.

03.01 Specific Guidance

Management Policy. Determine whether there is an appropriate documented management policy on ALARA.

- a. The policy should be documented.
- b. The policy should be approved by a corporate officer.
- c. The policy should be integrated with the licensee's design, including updates or modifications installed during construction as a result of construction or generic operating experience.
- d. The policy should embody the concept that ALARA is everyone's responsibility, from highest level managers to the most junior workers.

Assignment of Responsibilities and Authorities. Determine whether assigned responsibilities and authorities are adequate for ALARA implementation

- a. Examine specific responsibilities assigned to each management and supervisory level.
 - 1. Are lines of authority clearly specified?
 - 2. Is there support for personnel to participate in formulation of program goals and objectives?
 - 3. Is an effective measurement system specified to determine success in implementation, and is there a process to embody corrective measures to address problems?
 - 4. Review the processes for establishing goals and objectives, and the associated measurement systems.
 - 5. Examine how performance indicators, based on expected plant operations involving fuel receipt, fuel loading and initial startup testing, have been established.
- b. Examine the responsibilities of those with direct responsibility over the radiation protection program and staff to verify that their responsibilities and authority are

adequate to meet the commitments made by the licensee and to meet license conditions and the FSAR or other controlling documents. Consider the following:

1. Participation in design and equipment reviews, procedure development, and in identification of conditions and operations that may cause significant exposures.
 - (a) Examine design modification packages issued during construction for equipment installed in the Radiologically Controlled Area (RCA), to determine how the engineering staff evaluated the review for ALARA considerations, and the subsequent involvement of the Radiological Protection staff.
 - (b) Examine design modification packages expected to be installed following fuel loading to determine the extent of involvement of the Radiation Protection staff.
 2. Development of surveillance programs to collect, analyze, and evaluate data and information related to maintaining exposures ALARA.
 3. Implementation of the exposure control program, and the processes for identifying and reacting to deviations from expected values.
 4. Training and qualification of radiation protection personnel.
 5. The processes used to identify the types and quantities of resources needed to provide coverage of plant personnel conducting activities with the potential for significant radiation exposure.
- c. Examine the processes and methods used to incorporate plant specific and generic operating experience into the radiation protection program, including:
1. Coordinating reviews of facility and equipment design and modifications that may involve radiation exposure.
 2. Conducting audits of the effectiveness of station ALARA programs.
 3. ALARA efforts in support of operations that could result in substantial individual and collective doses.
- d. The ALARA program should ensure that all station workers are actively involved in seeking new and better ways to perform work with less exposure.

Procedures and Standards. Examine the written procedures for implementing ALARA policies and programs. Review the licensee's administrative processes and the mechanisms for communication and feedback with facility personnel, and with contractors or other suppliers of components and services affecting potential radiation exposures. Determine how procedures address aspects of the radiation protection programs such as:

- a. Setting of program goals and objectives (e.g., establishment of collective dose objectives for the year, for outages, and for specific jobs, such as fuel receipt, fuel loading, initial criticality and start up testing).

- b. Methods for job planning; for example, health physics review of other plant procedures and work practices, as appropriate; consideration of dose-saving methods (e.g., shielding, special tools); pre-work briefings; monitoring job progress; post-work debriefings and evaluations; methods to incorporate lessons learned into future jobs.
- c. Measurement of success of ALARA efforts (e.g., an exposure monitoring program with provisions for timely, periodic feedback on the status of meeting program goals and objectives).
- d. Measures to effect corrective actions, when feedback information indicates program failures and shortcomings (e.g., problems are identified, causes determined, corrective actions taken, and follow up actions executed or planned).
- e. Processes used by the licensee for assessing the resources provided for meeting ALARA program goals and objectives (e.g., the quantity and qualification of personnel (consistent with the guidance of Regulatory Guide (RG) 1.8) for implementation and maintenance of the program).
- f. Determine whether procedures for planning work in RCAs incorporate the requirements specified in the radiation protection basis documents (e.g., NEI Templates or other program description, FSAR Chapter 12 and Technical Specifications).
- g. Examine procedures and processes established for the use of temporary shielding, temporary Radiation Protection (RP) services, such as ventilation, communications and temporary station services, such as power, lighting and fluids, including the methods for identifying the need, methods for evaluating the installation (e.g., pipe weight load limits), the method for allocating installation and removal resources, and the methods for tracking installation and removal of temporary services. Determine how organizations other than radiation protection staff have integrated ALARA into their work group procedures and processes, which may include practices such as:
 - 1. Work group procedures reflect required interfaces with RP staff, procedures and processes, (e.g., mechanical engineering procedures clearly identify when RP staff review of design changes are required, work planning processes clearly identify when RP review of work activities are required, operations procedures identify when RP technician support is required).
 - 2. Procedures identify where specific worker actions or an equipment configuration is required to reduce personnel exposure (e.g., the use of special tools, equipment water level for shielding purposes, ventilation configuration for airborne activity control, use of methods for draining equipment that minimize facility contamination).
 - 3. Procedures for operating and maintaining equipment provided to reduce occupational radiation exposure have been implemented (e.g., operation of maintenance exhaust ventilation systems, operation of equipment provided for flushing crud like hydro-lasing pumps and system connections).

Indoctrination and Instruction. Determine whether there are adequate provisions for informing and instructing workers in the ALARA program. A program of indoctrination and instruction for workers should include:

- a. Indoctrination of management to ensure their understanding and support.
- b. Job-related ALARA training at the craftsman level.
- c. Incorporation of basic ALARA philosophy and management's support of ALARA into the basic radiation protection training, and ALARA "awareness training" for design, engineering, and construction personnel.
- d. Selection, training and qualification of staff consistent with RG 1.8 and RG 1.206 Section C.I.12.1, as well as any proposed alternatives to the RG guidance or other guidance documents referenced by the licensee.

Reviews of Design and Equipment Selection. Determine the provisions for review of design and equipment selection by the RP staff. Determine how variations from the standard design not captured in the functional program have been addressed in the licensee's program with respect to ALARA considerations. Plant design modification and equipment selection processes should include:

- a. Review and oversight of the incorporation of ALARA considerations in the work of the architect-engineer and construction organization.
- b. Where appropriate, ALARA reviews of, and input into, plant modifications in design, construction, preoperational, and operating phases, and ALARA input into plant equipment reliability studies.
- c. Assess how the ALARA program evaluates industry operating experience associated with effluent, waste handling and monitoring systems reliability and how the program identifies and assesses the impact of potential additional exposures.
- d. Assessment by the licensee regarding any design changes, amendment proposals, impact evaluations, or other remedial or compensatory action to address adequacy of ALARA program implementation, as a result of the design changes (e.g., re-routing of piping).

Source Term Identification and Control. The radiation source term, in the context of maintaining exposures ALARA, is the level of radiation emitted by, or quantity of radioactive material contained in, plant systems, structures or components that result in occupational radiation exposure from routine operation, including anticipated operational occurrences. The radiation source term can result from activated components in the primary containment, corrosion and wear products activated in the reactor and distributed to plant systems, or sealed sources maintained on site to support operations.

Source term reduction measures include chemistry controls to reduce corrosion rates (e.g., pH regimen); methods to reduce deposition rates (e.g., filter media selection, zinc injection); selection criteria for materials in contact with RCS fluids; methods of facilitating activity removal (e.g., shut down purification systems, hydro-lasing equipment and fittings).

- a. Determine if the licensee understands the expected source terms for the plant. For example:
 1. Assess the licensee's knowledge of the potential sources of RCS fluid contaminants, and their expected introduction rates (see for example EPRI TR-108737, "BWR Iron Control Monitoring Interim Report," EPRI Report 1018371, "BWR Source Term Reduction - Estimating Cobalt Transport to the Reactor," and EPRI TR-103296, "Cobalt Reduction Guidelines Revision 1").
 2. Assess the licensee's understanding of the characteristics of their plant design that could lead to extended neutron irradiation of material that is subsequently released into the RCS. See EPRI Report 1008102, "PWR Axial Offset Anomaly [AOA] Guidelines, Revision 1."
 3. Review how the licensee identified as potential sources of exposure, for example, potentially radioactive piping that is exposed (e.g., floor drain lines, filter housing drain lines).

- b. Assess the licensee's understanding of the features provided in plant for reducing source terms, and how they are to be implemented:
 1. Design specifications for conditioning of primary system surfaces to reduce the deposition of radioactive material, and how the conditioning regime is implemented.
 2. Design features (e.g., zinc injection, ion exchange and filtration media) that have been provided to reduce plant source term, and how these features are to be utilized during initial power operation.

- c. Review the processes the licensee has established for monitoring actual plant radiation fields versus expected radiation fields.
 1. Have Standard Radiation Monitoring Points (SRMP) been established and labeled for routine surveys of the primary coolant system (see EPRI Report 1003390 "Radiation Field Control Manual" for sample BRAC monitoring points and EPRI Report 1015119, "Application of the EPRI Standard Radiation Monitoring Program for PWR Radiation Field Reduction," for sample PWR monitoring points)?
 2. The methods for reviewing operating experience of similar plants, for the purpose of identifying the need for and location of standard points for monitoring source term trends in supporting systems.
 3. Where available, assess the licensee's established process for comparing plant source term performance to other plants utilizing a similar design.

Radiological Work Planning. A radiological work activity is one or more closely related tasks that the licensee has reasonably grouped together as a unit of work for the purpose of ALARA planning and work controls. The effectiveness of an operating reactor ALARA program is assessed by comparing the outcomes, in terms of collective dose, to the dose that was intended for individual work activities. However, for a facility beginning or preparing for initial operations,

actual occupational exposure data for the plant will be limited or unavailable. The startup survey program and the need to respond to startup support activities may require personnel entries into radiologically significant areas of the plant. Since the radiation type and exposure rate data will be limited or not fully characterized for some of these areas or plant conditions, processes for assessing plant conditions and radiological controls will need to be well-developed, in order to assure adequate personnel protection.

- a. Evaluate interactions between operations, maintenance, maintenance planning, scheduling, engineering, and radiation protection groups for interface problems or missing program elements:
- b. Evaluate how work planning activities have incorporated measures for:
 1. Identifying and controlling abnormal or unexpected sources of radiation exposure.
 2. Assessing and establishing personnel access controls during or as a result of transient plant conditions.
 3. Controls for special pre-operational or start up testing, such as BADGER testing (fuel storage rack neutron transmission rate), structural shielding integrity tests, initial radiation monitor calibrations, Main Steam line moisture carry over testing, etc.
- c. Evaluate the processes established for identification and resolution of abnormal or unexpected individual personnel exposure, occupational radiation exposure for evolutions or plant conditions, and area radiation dose rates or radiation types.

03.02 Specific Guidance

If available, obtain from the licensee a list of work activities (e.g., radiation work permits) that are in progress or have been completed. Focus on high dose rate activities, if available. ALARA work plans and dose reduction techniques should be commensurate with the radiological risk of the work activity and consider the overall benefit of the dose reduction method to collective dose.

Compare the results achieved with the intended dose established in the licensee's ALARA planning for these work activities.

The regulation in 10 CFR 20.2206(c) requires that, on or before April 30 of each year, licensees submit to the NRC an annual report containing the results of individual monitoring, when required by 10 CFR 20.1502, carried out by the licensee for the previous year's collective exposure.

Consider person-hour estimates provided by maintenance planning and other groups to the radiation protection group with the actual work activity time results, and the accuracy of these time estimates. Consider the reasons (e.g., failure to adequately plan the activity, failure to provide sufficient work controls) for any inconsistencies between intended and actual work activity doses.

For licensees with work activity dose that significantly exceeds projections, consider evaluating the following:

1. The interfaces between operations, radiation protection, maintenance, maintenance planning, scheduling and engineering groups for interface problems or missing program elements;
2. The shielding requests generated by the RP group with respect to dose rate reduction problem definition and assigning value (dose savings or financial costs); engineering shielding responses for follow through; and
3. Whether work activity planning considers the benefits of dose rate reduction activities such as job scheduling and shielding and scaffolding installation and removal activities.

Determine if post-job/work activity reviews were conducted to identify lessons learned and that any lessons learned are tracked for future work activities. Licensees may use multiple means to track lessons learned (e.g., corrective action program, just in time training files etc.).

03.03 Specific Guidance

- a. Review the FSAR Section 12.3-12.4 occupational dose estimates and compare to the assumptions and basis for the current annual collective exposure estimate or revisions to the occupational dose estimates for reasonable accuracy.

The ability to determine if doses for a work activity are ALARA, or whether they need to be reduced further, will often depend on the source term reduction methods, and the accuracy of exposure estimates made in the planning process. If the work activity is a repetitive task (e.g., performed each outage), the inspector should determine if the licensee's planning process also considered long-term (e.g., over the life of the plant) cost-beneficial ALARA initiatives for exposure reduction.

- b. Review applicable source term reduction procedures to determine the methodology for estimating exposures from specific work activities and the intended dose outcome.
- c. Review the assumptions and bases for ALARA work planning documents.

Exposure estimates should be based on good assumptions (e.g., dose rates and work hour estimates) and correct calculations with some flexibility allowed for the expected variability caused by the limits of forecasting.

Accurate exposure estimates usually require a detailed task analysis of the work activity. However, in cases of routine activities, the licensee may rely on previous experience to establish the intended dose and reasonable work controls, in lieu of detailed analysis. Use of past outage experience combined with additional industry experience for similar plants can provide a reasonable exposure estimate approach.

If exposure estimates appear questionable, use experience from similar plants if available as the primary standard of comparison, and use industry data, as available, or

actual work activity exposure data as a secondary standard of comparison to determine the reasonableness of licensee exposure estimates.

- d. If available, evaluate the licensee's method of adjusting exposure estimates, or re-planning work, when unexpected changes in scope or emergent work are encountered. Consider whether dose threshold criteria are established to prompt additional reviews or additional ALARA planning and controls.

During the conduct of exposure-significant maintenance work, consider if licensee management was aware of the exposure status of the work and would intervene if exposure trends increased beyond exposure estimates. Licensees should establish measures, track, trend and, if necessary, to reduce occupational doses for ongoing work activities.

Determine whether the frequency of these adjustments call into question the adequacy of the original ALARA planning process. Determine if adjustments to exposure estimates (intended dose) are based on sound radiation protection and ALARA principles or if they are just adjusted to account for failures to control the work.

Determine if there is sufficient station management review and approval of adjustments to exposure estimates and that the reasons for the adjustments are justifiable.

- e. If applicable, review licensee evaluations of inconsistent or incongruent results from the licensee's intended radiological outcomes. For example, review failures to adequately plan work activities, failures to provide sufficient management oversight of in-plant work activities, failures to conduct work activities without significant rework, failures to implement radiological controls as planned, etc.

Consider if licensees are implementing reasonable ALARA programs based on the licensee's ALARA evaluations. Place particular focus on higher dose work activities.

When collective dose for work activities is not tracking true to projections, licensee actions should revolve around evaluation and implementation of in-field dose reduction strategies and not be limited to dose estimating activities.

03.04 Specific Guidance

- a. Review the licensee's radiological administrative, operational, and engineering controls planned for the radiologically significant outage or on-line maintenance work activities and review the integration of radiological work controls and ALARA requirements into work packages, work procedures and/or RWP documents.

Risk-significant work activities take place in high radiation, locked high radiation or very high radiation areas and should be inspected whenever possible. Also, work activities that involve hard-to-detect isotopes, alpha contamination and/or respirable radiation hazards should be evaluated. Focus on work activities that present radiological risk to workers in terms of high collective doses, high individual doses, diving activities in or around spent fuel or highly activated material, or that involves potentially changing (deteriorating) radiological conditions for detailed review.

- b. If available, observe work activities and work planning activities and consider whether the licensee has effectively integrated the planned administrative, operational, and engineering controls into the actual field work to maintain occupational exposure ALARA.

Radiological administrative, engineering and operational controls include, but are not limited to procedures, RWPs, ALARA Plans, total effective dose equivalent (TEDE) ALARA Evaluations, work orders, etc. Engineering controls include temporary and permanent (e.g., lead, tungsten, and water) shielding, system flushing, permanent and portable ventilation systems, glove bags, tents, etc. Operational controls include work sequencing, work scheduling, and other operational dose mitigation strategies such as consideration of the benefits of dose rate reduction activities provided by water-filled components and piping, maintaining steam generators full when working on reactor coolant pumps, etc. Special attention should be given to unique aspects of the program or design.

Observe pre-job briefings and determine if the planned controls are discussed with workers.

Evaluate the in-plant placement and use of shielding, contamination controls, airborne controls, RWP controls, and other engineering work controls against the licensee's ALARA plans.

- c. Observe work activities and consider whether the licensee is tracking doses, performing timely in-progress reviews, and, when jobs are not trending as expected, consider if the licensee appropriately communicates methods to reduce dose.

Consider if HP and ALARA staff are involved with the management of radiological work control if/when in-field activities deviate from the planned controls (e.g., RWP, ALARA plans, work order instructions, radiological hold points, and stop work criteria).

Consider if the Outage Control Center and station management will provide sufficient support for ALARA planning as needed.

- d. ALARA staff should be involved with emergent work activities during outage or on-line maintenance. Specifically, ALARA activities should involve evaluation and implementation of in-field dose reduction strategies and not limited to dose estimating activities. Emergent work activities create the need for prompt ALARA planning to achieve dose reductions, such as procedure review, work controls, shielding and worker pre-job ALARA briefings for dose intensive tasks.

When possible, attend ALARA committee meetings.

- e. If applicable, determine if the licensee has captured lessons learned from radiation work activities.

83537-04 RESOURCE ESTIMATE

Approximately 40 hours of direct inspection effort will be required to implement this procedure. An inspection of the program and related procedures and records will require health physicists

trained in ALARA principles, and in inspection techniques as they relate to nuclear power facilities.

The actual hours required to complete the inspection may vary from this estimate. The inspection hours allocated for this inspection are an estimate for budgeting purposes. The hours expended for this inspection should consider plant specific design features and operational programs. Record the level of effort expended in such inspections for planning future inspections and updating budget allocations. If this inspection procedure is performed at a 10 CFR Part 52 licensee collocated with an existing operational unit and the operational program, equipment, and components are the same, or substantially similar to, that of the operating unit, inspection effort is expected to require approximately 10 hours of direct inspection effort.

83537-05 PROCEDURE COMPLETION

This procedure will be closed upon satisfactory inspection results verifying that an adequate program exists and processes are in place to maintain occupational exposures ALARA. The inspection must demonstrate the program can be inspected under the ROP.

83537-06 REFERENCES

NRC Inspection Manual Chapters 2501, 2502, 2503, and 2504

Regulatory Guide 1.8, Revision 3, "Qualification and Training of Personnel for Nuclear Power Plants," May 2000. U.S. Nuclear Regulatory Commission, Washington, DC

Regulatory Guide 1.68, "Initial Test Programs for Water Cooled Nuclear Power Plants," March 2007. U.S. Nuclear Regulatory Commission, Washington, DC

Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)," June 2007. U.S. Nuclear Regulatory Commission, Washington, DC

Regulatory Guide 8.8, Revision 3, "Information Relevant to Ensuring That Occupational Radiation Exposures Will Be As Low As Is Reasonably Achievable," June 1978. U.S. Nuclear Regulatory Commission, Washington, DC (see also Draft OP 618-4, Second Proposed Revision 4, May 1982)

Regulatory Guide 8.10, Revision 1-R, "Operating Philosophy for Maintaining Radiation Exposures As Low As Is Reasonably Achievable," May 1977. U.S. Nuclear Regulatory Commission, Washington, DC

Regulatory Guide 8.19, Revision 1, "Occupational Radiation Dose Assessment in Light- Water Reactor Power Plants - Design Stage Man-Rem Estimates," June 1979. U.S. Nuclear Regulatory Commission, Washington, DC

Regulatory Guide 8.27, "Radiation Protection Training for Personnel at Light-Water-Cooled Nuclear Power Plants," March 1981. U.S. Nuclear Regulatory Commission, Washington, DC

NUREG-0800, Revision 3, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," Chapters 11, "Radioactive Waste Management," and 12, "Radiation Protection," March 2007. U.S. Nuclear Regulatory Commission, Washington, DC (Revision 4 for Section 11.5, "Process and Effluent Radiological Monitoring Instrumentation and Sampling Systems.")

NUREG-0713, "Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities," March 2019.

NUREG-1736, "Consolidated Guidance: 10 CFR Part 20 - Standards for Protection Against Radiation," October 2001. U.S. Nuclear Regulatory Commission, Washington, DC

NUREG/CR-5569, ORNL/TM-12067, Revision 1, "Health Physics Positions Database," HPPOS-001 "Proposed Guidance for Calibration and Surveillance Requirements to Meet Item II.F.1 of NUREG-0737," April 1994. Oak Ridge National Laboratory, Oak Ridge, TN

SECY-04-0032, "Programmatic Information Needed for Approval of a Combined License Application Without Inspections, Tests, Analyses, and Acceptance Criteria," May 2004. U.S. Nuclear Regulatory Commission, Washington, DC

SECY-06-0114, "Description of the Construction Inspection Program for Plants Licensed under 10 CFR Part 52," May, 2006. U.S. Nuclear Regulatory Commission, Washington, DC

SECY-07-0047, "Staff Approach to Verifying the Closure of Inspections, Tests, Analyses, and Acceptance Criteria Through a Sample-Based Inspection Program," March 8, 2007. U.S. Nuclear Regulatory Commission, Washington, DC

SECY-05-197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses and Acceptance Criteria," October 28, 2005. U.S. Nuclear Regulatory Commission, Washington, DC

SRM-SECY-04-0032, "Programmatic Information Needed for Approval of a Combined License Without Inspections, Tests, Analyses, and Acceptance Criteria," May 2004. U.S. Nuclear Regulatory Commission, Washington, DC

ASME NQA-1-2008, "Quality Assurance Requirements for Nuclear Facility Applications," March 2008. The American Society of Mechanical Engineers, New York, NY

NCRP Report No. 162, "Self Assessment of Radiation-Safety Programs," 2009. National Council on Radiation Protection & Measurements, Bethesda, MD

NEI 07-03A [Revision 0] "Generic FSAR Template Guidance for Radiation Protection Program Description" and the associated NRC Safety Evaluation Report, May 2009 (ADAMS Accession No. ML0914906841)

NEI 07-08A [Revision 0] "Generic FSAR Template Guidance for Ensuring that Occupational Radiation Exposures are as Low as is Reasonably Achievable (ALARA)" and the associated NRC Safety Evaluation Report, October 2009 (ADAMS Accession No. ML0932201780)

NEI 06-13A, "Template for an Industry Training Program Description," March 2009 (ADAMS Accession No. ML0909105542)

NEI 99-02, Revision 6, "Regulatory Assessment Performance Indicator Guideline," October 2009 (ADAMS Accession No. ML0929311230) [or the latest NEI approved revision]

END

ATTACHMENT 1

Revision History for Construction Inspection Procedure 83537

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Form Accession Number (Pre-Decisional, Non-Public Information)
N/A	ML0818207731 10/27/10 CN 10-022	<p>Initial issue to support inspections of operational programs described in IMC 2504, Construction Inspection Program – Inspection of Construction and Operational Programs.</p> <p>Derived from original procedure 83528 of 01/01/1984 to address 10 CFR 52, initial test program, updates of NRC guidance, including risk-informed, performance-based inspection and enforcement policies.</p> <p>Completed search of CNs for previous 4 years and no commitments were found.</p>	N/A	ML102660656
	ML20045D575 03/04/20 CN 20-013	Complete rewrite to update the format in accordance with IMC 0040. Substantively revises guidance for units being constructed at a site with existing operational units for which the same program will be used at all units and conditionally lowers the Resource Estimate.		ML20045D593