Southern Nuclear

SNC
Unit S
Category 1

NMP-HP-204

ALARA Planning and Job Review

VERSION 10.4

Special Considerations:

Applicable to Corporate, FNP, HNP, VEGP 1-2, VEGP 3-4

PROCEDURE LEVEL OF USE CLASSIFICATION PER NMP-AP-003	
CATEGORY	**SECTIONS**
Continuous	NONE
Transient Response	NONE
Reference	NONE
Information	ALL

Approval: Stephen Taylor (Approved By) 02/01/2023 (Date)

RADIATION PROTECTION
Responsible Department

VERSION SUMMARY
PVR 10.0 **DESCRIPTION**
• Added information about a potential dose rate alarm as a result of a rapid repositioning from a lower dose rate to a higher dose rate to note prior to section 4.4 step 3 as requested in TE 1089200. • Changed requirements for HRA (high radiation area) briefings in section 4.5 to incorporate fleet changes to section 5.7 of the Technical Specifications for Farley, Hatch and Vogtle 1-2. • Added information for setting neutron dose and rate alarms as requested in TE 1095090.
PVR 10.1 **DESCRIPTION**
• Added NMP-HP-204-F08 to the records section as requested in TE 1094839. • Removed “and briefings” from section 4.5 steps 6 and 7 and from Figure 1B. • Corrected errors in Figure 4 page 2.
PVR 10.2 **DESCRIPTION**
• Added clarification to section 4.5.2 to specify that LHRA briefings may be performed a shift, or more, prior to the activity to address TE 1104112.
PVR 10.3 **DESCRIPTION**
• Removed Work Management from quorum from Figure 2 . Work Management falls under Maintenance (online work) and Plant Mgr (outage work).
PVR 10.4 **DESCRIPTION**
• Added definitions for Dose Rate Alarm Setpoint, Highest Expected Dose Rate and Work Area Dose Rate to section 2.0. • Changed Low to Dose Rate Alarm Setpoint and High to Highest Expected Dose Rate in Figure 3. • Simplified Figure 2, SNC PARC Agenda Format. Removed pictures and made it a bulleted table.

TABLE OF CONTENTS

1.0 PURPOSE/SCOPE/APPLICABILITY

1. This procedure establishes requirements for executing the technical and administrative processes required for As Low As Reasonably Achievable (ALARA) job reviews.

2. This procedure applies to site and corporate personnel as guidance concerning the ALARA Job Review process.

3. This procedure DOES NOT apply to work already planned under a site procedure prior to the release of this NMP.

4. This procedure will be implemented incrementally at VEGP 3-4 as sections become applicable to the activities being performed by the Operational Readiness Organization and the Construction Organization.

5. An Applicability Determination was performed and determined this procedure and associated instructions, forms and guidelines are administrative in nature and DO NOT provide direction for plant operation. This procedure series is exempt from the 10 CFR 50.59c(4) process per NMP-AD-008, Applicability Determinations, and/or ND-LI-VNP-002 "Applicability Determination & 50.59 / Departure Screening For VEGP Units 3 and 4.

2.0 DEFINITIONS

1. **ADDED SCOPE –** Additional tasks or activities that are a direct result of a scheduled or planned task, activity, or testing, but were NOT included in the original ALARA estimate.

2. **ALARA PLAN –** A documented job assessment that considers the radiological conditions expected during each phase of the job and the methods and controls to minimize contamination and collective radiation exposure (person-rem). The term “ALARA Plan” is equivalent to “ALARA Action Review” and “ALARA Review”.

3. **ANTICIPATED DOSE RATE ALARM –** Anticipated Dose Rate Alarms are dose rate alarms that the worker is expected to encounter traversing the path to and from the work location or a dose rate alarm expected due to body positioning. These alarms are covered in the Radiological Briefing and in Figure 4 and DO NOT require tracking in the CAP program.

4. **ANSI QUALIFIED RADIATION PROTECTION PERSONNEL** – An RPT, or other RP personnel, at Farley, Hatch or Vogtle 1-2 that meets the requirements of ANSI 18.1-1971 or who meets the requirements of ANSI 3.1-1993 at Vogtle 3-4.

2.0 DEFINITIONS (continued)

5. **CONTINUOUS RADIATION PROTECTION (RP) COVERAGE (CONTINUOUS COVERAGE) –** ANSI Qualified Radiation Protection Technician who performs constant coverage of work activities and radiological conditions and who is available to direct or stop work activities as radiological conditions warrant. There are three types of continuous coverage:

   a. Remote Monitoring: Used in a work area where dose rates vary due to worker position or changing dose rates. The Radiation Protection Technician has the ability to monitor the worker(s) visually or with a camera, teledosimetry, and voice communication.

   b. Direct Monitoring: Used in a work area where dose rates vary due to worker position or changing dose rates. The Radiation Protection Technician is in the line of sight with worker(s) or is able to restrict worker(s) movement by use of physical barriers. RP tech periodically checks accumulated dose for the worker(s).

   c. Indirect Monitoring: Used in a work area where dose rates are constant. The Radiation Protection Technician in a low dose area monitoring worker (s) dose by means of maximum stay time or teledosimetry.

6. **DOSE RATE ALARM SETPOINT –** The dose rate threshold setting in the SRD above which will trigger a dose rate alarm in the SRD. This is either set by the RWP or calculated using Figure 3 and changed in HIS-20 prior to the worker(s) logging onto the RWP.

7. **EMERGENT DOSE –** Dose for activities or tasks that are unplanned in the work scheduling process, unscheduled, or not previously identified. This dose is for work added after ALARA estimates are approved (both on-line and outage). This DOES NOT include activities that have previously assigned dose (e.g., rescheduled work, dose included in baseline, etc.).

8. **GENERAL RADIATION WORK PERMIT RWP –** A permit that controls work tasks that have minimal radiological risk, significant radiation exposure, or the potential to spread contamination. A General RWP is customarily used in areas with little or no loose surface contamination or airborne activity and low direct gamma radiation. General RWPs are for routine work in areas that DO NOT involve work with complex radiological conditions, and radiological conditions are static. Additionally, General RWPs will NOT be issued for work in high radiation areas, very high radiation areas, areas with significant contamination potential, or areas requiring a survey by Radiation Protection personnel PRIOR TO entry.

9. **HIGHEST EXPECTED DOSE RATE** – The highest expected dose rate to be encountered either in the work area or the approved travel path to and from the work area. This may be determined from pre-work surveys or from historical surveys or data.

2.0 DEFINITIONS (continued)

10. **INTERMITTENT RP COVERAGE –** Periodic Radiation Protection oversight and control provided by qualified technicians cognizant of activities within the job and radiological surveillance consistent with the radiological hazards (e.g., touring the job site and having full knowledge of the work and radiological hazards associated with the job and individuals involved).

    Radiological job coverage for activities in High Radiation Areas, High Contamination Areas, Airborne Areas, or Alpha Level 2 or greater areas REQUIRES an ANSI qualified RPT.

11. **JOB HISTORY FILES –** A compilation of documents (hard copy or electronic) used to provide information for the purpose of planning work in Radiation Control Areas (RCAs). These files may contain, but are NOT limited to radiological surveys, radiation work permits, work orders and exposure reports.

12. **MICRO ALARA PLAN –** A documented review and planning of work below the threshold for initiation of a formal ALARA Plan.

13. **OUTAGE –** Period of time when the reactor has been shutdown to perform refueling and/or maintenance activities. This includes refueling outages and forced or planned shutdowns between refueling outages.

14. **PERSON-HOUR ESTIMATE –** A Person-Hour Estimate is an estimate of the time in hours an individual(s) spends in a Radiation Control Area (RCA) performing a task.

15. **PERSON-REM ESTIMATE –** A Person-Rem Estimate is an estimate of the collective exposure in rem projected for all workers performing a specific task in a RCA.

16. **RADIATION WORK PERMIT –** An authorized document that provides positive administrative control to ensure all radiological work is performed in a safe manner.

    The RWP identifies personnel involved in a job such as stay times, if applicable, protective clothing and equipment required, special instructions or cautions pertinent to radiological hazards, hazards in radiologically controlled areas, general area and hot spot dose rates, airborne radioactivity levels, loose surface contamination levels, and other hazards pertinent to performing work in a safe manner.

17. **RADIATION WORK PERMIT TASK –** A subset of an RWP that defines radiological work instructions which allows set points and instructions for specific work activities. The dose and dose rate set point MUST NOT exceed the RWP controls.

18. **SPECIFIC RADIATION WORK PERMIT (RWP) –** A Specific RWP is normally used for the performance of a specific job in specific locations or areas. Examples of jobs requiring specific RWPs are radwaste handling and processing, Operations and Radiation Protection routine activities, refueling, entries into the reactor cavity, and routine or special maintenance.

2.0 DEFINITIONS (continued)

19. **SRD (SELF READING DOSIMETER) –** A dosimeter, such as a DMC3000, DMC2000, Pocket Ion Chamber, etc., that is worn and read by the worker and provides an indication of the dose received in the field. SRD's may also be referred to as ED (electronic dosimeter), or DAD (digital alarming dosimeter).

20. **WORK AREA DOSE RATE –** Average dose rate in the immediate area where work is to be performed.

21. **WORK IN-PROGRESS REVIEW –** A collaborative effort between Radiation Protection and work supervisors to ensure on-going activities requiring SPECIFIC RWPs projected for > 1 person-rem are on track to meet established goals.

22. **URGENT/EMERCENCY WORK –** Work items that have a near term direct impact on the health and safety of the general public, the reliability of power generation, or industrial safety.

3.0 RESPONSIBILITIES

1. The Fleet Radiation Protection Manager is the Corporate Functional Area Manager (CFAM), with the accountability and responsibility for governance, oversight and support of the Radiation Protection Program for the Fleet.

2. The Site Radiation Protection (RP) Manager is the Site Functional Area Manager (SFAM) and is accountable and responsible for the overall performance of the Radiation Protection Program.

3. Site management and supervision will provide timely and continuing monitoring of activities to verify that the day-to-day operating activities are conducted safely, ensure activities are performed in accordance with applicable standards, and report gaps to excellence.

4. Corporate and site management SHALL identify and accomplish performance improvements which contribute to nuclear and personal safety, support cost savings and targets, and champion initiatives for gap closure to drive industry best performance and fleet standardization.

5. The RP Department performs and documents radiological surveys to determine and communicate radiological conditions and hazards that exist throughout the plant.

6. Radiation Protection personnel SHALL participate in T minus planning meetings, design review meetings, etc., to capture scope of planned work in radiation controlled areas of the facility.

7. Radiation Protection personnel SHALL **work** with the appropriate work group(s) to assist in the planning of proposed work from an ALARA point of view.

8. Radiation Protection personnel SHALL **review** applicable department specific procedures/tasks plans involving work of radiological significance to ensure ALARA principles are incorporated.

3.0 RESPONSIBILITIES (continued)

9. Radiation Protection personnel SHALL **participate** in post job critiques as necessary to ensure lessons learned are integrated into same/similar future work.

10. Using a threshold of 50 mrem for BWRs and 25 mrem for PWRs, the Department Dose Champion or RP will write Condition Reports when the actual dose for an activity exceeds the estimated dose by > 25% OR where the actual dose was less than the estimated dose by > 50%.

4.0 INSTRUCTIONS

4.1 PRECAUTIONS AND LIMITATIONS

1. Precursors for unintended exposure occurrences include NOT monitoring the actual exposure (either remotely or by the individual), NOT using stay times, problems with monitoring equipment NOT addressed, NOT being able to hear alarms, NOT properly planning the work, and NOT using correct RWPs.

2. Performance deficiencies identified in the ALARA review process should be documented using the Condition Reporting system.

NOTE

Responsibilities of the RPT(s) providing stay time tracking are detailed in NMP-HP-306, Radiological Job Coverage.

3. In addition to normal LHRA (Locked High Radiation Area) controls, **ESTABLISH** and **TRACK** the stay time of workers if any one of the following conditions exists.

   a. Work area dose rates exceed 1,500 mrem per hour (deep dose equivalent).

   b. A worker's dose for a single entry into the work area is expected to exceed 500 mrem.

   c. As otherwise required by the RWP or ALARA Plan.

4. Stay times may be calculated using the formula on NMP-HP-204-F07, Stay Time Tracking / Calculation. RP supervision SHALL **approve** stay time calculations PRIOR TO use.

4.1 PRECAUTIONS AND LIMITATIONS (continued)

NOTE

Figure 2 provides format of standard Plant ALARA Review Committee (PARC) meeting agenda for PARC meetings.

5. With the exception of routine activities, the Plant ALARA Review Committee (PARC) SHALL **approve** dose estimates for specific activities that exceed the following thresholds:

   - Non-outage – 1 person-rem
   - Outage – 3 person-rem

6. RWP deviations require prior approval from Radiation Protection Supervision and SHALL be supported by a documented justification of why deviating from the RWP is warranted.

7. Due to the requirement for members of the NRC to have unfettered access, they are NOT to be restricted from the RCA in the event that they receive a dose or dose rate alarm.

4.2 ALARA PLANNING

1. **Refer to** NMP-HP-204-001, ALARA Planning, for instructions on micro ALARA planning and ALARA Planning.

4.3 RESPIRATOR USE EVALUATION

NOTE

A Respirator Use Evaluation, using NMP-HP-204-F06, is performed whenever respirators will be used for an activity to document the basis for respirator use.

1. A respirator use evaluation will be performed and documented using NMP-HP-204-F06 whenever the use of respirators are required for a task on an RWP or when specified on a Micro AL:ARA Plan or an ALARA Plan.

4.3 RESPIRATOR USE EVALUATION (continued)

2. (continued)

2. The extent and level of detail addressed in the ALARA evaluation should be commensurate with the potential radiological and physical risks involved in the activity. The following factors should be considered when performing the ALARA evaluation:

   - Worker safety, such things as heat stress or impaired vision should be evaluated.
   - Possibility that the planned work will cause re-suspension of radioactive material, thus increasing the average concentration during the task.
   - Environmental conditions.
   - Protective equipment and clothing that may have an effect on worker efficiency.
   - Comfort level of the workers regarding the use of respirators.
   - Experience and skill level of the individual with respect to the task.
   - Process and engineering controls to be used.
   - Specific details of the task to be performed.
   - Potential post-activity negative impacts (e.g., personnel decontamination and skin dose assessments).

3. The following information is needed to perform the calculation:

   - An estimate of the Person-Hours for the task. This value involves the period of time that respirator usage may occur depending on the results of this evaluation.
   - The whole body working area dose rate. This rate is the whole body (external) exposure rate that the worker(s) will be working in for the time period specified above. The rate should be expressed in millirem/hour.
   - The internal dose rate. This rate is the internal exposure rate due to the inhalation and/or ingestion absorption of radioactive material and should be expressed in millirem/hour. The data is determined by current air samples or historic data. **Convert** DACs to millirem/hour by multiplying by 2.5.

NOTE

Application of an inefficiency factor greater than 15% REQUIRES that the basis for that factor be documented.

   - The inefficiency factor (normally 1.15). This factor accounts for the added physical burden the respirator applies to the wearer and is in accordance with the inefficiency factor provided for in Nuclear Regulatory Commission (NRC) Regulatory Guide 8.15.
   - The protection factor for the type of respirator to be used.

4.3 RESPIRATOR USE EVALUATION (continued)

4. **Calculate** the total dose received if respirators are worn using NMP-HP-204-F06.

5. **Calculate** the total dose received if respirators are NOT used, using NMP-HP-204-F06.

6. IF it is calculated respirator usage should save the worker(s) dose, respirator use is indicated. Otherwise, respirators use is NOT indicated.

7. Even when the calculation doesn't indicate respirator use, respirators may still be allowed for contamination control, or based on historical data to prevent an uptake, if the justification for respirator use is documented on NMP-HP-204-F06, Respirator Use Evaluation Form.

4.4 DOSIMETRY SETPOINTS

NOTE

- Figure 3, Guidance for Setting Electronic Dosimeter (SRD) Alarms provides GUIDANCE on setting dose and dose rate alarms. The guidance is from IER 14-10 and are points to be considered. Variations from the guidance is allowed based on radiological considerations of the work area and travel path.
- Respirator use. Respirator use will increase the time required to perform the task. Per Regulatory Guide 8.15, it can add up to 15% more time to the task. This additional time should be considered when determining the dose alarm set point.

1. Guidance for setting ED alarms is provided in Figure 3; however, the following general instructions will be followed.

2. The evaluation should include the following:

   - An estimate of the Person-Hour for the task to be performed. This value involves the period of time that respirator usage may occur depending on the results of this evaluation.

   - The working area whole body dose rate. This rate is the whole body exposure rate that the worker(s) will encounter for the time period specified above. The rate should be expressed in millirem/hour.

NOTE

- A bias is placed in the EDs at time of calibration (normally 17%). Although the response is NOT directly proportional to the bias percentage, it will cause EDs to slightly over respond to the ambient dose rates by around 5% to 7%.
- Additionally, a rapid repositioning from a lower dose rate to a higher dose rate may cause a momentary overresponse by the ED. If the higher dose rate is close to the dose rate setpoint, it may induce a momentary dose rate alarm. Briefing to an anticipated dose rate alarm is appropriate when these conditions exist.

3. Due to ED bias placed in the dosimeter at calibration the ED will over-respond to the ambient dose rate. This should be considered when setting dose and dose rate alarm thresholds.

4. Dose Rate Alarm set points should be set low enough to provide workers with a warning of higher than expected work area dose rates.

5. Dose Alarm set points should be set at threshold to prevent unnecessary dose, but provide sufficient margin to prevent an administrative burden.

6. Approval by an RP Supervisor or above is REQUIRED PRIOR TO allowing the use of anticipated dose rate alarms. Documentation of approval may be in eSOMS or on the Radiological Briefing Record, NMP-HP-204-F02.

7. IF dose and/or dose rate alarm set points are changed from the RWP set points, the changes **MUST** be approved by RP supervision and documented in eSOMS logs and/or the radiological briefing.

8. In addition to the Guidance in Figure 3, the following items are to be considered when establishing Dosimetry setpoints:

    - Specific location to be entered and task to be performed
    - Previous work in the area and any dose rate alarms in the area
    - Worker position during task performance
    - Shielding or flushing of Hot Spots

9. Figure 4, Actions for Dose and Dose Rate Alarms, provides instructions for the worker and RP for response to dose and dose rate alarms.

10. In addition to the instructions in Figure 4, document any dose alarms or any unanticipated dose rate alarms as directed in NMP-HP-109, Investigation, Evaluation and Management of Damaged, Lost, Malfunctioning or Alarming Dosimetry, and in the CAP system.

4.4 DOSIMETRY SETPOINTS (continued)

4.5 RADIOLOGICAL BRIEFINGS

NOTE

1. ANSI qualified RP technicians (RPT) with a radiation dose rate monitoring device, may be exempted from radiological briefing requirements for entering HRA (High Radiation Areas) or LHRA (Locked High Radiation Areas) during the course of their assigned duties OR in support of any of the conditions detailed in #2 below.
2. Individuals escorted by an ANSI qualified RP technician may be exempted from radiological briefing requirements when responding to any of the following conditions:
   - Medical emergency
   - Fire alarm
   - An event that could threaten nuclear safety such as a loss of shutdown cooling.
   - A condition that needs to be evaluated for potential entry into an Emergency Action Level.
   - As otherwise allowed by site licensing documents.
3. The RPT providing job coverage is normally the most familiar with the radiological conditions of the work area and the preferred individual to perform the radiological briefing. When this is not practicable, such as during outages or when providing intermittent coverage for multiple tasks in the same area, the briefing may be given by other ANSI qualified RP personnel.

1. If workers are continuously escorted into areas without documented surveys, entry into such areas shall be made only after dose rates in the area have been determined and entry personnel are knowledgeable of them.
   a. These personnel will receive a pre-job briefing prior to entry into such areas.
   b. This dose rate determination, knowledge, and pre-job briefing does not require documentation prior to initial entry**.**
   c. The survey results will be documented after the initial entry.
   d. For any follow-up entries; personnel will review the documented survey results, RP coverage will be provided based on the applicable RWP, RP briefings will be documented as required.
2. Radiological briefings for tasks may be performed by the ANSI qualified RP technician providing job coverage or by other ANSI qualified RP personnel.
3. If the RPT providing job coverage is not providing the radiological briefing, or cannot attend the briefing, they will review the work to be performed, understand the radiological conditions read and understand the requirements of the RWP and any ALARA, or Micro ALARA plans prior to assuming job coverage activities.
4. PRIOR TO performing work on a task in a high radiation area or locked high radiation area, workers SHALL receive the appropriate Radiological Briefing.

4.5 RADIOLOGICAL BRIEFINGS (continued)

1. (continued)

5. Radiological briefings for work on a task in a high radiation area or locked high radiation area are to be attended by all workers involved in the activity(ies) except as detailed in the note above.

6. RP supervision will attend Radiological Briefings for LHRA entries for activities deemed to be high risk for Radiological Safety (excluding activities that are categorized as high radiological risk due solely to FME concerns) per NMP-DP-001.

7. Work Group supervision or lead should attend Radiological briefings for entries into LHRAs for activities deemed to be high risk for Radiological Safety per NMP-DP-001.

8. Additional, individual or small group briefings may be performed as required to address particular needs (e.g., replace workers, special skilled workers required) provided job scope or radiological conditions of the original briefing have NOT changed.

4.5.1 High Radiation Area (HRA) Briefings

NOTE

Briefings for high radiation areas are not formal briefings and may be given in the field by ANSI qualified RP personnel. No documentation is required, however, NMP-HP-204-F02 may be used as a guide to ensure critical elements are addressed.

1. HRA briefings are valid for the duration of the activity unless radiological conditions, work scope or activity performed change.

2. HRA briefings are REQUIRED PRIOR TO initial entry into a High Radiation Area.

   a. NMP-HP-204-F02, Radiological Briefing Record may be used as a guide for the briefing.

   b. HRA briefings may be given in the field by an ANSI qualified RPT or other ANSI qualified RP personnel.

   c. After the initial HRA briefing, workers re-entering the HRA are to check in with RP to verify there are no changes in radiological conditions. If there are any changes in radiological conditions, RP will update the workers on the changes.

   d. IF there are any changes in work scope or process, RP will evaluate the effect on any ALARA plans or Micro ALARA plans and any controls in place to ensure they address the scope or process changes.

4.5.1 High Radiation Area (HRA) Briefings (continued)

4.5.2 Locked High Radiation Area (LHRA) Briefings

1. LHRA briefings are valid for the shift unless radiological conditions, work scope or activity change.

2. Documented Locked High Radiation Area briefings are REQUIRED PRIOR TO initial entry into a Locked High Radiation Area and each shift thereafter, and MUST discuss applicable items found in NMP-HP-204-F02, Radiological Briefing Record.

3. An LHRA briefing can take place a shift or more prior to performing activities. The initial briefing is documented in eSOMS or NMP-HP-204-F02. An update/refocus brief will be performed the shift of activities followed with an entry made into eSOMS documenting the Update/refocus brief has been performed.

4. Initial and update LHRA briefings will be documented using either eSOMS logs OR NMP-HP-204-F02.

    a. Worker names and exposure ID should be entered into eSOMS logs to enable rapid verification of initial briefing to preclude the need for an additional briefing for re-entry during the same shift.

    b. After the initial LHRA briefing, workers re-entering the LHRA are to check in with RP to verify there are no changes in radiological conditions and to be reauthorized for entry.

    c. IF there are NO changes in radiological conditions, work scope or activity performed, a documented re-briefing IS NOT required.

    d. Shiftly, or IF radiological conditions OR work scope/activity changes, a new LHRA briefing will be conducted and documented using either eSOMS logs OR NMP-HP-204-F02.

    e. In addition to step “d” above, if radiological conditions OR work scope/process changes, RP will evaluate the need for changes to any ALARA plans, micro ALARA plans or work controls in place to ensure they remain appropriate for the changes.

5. E**nsure** all required workers are in attendance for radiological briefings.

6. Any workers not present for the initial briefing, or any new workers, will need to be briefed on the radiological conditions, the RWP requirements and any ALARA plan, or micro ALARA plan requirements and documented using either eSOMS logs OR NMP-HP-204-F02 **PRIOR** to allowing entry into an LHRA.

7. Where applicable, briefings will include instruction for dose rate alarm response for work in areas where a dose rate alarm is anticipated due to traversing an area of higher dose rates (≥ ED dose rate set point) during ingress or egress to or from the work location or where the worker(s) may receive a dose rate alarm due to ergonomics or ED shifting due to movement of clothing or lanyard. Figure 3 provides actions for dose and dose rate alarms.

4.5.2 Locked High Radiation Area (LHRA) Briefings (continued)

8. IF a recent survey is NOT available, historical survey data may be reviewed during the briefing. IF the survey is to be performed upon entry, this should be documented.

9. SNC RP supervision SHALL **provide** oversight for jobs involving high radiological risk (excludes activities graded as high risk for radiation safety due solely to FME concerns).

10. Central monitoring personnel assigned to specific job coverage will normally attend applicable briefings as determined by RP supervision.

NOTE

NMP-HP-218, Health Physics Stop Work Authority and Guidance On Response, provides actions and steps to be taken when RP Stop Work Authority is invoked.

11. Radiation Protection SHALL **exercise** stop work authority whenever radiological conditions or work practices deviate significantly from those anticipated in Pre-Job planning and briefing.

    - WHEN this occurs, RP supervision SHALL be notified and appropriate changes made in the approach to the job.
    - A new Radiological Briefing SHALL be given before resuming work.
    - Stop work actions and subsequent changes in job controls SHALL be reflected on the RWP, ALARA Plan, Micro ALARA Plan or briefing record, as appropriate.

12. A Post-Job Briefing **MAY** be performed with the workers to record lessons learned during the progress of an activity. NMP-HP-204-001, ALARA Planning, has guidance on Post Job Briefings.

4.6 STANDARDS FOR ESTABLISHING RADIOLOGICAL HOLD POINTS

Radiological hold points may be established for a RWP or an individual task covered by a RWP. Hold points are used as a tool to establish the higher bounds covered by an RWP or briefing to ensure the potential for unintended exposure to an individual or group of workers is minimized. WHEN a radiological hold point is reached, the work site should be left in a safe configuration, until additional planning and/or controls are established to complete the job.

4.7 WORK IN PROGRESS (WIP) REVIEWS

NOTE

RWP Dose and hours percentages can be viewed on HIS-20 Radiation Work Permits Reports using the RWP Total Dose, Hours and Dose Rate report as well on RP information applications (NORAD).

1. WIP Reviews apply to all active jobs requiring use of a specific RWP with exposure estimates of 1 person-rem or greater.

NOTE

It is recognized that certain RWP's are expected to accrue a significant portion of their dose budget within a very short time frame (e.g., SG nozzle dams or CRD drive work). For RWP's where the accrued dose exceeds 50% within a short time frame (e.g., within 24 hours), WIP reviews are completed at a percentage greater than 50%.

2. Review of RWP's should be performed by RP and work group supervision at a frequency to ensure that reviews are performed at, or near, dose thresholds.

3. Work group supervision should be notified and any problems discussed when the accumulated exposure on an RWP reaches 50% of the initial estimate. IF during this notification and discussion problems are identified that may invalidate the initial ALARA exposure estimates, further investigation and review SHALL be REQUIRED.

4. Document the results of the discussion with the Work Group supervision either electronically (HIS-20, eSOMS) or on NMP-HP-204-F05, Work In Progress Review.

5. IF exposure estimates are based on historical radiological data and the actual radiological conditions vary considerably from the estimates, the RWP dose budget should be revised to reflect the actual data. The reason for revising the RWP budget should be documented.

   - For RWP dose estimates that are > 3 person-rem, the Plant ALARA Review Committee should approve the WIP Review if the dose is expected to exceed 125% of the original estimate.

   - IF a WIP Review results in a change in the RWP dose estimate from less than 3 person-rem to greater than 3 person-rem, the Plant ALARA Review Committee should review the WIP.

   - Any jobs stopped to perform a WIP Review may be restarted following approval of a finalized WIP Review and worker reviews as appropriate.

6. WHEN an RWP accumulates approximately 80% of the current exposure estimate, the work will be reviewed to identify any problems and to estimate the final exposure. This review should be recorded using NMP-HP-204-F05, Work In Progress Review. IF necessary, the RWP may be locked out (preferred method) or suspended during this review. IF the final estimate of exposure is projected to exceed 100% of the current estimate, both the dose projection and the RWP will be revised.

7. RP Supervision can approve an RWP dose increase up to 125% of the dose estimate, NOT to exceed 3 Rem total estimated RWP dose.

8. Emergent Dose or scope additions should be evaluated as directed in Section 4.2 of this procedure, Pre-Job Planning. IF it is determined that the additional work SHALL be included on an existing RWP, it should be documented and the RWP estimates revised, as necessary.

4.7 WORK IN PROGRESS (WIP) REVIEWS (continued)

9. A WIP Review should contain the following:

   - The actual exposure for the job-to-date compared to the estimate
   - A comparison of the actual work hours-to-date compared to the work hours expected
   - An evaluation of project status (e.g., % complete) by the work supervisor and/or work crew against the collective exposure for the task-to-date
   - Reasons that the estimated or actual exposure exceeds current total job estimate, as applicable
   - Conclusions regarding the continuation of work including corrective actions, revised RWP dose estimates, and any additional ALARA controls needed to be implemented to ensure exposure for work remains ALARA.

NOTE

Modifying the dose estimates, RWP-hours or other administrative changes DO NOT constitute changes to the ALARA package.

10. IF the WIP review results in changes to the Radiological Briefing requirements, affected workers SHALL be briefed on the required changes. Signify that this briefing has been completed on NMP-HP-204-F04, Briefing Attendance Sheet, or electronically in the HIS-20 RWP Job Briefing or Authorization sections as applicable.

11. IF the WIP review results in changes to the work plan or other information that may have an immediate and direct impact to work in the field, THEN work SHALL be stopped until all workers are briefed on the changes.

12. RP supervision SHALL **review** AND **approve** each WIP Review.

4.8 EMERGENT DOSE APPROVAL

1. Responsible Job Supervisor (or designee) **initiates** NMP-HP-204-F08, Emergent Dose Approval Form, and routes for review and approval for all on-line work. Approval is REQUIRED for outage work starting at 100 mrem.

2. For dose tracking purposes, all Emergent Dose requests will be tracked and trended by the ALARA group.

3. **Review** requests for Emergent Dose against the criteria in Section 4.2 to determine if ALARA Planning is required.

4. Emergent Dose approval SHALL be obtained PRIOR TO starting OR continuing work except in cases of urgent work as defined by this procedure.

5. **Initiate** a Condition Report when online Emergent Dose is estimated to be 50 mrem or greater.

4.8 EMERGENT DOSE APPROVAL (continued)

6. **Initiate** a Condition Report for emergent outage work dose estimated to be 100 mrem or greater.

7. Emergent Dose less than 10 mrem may be approved by an ANSI qualified RP Technician. **Document** by signing on NMP-HP-204-F08, Emergent Dose Approval Form.

8. Emergent dose 10 mrem, or greater, but less than 25 mrem will be approved by Radiation Protection Supervisor (or designee). **Document** by signing on NMP-HP-204-F08.

9. Emergent dose 25 mrem, or greater, but less than 250 mrem, will be approved by the Radiation Protection Manager (or designee). **Document** by signing on NMP-HP-204-F08.

10. Emergent dose 250 mrem or greater, but less than 500 mrem will be approved by Plant Manager (or designee) and is documented by signing on NMP-HP-204-F08.

11. Emergent dose 500 mrem or greater will be approved by the Plant ALARA Review Committee and is documented by signing on NMP-HP-204-F08.

12. The completed and signed Emergent Dose Approval From is maintained with the associated RWP and transferred to Documentum as part of the RWP package on close out of the RWP.

5.0 RECORDS

1. All records are maintained per appropriate procedures.
2. Forms SHALL be transmitted to Document Control. This transmission to Document Control can be either electronic or hardcopy.
3. Documentation entered into eSOMS logs is automatically transmitted to D2 using R-Type GG7.107.
4. ALARA Planning and Job Review documentation SHALL be transmitted to Document Control.
5. ALARA planning and job review documentation (ALARA Review Packages) may be transmitted to Document Control (DMS) as individual documents or as a complete package containing the documentation that was required to document the activity.

QA records (X)	Non-QA records (X)	Record Generated	Retention Time	R-Type
X		RWP ALARA Package	LP+99	GG2.031
X		NMP-HP-204-F02, Radiological Briefing Record	LP+99	GG2.028
X		NMP-HP-204-F04, Briefing Attendance Sheet	LP+99	GG2.052
X		NMP-HP-204-F05, Work In Progress Review	LP+99	GG2.054
X		NMP-HP-204-F06, Respirator Use Evaluation Worksheet	LP+99	GG2.055
X		NMP-HP-204-F07, Stay Time Tracking / Calculation	LP+99	GG2.219
X		NMP-HP-204-F08, Emergent Dose Approval Form,	LP	GG2.130

6.0 REFERENCES

1. 10 CFR 20, Standards for Protection Against Radiation
2. 10 CFR 50, Domestic Licensing of Production and Utilization Facilities
3. INPO IER 11-41, Unplanned Personnel Exposures from Highly Radioactive In-Core Components
4. International Commission on Radiological Protection, Publication 37, Cost-Benefit Analysis in the Optimization of Radiation Protection
5. NMP-AD-035, ALARA Program
6. NMP-DP-001, Operational Risk Awareness
7. NUREG-CR-0446, Determining Effectiveness of ALARA Design at Operational Facilities
8. US NRC Regulatory Guide 8.8, Information Relevant to Ensuring that Occupational Radiation Exposure at Nuclear Power Stations will be As Low As Reasonably Achievable
9. US NRC Regulatory Guide 8.10, Operating Philosophy for Maintaining Occupational Radiation Exposure As Low As Reasonably Achievable
10. US NRC Regulatory Guide 8.15, Acceptable Programs for Respiratory Protection

7.0 COMMITMENTS

7.1 FARLEY

None

7.2 HATCH

SNC19546, SNC19820, SNC19821

7.3 VOGTLE 1-2

SNC2482, SNC3162, SNC4333, SNC4338, SNC4392, SNC6160, SNC6161, SNC6163, SNC6164, SNC6166, SNC6173, SNC6174, SNC6265, SNC6646, SNC6649, SNC6650, SNC564, SNC8432, SNC8436, SNC8437, SNC10303, SNC10305, SNC877, SNC14828, SNC16259, SNC16265

7.4 VOGTLE 3-4

COMTA 2071, COMTA 3221, COMTA 3224, COMTA 3226, COMTA 3227, COMTA 3270, COMTA 3345

FIGURE 1
Page 1 of 2

ESOMS Log Briefing Stamps

NOTE
Figure 1A
High Radiation Area Briefing Stamp

Briefing given by <text>

<Worker/Group>, was/were briefed on RWP <number> to perform <task> in <location/room>.
MWO or Tagout <text>

A Yellow RWP will be used for entry into a HRA

<text> ENSURE the RWP allows access into the appropriate HRA.

<text> ASK if entrants have read and understand the RWP. If not, SUSPEND the briefing until the RWP has been read by all entrants.

<text> DISCUSS the radiological conditions of the area using the most current survey.

<text> ENSURE the role of each entrant is understood.

<text> ENSURE the expectations to minimize dose using low dose rate areas and other ALARA measures is understood. (e.g., checking dose every 15-20 mins, securing dosimetry)

<text> VERIFY dosimeter setpoints are appropriate for the work based on expected radiation levels and discussed work activities.

<text> Dress requirements (X' selection): <text> Full Set with hood and double shoe covers <text> Lab coat, booties and gloves (Document below any modifications)

<text> ENSURE entrants understand to check with RP to make sure conditions have not changed if they leave and then return to the area.

<text> EXPLAIN that additional briefings are required for either of the following conditions:
- Work scope changes.
- Work scope involves high radiological risk; a briefing is required each shift as a minimum.

FIGURE 1
Page 2 of 2

ESOMS Log Briefing Stamps

Figure 1B
Locked High Radiation Area Briefing Stamp

######## LOCKED HIGH RADIATION AREA BREIFING RECORD ########

Briefing given by <text>

<Worker/Group>, was/were briefed on RWP <number> to perform <task> in <location/room>.
MWO or Tagout <text>
*** RP supervision will attend Radiological Briefings for LHRA entries for activities deemed to be high risk for Radiological Safety (excluding activities that are categorized as high radiological risk due solely to FME concerns) per NMP-DP-001.
A Red RWP will be used for entry into a LHRA

<text> ENSURE the RWP allows access into the appropriate LHRA.

<text> ASK if entrants have read and understand the RWP. If not, SUSPEND the briefing until the RWP has been read by all entrants.

<text> DISCUSS the radiological conditions of the area using the most current survey.

<text> ENSURE the role of each entrant is understood.

<text> ENSURE the expectations to minimize dose using low dose rate areas and other ALARA measures is understood. (e.g., checking dose every 15-20 mins, securing dosimetry)

<text> VERIFY dosimeter setpoints are appropriate for the work based on expected radiation levels and discussed work activities.

<text> Dress requirements (X' selection): <text> Full Set with hood and double shoe covers <text> Lab coat, booties and gloves (Document below any modifications)

<text> EVERY LHRA ENTRY REQUIRES A DOCUMENTED BRIEFING.

<text> EXPLAIN that additional briefings are required for either of the following conditions:
- Work scope changes.
- Work scope involves high radiological risk; a briefing is required each shift as a minimum.

FIGURE 2
Page 1 of 1

SNC PARC Agenda Format (Example)

NOTE

This is a guide for developing the PARC agenda. Variation to the agenda is permitted to meet PARC meeting purposes. Not all items are applicable to every PARC. Only the elements applicable to the PARC type/purpose should be used.

1. Title Page
   a. Meeting date, Time and Location
   b. PARC Type
      (i) Online; Outage; Special
2. Agenda (Topics and presenters – Include only those items as needed)
   a. 5 Minute Driver/DEI Topic
   b. Previous PARC Attendance
   c. Current Parc Attendance (establish that quorum* is met with no more than two alternates)
      (i) Plant Manager/Chair
      (ii) RP Manager
      (iii) Engineering Director
      (iv) Maintenance Director
      (v) Operations Director
   d. Review of Previous Minutes/Actions
   e. YTD Dose v Actuals
   f. Current CRE performance
      (i) Dose performance and explanations of deltas
      (ii) Emergent Dose Discussion
   g. Planned work for upcoming work period
      (i) Discussion/challenges of dose estimate
   h. Approval of dose goal
3. Discussion of any Strategic Dose Reduction Plans
   a. Long Term (5 Year)
   b. Annual Dose Reduction Plan
   c. Outage Dose Reduction Plans
4. Review of Actions
5. Meeting Close

FIGURE 3
Page 1 of 2

Guidance for Setting Electronic Dosimeter (SRD) Alarms

NOTE

ED dose rate setpoints should not encumber workers when working in non-uniform fields. If workers must come in close contact with areas with higher dose rates then in general areas during the work ED setpoints should be raised to accommodate the work , (not to exceed 1.25 times the contact dose rates), or anticipated dose rate alarms should be utilized if body positioning will allow the work to progress without frequent alarms.

Setting SRD Dose Gamma Rate Alarms:

Establish dose rate alarm setpoints at thresholds to alert workers that they have entered unexpectedly high dose rate fields using the following criteria;

IF Work† Area Is A …	**THEN** Set The Dose Rate Alarm As Follows…
Radiation Area	Dose rate alarm should be calculated using 150 percent of the maximum anticipated dose rate in the immediate work area.
High Radiation Area	Dose rate alarm should calculated using 125 percent of the maximum anticipated dose rate in the immediate work area.
Locked High Radiation Area	Dose rate alarm should be calculated using 125 percent of the maximum anticipated dose rate in the immediate work area

†Work Area is the dose rate where the work will be performed, (e.g., at the valve, pump, etc.) not necessarily the highest in the surrounding area.

Guidance For Setting SRD Gamma Dose and Rate Alarms

IF Average Dose for RWP or Task is	**THEN** Set Dose Alarm
< 25 mRem	Within 10 mRem of average
≥ 25 mRem	(Approximately) 110% of anticipated dose for RWP/task/entry

Example for setting dose rate alarm;
Work Area Dose Rate = 100 mR/h SRD bias is 10%* (1.10) so, 100 mR/h x 1.10 = 110 mR/h (dose rate measured by SRD) Dose Rate Alarm Set Point is 125% of working area dose rate; 110 mR/h x 1.25 =137.5 (138) mR/hr

Example for setting dose alarm;
Dose rate = 100 mR/h ; Estimated work duration = 90 minutes Task Dose = 100 mR/h x 1.5 hours = 150 mR (150 mR) Bias adjusted Task Dose = 150 mR x 1.10* = 165 mR Dose alarm setpoint = 165 mR x 1.10** = 181.5 mR (182 mR)

* use site specific SRD bias.
** recommended percentage from INPO 14-10

FIGURE 3
Page 2 of 2

Guidance for Setting Electronic Dosimeter (SRD) Alarms

Guidance for entering neutron dose and rate setpoints in the RWP for individual tasks is included in NMP-HP-206.

Guidance for setting neutron dose rate alarm;
The neutron dose rate alarm is optimally set at 125% of the expected neutron dose rate. However, it may be set to 150% of the anticipated neutron dose rate if neutron dose rates vary significantly close to the immediate work area.

Guidance for setting neutron dose alarm;
The neutron dose alarm is optimally set at 110% of the expected neutron dose.

FIGURE 4
Page 1 of 2

Actions for Dose and Dose Rate Alarms

The following table provide instruction for Worker and RP responses to SRD dose and dose rate alarms;

Actions for Dose Alarms	
IF the alarm is …	**THEN** …

A Dose alarm	• Worker is to stop work, exit the area and report alarm to RP.
	• Notify RP Supervisor
	• Exclude Worker from any RCA entry until Investigation is complete
	• RP will document the event in the CAP process.
	• RP will investigate the event as directed in NMP-HP-109, Investigation, Evaluation and Management of Damaged, Lost, Malfunctioning or Alarming Dosimetry, and utilizing any, or all, of the following:
	  • Interview worker/ obtain statement
	  • Perform follow-up surveys
	  • Review RWP limits/conditions
	  • Form IRT
	  • Hold a HPES

Action for **Unanticipated Dose Rate Alarm**	

Unanticipated Dose Rate Alarm
 	
If an alarm is received upon entering work area, or traversing the path to the work area and no dose rate alarms were anticipated for activity (discussed in briefing), worker is to immediately exit area and notify RP.
	• RP will document Dose Rate Alarm in a condition report
	  • RP will investigate the cause of the alarm as directed in NMP-HP-109, Investigation, Evaluation and Management of Damaged, Lost, Malfunctioning or Alarming Dosimetry, and to include, but not limited to, verification that worker is on proper RWP/Task and proper work area, interviewing worker, follow-up surveys and testing of SRD for proper functioning and setpoints.
	  • If investigation reveals a change in radiological conditions, prior to resumption of work, RP will, as necessary, edit RWP, adjust SRD alarm setpoints, and re-brief worker on radiological conditions.
	  • If investigation reveals a malfunctioning SRD, RP will remove the SRD from service and allow work to resume.
	  • If investigation reveals that the alarm was caused by worker error, RP may form an IRT, per NMP-GM-020-001, Issue Response Team, and/or convene an HPES, per NMP-GM-005-010, Human Performance Event Study, prior to allowing worker to resume duties.
	
	  • **OBTAIN** RP Supervision approval prior to reinstating RCA access.

FIGURE 4
Page 2 of 2

Actions for Dose and Dose Rate Alarms

RP Actions for Use of Anticipated Dose Rate Alarms	
Anticipated Dose Rate Alarm	**Action Prior to Use of Anticipated Dose Rate Alarms;**
Radiological conditions can be present where work may involve transit through a dose rate that is higher than the work area or work activities that involve discrete actions of short duration that present a dose rate higher than the work area dose rate for the activity. In such cases, a planned dose rate alarm is appropriate to support a dose rate set point that is reflective of the dose rates for the activity and provide an alarm function that is beneficial to dose control.	• Obtain current surveys and historical data relevant to the work to be performed to determine if an anticipated dose rate alarm is warranted. • If an anticipated dose rate alarm is warranted document RP supervision approval in eSOMS or on NMP-HP-204-F02 or similar form. This may be obtained in-person, over the phone or via email. • Brief the workers on the requirements for use of and response to anticipated dose rate alarms.

IF the alarm is received…, …	**THEN** …
1) Traversing pathway to work location	• Worker is to quickly pass through area where dose rate alarm is anticipated; • If alarm stops after passing through the area, the worker may continue to work area. • If alarm does not stop after passing through the area, instruct worker to exit area and return to RP.
2) While in the work area	• Worker is to reposition or back away from work area. • If alarm does not stop, worker is to leave area and report to RP. • If alarm stops, worker may resume work. • If a second dose rate alarm is received, the worker is again to reposition or back away from the work area. • If alarm does not stop, worker is to leave area and report to RP. • If alarm stops, worker may resume work. • If a third dose rate alarm is received, the worker is to leave the area and report to RP.

RP Actions for Anticipated Dose Rate Alarms	
IF	THEN
1) No dose rate alarm was received for the entry	1) No further documentation or evaluation is needed. Reinstate RCA access, if required.
2) The highest dose rate indicated by the electronic dosimeter is within the anticipated dose rate range and a result of the planned reason for the alarm	**2)** **No** further action is required. Reinstate RCA access, if required.
3) The highest dose rate indicated by the electronic dosimeter is greater than the HEDR by more than 150% or is not the result of the planned reason.	3) **INITIATE** an investigation to determine cause per NMP-HP-109, Investigation, Evaluation and Management of Damaged, Lost, Malfunctioning or Alarming Dosimetry. **EVALUATE** the area for increased dose rates to validate posting is adequate for the area.

Hydrogen Injection Reduction ALARA Planning Tool (Hatch Only)

NOTE

Normal mode of operation for Hydrogen Injection is the external/ automatic mode (load following). When operating in the internal/automatic mode (manual), the following guidelines MUST be used unless approved by RP Supervision (or higher)

STEP	IF		AND	THEN
1	The work activity is **NOT** in the vicinity of a nuclear steam system or component (see Note 1)			**DO NOT** reduce injection rate
2	The work activity **IS** in the vicinity of nuclear steam system or component (see Note 2)		There is **NO** immediate need to enter the area	Reschedule activity for power reduction
			There **IS** an immediate need to enter the area (see Note 3)	Proceed to step 3
3	Reactor power is	≥ 75%		Do **NOT** reduce injection rate
		≥ 50%	< 75%	*Have Operations reduce injection rate to 4 SCFM
		≥ 10%	< 50%	*Have Operations reduce injection rate to 3 SCFM (See Note 4)

*RP personnel will verify that hydrogen injection is at the correct flow rate prior to allowing personnel entry into the affected area(s).

NOTES:

Note 1: Examples – RWCU Pump Rooms, RWCU Heat Exchanger, FPC Heat Exchanger

Note 2: Examples – Main Steam Lines, Steam Chase, Condenser Bay, Turbine Enclosure, SJAE

Note 3: Examples – Required surveillances, events which could lead to taking unit off line, as determined by SOS or Scheduling, as determined by RP

Note 4: When in "Load Following", the U1 Hydrogen Water Chemistry System will maintain the hydrogen injection rate at 3 SCFM between 30% and 10% power.**Note 5 (Hatch Only)**: The Unit SS MUST be notified prior to entry to ensure Hydrogen Injection levels are not changed during entry