



Information Use

NUCLEAR OPERATING FLEET
RADIATION PROTECTION PROCEDURE

AD-RP-ALL-2007

RADIATION PROTECTION OUTAGE READINESS

REVISION 4

Effective Dates:

09/01/2022
Brunswick

09/01/2022
Catawba

09/01/2022
Harris (HNP)

09/01/2022
McGuire

09/01/2022
Oconee

09/01/2022
Robinson

09/01/2022
NGO

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REVISION SUMMARY	
PRR 02411684	DESCRIPTION
<ul style="list-style-type: none"> • Section 5.0 Old Steps 1.a and 1.b: Deleted historical steps that are no longer needed. • Attachment 1 Changes: <ul style="list-style-type: none"> ◇ 1.4: Changed the Milestone from T-3 to T-1. (PRR 02411684) ◇ 1.8: Deleted 'including ramp-up & de-staffing charts'. ◇ 1.9: Added new step, 'Develop ramp-up and de-staffing charts' with Milestone T-1.5; renumbered remaining item. ◇ 2.2: Under Item changed 'DOSE GOAL' to DOSE ESTIMATE'; changed Milestone to '24 Month (T-15 to T-12) 18 Month (T-13 to T-10)'; changed Comments to 'AD-WC-ALL-0320 Milestone M-7'. ◇ 2.20: Changed Item to 'IDENTIFY AND APPROVE RWP's' in bold; changed Milestone to '24 Month (T-8 to T-1) 18 Month (T-8 to T-1)'; under Comments added 'AD-WC-ALL-0320 Milestone M-24'. ◇ 2.21: Changed Item to 'IDENTIFY AND APPROVE TSR's' in bold; changed Milestone to '24 Month (T-8 to T-1) 18 Month (T-8 to T-1)'; under Comments added 'AD-WC-ALL-0320 Milestone M-24'. ◇ 2.22: Changed Item to 'Complete approvals for ALARA Plans'. ◇ 2.23: Added new step, 'Complete approvals for micro-plans' with Milestone T-0; renumbered remaining items. ◇ 6.1, 6.2, and 6.3: Changed the Milestones to 'T-4'. ◇ Old 6.6: Deleted 'Order lockers for supplemental staff'; renumbered remaining items. ◇ 6.7: Changed Milestone from 'T-2' to 'T-0.5'. ◇ 10.2: Changed the Milestone from T-3 to T-1. (PRR 02411684) ◇ Approval Page: Under 'Approved for use by:' changed 'RP General Supervisor' to 'RP Supervisor' and 'RPM' to 'RP Superintendent'; under 'Verified checklist complete:' changed 'RP General Supervisor' to 'RP Superintendent'. 	

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1.0 PURPOSE

1. Provide a process to ensure the Radiation Protection (RP) group is ready to provide effective support for a refueling outage. This procedure incorporates outage milestones, industry best practices and lessons-learned from previous fleet outages.

2.0 SCOPE

1. This procedure only applies to scheduled refueling outage preparation and readiness. Portions of this procedure may also be used for forced or planned maintenance outages. {7.1.1}

3.0 DEFINITIONS

1. **Control Point:** Any single point access where additional radiological controls are deemed necessary for contamination control OR removal of radioactive materials and equipment (e.g., exit from RCA).

4.0 RESPONSIBILITIES

4.1 Radiation Protection Manager (RPM)

1. Ensures the RP outage readiness preparations are performed in accordance with this procedure.
2. Assigns an RP Outage Coordinator or other designated RP personnel for each refueling outage.

4.2 Radiation Protection Supervisor

1. Makes staff assignments for outage readiness activities.
2. Monitors progress towards outage readiness targets.

4.3 RP Outage Coordinator

1. Leads RP in adhering to pre-outage readiness expectations in accordance with AD-WC-ALL-0320, Outage Preparation Milestones. {7.1.2}

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5.0 INSTRUCTIONS

1. All sites are to use Attachment 1, RP Outage Readiness Checklist, (or equivalent) to ensure RP readiness to support scheduled refueling outages.
2. Items that are not required as formal Work Management or RP fleet milestones are considered placekeepers and intended to assist in outage readiness.
3. Site specific outage procedures and readiness plans can be used to demonstrate completion of items.
4. RP Outage Readiness Checklist items indicated in **BOLD CAPS** are formal Work Management milestones and managed in accordance with AD-WC-ALL-0320, Outage Preparation Milestones.
5. The site RPM may extend RP Outage Readiness Checklist items that are not indicated as fleet RP or Work/Outage Management required items as necessary based on resources and priorities.
6. The site RPM may add additional items to the RP Outage Readiness Checklist based on site needs or lessons-learned.

6.0 RECORDS

No records are generated by this procedure.

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7.0 REFERENCES

7.1 Commitments

1. CAPR 236014-18, Common Cause Evaluation of Posting and Boundary Deficiencies
2. CAPR 242128-04, Common Cause Evaluation of Contamination Control Events
3. SOER 01-1, Unplanned Radiation Exposures, Recommendation 2

7.2 Procedures

1. [AD-RP-ALL-2015](#), Alpha Radiation Characterization
2. [AD-WC-ALL-0320](#), Outage Preparation Milestones

7.3 Miscellaneous Documents

None

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1.0 Functional Area: Staffing

#	ITEM	ASSIGNED TO	MILESTONE (months)	DUE DATE	DATE COMPLETED	COMMENTS
1.1	Develop outage staffing plan		T-4			
1.2	Identify and request RP, ALARA and Decon resources within allocated budget from vendor company		T-5			
1.3	Identify and communicate to fleet coordinators shared resource requests		T-4			
1.4	Select contractors and communicate to vendor		T-1			
1.5	Submit in-processing and training needs to site coordinators		T-2			
1.6	Submit computer access requests for contractors		T-0			
1.7	Assign control point leads		T-0			
1.8	Develop budget		T-3			
1.9	Develop ramp-up and de-staffing charts		T-1.5			
1.10	Implement a transition schedule for staff and contractors		T-0			

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2.0 Functional Area: ALARA Planning and RWP {7.1.3}

#	ITEM	ASSIGNED TO	MILESTONE (months)	DUE DATE	DATE COMPLETED	COMMENTS
2.1	Identify projects that require additional ALARA support to be budgeted		T-6			
2.2	DEVELOP PRELIMINARY DOSE ESTIMATE		24 Month (T-15 to T-12) 18 Month (T-13 to T-10)			AD-WC-ALL-0320 Milestone M-7
2.3	Submit known TSRs to Engineering		T-7.5			
2.4	Identify RP HIT teams and members		T-4			
2.5	Activate RWPs for pre-outage work		T-3			
2.6	Identify outage related RWPs		T-2			
2.7	Schedule ALARA Plan ALARA Committees		T-3			
2.8	Identify ALARA Plans		T-4			
2.9	Schedule additional ALARA support resources		T-2			
2.10	Identify high risk radiological activities		T-3			
2.11	Review SRD setpoints after RWPs are generated		T-0			
2.12	Integrate shielding and hot spot removal activities into schedule		T-3			

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2.0 Functional Area: ALARA Planning and RWP (continued) {7.1.3}

#	ITEM	ASSIGNED TO	MILESTONE (months)	DUE DATE	DATE COMPLETED	COMMENTS
2.13	Schedule BRAC/EPRI surveys		T-1			
2.14	Identify and evaluate primary system weld activities that could lead to Argon gas activation during power ascension		T-3			
2.15	Identify mock-up needs		T-5			
2.16	Develop ALARA plans and micro-plans		T-1			
2.17	Evaluate need and submit additional TSRs		T-2			
2.18	Develop RWPs		T-2			
2.19	Schedule RWP/ ALARA Plan briefings		T-1			
2.20	IDENTIFY AND APPROVE RWPs		24 Month (T-8 to T-1) 18 Month (T-8 to T-1)			AD-WC-ALL-0320 Milestone M-24
2.21	IDENTIFY AND APPROVE TSRs		24 Month (T-8 to T-1) 18 Month (T-8 to T-1)			AD-WC-ALL-0320 Milestone M-24
2.22	Complete approvals for ALARA Plans		T-1			
2.23	Complete approvals for micro-plans		T-0			
2.24	Establish final outage dose goal		T-1			Consider operational deviations that may affect dose rates such as recent forced outages, failed fuel and chemistry indicator excursions
2.25	Develop metrics and reports to monitor dose goal performance and trends		T-1			

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3.0 Functional Area: Materials and Laundry

#	ITEM	ASSIGNED TO	MILESTONE (months)	DUE DATE	DATE COMPLETED	COMMENTS
3.1	Identify consumable list and communicate to vendor(s)		T-6			
3.2	Order containment devices – tents, glove bags, catch funnels		T-4			
3.3	Determine protective clothing needs and communicate to vendor		T-2			
3.4	Order specialty items including delta suits, multi-badge vests, aprons and sleeves		T-2			
3.5	Order specialized shielding		T-4			
3.6	Order specialized decon supplies		T-4			
3.7	Order respirator supplies, including filters, masks, PAPR blowers/hoods		T-4			
3.8	Order audio/video supplies		T-4			
3.9	Order RadWaste shipping containers		T-2			
3.10	Verify all required materials on-site		T-1			
3.11	Verify supply of trip tickets		T-1			

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4.0 Functional Area: Dosimetry and Respiratory Protection

#	ITEM	ASSIGNED TO	MILESTONE (months)	DUE DATE	DATE COMPLETED	COMMENTS
4.1	Determine pre-outage staffing needs and schedule		T-4			
4.2	Identify and communicate to EnRAD needed supplies of DLRs, SRDs, telemetry devices (above baseline inventory)		T-4			
4.3	Evaluate applications of EDEX		T-4			
4.4	Identify air-line support equipment needs		T-4			
4.5	Verify bioassay supplies		T-3			
4.6	Verify cal dates of all respiratory support equipment		T-2			
4.7	Verify breathing air grade D or E (per site requirements) quality checks and ensure testing is acceptable for entire outage		T-1			

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5.0 Functional Area: Instrumentation

#	ITEM	ASSIGNED TO	MILESTONE (months)	DUE DATE	DATE COMPLETED	COMMENTS
5.1	Determine instrument needs, including specialty instruments and communicate to EnRAD		T-4			
5.2	Identify all lapel air sampling needs and communicate to EnRAD		T-4			
5.3	Identify all cam needs and communicate to EnRAD		T-4			
5.4	Verify cal dates of air sampling equipment		T-1			
5.5	Verify cal dates of portable instruments and telemetry devices		T-1			
5.6	Verify cal dates of SAMs/BAMs		T-2			
5.7	Verify calibration of WBCs current through outage duration		T-2			
5.8	Verify cal dates of all fixed monitors		T-2			
5.9	Setup hot smear alpha survey equipment (additional)		T-0			

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6.0 Functional Area: Facilities

#	ITEM	ASSIGNED TO	MILESTONE (months)	DUE DATE	DATE COMPLETED	COMMENTS
6.1	Submit facility requests		T-4			
6.2	Submit temp power requests		T-4			
6.3	Submit IT requests		T-4			
6.4	Design control points – order furniture and equipment		T-4			
6.5	Develop remote monitoring plan		T-3			
6.6	Develop RCA drinking water plan		T-3			
6.7	Setup briefing facilities		T-0.5			
6.8	Order radios/phones/pagers		T-2			
6.9	Stock in plant control points and decon areas		T-0			

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7.0 Functional Area: Contamination/Airborne Controls

#	ITEM	ASSIGNED TO	MILESTONE (months)	DUE DATE	DATE COMPLETED	COMMENTS
7.1	Develop HEPA airborne control plan		T-2			
7.2	Develop contamination control/PCE mitigation plan		T-2			
7.3	Identify jobs that require tents – incorporate into schedule		T-2			
7.4	Identify jobs that require glove bags – incorporate into schedule		T-2			
7.5	Verify HEPA equipment operable and tested and cal due dates current		T-1			
7.6	Verify vacuums operable and tested		T-1			
7.7	Develop hot shop contamination/airborne control plans		T-2			
7.8	Verify containment devices available		T-1			
7.9	Verify cavity decon supplies		T-1			
7.10	Establish contamination control/particle barriers		T-0			
7.11	Determine areas in which ventilation unit use in the RCA will be allowed and controls		T-0			Includes fans, blowers, ventilation or temp A/C units

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8.0 Functional Area: Training

#	ITEM	ASSIGNED TO	MILESTONE (months)	DUE DATE	DATE COMPLETED	COMMENTS
8.1	Identify JIT training needs based on outage lessons-learned, performance gaps and industry OE and communicate to training		T-4			
8.2	Schedule pre-outage staff and contractor training/briefing sessions		T-2			
8.3	Develop training program for mock-ups		T-3			
8.4	Conduct training for identified outage personnel		T-0			

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9.0 Functional Area: Administrative

#	ITEM	ASSIGNED TO	MILESTONE (months)	DUE DATE	DATE COMPLETED	COMMENTS
9.1	Review outage lessons-learned (fleet, INPO, NRC, NOS) and make assignments		T-6			
9.2	Identify procedures (new and revised) needed to support outage		T-4			
9.3	Develop observation scheduled focus areas		T-1			
9.4	Verify procedures issued		T-1			
9.5	Assign individual for CAP QC		T-1			
9.6	Establish turnover log system		T-1			
9.7	Assign individuals to monitor and closeout RP outage schedule tasks		T-1			
9.8	Develop plan for ensuring timely survey review and distribution		T-1			

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9.0 Functional Area: Administrative (continued)

#	ITEM	ASSIGNED TO	MILESTONE (months)	DUE DATE	DATE COMPLETED	COMMENTS
9.9	<p>Develop a Rad Worker expectations communication schedule and departmental oversight plan using standard fleet bulletins. Site specific OE should be used in communications. Examples of topics that may be helpful in creating communications:</p> <ul style="list-style-type: none"> • Read and comply with radiological postings • Verification of being on the correct RWP and RWP task • Use of TAM/Core 4 principles in the field to be aware of changing plant conditions 		T-1			
9.10	Develop post-outage alpha characterization report per AD-RP-ALL-2015, Alpha Radiation Characterization		T+3			

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10.0 Functional Area: Special Plans

#	ITEM	ASSIGNED TO	MILESTONE (months)	DUE DATE	DATE COMPLETED	COMMENTS
10.1	Develop forced oxidation/cleanup plan (PWR only)		T-4			
10.2	Develop radiography plan		T-1			
10.3	Develop plans for 1 st time evolutions		T-3			
10.4	Develop EDEx special monitoring plan		T-3			
10.5	Develop cavity decon plan		T-3			
10.6	Develop RadWaste/hot trash handling plan		T-2			
10.7	Develop RCA material release plan		T-2			
10.8	Develop alpha monitoring plan		T-2			
10.9	Develop initial containment/drywell entry and survey plan		T-2			
10.10	Develop shutdown deposing plan		T-2			
10.11	Develop/verify survey plans for reactor shutdown and system manipulations (i.e., drain and fill)		T-2			
10.12	Develop startup posting/controls plan		T-1			

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11.0 Functional Area: Contingency Plans

#	ITEM	ASSIGNED TO	MILESTONE (months)	DUE DATE	DATE COMPLETED	COMMENTS
11.1	Develop elevated dose rates plan, if required		T-3			
11.2	Develop failed fuel monitoring plan, if required		T-3			
11.3	Develop elevated alpha monitoring/control plan		T-2			
11.4	Develop condenser iodine mitigation plan (BWR)		T-2			
11.5	Develop separator/dryer repair diving plan (BWR)		T-2			

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Outage: _____

Date issued: _____

RP Outage Coordinator: _____

Approved for use by:

RP Supervisor: _____ / _____

RP Superintendent: _____ / _____

Verified checklist complete:

RP Outage Coordinator: _____ / _____

RP Superintendent: _____ / _____