

ENGINEERING, COMPUTING, AND WEAPONS STANDARD OPERATING PROCEDURE
13B

Subj: Radiological Affairs Support Program (RASP) Deficiency Report (RDR) Program
Standard Operating Procedure (SOP)

Ref: (a) NAVSEA S0420-AA-RAD-010 Revision 2A with ACN-1
(b) RASO RSO Course S-4J-0016: Module 7 RDR and Root cause Analysis Slides
(c) COMNAVSURFPACINST 3040.1N43 Significant Event/Near-Miss Reporting
(d) NRC Information Notice 96-28: Suggested Guidance Relating to Development and
Implementation of Corrective Action

Encl: (1) Formal Critique Report - Template

1. Purpose. The purpose of the RDR program at the command level is to identify and correct Radiological Affairs Support Program (RASP) deficiencies and abnormal conditions per reference (a). RDRs are used to document and track the completion of RASP improvements. Self-identification and correction of lower order deficiencies or abnormal conditions are effective methods to identify trends and address program weaknesses before they develop into violations per reference (a) Section 2.11.1.

2. Cancellation. ECWSOP 13A.

3. Background and Discussion. The RDR program facilitates the self-identification and reporting process and provides a means for documenting and tracking the:

- a. Identification of the problem or condition of concern.
- b. Cause of the problem or condition when appropriate.
- c. Immediate and long-term (if appropriate) corrective actions taken.

An introduction to Radiological Deficiency Reporting can be found in reference (b). Reference (c) provides useful guidance for performing Formal Critique Reports. A Formal Critique Report is used to identify a root cause. Reference (d) also provides guidance relating to development and implementation of corrective actions that should be considered after identification of violation(s).

4. Responsibilities.

a. Authorized Users: Individuals who have access to radioactive material specified on the USNA Naval Radioactive Material Permit (NRMP) or ionizing radiation producing machine sources capable of exposing individuals with greater than 100 millirem per year or 2 millirem per hour exposure. Authorized users shall be qualified by the RSO and RSC, with the recommendation of the Department Chair and School Dean. Authorized users shall:

- (1) Identify deficiencies, abnormal conditions, and improvement items.
- (2) Submit RDRs as appropriate.

b. USNA Licensees (Laboratory Managers): USNA Licensees are Faculty and Staff who have submitted a USNA RASP Local Authorization (radiation use license application) and have been approved as a licensee by the RSC. USNA Licensees are considered the custodian, principal user, or radiological laboratory and facility manager. Licensees shall:

- (1) Identify deficiencies, abnormal conditions, and improvement items.
- (2) Submit RDRs as appropriate.
- (3) Address deficiencies identified by personnel as assigned.
- (4) Document corrective actions as assigned.

c. Radiation Safety Officer (RSO) and Assistant Radiation Safety Officer (ARSO): The RSO and ARSOs are designated by USNA Superintendent and are responsible for the operation of the Radiation Safety Program (RASP) including maintaining regulatory compliance. The RSO and ARSO shall:

- (1) Identify deficiencies, abnormal conditions, and improvement items.
- (2) Submit RDRs as appropriate.
- (3) Review each RASP deficiency or abnormal condition monthly.
- (4) Assign each RDR a level of significance, RDR Point of Contact (RDR POC), and RDR Supervisor consistent with reference (a) Section 2.11.1.5 and 2.11.2.1.f.
- (5) Review RDRs, corrective actions for “Resolved” RDRs, and move RDRs from Active Entries to Closed Entries (mark as “Closed out”).
- (6) Address assigned deficiencies identified by personnel as assigned.
- (7) Document corrective actions as assigned.
- (8) Perform a trend analysis as part of the Radiation Protection Audit.
- (9) Provide a quarterly report of RDRs to the RSC, Dean of the School of Math and Science, and Dean of the School of Engineering, Computing, and Weapons.

d. Radiation Safety Committee (RSC) Member: RSC Members are designated by the USNA Superintendent and are the principal advisory group of the RSO. RSC members shall:

(1) Identify deficiencies, abnormal conditions, and improvement items.

(2) Submit RDRs as appropriate.

(3) At least one RSC member shall review the RDR Log at least monthly (Active Entries and Closed Entries).

e. Other Personnel: Management or other personnel that do not fall under the previous categories listed in this section but are associated with USNA RASP operations shall:

(1) Identify deficiencies, abnormal conditions, and improvement items.

(2) Submit RDRs as appropriate.

f. RDR Originator: An individual that identifies a deficiency and submits an RDR.

g. RDR Point of Contact: The person assigned by the (A)RSO to address an RDR shall:

(1) Perform and document the corrective actions to mitigate the deficiencies and abnormal conditions identified.

(2) Provide updates to RDRs at least once a month.

(3) Inform the RDR supervisor when corrective actions are complete.

h. RDR Supervisor: The RDR supervisor is an independent person assigned by the (A)RSO. The RDR supervisor shall:

(1) Ensure corrective actions taken to correct the deficiencies and abnormal conditions are appropriate and documented.

(2) Ensure updates to RDRs occur at least once a month.

(3) Update the RDR to “Resolved” after corrective actions are complete.

5. Specific Instructions

a. Level of Significance: Each RDR deficiency shall be assigned a level of significance (e.g. A3, B2, C2) by the RSO or ARSO, consistent with reference (a) Section 2.11.1.5. The RDR level of significance reported herein does not correlate directly to the level of severity for NRC/Navy MML violations as they are separately determined.

A Level - Incident:

(A1) An actual loss of safety or security associated with severe or potentially severe bodily harm to a radiation worker or member of the public.

(A2) Reflects the result of a loss of safety or security, but to a lesser extent which is associated with bodily harm or potential bodily harm to a radiation worker or member of the public.

(A3) Failure to comply with radiation exposure control or contamination control requirements such that limits or control levels are exceeded. Exceeding a radiation exposure limit or administrative control limit (ACL), external or internal contamination of personnel, or releases of radioactivity to the environment above limits are examples of this type of incident.

B Level - Potential Incident:

(B1) Exists when there is a realistic potential for the loss of safety or security. It may be associated with systemic failure to accomplish or meet a RASP regulatory requirement.

(B2) Has more than minor safety or environmental significance. It may be associated with non systemic failures to accomplish or meet RASP regulatory requirements. If uncorrected, the problem could lead to an incident.

C Level – Deficiency or Improvement Item:

(C1) Deficiencies have minor safety, health, or environmental significance. These violations typically reflect inadequate documentation of program compliance requirements or minor problems that if left uncorrected could lead to a more significant issue.

(C2) Items identified as program improvements and do not impact RASP compliance.

b. RDR Process Flow: Figure 1 demonstrates process flow.

(1) **Submission.** The RDR is submitted via the website by any Authorized User, Laboratory Manager, (A)RSO, RSC member, or Other Personnel. Information required for submission include:

- (a) Date of Discovery
- (b) Name and contact information for person discovering the problem
- (c) Deficiency description
- (d) Immediate corrective action(s) taken
- (e) Apparent cause (for deficiencies if known)

(2) **Transfer of RDR Submission to Active Entries.** The RSO or ARSO transfers the entry from “Submissions” to “Active Entries”. The RDR transfer column shall be checked off by

the RSO or ARSO after transfer occurs. All A & B level RDR's should be transferred and assigned as soon as an (A)RSO is informed of the incident or potential incident. All C level RDRs should be transferred to active within a week of submission.

(3) **Active Entries.** Once the RDR is recorded in "Active Entries", the RSO or ARSO will assign:

(a) Level of Significance. (**See section 4.c related to reportable incidents*)

(b) **RDR POC.** This is an individual identified to best address the deficiency (or improvement item). The supervisor may not necessarily be the (A)RSO or RDR originator.

(c) **RDR Supervisor.** This is an individual identified to best support the RDR POC to identify and implement corrective actions for the deficiency. If the RDR is assigned to the RSO or ARSO, a supervisor shall be assigned outside the Radiation Safety Office.

(d) The RDR status shall be marked as "In Progress."

(e) **Estimated Completion Date (ECD).** An ECD shall be assigned based on the complexity and scope of the corrective actions. The RDR POC and supervisor will ensure the ECD is achievable upon assignment.

(4) **Communicate RDR Assignments.** The (A)RSO shall communicate RDR description and ECD to the RDR POC and Supervisor.

(5) **Identifying and Implementing Corrective Actions.**

(a) RDR POC shall provide progress updates under "Notes/Resolution". Once a long-term corrective action has been identified to correct the deficiency, the RDR POC will update the "Long-term Corrective Actions" column.

(b) RDR Supervisor shall oversee the progress of identifying and implementing corrective actions for assigned deficiency by placing updates under "RDR Supervisor Comments".

(c) All applicable supporting documentation shall be placed in the "RDR Documentation" folder.

(6) **Resolving RDRs.** Once the RDR POC and RDR Supervisor have agreed the deficiency has been appropriately addressed, the RDR Supervisor will leave a comment in the RDR Log and mark the RDR "Resolved".

(7) **Transfer of RDRs to Closed Entries.** Once the RDR is "Resolved", the (A)RSO shall review documentation to confirm appropriate corrective actions have been completed. The (A)RSO will leave a comment in the "RSO/ARSO Comments" column and transfer the RDR from Active Entries to Closed Entries marking the RDR as "Closed out". Records shall be retained for 3 years.

(8) Considerations and best practices.

(a) The RDR POC may not necessarily be the RDR originator (submission individual) or (A)RSO.

(b) If the RDR is assigned to an (A)RSO, an RDR supervisor should be assigned that is outside of the Radiation Safety Office.

(c) The RDR POC, RDR Supervisor, and (A)RSO may adjust the ECD if required. The RDR supervisor must be informed of the change. The change and reasoning must be documented in the "Notes/Resolutions" and "RDR Supervisor Comments" of the RDR.

(d) The RSO should move RDRs from submitted to active and from active to closed.

(e) The RSO should review the RDR log daily.

c. Reportable Incidents: Incidents (A level violations) are reportable events by an RSO or ARSO per reference (a) Section 2.23 and have specific reporting requirements per reference (a) Section 2.27. A and B Level incidents should be immediately reported to the Dean and Superintendent summarizing immediate corrective actions.

(1) For A & B level violations as defined in reference (a) Section 2.11.1.5, a Formal Critique Report is required using the template provided in enclosure (1).

(a) The RSO or ARSO shall assemble an *ad hoc* working group consisting of the RDR POC, an RSO or ARSO as facilitator, and at least one other RSC member or outside Laboratory Manager to perform the critique. It may be effective to add team members from outside the RASP for outside perspective.

1. For A level incidents, the critique team should be formed within 1 business day.

2. For B level incidents, the critique team should be formed within 5 business days.

(b) Documentation of the root cause and mitigations (Formal Critique Report) are required to be maintained and linked on the RDR log.

(c) The amount of records/level of critique should be appropriate to the severity of the finding.

d. Formal Critique Process: The purpose of the critique is to determine the facts of the event, the root causes, and to implement immediate actions before work continues to preclude a recurrence. Long-term corrective actions may be determined subsequent to the critique. To foster an environment in which personnel critically assess the event and share the facts, no actions of an administrative or disciplinary nature shall be addressed in critiques; such actions will be determined and processed independently using normal Navy and command procedures. The team

should base the process upon references (b) - (d). **Note:** References (c) and (d) are provided as an optional reference to stimulate discussion during analysis.

(1) **Assemble a Team.** An RSO or ARSO will assign the team members. An RSO or ARSO will also act as facilitator.

(2) **Notify the Dean of Engineering, Computing and Weapons (ECW) and the Dean of Math and Science (M&S).**

(3) **Define the problem.** The team shall discuss and write a brief, clear problem statement that all parties agree upon.

(4) **Five Whys.**

(a) Ask the first “why?”. Record answer.

(b) Ask “why” 4 more times. Record all responses.

(5) **Root Cause.** When “why” produces no more useful responses, these are the identified root causes of the deficiency.

(6) **Corrective Actions.** Determine corrective actions or process changes.

(a) Discuss and then agree on countermeasures, which should be documented. As part of this process, reference (d) provides a list of questions of which some or all may be beneficial as part of the critique.

(b) Monitor corrective actions. If they are ineffective, a new critique may be required. Any team member may request a new critique or write additional RDRs as appropriate.

(7) **Recordkeeping.** Document the Formal Critique Report. Reference (a) compliant Formal Critique Report template is provided in Enclosure (1), adapted from reference (c). The report should be maintained and linked to the RDR log. Both the RDR log updates and the report must be completed to mark the RDR as resolved (and eventually closed). The formal report will be reviewed and signed by the RDR POC, RDR Supervisor, (A)RSO, and the ECW Dean.

e. Systemic or Repeat Findings: For C severity level RDRs that are systemic or repeat violations, a Formal Critique Report is to be documented in a memo. As this is a lower level of significance deficiency, a team is not required and the scope of the report may be limited. However, the memo shall include the information outlined in enclosure (1).

(1) The assigned RDR POC will generate a Formal Critique Report and submit the document to the RDR supervisor for review.

(2) The RDR supervisor will ensure the root cause and corrective actions are adequate. Corrective actions should be recorded in the RDR log in the “Long-term Corrective Actions” column, and status updates in the “Notes/Resolutions.”

f. Records:

(1) Deficiencies shall be documented electronically via USNA RASP drive.

(2) A running record of RDRs shall be maintained electronically.

(3) The Radiation Protection Audit performed by the Radiation Safety Office and trend analysis of deficiencies shall be issued as a memorandum to the Superintendent. Copies of the memorandum shall be provided to the Dean of ECW and available to USNA RASP Personnel Management.

(4) All RDRs and associated documentation must be maintained for three years via the use of the electronic RDR log.



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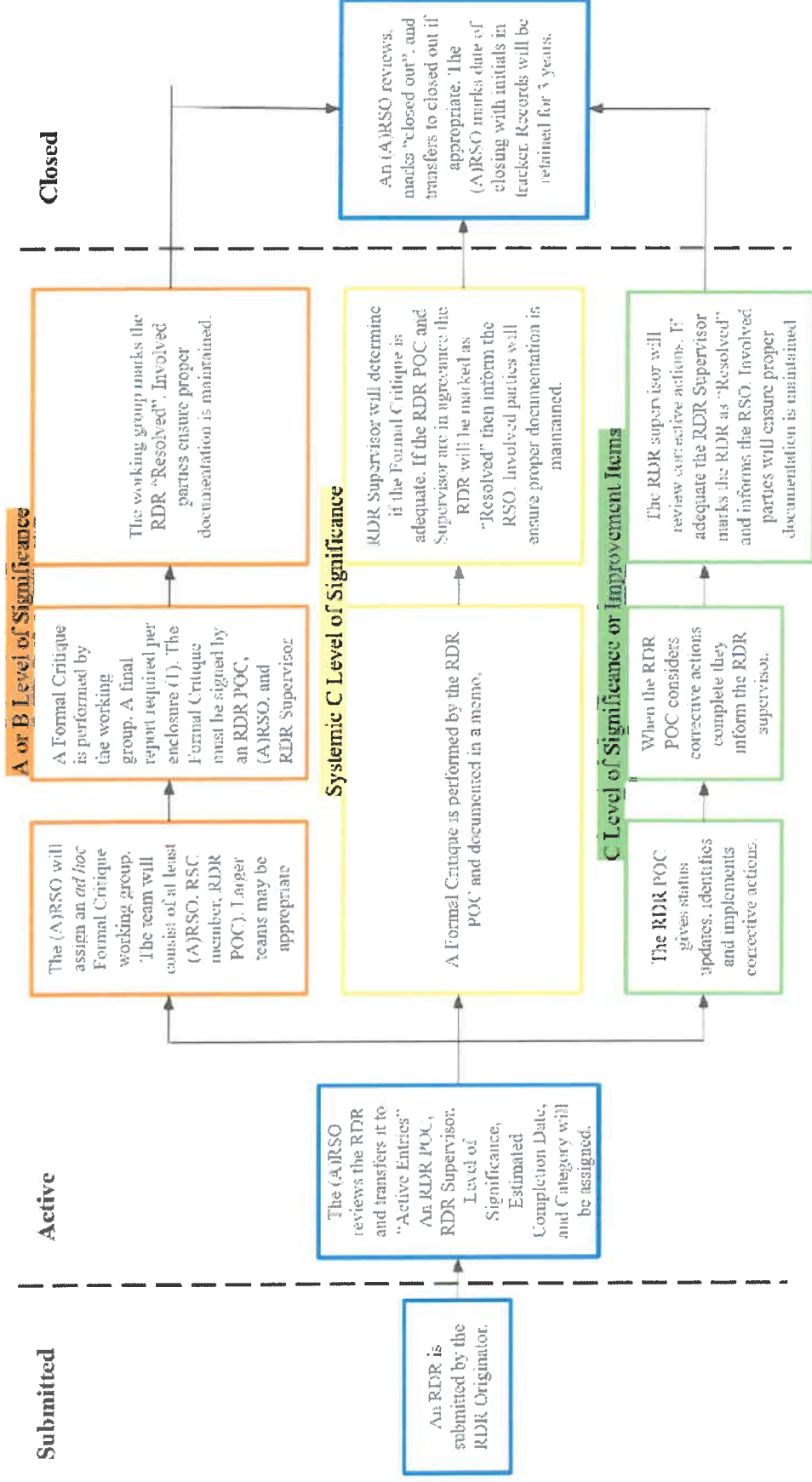


Figure 1. RDR process.

Formal Critique Report for RDR XXXXXX

RDR Serial Number

Ref: if any

Encl: (if any)

1. Report Type (Initial or Revision)

2. **Summary of Event/Finding:** Provide a one paragraph executive summary of the event. Include a brief discussion of the problem, as well as the most significant cause(s) and corrective action(s). The report should state that all corrective actions have been defined and either completed or firmly scheduled. In a revised report, summarize the new information and give reasons for the revision. Changes in the revised report should be indicated with side bars in the right-hand margin.

3. **Designation of apparent cause.** Check all that applied

Design _____ Material _____ Personnel _____ Procedure _____

4. **Plant/Equipment/Initial Conditions:** State the operating mode and procedure in effect at the time of the event, as required to provide understanding of it. If this was found during an audit/surveillance, describe auditor and audit type.

5. **Description of Incident/Potential Incident/Repeat Violation:** Use short, clearly written paragraphs to describe the events (facts). Minor problems identified during the critique process that did not directly lead to the event need not be used.

6. **Problems and Root Causes:** List the problems identified and identify the root causes of these problems (Analysis). Report on the "5 whys" analysis.

7. **Corrective Action:** Describe, in order, the immediate actions, short term corrective actions and long-term corrective actions taken or planned. Ensure each corrective action lists the party responsible and an actual or estimated completion date, as applicable.

8. **Similar Events:** If there is a similar event within three years, list the RDRs by serial number and discuss why previous corrective actions were not effective.

1. RDR serial Number:		2. Level of Significance (Check one): A1 __ A2 __ A3 __ B1 __ B2 __ C1 __ C2 __	
3. Location:		4. Date of Discovery:	
5. Incident, Potential Incident, or Deficiency/Improvement Item:			
6. Root Cause:			
7. Immediate Corrective Action:			
8. Action required to correct the Incident, Potential Incident, or Deficiency/Improvement item:			
9. RDR POC (Print):		10. RDR POC (Sign):	
11. Date:			
12. RDR POC Review and Comments:			
13. RDR Supervisor (Print):		14. RDR Supervisor (Signature)	
15. Date:			
16. RSO/ARSO Review and Comments:			
17. RSO/ARSO (Print):		18. RSO/ARSO (Signature):	
19. Date:			
20. ECW Dean (Print):		21. ECW Dean (Signature)	
22. Date:			
23. Date Corrective Action Assigned:		24. Command UIC:	
		00161	
Instructions: Information may be copied from the RDR log or Formal Critique Report as appropriate. Use as many pages as required in providing complete information. Block 1. RDR serial number should be formatted RYYMMDD-X – may be taken from submission record. Block 1 - 7 may be copied over from the RDR log. Block 5. Include Requirement/Reference to instruction or RAD-010 as appropriate. Block 12. For programmatic RDRs, Dean of ECW should be chosen as RDR Supervisor.			