Inspection Findings & Violations 2018 – 2020

Provided by US NRC Inspector from Regions I, II, III and IV

2021 NATC Virtual ALARA Symposium

January 4, 2021

2021 Virtual NATC ALARA Symposium Regulatory Forum Summary

- 2021 Virtual NATC ALARA Symposium held January 3-5, 2021 sponsored a Tuesday afternoon regulator highlights session with 14 US NRC branch chiefs, health physics inspector and headquarter health physicists.
- The NATC ALARA symposium is the premier regulatory and utility forum to discuss ALARA and RP findings at the beginning of each year starting in 1997
- 32 ALARA and RP Findings were discussed by inspectors from each of the 4 US NRC Regions
- NATC was requested to provide summary scripts of each finding weekly in 2021 as a briefing aid for ISOE member RPMs and regulators to assure dissimilation of the lessons learned to **avoid repeat** occurrences in the nuclear industry

NRC Regulatory Panel January 4, 2021

- Region I
- Anthony Dimitriadis, Branch Chief
- Scott Wilson, Senior Health Physicist
- Elizabeth Andrews, Health Physicist

US NRC Region 1 - Findings & Violations

Scott Wilson
Sr. Health Physicist
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Fitzpatrick Greater than 50% Accumulate RWP Dose NRC Finding: Date June 30, 2019

- A Green self-revealed NRC finding was identified because Exelon did not follow their ALARA procedure during the spring 2019 Fitzpatrick Refueling outage on Safety Relief Valve RWP
- Specifically, Exelon did not follow procedure RP-AA-401, “ALARA Planning and Controls,” to conduct a work-in-progress reviews
- Expanded work scope was not accounted for in contingent dose
- Actual dose not be accommodated in the existing dose estimate
- The expanded work scope caused the accumulated dose to be greater than 50 percent of the estimate for safety relief valve work.

Description of Safety Relief Valve RWP Work Scope

- The purpose of the safety relief valves is to prevent overpressurization of the reactor coolant system
- One of the tasks was a modification of the safety relief valves, including the replacement of eight nitrogen accumulators
- The activity had an estimated exposure of 12.534 person-rem

- *Reports\Final\2019\Fitz2019002 final.docx*
- ADAMS ACCESSION NUMBER: ML19225B240

Modification Work & Test Failure

- Following the completed modification of the safety relief valves, the safety relief valves were tested
- A solenoid within a safety relief valve failed during this testing
- The solenoid was disassembled
- Foreign material was found
- The foreign material in the safety relief valve was determined to be from the nitrogen accumulator work upstream of the solenoid

Safety Relief Valve Work Scope Expansion

- The scope of the work was expanded to remove, blow down, and reinstall the 11 safety relief valves to verify that foreign material did not exist in the lines
- Procedure RP-AA-401, “ALARA Planning and Controls,” Section 4.2.4 states, in part, if a task is not proceeding as planned with a greater than anticipated dose accrual or
- an expanded scope that is not accounted for in contingent dose, and cannot be accomplished in the existing estimate
- RP should conduct a work-in-progress review and update radiation work permit estimates per the work-in-progress results

Additional 10.627 person-rem over Estimated Task Exposure

- Upon discovery of foreign material in the safety relief valve
- Subsequent expanded scope to ensure the other safety relief valves did not contain foreign material
- Exelon did not conduct a work-in-progress ALARA review with updated exposures
- The exposure at the end of the task was 23.161 person-rem
- 10.627 person-rem over the estimated exposure of 12.534 person-rem

Corrective Actions:

- Exelon’s immediate corrective actions included reviewing the lessons learned in the post-job review following the work and entering the issue into their corrective action program

Performance Deficiency:

- Exelon failed to follow their ALARA procedure to conduct a work-in progress review after they encountered an expanded work scope
- not accounted for in contingent dose and could not be accommodated in the existing dose estimate

NRC Cornerstone Findings Screening:

- The inspectors determined the performance deficiency was more than minor because it was associated with the Program & Process attribute of the Occupational Radiation Safety cornerstone
- Additionally, this finding is similar to IMC 0612, Appendix E,
- Example 6.i. Specifically, the actual collective dose exceeded 5 person-rem and exceeded the planned, intended dose by more than 50 percent

Significance:

- The inspectors assessed the significance of the finding using Appendix C, “Occupational Radiation Safety SDP (Significant Determination Process)”
- The inspectors assessed the significance of the finding using IMC 0609, Appendix C, “Occupational Radiation Safety – Significance Determination Process”

Cross-Cutting Aspect: H.5 - Work Management

- The organization implements a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority
- The work process includes the identification and management of risk commensurate to the work and the need for coordination with different groups or job activities
- Exelon’s ALARA work-in-progress review process was not controlled and executed following an expanded scope of work activities associated with the safety relief valve accumulators
- This expanded scope caused the accumulated dose to be greater than 50 percent of the estimate for the task

Enforcement:

- Inspectors did not identify a violation of regulatory requirements associated with this finding

- Questions for RP Department Consideration:
- Does our Station ALARA Program have teeth to assure expanded RWP work scope will be reviewed and approved by management/ALARA Committee to avoid a repeat of this type of green NRC ALARA finding?

Comments and Questions

- Please provide any questions to NATC at the Grainger College of Engineering, University of Illinois for follow up with US RPMs and/or regulatory health physics inspectors
- Amy Moeller
- almoeller88@gmail.com
- David W. Miller
- dmiller@Illinois.edu
- 217 855 3238

The most recent ONS jobs relevant to this finding are:

First evolution of SSF Letdown work in O2R29

Alloy 600 repairs in O3R30

SSF Letdown Line work

Original estimate of **3.288 REM** did not account for expansion of hanger task durations and as found dose rates in some areas

Two revisions of dose estimate were presented to Station ALARA Committee for approval

Final dose of **7.822 REM** was 138% over original AND >5 REM

SSF Letdown Line work

Original estimate of **3.288 REM** did not account for expansion of hanger task durations and as found dose rates in some areas

Two revisions of dose estimate were presented to Station ALARA Committee for approval

Final dose of **7.822 REM** was 138% over original AND >5 REM

*This occurred during an NRC Inspection visit

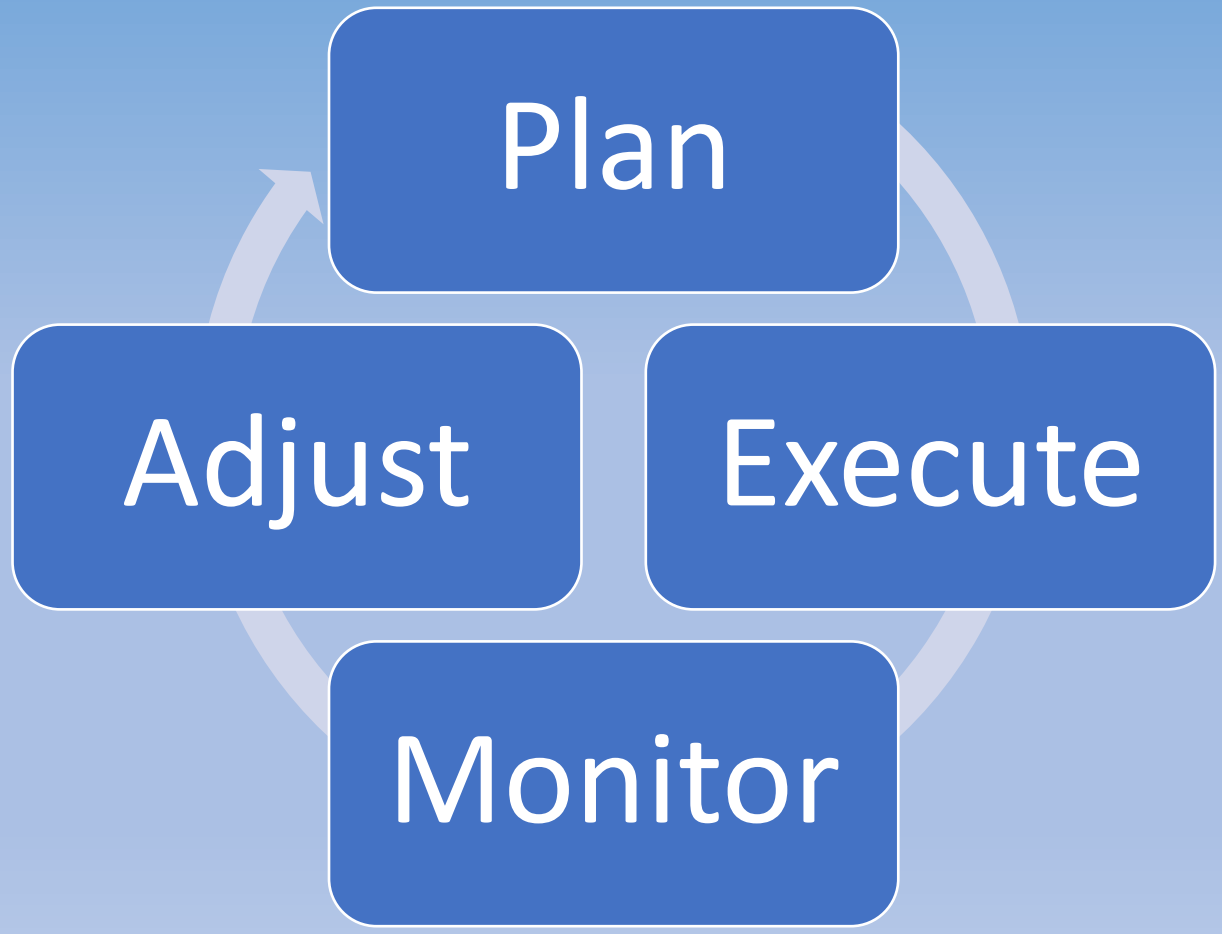
Alloy 600 Repairs

Original estimate of **2.675 REM** did not account for additional staff and RWP hours due to First Of A Kind technique

Revised dose estimate was presented to Station ALARA Committee for approval

Final dose of **4.457 REM** was 67% over original AND just shy of 5 REM

We avoided “findings” by staying in process



DUKE ENERGY.

Information Use

NUCLEAR OPERATING FLEET

ADMINISTRATIVE PROCEDURE

AD-RP-ALL-9001

ALARA PLANNING

REVISION 5

4.3 Responsible Job Supervisor

1. Ensures basic ALARA principles and concepts are utilized.
2. Participates in ALARA Plan, in-progress reviews and ALARA critiques.
3. Presents, development and utilization of ALARA Plan (with dose reduction initiatives) to Challenge Board with ALARA assistance.
4. Implements identified ALARA initiatives when applicable during execution of the task.
5. Ensures personnel assigned to task attend radiological briefing.
6. Tracks actual dose received for the task relative to the dose estimated.
7. Completes ALARA Critique with assistance from RP/ALARA.

5.5 ALARA Plan In-Progress Evaluations

1. Dose tracking by responsible job supervisor is performed as follows (tasks of short duration may not allow adequate time to perform in-progress review):

    a. Track actual dose received relative to the dose estimated during execution of the task.

    b. Contact RP for an evaluation, if during execution of task, it is determined that actual dose being received is higher than estimated.

2. ALARA will periodically contact responsible job supervisor to review total dose and status of the Work Activity, checking for consistency with the dose estimate.

    a. Use Attachment 2, In-Progress Review (Equivalent), to document results.

    b. The frequency of these reviews are based on the exposure significance of the Work Activity.

    c. Guidelines used to determine the frequency are shown on Attachment 1, ALARA Plan (Equivalent).

5.5 ALARA Plan In-Progress Evaluations (continued)

d. Initiate a NCR for all activities (with ALARA Plan) which are projected to exceed their original dose estimate by 25% or greater.

(1) The purpose of the NCR is to allow the responsible team to determine the reason for missing the dose estimate and provide corrective action to enhance future results (if applicable).

- If the activity is greater than 1 person-rem and is projected to exceed the original dose estimate by 25% or greater, then the ALARA Committee chairman (or designee) must be contacted to discuss reason for missing estimate and options available (document discussion in NCR).
- If the activity is greater than 5 person-rem and is projected to exceed the original dose estimate by 25% or greater, then a special Site ALARA Committee meeting shall be held to discuss reason for exceeding and options available (document in ALARA committee meeting minutes).

5.6 Revising ALARA Plan

1. Evaluate revising ALARA Plan when it is anticipated that the approved estimate will be exceeded by 25%.

2. Perform the following when revising the ALARA Plan:

   a. Determine the cause for the excess Work Activity dose (radiological condition and work scope).

   b. Identify additional dose reduction techniques that may be necessary.

   c. Validate dosimetry placement and worker orientation in dose field. {7.1.2}

   d. Determine what the revised dose estimate will be to complete the Work Activity.

   e. Notify appropriate management (e.g., RP Supervision, Project Coordinator) of need to revise the dose estimate and what additional dose reduction techniques will be utilized or existing techniques that require re-enforcement.

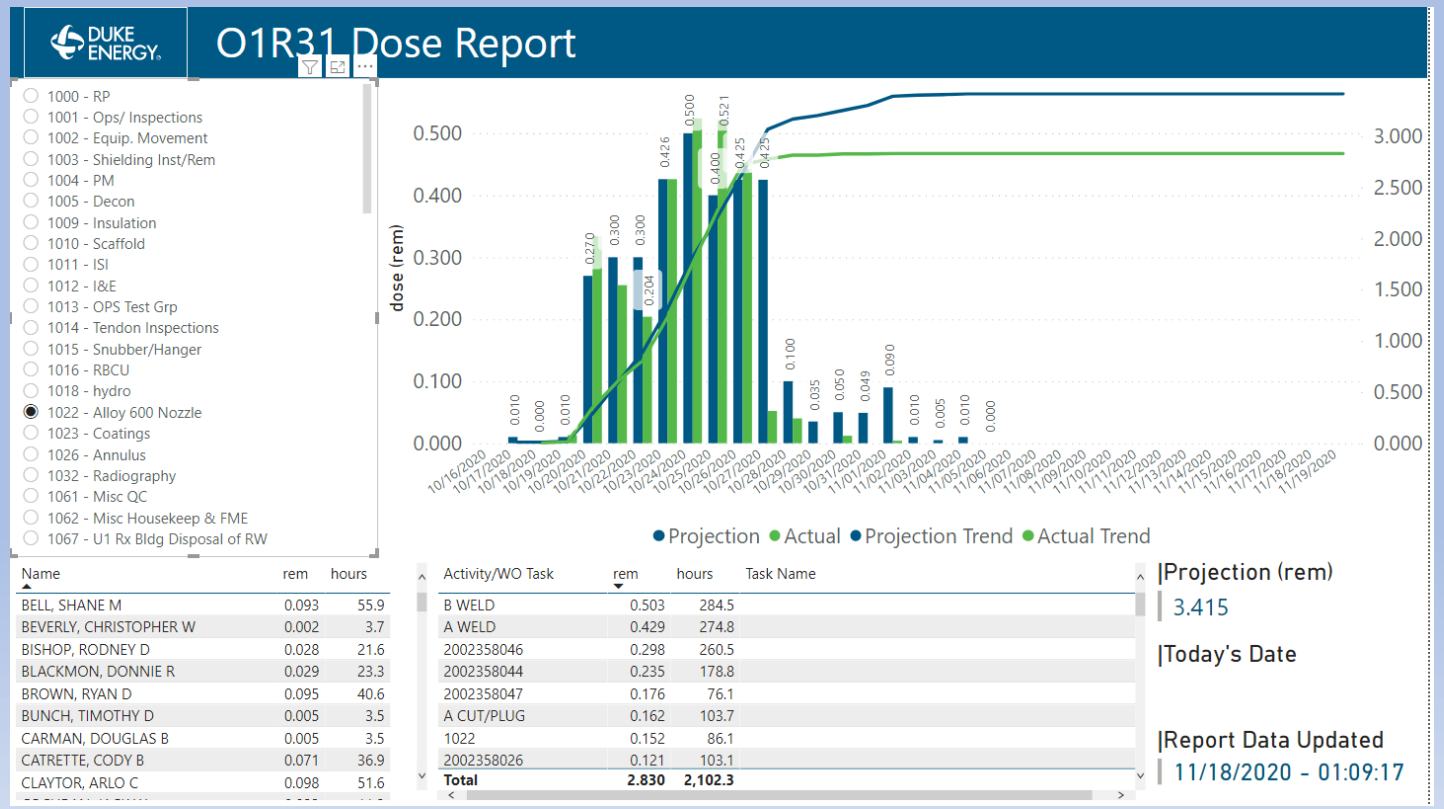
   f. Add revision summary including the justification for the revision.

   g. Include pertinent in-progress ALARA review information from the execution team and other individuals that are involved in the Work Activity.

   h. Include the new dose estimate and route for approval.

This needs to be done BEFORE the dose estimate is exceeded

Several dose tracking tools are available:



AR Reports

Several dose tracking tools are available:

2504

RP Badge Number	W/O - Task	Task Description	Entry Date	Entry Time	Craft Description	Name	Type	Max Dose Rate	Dose (MR)	Time (Hours)
V103647	20228760 - 67	EC112474 - 1RC-223 - DISASSEMBLE, INSPECT, CLEAN, REASSEMBLE	11/11/2020	12:33 PM	Mechanical Maintenance - 209	GOAD, JOHNNY R	WB	24	8	2.3
209726	20228760 - 67	EC112474 - 1RC-223 - DISASSEMBLE, INSPECT, CLEAN, REASSEMBLE	11/11/2020	12:33 PM	Work Execution / FIN - 214	HOLDER, ANDREW C	WB	14	6	2.3
V21049	20228760 - 67	EC112474 - 1RC-223 - DISASSEMBLE, INSPECT, CLEAN, REASSEMBLE	11/12/2020	12:43 PM	Inspection Services - 106	BALLARD, TERRY L	WB	15	5	1.8
V405495	20061290 - 74	EC112474 U1 SSF-VERIFY WIRING FOR VALVE 1RC-223	11/12/2020	12:18 AM	Mechanical Maintenance - 209	CUTCHEN Jr, STANLEY P	WB	15	3	2.1
203939	20061290 - 74	EC112474 U1 SSF-VERIFY WIRING FOR VALVE 1RC-223	11/12/2020	12:18 AM	Work Execution / FIN - 214	LOEWEN, CHRISTOPHER S	WB	24	6	2.1
V103635	20228760 - 67	EC112474 - 1RC-223 - DISASSEMBLE, INSPECT, CLEAN, REASSEMBLE	11/12/2020	9:27 AM	Mech...	FULTON, WALTER D	WB	25	5	3.4
V103647	20228760 - 67	EC112474 - 1RC-223 - DISASSEMBLE, INSPECT, CLEAN, REASSEMBLE	11/12/2020	9:5...	...ce -	GOAD, JOHNNY R	WB	14	9	4.4
209726	20228760 - 67	EC112474 - 1RC-223 - DISASSEMBLE, INSPECT, CLEAN, REASSEMBLE	11/12...			HOLDER, ANDREW C	WB	17	10	4.5
V211840	20228760 - 67	EC112474 - 1RC-223 - DISASSEMBLE, INSPECT, CLEAN, REASSEMBLE				...RTEE, ETHAN C	WB	18	5	2.8
V21049	20228760 - 67	EC112474 - 1RC-223 - DISASSEMBLE, INSPECT, CLEAN, REASSEMBLE				...LARD, TERRY L	WB	17	6	2.1
207696	20228760 - 67	EC112474 - 1RC-223 - DISASSEMBLE, INSPECT, CLEAN, REASSEMBLE				...AM, THOMAS B	WB	33	9	3.4
V404225	20346703 - 91	EC112474 - 1RC-... INSPECT, CL...				...OMERY,	WB	7	1	0.9
						...s for RWP - 1069:			6,213	5,652.0

2511

RWP NUM	RWP/TASK DESCRIPTION	EST. DOSE (mrem)	RWP HOURS	# OF INDIV	# OF ENTRIES	GAMMA (mrem	NEUT. (mrem)	TOTAL DOSE (mrem)
1000	U1 RX BLDG RP SURVEILLANCE ACTIVITIES NOT ASSOCIATED WITH OTHER SPECIFIC RWP's	1,000	2,178.2	64	646	964	0	964
1001	U1 RX BLDG INSPECTIONS AND VALVE OPERATIONS	1,300	1,847.0	210	586	1,074	0	1,074
1002	U1 RX BLDG STAGE AND REMOVE EQUIPMENT AND SUPPLIES	600	1,445.2	137	634	876	0	876
1003	U1 RX BLDG INSTALL AND REMOVE SHIELDING	800	262.6	41	171	444	0	444
1004	U1 RX BLDG MISC. P.M. AND CORRECTIVE MAINTENANCE	300	378.6	90	219	166	0	166
1005	U1 RX BLDG ALL DECON ACTIVITIES	475	867.9	30	310	654	0	654
1009	U1 RX BLDG REMOVE AND REPLACE INSUL...ATION ...AND REMOVE	1,339	758.8	47	332	1,050	0	1,050
1010	U1 R... SCA...	3,130	3,361.2	83	1,248	2,420	0	2,420
1011	U1 R... (INC... WC...	1,000	598.3	47	248	908	0	908

2503

AR2503 - Daily Collective Job Dose History Report

Daily Collective Job Dose History Report
Oconee Nuclear Station
For RWP(s): 23
For Date Range: 01/02/2021 thru 03/29/2021

Report Executed: 3/29/2021 1:44:44 PM

DATE	DAILY DOSE (MREM)	DAILY TIME (HRS)	RUNNING TOTAL (MREM)	RUNNING TOTAL (HRS)
01/01/2021	1	10.8	1	10.8
01/02/2021	1	40.9	2	51.7
01/03/2021	0	45.0	2	96.7
01/04/2021	2	39.1	4	135.8
01/05/2021	1	52.5	5	188.3
01/06/2021	5	63.8	10	252.1
01/07/2021	7	60.1	17	312.2
01/08/2021	3	68.2	20	380.4
01/09/2021	1	37.5	21	417.9
01/10/2021	1	62.6	22	480.5
01/11/2021	1	81.3	23	561.8
01/12/2021	0	54.4	23	616.2

Discussion

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