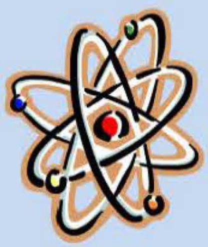
# Inspector Newsletter

**January 2020**

***Providing useful information to our inspectors, by our inspectors!***

~~**FOR INTERNAL USE ONLY**~~



## Table of Contents:



# Near Death: The Birth of the ROP

**By: Thomas Wellock**
**NRC Historian**

It was "the NRC's day of reckoning," recalled New Mexico's Senator Pete Domenici. Described by *The New York Times* as "one of the Senate's hardest-working, most intelligent and most intense members," Domenici was a passionate supporter of nuclear power. By 1998, he concluded the NRC had crossed the line from regulating reactor safety into excessive oversight of licensee management. As the chairman of the agency's appropriations subcommittee, he could do something about it. In June, he met with Chairman Shirley Jackson and hit her with a surprise ultimatum: Develop risk-informed, performance-based regulation or face cuts of up to $150 million—a third of the NRC's budget—and the loss of 700 staff.

"You can't be serious?" Jackson asked. When it was clear he was, she pleaded for time to show him the agency could change. Domenici agreed. "Chairman Jackson got up, left, and didn't look back." The meeting, Domenici wrote, was a "turning point" for the NRC in its move to risk-informed regulation that might spur a "rebirth of interest" in new reactor construction.

Jackson's version of events differed. She, like Domenici, was a force. She grew up a prodigy in the nation's still-segregated capital. Her 1973 Ph.D. in physics was the first MIT bestowed on an African-American woman, and her appointment to the NRC broke similar ground. Domenici's cuts were not a surprise, she insisted. They had been announced in May. Under her guidance, the NRC was already moving toward risk-informed regulation. It was a term she invented!

While the principals disputed the details, the Domenici-Jackson summit is still remembered as the NRC's "near-death" experience that forced it to terminate its controversial oversight program, the Systematic Assessment of Licensee Performance (SALP). Jackson returned from the meeting to warn staff it could not go "back to business as usual" and had to "accelerate the re-alignment of our regulatory approach to be responsive to legitimate concerns of our stakeholders." With substantial input from industry, the NRC created the Reactor Oversight Process (ROP) as a more performance-based, risk-informed program.

The death of the SALP and birth of the ROP marked the swift resolution of a nearly 20-year debate over the NRC's proper oversight role. The 1979 Three Mile Island accident called into question an article of regulatory faith: A licensee's sense of ownership for plant safety could be destroyed by excessive oversight of management practices. TMI and several subsequent safety culture events forced the NRC into more vigorous and, to licensees, intrusive oversight of plant operations. An adversarial relationship emerged by the late 1980s and grew worse during the deregulation of electric power markets in the 1990s.

After TMI, the agency expanded its trial resident inspector program and created the SALP to combine quantitative and qualitative assessments into a rating of plant performance. Assessment of a licensee's safety culture emerged as a persistent regulatory conundrum after the 1986 accident at the Soviet Union's Chernobyl nuclear power plant. While the NRC and U.S. industry acknowledged the importance of safety culture, they insisted U.S. operations were distinctly superior to the Soviets.

Some wondered if it was a distinction without a difference. Lax management contributed to a series of malfunctions and operator errors during a loss-of-feedwater event at the Davis-Besse Nuclear Power Station near Toledo, Ohio. In 1987, the NRC issued fines to dozens of plant operators at Pennsylvania's Peach Bottom nuclear power plant for "inattentiveness" (sleeping) while on duty. *Time* magazine's headline, "Wake me if It's a Meltdown," was a humorous comment on a serious safety lapse. Peach Bottom was shut down for over two years. Similar management weaknesses kept Alabama's Browns Ferry station offline for years.

Davis-Besse, Peach Bottom, and Browns Ferry were emblematic of the NRC's oversight dilemma.

Even as most licensees improved their safety performance metrics, some exhibited a "fossil-fuel mentality" that prioritized profits over safety. NRC confronted an assemblage of licensees that ranged from small municipal utility districts, up to Fortune 500 corporations with unsettling variability in management quality. As one NRC inspector recalled finding safety violations at some plants was "like fishing in a stocked pond."

The NRC struggled to bring consistency to its oversight responsibilities. It added new layers of review, such as annual capstone senior management meetings and a "watch list" of problem plants. Worrisome plants might also receive a multiweek visit from a Diagnostic Evaluation Teams (DET) to assess plant operations and "organizational culture." In 1989, the Commission approved a policy statement on the conduct of plant operations that included a definition of safety culture as "the personal dedication and accountability of all individuals" to practices of plant safety and the promotion of an "environment of safety consciousness."

Defining safety culture was easier than measuring and enforcing it. A diagnostic-team visit was a plague at a utility's doorstep, a prelude to joining the watch list that got upper management fired, sent utility stock prices tumbling, and required millions in upgrades.

Yet, industry claimed the SALP and DETs needlessly damaged corporate reputations with unfair, subjective assessments. By 1989, relations were so toxic Executive Director of Operations Victor Stello admitted at the first Regulatory Information Conference (RIC) that the U.S. had the world's "most adversarial relationship between regulators and industry. "We do not trust you, you do not trust us."

In 1994, NEI contracted with Towers Perrin consultants for an industry poll on its relationship with the NRC. The report portrayed the agency as an arrogant regulator

**Continued on page 3**

# First Report Issued Under the ROP

August 12, 1999

Mr. Michael J. Colomb
Site Executive Officer
New York Power Authority
James A. FitzPatrick Nuclear Power Plant
Post Office Box 41
Lycoming, New York 13093

SUBJECT: NRC INTEGRATED INSPECTION REPORT 50-333/99-06

Dear Mr. Colomb:

On July 17, 1999, the NRC completed an inspection at the James A. FitzPatrick Nuclear Power Plant. The results of this inspection were discussed on July 22, 1999, with Mr. D. Lindsey and other members of your staff. The enclosed report presents the results of that inspection. You will note that the format of this report has changed from those previously issued. These changes are in accordance with the new NRC Reactor Inspection and Oversight Program which is currently being piloted at your facility.

This inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission=s rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of a selected examination of procedures and representative records, observations of activities, and interviews with personnel.

As part of the pilot inspection program, you submitted performance indicator data. The performance indicator data was in the green performance band, except the white performance threshold was exceeded for the AUnplanned Power Changes per 7000 Critical Hours@ indicator during the fourth quarter of 1998, and the first quarter of 1999. We also note that this indicator has subsequently returned to the green band with the submittal of the second quarter 1999 data. This indicator was discussed with you during the periodic performance review meeting on June 3, 1999. We understand your actions to improve performance in this area included the implementation of an equipment reliability performance improvement plan. As noted by this indicator returning to the green band, we recognize that you are taking actions to improve performance in this area. Therefore, we have chosen to monitor your activities through the baseline inspection program.

The NRC identified five issues of low safety significance that have been entered into your corrective action program and are discussed in the summary of findings and in the body of the attached inspection report. Of the five issues, three were determined to involve violations of NRC requirements, but because of their low safety significance the violations are not cited. If you contest these noncited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with a copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the FitzPatrick facility.

Text below taken from, SECY-00-0049, "Results of the Revised Reactor Oversight Process Pilot Program." ML12268A481

A 6-month pilot program of the RROP was conducted at two sites per region from May to November 1999. The purpose of the pilot program was to apply the RROP and identify lessons learned so that the various processes and procedures could be refined and revised as necessary prior to a Commission decision on the initial implementation of the RROP at all power reactors. Pilot program criteria were established to evaluate the results of implementing each of the components of the RROP at the pilot plants.

In addition to evaluating the new process against these pilot program criteria, the staff employed a number of methods to obtain internal and external stakeholder feedback during the pilot program. This feedback was considered by the staff, along with the other pilot program results and lessons learned, and pertinent oversight processes and procedures were revised as appropriate.

The effort undertaken by the staff to implement the RROP at the pilot plants highlighted the challenges inherent in developing a risk-informed regulatory oversight process. Due to its nature, the uncertainties associated with risk analysis make it difficult to establish objective, risk-informed thresholds for both performance indicators and inspection findings. However, the pilot program demonstrated that these new risk-informed tools, used by a knowledgeable and experienced inspection staff, result in an oversight process that is more objective and predictable than the current oversight process.

Based on the results of the 6-month pilot program, the staff has concluded that the cornerstones of safety concept and the associated framework is sound. Pilot program feedback received by the staff, from both internal and external stakeholders, indicates that further experience with the process is needed. Implementing the RROP at all sites will enable the staff to acquire further experience and provide it the opportunity to identify additional lessons learned and gain greater confidence in the efficacy of the RROP.

| Region I | Region II | Region III | Region IV |
|---|---|---|---|
| Salem/Hope Creek | Shearon Harris | Prairie Island | Fort Calhoun |
| FitzPatrick | Sequoyah | Quad Cities | Cooper |

Read more about the results of the RROP Pilot Program, conducted at the eight sites listed to the left, under ML12268A481.

## Thoughts on the Reactor Oversight Process

**By: Tom Hipschman**
**NRR/DRO/IRIB**

In this newsletter, we celebrate the 20th anniversary of the Reactor Oversight Process (ROP). In an excellent article by our agency's historian, we understand the challenges the agency faced that led to the ROP and how we not only changed but persevered through the development and implementation of a strong oversight program that has served to instill confidence in the public regarding the safe use of nuclear technology. The ROP continues to be a living and evolving process that assures we continue to regulate the nation's civilian use of byproduct, source, and special nuclear materials to ensure adequate protection of public health and safety, to promote the common defense and security, and to protect the environment. Following the events of September 11, 2001, we adapted by increasing our security oversight as well as ensuring our licensees knew how to respond to events involving the potential for large fires and explosions. After the reactor vessel head degradation at Davis-Besse, we enhanced our understanding and oversight of in-service and materials inspections, as well as corrective action program inspections. We've learned in many other areas as well, such as fires from electrical hot shorts, flooding from both internal and external events, loss of off-site power and the list goes on. The ROP is flexible in adapting to change and we continue to be well served by the inspection bases we review annually that was established 20 years ago. And we continue to keep the ROP focused on strong oversight as we look forward to the next 20 years as a modern, risk informed regulator.

We recently proposed changes to the Commission through the ROP Enhancement effort, as well as recommendations for the engineering inspection program that are still under review. We recently updated our inspection procedures to incorporate risk informed initiatives and we're developing inspection criteria for the next generation of reactors as the AP1000 reactors get closer to becoming operational. We're also thinking about how the ROP might look 20 years from now. A small group has begun looking at how we can continue to improve the ROP and we'll have a panel discussion during the 2020 Regulatory Information Conference. However, with all this change the very core of our inspection program remains unchanged – the agency's need for attentive, safety-focused and objective inspectors. We look to the Principles of Good Regulation as our guide. As a resident inspector who transitioned to the new inspection program 20 years ago, what struck me was that although I had many new inspection procedures and processes to implement, the core of my job remained unchanged - to go out into the plant and look for problems. And that continues to remain true. We have the best trained and dedicated inspectors that continue to serve and look for safety issues. To be an NRC Inspector, you are the gold standard. You are the vital link to ensuring the safety and security of the nation's use of nuclear materials. Continue to maintain that safety focus to ensure the safe use of nuclear technology during all your inspections and give us that first hand feedback on how to improve the ROP for the future.

# Near Death: The Birth of the ROP (continued)

that instilled among utilities "an intense and widespread fear of retribution by the NRC." Even as industry performance metrics improved the NRC persisted with an arbitrary, punitive oversight program. It documented cases of frivolous inspection violations, such as leaving blank spaces on routine forms and poor housekeeping that missed dust bunnies behind a plant telephone. The "current regulatory approach represents a serious threat to America's nuclear energy generating capability," Towers Perrin concluded. The NRC's own assessment of the SALP partly confirmed the industry view of its subjectivity and inconsistent grades.

Licensees were also squeezed by deregulation. The National Energy Policy Act of 1992 permitted states and regions to create competitive electricity markets. Utility industry consolidation produced complex energy-producing corporations. By 1997, 50 percent of utility executives thought most utility companies would not survive the decade.

Nuclear power plants were swept up in deregulation, too. An industry executive predicted, nuclear power plants "will end up owned by people who can run them efficiently and do well, not by all these mom-and-pop utilities." A half dozen uncompetitive nuclear plants closed and a fire sale on others began. In 1998, energy companies snapped up the undamaged Unit 1 at Three Mile Island, New Jersey's Oyster Creek, and Pilgrim in Massachusetts. TMI sold for less than the value of its fuel. David Lochbaum of the Union of Concerned Scientists likened the sale to "buying a used car with the contents of the gas tank being worth more than the car itself."

Tighter competition heightened industry concern with "regulatory burden." "We have to adapt to competition," said utility executive Corbin McNeil, but there "is no similar incentive driving the NRC to change the way it does business." An industry financial analyst warned a Nuclear Energy Institute (NEI) conference, "It's hard to see how NRC oversight can fit into a competitive environment."

The regulatory solution, the industry concluded, was risk-informed regulation and oversight. Despite their initial opposition to the 1991 maintenance rule, its successful implementation with risk assessment tools alerted the industry to the possibilities of more quantitative regulation. NEI held up the maintenance rule as the model that "should be applied to other areas [of regulation] without the need for protracted debate."

As it grappled with problem plants, the NRC was wary of a drastic SALP overhaul. In March 1996, *Time* featured a cover story of George Galatis, an engineer-turned-whistleblower at the Millstone station in Waterford, Connecticut. *Time* detailed Galatis's successful three-year battle to compel Northeast Utilities to file a license amendment to modify the plant's refueling procedures and systems. The article suggested there might have been "collusion between the utility and its regulator" in minimizing Millstone's management problems. NRC investigations uncovered multiple issues regarding site management. It took more than two years for Millstone-2 and 3 to receive NRC permission to restart. Millstone 1 closed for good.

The Maine Yankee Nuclear Station suffered Millstone 1's fate. The licensee's management, Shirley Jackson told the 1996 RIC, had fallen prey to "economic pressure to be a low-cost energy producer" at the expense of safety. The number of problem plants seemed to be spreading. In just one year, the number of plants on the NRC watch list spiked from six to fourteen. A utility executive said, "A lot of utilities are looking really seriously at shutting down if they have a big regulatory problem."

The NRC contended the SALP was working and improved operations and even a long-term reduction in inspection hours. The industry, however, fumed at the spike in the watch list and the cost of addressing minor safety issues. "The existing regulatory process gives the public an inaccurate view of plant safety," said Corbin McNeill, Chairman of PECO Energy Company. "The NRC applies the regulatory process to every plant as if it were performing at a low level."

Missing from the debate was congressional guidance. The "Republican Revolution" in the 1994 congressional elections established a Congress intent on reducing the size of the federal bureaucracy. Initially, the GOP's wrath fell inside the beltway with proposals to abolish agencies, including the "Department of Energy Abolishment Act." Headquartered sixteen Metro stops from Capitol Hill, a comparatively quiet decade passed without an NRC specific congressional authorization hearing.

Domenici shattered the quiet in 1998. Dennis Rathbun, who served in Jackson's office, recalled in visits to Capitol Hill in the spring he heard hints that NRC staff might have to worry about how they were going to pay the mortgage. The industry armed Domenici with an estimate that the NRC could absorb cuts of 700 staff. The reduction in force was to be applied like the tenth plague of Passover targeting 500 engineers and inspectors. Domenici said his intention was to administer some "tough love." It worked. With Jackson's promised reforms, budget cuts were limited.

Domenici's drive to reform the oversight process produced an incongruous moment of unity between the industry, antinuclear activists, and the Commission. At a congressional hearing, NEI assailed the agency's "outdated, ineffective regulatory framework" and called for "risk-informed and performance-based concepts" that would be "objective, safety-focused, and responsive." David Lochbaum of the Union of Concerned Scientists agreed that "the NRC needs to have objective criteria to understand what plant performance is. They don't have that and that puts them into this box where a good performing plant overnight comes on the watch list. That is not fair to anybody involved." Commissioner Edward McGaffigan joined the chorus in calling for the NRC to discard "this old, prescriptive, deterministic framework hanging around, driving us to do things that are trivial."

Some NRC staff objected to the challenge to the agency's independence. The NRC had been "relatively resistant to political pressure," a staffer noted at an agency-wide meeting. "We are being threatened by someone who has the power of the purse over us." Jackson disagreed, "We are creatures of Congress, and we have a responsibility to be responsive. Congress has provided us with a platform to accelerate our movement in a direction we know we must go, a direction we ourselves already had decided we needed to go."

The Commission moved swiftly. Enforcement was not to be the primary tool of oversight, it told staff. The NRC suspended the SALP in October 1998 and later discontinued the hated watch list. Staff-industry consultation on the new ROP framework was close enough *Inside NRC* claimed NEI "literally co-wrote" it. The 1999 draft in SECY-99-007 established risk-informed thresholds and "cornerstones" of safety to express traditional defense-in-depth safety. Its action matrix considered the safety significance of performance deficiencies and favored the tools of licensee response and graduated NRC oversight over more punitive action.

Some agency critics were displeased with the drive toward risk-informed regulation and the ROP's lighter touch. Jim Riccio of Public Citizen quipped the NRC's "near death experience" had really been a "non-hostile takeover of NRC by NEI." Elsewhere, the ROP framework won broad support. David Lochbaum said the ROP "can make a large, positive contribution to nuclear power plant safety, " and was "substantially better than the [SALP] and Watch List processes."

The ROP was a step on the road to risk-informed regulation helped along by congressional guidance, but it was also an acknowledgement of safer plant operations. Since 1982, significant safety event reports dropped an order of magnitude while the median unit capability factor rose 38 percent. U.S. performance measures were on par with or superior to other industrial nations. More recent trends have been stable or shown improvement.

The ROP has stood the test to time even as it has evolved. The early effort to avoid the SALP's judgments on the elusive concept of safety culture needed revision in the wake of the 2002 Davis-Besse vessel-head erosion event. The NRC strengthened the ROP's ability address safety culture weaknesses with inspection guidance, added a 2011 safety culture policy statement, and initiated a common language initiative. Thus, the NRC's search continues to strike a proper oversight balance between quantitative and qualitative factors of safety.

# RPS-Inspection Auto-Report Generator 1-Year Later!!

**By: Marc Ferdas**
**Rgn I/DRP/TSAB**

Wow!! 1-Year ago we embarked on one of the agency's most transformative innovations to date, leveraging technology to help us create ROP inspection reports. The Auto-Report Generator function has allowed us to streamline the inspection report creation and the approval process, as well as brought additional consistency in our documentation of inspections.

As with any major change no matter how much you prepare, test, and train there are always going to be initial implementation issues. Switching to the RPS-Inspections Auto-Report Generator was no exception. We have come a long way since the Auto-Report Generator functionality went live on January 1, 2019. Let's look back at what has been accomplished during the past year.

- Added ability to generate security-related reports (Physical Security, MC&A, and Cyber).
- Added ability to generate 95001 & 95002 supplemental reports.
- Added ability to document VLSS issues.
- Added ability to track status of GTG findings in PIM via a notes section.
- Added ability to discuss and/or close all types of open items.
- Added ability to track number of applicants for New Reactors.
- Added undo/redo and version history for scope, sample and result text fields.
- Added ability for scope text to show if no samples entered.
- Added ability to customize branch and division names for cover letters.
- Fixed numerous (>200) cover letter and report formatting issues.
- Fixed issue with letterhead color.
- Fixed issue with findings adding up correctly in cover letter.
- Re-programmed application to locked sample order with finalization of report.
- Removed pre-populating certain cover letter fields (company, facility, and location).
- Made LER title editable when documenting an update.
- Updated sub-procedure ordering so appears in numeric order in generated report.
- Updated all auto-generated cornerstone screening statements.
- Cleaned up inactive and old organizations in various drop-down menus.
- Updated the "RPS-Inspections Desk-Guide" 9 times.
- Created a FAQ document that can be accessed from within the application, plus added another 10 questions after initial release.
- Completed a major revision to IMC 0306 to better align with current RPS-Inspections application.
- Completed a major revision to IMC 0611, IMC 0611 Exhibit 4, and cover letter templates to ensure alignment with what report auto-generator produces.
- Updated IR 11 to capture EPID data (title, contact, supervisor).
- Updated IP 22 to allow running report for by a specific procedure.
- Created new RPS report that shows EPID/CAC Errors. Created new report (IR 13) that provides time charged to specific CACs per EPID. Allows user to compare across EPIDs, sites, and regions.
- Created new report (IR 5a) that provides visual depiction of percent complete vs minimum and nominal sample sizes. Also, monitors/measures ROP completion status in terms of completion status selected in "All Procedures" tab.

The entire project team greatly appreciates the patience and professionalism brought by all as we worked through initial implementation. As everyone gets more familiar with the report generator and all the improvements made, we hope you will see the benefits of RPS-Inspections Auto-Report Generator and the progress we have made in transforming and modernizing how we do business

If you run into problems, think something might not be working correctly, have a question about report format, or have suggestions on how we can improve things, please first check with your technical support branch chief/team leader as they can likely help you. If it is something they cannot fix, or something not already being worked you can report the item to RPSSupport.Resource@nrc.gov so we can ensure it gets reviewed and addressed.

Now that my rotation as the RPS-Inspections Project Manager has concluded, I'd like to thank everyone who helped with the RPS-Inspections project.

A special shout out to Bridget Curran, whose hard work on this project has not gone unnoticed. Her experience with RPS is invaluable.

On January 1, 2020, Manuel Crespo became the new RPS-Inspections Project Manager. Let's make his transition a smooth one!


We recently became aware of some instances when ISFSI information is not being included in the final versions of the issued integrated reports.

If you have an ISFSI inspection included in your report, you need to:

1. Include the ISFSI report name in the subject line.
2. Include the ISFSI license and docket numbers in the appropriate part of the cover letter.
3. Include the ISFSI docket number, license number, report number, and EPID number (associated with the Part 72 report) on the 1st page of the integrated report with other logistical information.

*The requirements to manually add the above information have not changed since going to the auto-report generator. This was a requirement when we produced reports using templates.*

We have a long-term action to have RPS automatically include all of the above, but until then please continue to add ISFSI information to the integrated reports after the Word document is generated.

# Who is Monitoring the Monitors?

**By: Eric Miller, RI/FitzPatrick Senior Resident Inspector**

Background: The drywell continuous atmospheric monitoring system (CAMS) is used to continuously monitor the drywell atmosphere for airborne particulate and gaseous radioactivity. At FitzPatrick nuclear station, there are two redundant systems that provide flow through their respective scintillation detector assembly sample chambers and measure the sample beta radioactivity level. The detectors are sensitive enough to detect a reactor coolant leak of 1 gallon per minute within 4 hours. The CAMS provide early alarms to the operators so that closer examination of other drywell leakage detection systems will be made to determine the extent of any corrective actions that may be required. The 'B' CAMS take a suction from the discharge of the 'B' drywell cooling fan discharge plenum. The 'A' CAMS take a suction in an area below the 'B' discharge plenum. Discussions with engineering and review of prints indicate that there should be effective mixing in the drywell atmosphere such that the reading from both CAMS should be fairly consistent.

Design Requirements: 10 CFR Part 50 Appendix A Criterion 13, "Instrumentation and Control," requires instrumentation to be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those systems and variables that can affect the reactor coolant pressure boundary, the containment, and its associated systems. Appropriate controls are required to maintain the variables and systems within their operating range.

10 CFR Part 50 Appendix A Criterion 30, "**Quality of Reactor Coolant Pressure Boundary,**" requires components which are part of the reactor coolant pressure boundary to be designed, fabricated, erected, and tested to the highest quality standards practical. It also requires a means for detecting and, to the extent practical, identifying the location of the source of reactor coolant leakage.

Regulatory Guide 1.45, "Guidance on Monitoring and Responding to Reactor Coolant System Leakage," also provides additional guidance for NRC staff and licensees to assess indications of reactor coolant pressure boundary leakage.

Technical Specifications: The drywell CAMS are required by Technical Specification 3.4.5, "RCS Leakage Detection Instrumentation," to allow FitzPatrick operators to readily detect a reactor coolant leak. Leakage from the reactor coolant pressure boundary inside the drywell is detected by at least one of two independently monitored variables, such as drywell sump pump flow and drywell gaseous and particulate radioactivity levels. The associated Limiting Condition for Operation (LCO) requires the following leakage detection instrumentation to be Operable: a.) drywell floor drain sump monitoring system; b.) one channel of the drywell continuous atmospheric particulate monitoring system; and c.) one channel of the drywell continuous atmospheric gaseous monitoring system.

Operating history: FitzPatrick unidentified leakage began to trend up on October 7, 2018, following reactor startup from a refueling and maintenance outage. In the following week, the station established a monitoring plan with action levels to more closely monitor the leakage trend. The CAMS initial counts were 960 counts per minute (cpm) and 611 cpm, respectively. From October 7, 2018, through December 6, 2018, there were no indications of leakage from the drywell floor drain system (i.e. floor drain leakage = 0.00). On December 7, 2018, drywell floor drain reached 0.01 gpm and began to slowly trend up. On April 19, 2019, FitzPatrick reached Action Level 3 per IMC 2515 Appendix D Leak Rate Trending. The Resident staff then made notifications to NRC management in accordance with IMC 2515 Appendix D. A subsequent chemistry sample in May 2019 of the drywell floor drain indicated that the leak was from the reactor coolant system (RCS), showing signs of sodium-24. In December 2019, CAMS readings reached approximately 114,000 counts per minute. Since counts had reached the established alarm setpoint for the CAMS, the station has raised the setpoint to a higher value. The original alarm limit was 30,000 counts per minute.

The station developed a Failure Modes Causal Tree (FMCT) to assess potential leaks. Through comparison of drywell CAMS data from a through-wall leak that occurred in 2016 (~400,000 cpm) to what they are seeing today (~100,000 cpm), the station determined that the leak is likely a packing leak due to the CAMS values being different. The station established a probable cause associated with a packing leak of the inboard isolation valve for reactor water cleanup due to a sudden change in CAMS counts per minute causing exceedance of their ACMP action level for a change greater than 5,000 counts per minute. The probable cause is also supported based on end of refuel outage assessment during post maintenance reactor vessel hydro testing which indicated a packing leak on that same valve, which was addressed by the station prior to startup.

NRC Value Added: On October 6, 2019, both CAMS were declared inoperable, and following repair of the 'B' CAM, was returned to operable on October 8 (resulting in a 63 hour duration LCO). TS action statement 3.4.5 C.1 requires "grab samples" once per 12 hours. The TS bases for C.1 actions state "*The 12 hour interval provides periodic information that is **adequate** to detect LEAKAGE.*" The residents' inspection of the RCS leakage surveillance (71111.22) performed during the inoperability of both CAMS identified that radiation protection staff were not appropriately implementing the compensatory measure procedure.

Specifically, multiple staff on various occasions were implementing the procedure differently and incorrectly. The inspectors also identified that FitzPatrick staff in Operations, Chemistry, and Radiation Protection did not question how to assess and compare the grab sample results. The grab sample was an isotopic analysis and did not provide any indication of counts per minute. This prevented operations staff from effectively monitoring the results of the grab sample due to the difference. Interviews revealed that the FitzPatrick staff did not effectively understand the results of the isotopic analysis.

Corrective Actions: FitzPatrick staff entered the inspectors concerns into the corrective action program and are currently assessing next steps to address the issues.

Food for Thought: (1) What do the CAMS at your site read? Include them in your plant status. (2) What are the setpoints and how/where alarms being tracked (plant computer, annunciator, etc.)? (3) How are manual results being analyzed and converted to the appropriate units in the event of CAM inoperability? (4) Where (location and elevation) in the drywell/containment is/are the sample(s) being collected and returned? Search for them in your next drywell/containment outage entry. (5) How high should the CAM readings reach before any action is required? Challenge the licensee on this. Unlike leakage limits, Tech Specs and bases don't specify actions for CAM limits.

Inspector Best Practices noted above:

- Maintain a questioning attitude when performing panel walkdowns in the control room and throughout the plant. It is an accepted industry-wide standard for operators to ensure proper indications on instrumentation panels and MCCs during their walkdowns. Exercise attention-to-detail and hold operators to these standards during your plant walkdowns.

- Independently verify when possible. There is no substitute for being there and seeing first hand.

- Trust but verify! Periodically verify that the licensee is adequately implementing adverse condition monitoring plan actions and operability determination compensatory measures, especially for longstanding degraded conditions.

- Maintain a questioning-attitude. Make sure that your field observations align with the design basis and good engineering judgment. Is the compensatory measure appropriate, properly implemented, and adequate to ensure continued operability/functionality of the degraded SSC?

- When you know what "normal" looks like, then "abnormal" will jump right out at you. Inspector Manual Chapter 2515 Appendix D provides the NRC with a process for awareness, but even after reaching Action Level 3 and taking the required actions, continue to monitor closely and provide regular updates to NRC management.

- Ensure that you share your field observations with Operations and/or Engineering, as appropriate, in a timely manner. Do not analyze the condition for them or lower your standards.

**For more Inspector Best Practices, take a look at NUREG/BR-0326, Rev 1, "NRC Inspector Field Observation Best Practices."**

# Inspectors Spot Butterfly Loose Onsite

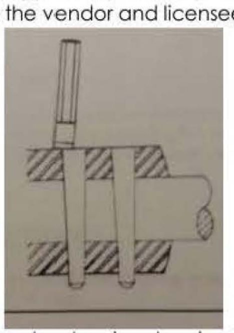
**By: Daniel Mills, RIII/Davis-Besse SRI, and Jackie Harvey, RIII/Davis-Besse Resident Inspector**

The sample: On June 4, 2019, the licensee prepared to replace a component cooling water (CCW) heat exchanger outlet isolation butterfly valve with a new valve received from the vendor (Fisher Controls) in 2017. Based on a scrub of the workweek schedule and plant risk (valve failure would render the associated CCW train inoperable), the inspectors selected the valve replacement as a maintenance effectiveness quality control sample.

Shopping for issues: The inspectors typically do a maintenance shop walk-through prior to the work to look for component and/or quality control issues. In this case, the inspectors identified that one of the three taper pins holding the butterfly valve disk to the stem appeared to be loose.

In response to the inspector's observation, the licensee performed repairs by resetting and re-staking the pins in accordance with mechanical maintenance procedure DB-MM-09317 "Fisher type 9100 Butterfly Control Valve Maintenance." This resulted in the large ends of the taper pins being flush with the surface of the disk which still didn't appear to be quite right to the inspectors. Based on the licensee's initial response (simply tapping the loose pin back into place and re-staking), the inspectors were not confident that the licensee completely understood their underlying concern (improper pin installation).

OpE-tunity: Based on additional digging, the inspectors noted that NRC Information Notice 2005-23 and NRC Part 21 Report 2005-42 described the issue of loose taper pins, with corrective actions to include the proper seating and staking of the pins. These references state that degradation of butterfly valves supplied by Fisher Controls and other manufacturers has occurred during plant operation as a result of the loss of taper pins used to connect the valve disc to stem. The degradation can involve leakage and affect valve operation. Taper pins lost from butterfly valves can also interfere with the operation of other plant components in fluid systems. The inspectors also noted that the vendor manual detailed the requirement for the pin ends to be ground below the surface of the disk before staking; however, the instructions were confusing and difficult to follow (at least partly due to the instructional drawing depicting flush ground pins) and were apparently misinterpreted by both the vendor and licensee.



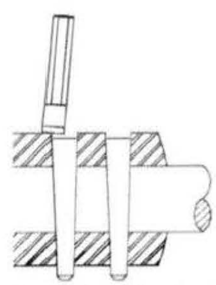
Vendor drawing showing flush

taper pin ends

After licensee's repair attempt

After review of the licensee's actions taken to repair the valve, the inspectors noted that the pins were improperly set and staked and brought the concern to the licensee. Additionally, the inspectors identified that the associated mechanical maintenance procedure, DB-MM-09317, included the vendor manual as a reference, but did not incorporate the vendor manual criteria ensuring the ends of the pins were below the surface of the disk before peening.

Corrective Actions: The licensee entered this issue into their CAP and returned the valve to the vendor, who determined that the pins were improperly installed. This resulted in NRC Event Notification 54238, NRC Part 21 Report 2019-24, and Fisher (vendor) Information Notice 2019-01, which revised and clarified the steps necessary to achieve the criteria that the large end of the taper pins be driven below the surrounding surface and then the surrounding material peened over the heads. Additionally, the licensee revised mechanical maintenance procedure DB-MM-09317 to include the updated vendor guidance regarding pin setting and staking. As part of their extent-of-condition review, the licensee discovered several other valves (including the old valve they had replaced) that exhibited similar improper taper pin installation. (See NRC Inspection Report 05000346/2019003 for additional details).



Revised vendor drawing

Vendor pic of properly staked pins

Valve after vendor repair

Inspector Best Practices noted above:

- Consider performing periodic walk-throughs of the maintenance shop prior to and/or following risk significant work looking for component issues (degraded as-found condition or poor ready for installation condition), less than adequate work control, and/or quality control issues (including proper labeling and storage of safety-related components).

- Ensure that you take the time to ensure that the right folks in the licensee's organization clearly understand your safety concern. Establishing good lines of communication and credibility with the licensee will go a long way toward this end.

- Remain aware of plant status. This allows you to risk-inform your samples and harvest samples when plant conditions are ripe.

- Independently verify when possible. There is no substitute for being there and seeing first hand. What did the licensee overlook or fail to consider?

- Maintain a questioning attitude. Make sure that your field observations align with the design basis, industry operating experience, and good engineering judgment.

**For more Inspector Best Practices, take a look at NUREG/BR-0326, Rev 1, "NRC Inspector Field Observation Best Practices."**

# Triennial Fire Protection Team Drums Up Value Added Insights

**By: Justin Fuller, RI, Millstone SRI and Louis Dumont, RI/DRS/EB2**

In preparation for a triennial fire protection inspection, team members spent time reviewing the licensee's fire protection program procedures (including transient combustible control procedures), and highlighted items for independent verification onsite. On July 16, 2019, the team identified two 55-gallon drums of lube oil unattended, and without a fire prevention permit (FPP), in the Millstone Unit 3 'A' EDG room enclosure (see picture below), which was contrary to licensee procedure CM-AA-FPA-101, "Control of Combustible and Flammable Materials." CM-AA-FPA-101 stated that "combustibles and flammables may be stored only in areas approved by the site fire marshal either through site utilization of administrative procedures or by use of a FPP. The inspectors noted that the site fire marshal had not approved these transient combustibles. Upon further review, the inspectors noted that only ten gallons of transient lube oil was provided for in the fire severity calculation for this risk significant fire area. The licensee entered this issue in the corrective action program (CAP) and removed the lube oil from the fire area. Engineering reviewed the fire severity calculation, accounting for the additional transient lube oil, and determined that the equivalent fire severity did not change (which the inspectors factored into their significance assessment using Appendix F). During the inspection, the team also identified other areas throughout the plant where combustibles were left unattended without a FPP. Specifically, the team identified transient combustibles located within 20 feet of the Unit1/Unit 2 control room barrier, which is designated as a combustible free zone, and three examples of metal cabinets with combustibles stored without the door installed in the Unit 3 auxiliary building. The licensee entered the additional examples of transient combustibles left unattended into the CAP and removed the affected transient combustibles from the respective fire areas. The identified finding was the result of a collaborative team effort focused on improving an apparent programmatic shortcoming (special shout out to the entire TFP team – **Manan Patel** (Team Leader), **Carey Bickett**, **Gene Dipaolo**, **Clinton Hobbs**, **Jeff Rady**, **Louis Dumont**, and **Justin Fuller**). See NRC Inspection Report 05000423/2019010 for more details.

<u>Inspector Best Practices noted above:</u>

- Give strong consideration to including a resident inspector on the team when possible. It is very beneficial to have one of the resident inspectors on the team, providing the in-depth knowledge of the plant and an excellent working relationship with senior management at the site.

- Trust but verify! Independently walk down whenever possible (given due consideration to ALARA and personnel safety).

- Spend time with other inspectors in the plant. Two sets of eyes and two questioning minds are better than one.

- Effectively using the licensee's own procedures and industry standards to logically and methodically support your safety concern provides a more solid regulatory foothold and helps highlight licensee performance deficiencies.

- Maintain a questioning attitude. Make sure that your field observations align with the design basis and good engineering judgment.

- When you know what "normal" looks like, then "abnormal" will jump right out at you.

- Knowledge is power. A fair understanding of the design and licensing basis allows one to place identified issues and/or concerns in their proper perspective (transient combustibles should always be properly controlled and should not be found in designated combustible free zones).

- Ensure that you share your field observations with Operations and/or Engineering, as appropriate, in a timely manner. Do not analyze the condition <u>for</u> them or lower your standards.

- Good inspection practices include the age-old question "have you considered the extent-of-condition?" This extent-of-condition review may uncover a programmatic issue and/or increase the risk significance depending upon the condition of other similar SSCs or areas.

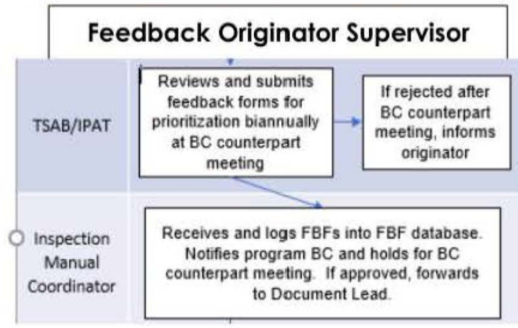
- Sometimes, it's not a matter of "what's there" but "what's not there that should be."

- Phone a friend. Remember that the DRS & DRP regional staff, resident inspectors, NRR OpE Clearinghouse, and the NRR staff are excellent resources to tap to help put your issue in perspective.

Unattended drums of lube oil in EDG enclosure without a fire prevention permit.

# Changes to the Inspection Program Feedback Process

**By: Bridget Curran**
**NRR/DRO/IRSB**




Beginning in 2020, the Division of Reactor Oversight (DRO) will be implementing a revised Inspection Program Feedback process that will enable better management of the inventory of feedback forms. Regional staff, through their Technical Support and Assessment Branch Chiefs (TSABs) or Inspection Program and Assessment Team (IPAT) Leaders, will now be reviewing their feedback forms before sending them to DRO. The DRO Inspection Manual Coordinator will log all received feedback forms into the database in preparation for prioritization ranking biannually at Branch Chief Counterpart meetings.

During the biannual meetings, the TSAB/IPAT BCs/TLs will discuss and rank their feedback forms in order of priority. Based on those discussions, DRO BCs will advise the Inspection Manual Coordinator to forward feedback forms to the appropriate document leads for action. The figure below highlights the new steps of the feedback form process. The process does not change much, except for applying a filtering mechanism to ensure that resources are properly applied to significant issues.

Please forward any questions regarding this new process to Bridget.Curran@nrc.gov.

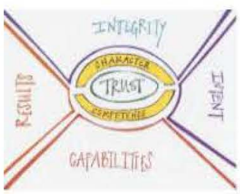
# Déjà Vu All Over Again

**By: Ken Kolaczyk, NRR/DRO/IRSB**

Have you ever wondered if there are any generic communications related to your inspection but don't know where to look? Do you believe the editors of the "Inspector Newsletter" have run out of material and as a result, have been forced to recycle old articles that were written a long time ago to fill up the Newsletter? Well NRR's Operating Experience Branch (IOEB)- which again now includes Generic Communications (after the recent NRR reorg) has the answer to both questions. IOEB maintains a SharePoint site that contains a cross reference of Operating Experience/ Inspection Procedure at the following SharePoint site located here: (b)(7)(F)

Be sure to check out this refreshed and updated site as part of your inspection preparation activities to ensure old lessons from the past will not have to be relearned. Regarding the answer to the second question about recycling old articles, well that is up for you to decide after reading the July 2012 Inspector Newsletter that is posted at the following url: (b)(7)(F)

# Speed of Trust and Inspector Best Practices

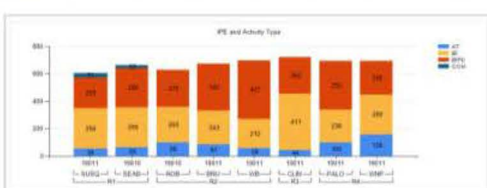


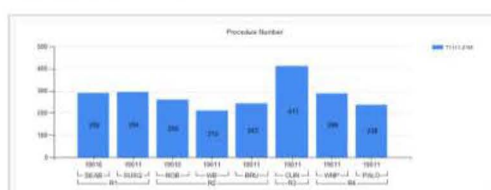

**Speed of Trust Action Card #13** - Extend trust. Demonstrate a propensity to trust. Extend trust abundantly to those who have earned your trust. Learn how to extend "Smart Trust" to others based on the situation, risk, and credibility of the people involve.

**Inspector Best Practices** - (1) Trust but verify! Independently verify when possible. There is no substitute for being there and seeing first hand. (2) Ensure that you share your field observations with Operations and/or Engineering, as appropriate, in a timely manner. Do not analyze the condition for them or lower your standards. Trust that they will do the right thing; however, follow-up to ensure that they do. (3) The licensee remains responsible and accountable for contractor work in the field and in the office (engineering technical support). Trust but verify that this contractor work meets acceptable industry standards. (4) Trust the process (IMC 0612 Appendix B "Additional Issue Screening Guidance"). Do not let pride of ownership (an NRC identified issue) cloud your vision regarding the more-than-minor threshold. Consistent objectivity strengthens our assessment process and results in increased credibility. (5) Phone a friend. Remember that the DRS & DRP regional staff, other residents, NRR OpE Clearinghouse, and the NRR staff are excellent resources to tap to help put your issue in perspective. Promptly communicate issues of concerns and trust that others will help you to effectively and efficiently resolve them.

For more inspector best practices, please see NUREG/BR-0326, "NRC Inspector Field Observation Best Practices."
http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0326/br0326.pdf
Please contact Bridget Curran, NRR/DRO/IRSB, if you'd like a hard copy of the "NRC Inspector Field Observation Best Practices"


Have you ever wanted to compare hours charged from inspection to inspection? Now you can with RPS-Inspections report IR 13 ("Inspection Activity Type Hours"). This new report allows you to compare across inspections within your own branch, division, or another regional office. Just select the procedures, activities, and EPIDs you want to look at.





# 10 CFR 50.69, RICT & SFCP Training Initiatives

## Things Are Getting Risky… Are You Trained and Ready?

**By: John Hughey, NRR/DRA/APOB**
**Ken Kolaczyk, NRR/DRO/IRSB**
**Edgardo Torres, NRR/DRA/APOB**

NRR's Divisions of Risk Assessment (DRA) and Reactor Oversight (DRO) are collaborating to develop inspector training for several risk-informed initiatives such as: 10 CFR 50.69, *Risk Informed Categorization and Treatment of Structures, Systems and Components for Nuclear Power Reactors; Risk-Informed Technical Specification Initiative 4.B, Risk Informed Completion Times (RICT); and Risk-Informed Technical Specification Initiative 5.B, Surveillance Frequency Control Program (SFCP)*. The team's goal is to provide focused training to inspectors that will aid their ability to verify the implementation of the aforementioned risk-informed initiatives.

Near term risk-informed training that is undergoing final development will review the background of 10 CFR 50.69, discuss how the licensee is expected to implement the rule and how inspectors should review implementation of the rule using NRC Inspection Procedure (IP) 37060, "10 CFR 50.69 Risk Informed Categorization and Treatment of Structures, Systems and Components Inspection." This just-in time (JIT) training is scheduled to be presented by a DRA/DRO team on January 22, 2020, to Region 1 inspectors to support a February 2020 10 CFR 50.69 inspection at the Limerick Generating Station. The following plants have 50.69 applications under review: Hatch, Prairie Island, Calvert Cliffs, Watts Bar and Millstone 2. The following plants have incorporated 50.69 into their license: Limerick, Palo Verde, Byron, Braidwood, Peach Bottom, Brunswick, Harris, Sequoyah, Monticello, and Robinson.

The objectives for the RICT training are to provide an overview of NEI 06-09-A, Revision 0, *Risk-Informed Technical Specifications Initiative 4b – Risk Managed Technical Specifications (RMTS) Guidelines*, focusing on inspectable items though the manual; discuss inspection procedure modifications efforts; and provide examples of possible inspection scenarios that could develop into performance deficiencies. The following plants have RICT applications under review: Limerick, Byron, Braidwood, Harris, Nine Mile Point 2. The following plants have incorporated RICT into their license: Vogtle, South Texas Project, St Lucie, Turkey Point, Palo Verde, Calvert Cliffs and Farley. The DRA/DRO team intends to deploy this training to the NRC inspectors in calendar year 2020.

The objectives for the SFCP training are to provide an overview of NEI 04-10, Revision 1, *Risk-Informed Technical Specifications Initiative 5b – Risk Informed Method for Control of Surveillance Frequencies*, focusing on inspectable items though the manual; discuss inspection procedure modifications efforts; and provide examples of possible inspection scenarios that could develop into performance deficiencies. The following plants have SFCP applications under review: Watts Bar and Palisades. Fifty-two plants have incorporated SFCP into their license. This training is also under development by DRA/DRO and plans for deployment to our inspectors are currently under evaluation.

The team will work with both the ad-hoc risk-informed initiatives working group and inspection manual chapter (IMC) 1245 working group to incorporate their suggestions regarding training content and recommendations regarding delivery to the inspector staff. If anyone has suggestions regarding what subjects should be examined in further detail by the training, contact Edgardo Torres at Edgardo.Torres@nrc.gov, and John Hughey at John.Hughey@nrc.gov from DRA; or Ken Kolaczyk at Kenneth.Kolaczyk@nrc.gov from DRO.

Read about our Reactor Stars in Region IV on the Reactor Star Share Point page:

(b)(7)(F)

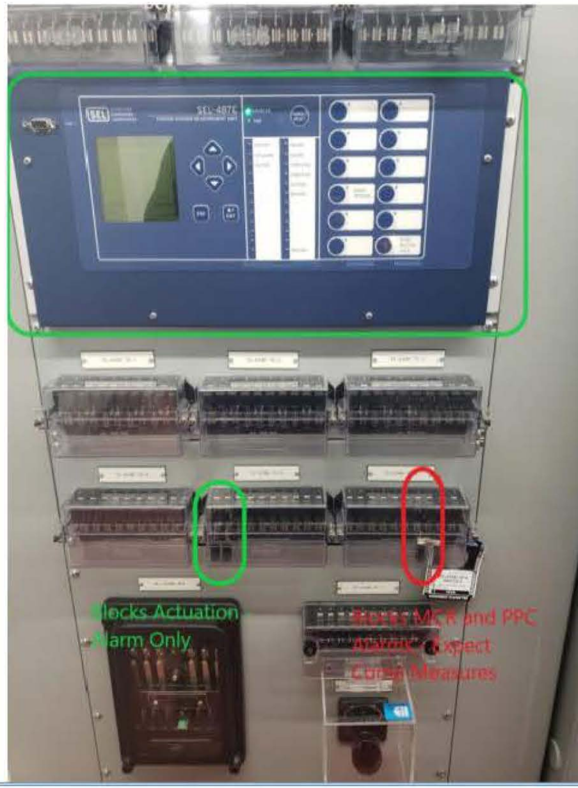
**Don't forget to verify that engineering modifications in the field ensure proper form, fit, and function.**

~~FOR INTERNAL USE ONLY~~

# The "Wild Life" of an Inspector's Job!

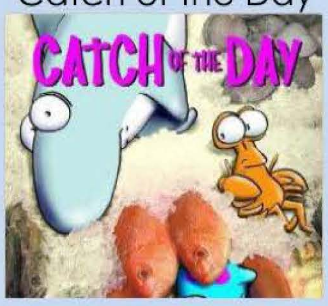
## Eagle Eyes Award

**Nominated by: Glenn Dentel, Branch Chief, RI/DRS/EB2**




This quarter's Eagle Eyes Award goes out to **Brandon Pinson**, Reactor Inspector RI/DRS/EB2. During a TI-2515/194 open phase condition (OPC) inspection relay room walkdown at Nine Mile Point (NMP) U1 in November 2019, Brandon identified a different configuration on a station phasor measurement unit panel than the team observed at other switch blocks (see picture left). Brandon promptly asked the licensee why the difference and if there were any associated compensatory measures in place. The switch blocks main control room and plant computer OPC-related alarms for offsite power transformer (XFMR) 101N at NMP U1. Operators had blocked the alarm as it was a nuisance at the time (due to the minimum load condition), but failed to implement additional safety measures to compensate for the disabled alarm functions for that XFMR to monitor for an OPC. In this case, the team assessed the licensee performance deficiency as minor as the licensee fortunately had some monitoring of voltages which would likely have identified an open phase. For additional details, check out IR 05-220/2019014 or contact Brandon. **Great catch!**

## Catch of the Day




**Nominated by: Zach Hollcraft, TMI SRI**

This quarter's "Catch of the Day" recognition goes out to **Peter Boguszewski**, Peach Bottom Resident Inspector. During the recent Peach Bottom Unit 3 outage, residents were monitoring shutdown risk as directed by IP 71111.20, "Refueling and other Outages." Peter attended the morning Outage Control Center turnover and noted that shutdown risk was briefed as **Green** for the day. Later, a shutdown risk status e-mail showed the risk to be Yellow. Peter questioned the outage risk manager about the change and was told that planned work on the standby gas treatment system was moved a couple of days earlier, but that its effect on risk was not captured until the risk manager re-ran the numbers during a periodic check. Peter questioned whether the control room staff had been aware of the change in shutdown risk prior to being notified by the outage risk manager and was told that they were not. Armed with this information, Peter then questioned the Shift Operations Superintendent and Control Room Supervisor on watch about the sequence of events. When they confirmed that the control room staff was unaware of the change in shutdown risk for approximately seven hours, Peter questioned whether the station had initiated a correction action document and was told they had not. Based on Peter's questions, the licensee subsequently initiated a correction action issue report (IR) to address the performance deficiency. (See Peach Bottom Inspection Report 2019004 for more details.) **Great catch, Peter!**

## Help Us Celebrate 20 Years of the ROP!
## 2000 -2020

We are looking for articles, snippets, and pictures that reflect the transition from the Systematic Assessment of Licensee Performance (SALP) program to the Reactor Oversight Process (ROP) Inspection Program. Submit your perspectives to the Inspector Newsletter e-mail address: InspectorNewsletter@nrc.gov

Inspector Mailbox

**Send your questions and comments to the Inspector Mailbox. The Newsletter Editorial Staff is happy to answer any newsletter questions, comments or concerns that you may have.**

**InspectorNewsletter@nrc.gov**

http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0326/br0326.pdf

**Support Our Troops**

**Special "Shout Out & Thank You" to all of the NRC employees currently serving our country on Active Duty. Stay safe and come home soon!**

**Welcome Home to all of the NRC employees who have recently returned home to us safely! We're glad to have you back and inspecting with us!**

# Newsletter Editorial Board

***We are looking for articles, as well as your feedback!!!***

***Contact any one of us by using the new Inspector Newsletter e-mail account!!!***

Joe Schoppy, RI

Edwin Lea, RII

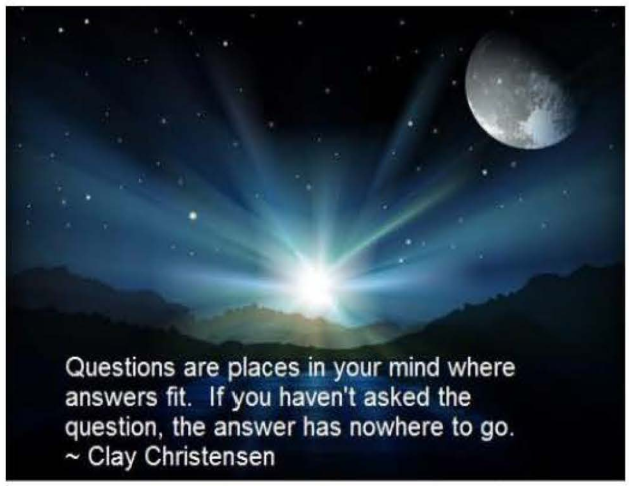
Jamnes Cameron, RIII

Leanne Flores, RIV

Bridget Curran, HQ

## *Many Thanks to Our October 2019 Newsletter Contributors!*

Tom Hipschman, Marc Ferdas, Amy Beasten, Justin Vazquez, Booma Venkataraman, Joe Schoppy, and John Cherubini




**What Questions Have You Asked Today?**

# Other Useful Information:
## Quarterly ROP Changes?

If you'd like to read about summaries of (very high level) significant (not editorial) recent changes in ROP guidance since the last newsletter let us know and we'll include them!

***Send us your feedback and your articles! You could be one of the contributors to the next Inspector Newsletter!***

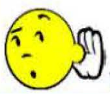
***We're on the Web! Check us out at:***

(b)(7)(F)

or find the current and previous newsletter articles on Share Point *(click on link to the Share Point site).*

***Providing useful information to our inspectors, by our inspectors!***





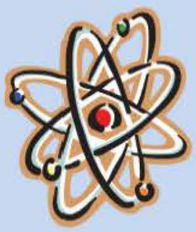
What have you heard around the plant lately? Let us know in five lines or less!

# Inspector Newsletter

**April 2020**

***Providing useful information to our inspectors, by our inspectors!***

~~FOR INTERNAL USE ONLY~~



## Table of Contents:



# Sun Sets on Use of NRC Contractors for Design Inspections

**By: Doug Bollock, NRR/DRO/IRIB**

The time has come, this year we are phasing out the use of contractors on Design Bases Assurance Inspections (DBAIs). This was a tough decision considering the great support the contractors have provided the NRC inspectors over the years and the wealth of experience the contractors possess. The decision was made after considering the shift in focus of engineering inspections from original design basis to inspecting current licensee performance and the benefits of using only NRC inspectors, thereby increasing technical knowledge, proficiencies, and experience gained by NRC inspection staff.

Before we bid adieu to the contractors, we requested that they share some of their design bases inspection methods, checklists, and tips in a series of knowledge transfer (KT) training sessions in each regional office. The training topics, locations, and dates are listed below. If you can't attend in person, the training sessions will be available real-time via WebEx or Skype. In addition, the sessions will be recorded and should be available in a TMS theater near you in the future. Please contact your regional DBAI KT training lead for additional information (Region I – Joe Schoppy; Region II – Marcus Riley; Region III – Karla Stoedter; and Region IV – Gerond George). In addition to the KT training sessions below, NRC staff are encouraged to look for external training that cover engineering inspection topics and work through their regional management to attend external training. NRR staff is also looking into expanding the post-qualification program to include additional NRC internal engineering training courses.

| Training Dates | Office |
|---|---|
| June 29 to July 1, 2020 (Mon-Wed) | Region 1 |
| September 9-10, 2020 (Wed-Thurs) | Region 2 |
| November 17-19, 2020 (Tues-Thurs) | Region 4 |
| December 15-17, 2020 (Tue-Thurs) | Region 3 |

**Training Topics:**

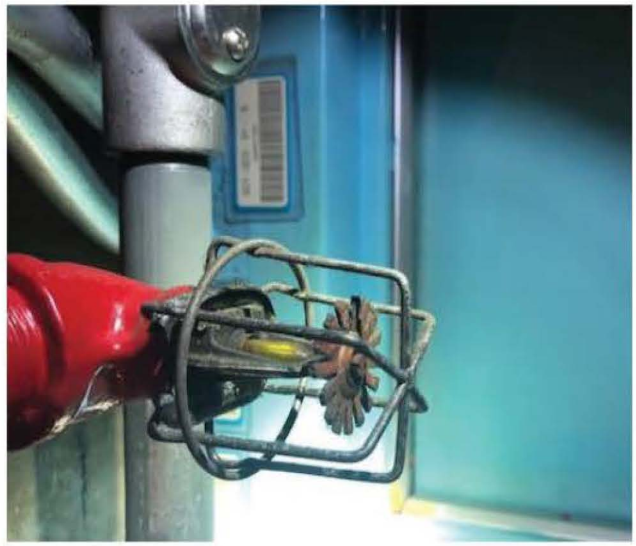
| Region | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Day 1 | HVAC and fan design and testing inspection techniques | Seismic supports and Structural Design inspection techniques | Pump and Motor design and flow testing inspection techniques | Electrical protection and coordination inspection techniques - circuit breakers, fuses, relays, design maintenance testing inspection techniques |
| Day 2 | Heat exchanger & cooling tower design and testing inspection techniques | Equipment Protection for Internal and External Hazards (cranes) inspection techniques | Valve design and O & M testing (flow design & balancing, open/close timing, IST) inspection techniques | EDG electrical inspection techniques - ESF sequencing load shedding/TSSRs/Generator (Field flash/power output/frequency) inspection techniques |
| Day 3 | EDG mechanical (fuels, oil, tank inspections, starting air & combustion air requirements) inspection techniques | NONE | IA/Compressed Air (usage requirements, air receiver and system inspection & maintenance) techniques | I & C (Digital I & C/EQ/total loop uncertainties, time testing, installation, maintenance. design, calibration & inspection techniques |

Read about our Reactor Stars in Region IV on the Reactor Star Share Point page:

(b)(7)(F)

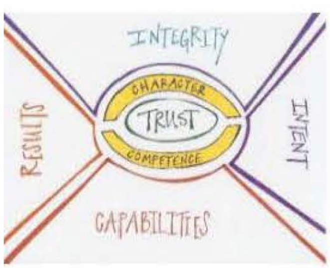
# What's Wrong with This Picture?

Picture #1: What's wrong with the above picture? After pondering the picture for a few minutes, flip back to page 12 for the answer.



Picture #2: What's wrong with the above picture? After pondering the picture for a few minutes, flip back to page 12 for the answer.

# Speed of Trust and Inspector Best Practices




**Speed of Trust Action Card #10** – Hold yourself accountable first; hold others accountable second. Be clear on how you'll communicate how you're doing – and how others are doing. Don't blame others or point fingers when things go wrong.

**Inspector Best Practices** - (1) The licensee remains responsible and accountable for contractor work in the field and in the office (engineering technical support). Trust but verify that this contractor work meets acceptable industry standards. (2) Be approachable. If people feel intimidated by you, they are far less likely to talk to you. (3) Ensure that you share your field observations with Operations and/or Engineering, as appropriate, in a timely manner. Do not analyze the condition for them or lower your standards. (4) Seek first to understand, then to be understood (Covey Habit #5). Always be willing to listen to the licensee's perspective before jumping to conclusions and/or demanding to be heard.

For more inspector best practices, please see NUREG/BR-0326, "NRC Inspector Field Observation Best Practices."
http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0326/br0326.pdf

Please contact Bridget Curran, NRR/DIRS/IRGB, if you'd like a hard copy of the "NRC Inspector Field Observation Best Practices"

# Perspectives on COVID-19 and the ROP

**By: Tom Hipschman**
**NRR/DRO/IRIB**

This month marks the 20 Anniversary of the implementation of the ROP. Who would have thought 20 years ago we'd be in an unprecedented era in our history as a nation and as an agency enduring the global pandemic known as Coronavirus COVID-19? By now, we've been in a full-time teleworking status for several weeks. Numerous inspections have been postponed, but many are also being performed remotely. The resident inspectors are performing their oversight role in a way that was probably never imagined 20 years ago, and by all accounts, they're doing it well. At the time of this article, inspectors have used technology to inspect remotely, including performing an event response for a unit trip without even going onsite.

Additionally, NRR is approving exemptions such as from 10 CFR 26.205(d)(1) – (d)(7), provided that certain conditions are met, as described in NRR's March 28 letter issued to industry. In addition to the details of the exemption process, the March 28 letter contains the regulatory basis for our determination that such exemptions, if approved, will maintain reasonable assurance of safety during a defined, limited period of flexible work hour controls. The US electricity system is part of the nation's critical infrastructure. Providing regulatory flexibility that maintains safety during the COVID-19 pandemic helps to ensure safe and reliable electric power during a national emergency. Additionally, the agency is reviewing the necessary actions related to many other issues that our licensees are experiencing.

It has been a big change for us all, and we are all learning some new technology and techniques to communicate and work better. The Division of Reactor Oversight has worked with the Regional Offices, and within headquarters to update and provide new guidance for doing our important safety roles. There is new guidance in Inspection Manual Chapter 2515, Appendix E, "Pandemics, Epidemics, and Other Widespread Illnesses or Diseases" (ML20079E700). Additional guidance for inspectors was provided in an email on March 19, 2020 and updated on April 6, 2020 (ML20097E538) to provide inspectors with additional guidance given the rapidly changing situation both nationally, and at the reactor sites. The top priority of this guidance remains to protect the health of our inspectors as well as site personnel, while providing the flexibility of maintaining oversight that supports reasonable assurance of adequate protection of public health and safety.

But all this change hasn't occurred this rapidly without a few bumps along the way, and the feedback we've received has been vital for the agency to learn, adapt, and continue to excel in our roles. I believe that as an agency are meeting the requirements of our mission, but we also meeting the spirit and intent as well. We have all been affected by federal, state, and local orders to remain at home except for essential business. And I believe as an organization, there is a silver lining to this disruption. We've learned how to not only work remotely, but also inspect remotely as well. We've learned how to be even more agile and flexible in getting our work accomplished. I'm confident that there will be many lessons learned that we will incorporate into the Reactor Oversight Process to make it even better over the next 20 years in whatever form that may take in the future.

But as many others have said, we all do well to keep this in perspective. For myself, I'm appreciative how our inspectors, regions, and staff continue to impress and provide confidence in our oversight roles, and I am grateful to all of you for the work you do.

# Transitioning Out of ROP Enhancement – Back to Normal Work Practices

**By: Russ Gibbs,**
**NRR/DRO/IRSB**

The Reactor Oversight Process (ROP) Enhancement project is now completed. Recall that the first phase of the project ended with the submission of SECY-19-0067 (ML19070A050), which is still with the Commission for their direction. For inspectors, the most important potential outcome of the changes proposed is a modest reduction in the Baseline Inspection Program by about 15% - affecting sample sizes for certain inspection procedures (IPs). The goal of this proposed change is to better risk-inform and performance base the inspection program while achieving improved efficiency. This change will give inspectors more flexibility to focus on more important safety issues and more time for other inspection-related activities such as participating in team inspections.

Other ongoing and longer-term enhancement activities to be accomplished using normal work management practices include the completion of an effectiveness review of the Cross-Cutting Issues (CCI) Program, a comprehensive review of Problem Identification and Resolution inspections (PI&R) and an effectiveness review the Independent Spent Fuel Storage Installations (ISFSI) inspection program. For the CCI and PI&R reviews, work is ongoing to clearly define current problem statements and to identify and develop options for improvement. Depending upon outcomes, the path forward may require Commission notification or approval. For ISFSI, a recommendations memo (ML19277G895) will be decided upon soon to define changes for the 2021 inspection cycle. For Radiation Protection (RP), eight IPs have been issued this year. A Commissioners Assistant note was prepared that outlines the RP changes (ML19317D673). All these efforts have involved significant regional interactions. Other longer-term enhancement activities such as a revision to the Mitigating Systems Performance Index performance indicator, continued improvements to Significance Determination Process risk tools, and improvements to the Emergency Preparedness inspection program are at various stages of development.

An improved public website below was developed for ROP Enhancement working with NRR's Embark Venture Studio. The website provides a fresh look and a possible example for future NRC websites. Although the ROP Enhancement project is completed, the website will remain accessible until a website is developed that shows ongoing enhancements to the ROP in a broader perspective.

https://www.nrc.gov/reactors/operating/oversight/rop-enhancement.html
If you have any questions about the project, feel free to reach to Russell Gibbs at Russell.gibbs@nrc.gov.

# Region IV Reactor Stars!

## Have you met: Ayesha Athar & Jim Drake

NUMBER: 2019-18

### TITLE: Responding to Plant Events Anytime, Anywhere

On September 24, 2019, Diablo Canyon, Unit 2 was in the third day of a refueling outage, extensive work on the main generator stator had started, including demolition of the stator core cooling water system.

Large sections of the carbon steel piping were being replaced. During this process a section of stator water cooling pipe had been breached and removed. FME covers were positioned on both ends of the pipe and hot-work permits were issued to allow additional grinding on the pipe to remove a valve. During the grinding activity, workers witnessed an explosion, described as a rapid energy release; large enough to blow off both FME covers and damage welding curtains that were in place for subsequent welding activities. No significant equipment damage or major injuries were reported. Initial investigation findings determined the source of the energy was likely due to a pocket of hydrogen gas inside the pipe and near the grinding work.

When informed of the situation, Ayesha Athar, acting resident inspector, reached out to Jim Drake, senior reactor inspector on site for ISI inspections, and asked that he accompany her to the scene to assess the situation. While at the scene they interviewed workers, evaluated the damage, took photographs and reported the conditions to the branch chief. Their quick response provided key management with the information to properly evaluate the nature of the event, whether regulatory response was necessary, and if the licensee considered the proper emergency plan response.

This event highlights the importance of teamwork and how important it is that inspectors at a facility be ready to respond to any event quickly. Ayesha and Jim's assessment and the information they relayed back to the region was important to the safety mission of the NRC.

Although this event did not result in significant equipment damage or personnel injuries it highlights the importance that all inspectors who are on site be prepared to react and respond to emergency events.

## Have you met: Gregory Kolcum

NUMBER: 2019-19

### TITLE: Columbia Walkdown During Deep Backshift Identified Equipment Protection Mistake

During a weekly walkdown of safety-related and risk significant areas on deep backshift in accordance with Manual Chapter 2515, Appendix D, Greg identified a configuration issue relative to the protection of the 'A' control rod drive pump, which was contrary to what he expected, based on his review of condition reports and plant status information he reviewed prior to going into the field. Per that review the only system intended to be protected was the 'A' control rod drive pump for planned maintenance on the 'B' control rod drive pump.

Columbia Generating Station is a BWR-5 design with emergency core cooling pumps and reactor core isolation cooling located on the ground level. Each pump room is separated by water-tight doors. Columbia Generating Station Protected Equipment Program Procedure 1.3.83 provides guidance for protecting equipment to minimize plant risk, including limiting or prohibiting operation or maintenance of plant equipment when structures, systems, and components are made inoperable or unavailable. The intent is to provide additional administrative barriers to guard against inadvertently rendering a component or system, which is important to station risk and nuclear safety, inoperable or unavailable. Protected equipment actions taken in accordance with this procedure support the Configuration Risk Management Program and are classified as risk. management actions for compliance with 10 CFR 50.65(a)(4). This procedure applies to online and shutdown conditions with the goal to maintain plant risk within acceptable levels by maintaining defense in depth of key safety functions, preventing inadvertent plant trips, transients, or Technical Specification Limiting Conditions for Operations entries. Protecting equipment supports the key safety functions of decay heat removal, spent fuel pool cooling, inventory control, electrical power (includes both onsite and offsite power}, reactivity control, and primary containment 'integrity (containment isolation, containment pressure and temperature control).

Greg first passed the control rod drive pumps while walking to the ground level of the reactor building 'B' control rod drive pump was protected and not running. Protected equipment and systems are to be clearly identified in the field to prevent inadvertent work on or near the protected equipment. Physical barriers are to be used whenever possible, particularly in cases where bumping into a component may cause an inadvertent trip or system transient. In this case, brightly colored pink chain was used to post 'B' control rod drive pump as protected. This configuration seemed odd to Greg since the protected pump was not running. Greg continued the emergency core cooling system pump plant tour and went to the control room, where he asked the reactor operator which control rod drive pump was protected. The entire crew said 'A" control rod drive pump. The inspector let the crew know that the 'B' control rod drive pump had the brightly colored pink chain. The crew challenged Greg, but after checking, acknowledged that a mistake had been made. The equipment operator corrected the mistake and notified the shift manager. Fortunately for the crew, work would not begin until the next day during the normal workday.

This observation highlights the importance of several inspection techniques. First, conducting weekly walkdowns in plant status allows the inspector to observe licensee activities for protected equipment prior to work being performed. Second, reading the licensee's plant status page verifies plant conditions match. Third, inspecting conditions late on backshift can help identify if the licensee is complacent in ensuring procedures are followed, like placing the right protected equipment barrier on the right equipment.

# You Have Spoken and We Have Listened!

**By: Scott Bussey, Mathew Emrich, Ken Kolaczyk.**
**OCHCO/ADHRTD/RTTB and NRR/DRO/IRSB**

Recognizing its important role as a key contributor to the growth and development of inspector technical knowledge, the NRC Technical Training Center (TTC) staff not only continually analyzes the feedback it has received from students, but also industry operating experience for inclusion into class curriculum. As part of this ongoing process, the TTC has recently modified the reactor technology refresher continuing training courses to ensure the curriculum remains relevant and is responsive to the needs of the end user. Changes to the refresher training courses include the following:

- Systems Refresher Course
  - Design Basis and 10 CFR 50.59 Training
  - Mission Critical Thinking and Risk-Informed Decision Making
  - Risk Informed Technical Specifications Implementation
  - Reactor Startup static scenario based upon recent industry operating events
  - 10 CFR 50.155, "Mitigation of Beyond Design Basis Events"
  - 10 CFR 50.69, "Risk-Informed Categorization and Treatment of Structures, Systems, and Components for Nuclear Power Reactors"
- Simulator Refresher:
  - Post-Reactor Trip/Scram static scenario with issues to be identified in a post-trip walk down by students
  - Severe Accident Guidelines and Scenario Run on the Severe Accident Simulator

The TTC reactor technology staff is excited about these changes and as always, welcomes feedback from students regarding the subject matter. Other curriculum changes that are under consideration involve tailoring certain refresher training courses to inspector type. i.e. including more operating scenarios for classes that consist of Licensed Operator Examiners and Operations inspectors and more engineering related subjects for classes that consist primarily of Engineering Inspectors.

# Fighting Fire with Foam

**By: Lindsay Merker, Columbia Generating Station Resident Inspector**

*Two fire brigade members stood outside a nondescript building: one pressed against the door feeling for heat, the other crouched with a strong grip on the primed fire hose. "Attack Team to Fire Brigade Leader, we are entering the building."*
*"Fire Brigade Leader to Attack Team, understand you are entering the building."*
*"Attack Team to Fire Brigade Leader, that is correct."*
*The first fire brigade member yanked open the door. Smoke billowed out the open doorway while the fire inferno inside raged…*

On February 20, 2020, I stood outside one of the fire training facilities at the Volpentest Hazardous Materials Management and Emergency Response (HAMMER) Federal Training Center in Richland, WA.

The HAMMER facility is a Department of Energy facility located on the Hanford Nuclear Reservation that provides safety and health training for workers and emergency responders.

Columbia Generating Station was using the HAMMER facility's unique training environment as part of their training program for new fire brigade members. The trainees were practicing and demonstrating their skills in full turnout gear with primed fire hoses, smoke, and yes, live fire.

How did we get here?

NRC inspection procedure 71111.05 was revised on August 7, 2019, to include comments submitted by NEI and criteria for inspecting AP1000 plants.

While reviewing the new procedure change, I noticed a couple changes for inspectors to verify peppered throughout the document:

1) Confirm [floor] drains are factored into system design and acceptance test results. (Section 03.01.d.3)

2) The licensee declares the emergency action levels and makes the appropriate notifications in accordance with their NRC approved Emergency Response Plan commitment(s). (Section 03.02.d)

However, what really caught my eye was the revised sentence "select an unannounced drill or fire brigade live fire training exercise." Previously, this sentence had limited inspectors to drills or actual activation of the fire brigade in response to a fire event. I contacted the fire marshal and fire training coordinator to identify upcoming live fire training exercises to include in my inspection schedule.
While at the HAMMER facility, I conducted a walkdown of the live fire facility with the licensee's fire brigade trainer (before it was set on fire) and watched the training drills. I inspected the trainees' ability to roll out and prime the fire hoses, don their turnout gear, communicate with the fire brigade leader, and attack several fires, a task that (thankfully) I had only seen simulated at the plant.

The trainees were given two scenarios. The first scenario tested the trainees' abilities to properly enter and clear the first floor of the live fire facility. Each fire brigade member went twice on the attack team to ensure everyone had a turn with the hose. The second scenario challenged the trainees' ability to put out an oil fire that had propagated over water using foam (pictured below).

I found the live fire training drill experience extremely rewarding and will use the insights gained from this inspection to further inform the rest of my fire brigade drill performance sample. Does your site have a live fire training drill? If so, I highly encourage you to incorporate one in your inspection schedule.

Columbia Generating Station fire brigade trainees demonstrating skills during a live fire drill.

# Shout Out to Our Resident Inspectors – Past & Present!

## Our Residents - On the Front Lines Protecting Our Safety

| FIRST | LAST | FIRST | LAST | FIRST | LAST | FIRST | LAST | FIRST | LAST |
|---|---|---|---|---|---|---|---|---|---|
| HASAN | ABUSEINI | CAREY | BROWN | RICK | DEESE | NORMAN | GARRETT | GEORGE | HUTTO |
| DYLE | ACKER | EVA | BROWN | ANNE | DEFRANCISCO | MICHELLE | GARZA | SHRIRAM | IYER |
| CAROLINE | ACOSTA | F | BROWN | DOUGLAS | DEMPSEY | GEROND | GEORGE | DONALD | JACKSON |
| JOHN | ADAMS | MICHAEL | BROWN | STEVEN | DENNIS | GREGORY | GIBBS | DONNA | JACKSON |
| DAVID | AIRD | FRANCIS | BRUSH | GLENN | DENTEL | RUSSELL | GIBBS | TERRY | JACKSON |
| ALEJANDRO | ALEN | MICHAEL | BUCKLEY | BINOY | DESAI | JOHN | GIESSNER | LOIS | JAMES |
| DON | ALLEN | ARTHUR | BURRITT | WESLEY | DESCHAINE | MARK | GILES | JOHN | JANDOVITZ |
| PETER | ALTER | STEPHEN | BURTON | BILLY | DICKSON, JR | JASMINE | GILLIAM | STEVEN | JANICKI |
| JOSEPHINE | AMBROSINI | RUSSELL | BYWATER | EUGENE | DIPAOLO | ANTHONY | GODY | FREDRICK | JAXHEIMER |
| BRIAN | ANDERSON | CHRISTOPHER | CAHILL | JOHN | DIXON | DAVID | GRAVES | KENNETH | JENISON |
| ELIZABETH | ANDREWS | LOYD | CAIN | JENNIFER | DIXON-HERRITY | MELVIN | GRAY | MATHEW | JENNERICH |
| DANIEL | ARNETT | ROBERT | CALDWELL | DOUGLAS | DODSON | KATHERINE | GREEN-BATES | CHRISTOPHER | JEWETT |
| R | ARRIGHI | STEPHEN | CAMPBELL | JACOB | DOLECKI | JONATHAN | GREIVES | DANTE | JOHNSON |
| JOSEPH | AUSTIN | JAMES | CANADY | ANDREW | DUNLOP | JEREMY | GROOM | GILBERT | JOHNSON |
| JUAN | AYALA | PEDRO | CARDONA MORALES | STEVEN | DOWNEY | GILBERTO | GUERRA, JR | JONATHAN | JOHNSON |
| ODUNAYO | AYEGBUSI | ERIN | CARFANG | JAMES | DRAKE | EUGENE | GUTHRIE | THOMAS | JOHNSON |
| RAY | AZUA | PAUL | CARMEN | JASON | DRAPER | BRIAN | HAAGENSEN | CLINTON | JONES |
| RANDAL | BAKER | KENYA | CARRINGTON | P | DRYSDALE | PETE | HABIGHORST | HEATHER | JONES |
| HARRY | BALIAN | DANIEL | CARTER | MICHAEL | DUDEK | LUCAS | HAEG | MICHAEL | JONES |
| JAMES | BAPTIST | JOHN | CARUSO | LAURA | DUDES | ROBERT | HAGAR | ROBERT | JONES |
| MICA | BAQUERA | LAUREN | CASEY | AARON | DUGANDZIC | MARK | HAIRE | STEVE | JONES |
| KEVIN | BARCLAY | PAUL | CATALDO | DAVID | DUMBACHER | MANDY | HALTER | BENNY | JOSE |
| MARTHA | BARILLAS | MICHELLE | CATTS | LOUIS | DUMONT | JEFFREY | HAMMAN | JEFFREY | JOSEY |
| ALLAN | BARKER | STEPHEN | CAUDILL | ERIC | DUNCAN | JOYCE | HAMMAN | DUANE | KARJALA |
| STEVE | BARR | ANTONE | CERNE | KATRINA | DUNHAM | SHERLYN | HANEY | NICHOLAS | KARLOVICH |
| ANDREW | BARRETT | MICHAEL | CHAMBERS | ZACHARY | DUNHAM | JOHN | HANNA | JACK | KEETON |
| B | BARTLETT | TIMOTHY | CHANDLER | JIMMY | DYKE | SAMUEL | HANSELL | ELIZABETH | KEIGHLEY |
| JONATHAN | BARTLEY | NATASHA | CHILDS | JASON | DYKERT | J | HANSEN | BRIAN | KEMKER |
| JOSEPH | BASHORE | MARK | CHITTY | JASON | EARGLE | DAVID | HARDAGE | KRISS | KENNEDY |
| DANIEL | BEACON | JACKSON | CHOATE | TED | EASLICK | MATTHEW | HARDGROVE | SILAS | KENNEDY |
| WILLIAM | BEARDEN | JASON | CHRISTENSEN | GWYNNE | EATMON | G | HARRIS | DAVID | KERN |
| AMY | BEASTEN | EDWARD | CHRISTNOT | TERESA | EATMON | LARRY | HARRIS | CHERYL | KHAN |
| DAVID | BEAULIEU | RODNEY | CLAGG | RHEX | EDWARDS | THOMAS | HARTMAN | DANIEL | KIMBLE |
| JAMES | BEAVERS | JEFFREY | CLARK | FRANK | EHRHARDT | JACQUELYN | HARVEY | MARK | KING |
| JAMIE | BENJAMIN | LEONARD | CLINE | SARAH | ELKHIAMY | JOSHUA | HAVERTAPE | MICHAEL | KING |
| PABLO | BENVENUTO | E | COBEY | JOHN | ELLEGOOD | GEORGE | HAUSMAN | MATTHEW | KIRK |
| RICHARD | BERG | STEVEN | COCHRUM | ROY | ELLIOT | JUSTIN | HAWKINS | JOHN | KIRKLAND |
| BRYAN | BERGEON | ELLERY | COFFMAN | KEVIN | ELLIS | MICHAEL | HAY | EDWARD | KNUTSON |
| ROBERT | BERRYMAN | RONALD | COHEN | NORA | EMBERT | MAHDI | HAYES | KEN | KOLACZYK |
| DIANA | BETANCOURT ROLDAN | BRENDAN | COLLINS | MATTHEW | ENDRESS | JERMAINE | HEATH | TIMOTHY | KOLB |
| RAM | BHATIA | PAULA | COOPER | JENNIFER | ENGLAND | PATRICK | HEHER | GREGORY | KOLCUM |
| BRICE | BICKETT | DAVID | CORPORANDY | DOUGLAS | ESKINS | JUSTIN | HEINLY | ANTHONY | KOONCE |
| CAREY | BICKETT | JORGE | CORUJO-SANDIN | RYAN | EUL | CHRISTOPHER | HENDERSON | BETH | KORONA |
| D | BILLINGS | MARK | COX | MICHELLE | EVANS | NICHOLAS | HERNANDEZ | KELLY | KORTH |
| ALAN | BLAMEY | KEVIN | COYNE | ABIN | FAIRBANKS | JEFFREY | HERRERA | LAURA | KOZAK |
| MICHAEL | BLOODGOOD | R | CRANE | THEODORE | FANELLI | SANDRA | HERRICK | JAMES | KRAFTY |
| JULIE | BOETTCHER | GREGORY | CRANSTON | RODNEY | FANNER | JAMES | HICKEY | JOHN | KRAMER |
| PETER | BOGUSZEWSKI | KEVIN | CRONK | MATHEW | FANNON | JOHN | HICKMAN | DONALD | KRAUSE |
| ALLYCE | BOLGER | GREGORY | CROON | TOM | FARNHOLTZ | PATRICK | HIGGINS | PAUL | KROHN |
| BRIANA | BOLLINGER | EDDY | CROWE | NESTOR | FELIZ-ADORNO | CHRISTOPHER | HIGHLEY | ROBERT | KRSEK |
| DOUGLAS | BOLLOCK | JEFFREY | CRUZ | MARC | FERDAS | ELIZA | HILTON | JEFFREY | KULP |
| F | BONNETT | LUIS | CRUZ | RICARDO | FERNANDES | NICK | HILTON | RAYOMAND | KUMANA |
| BRIAN | BONSER | SAMUEL | CUADRADO DE JESUS | PATRICK | FINNEY | THOMAS | HIPSCHMAN | MICHAEL | KURTH |
| BRENT | BOSTON | DAVID | CULLISON | NIKLAS | FLOYD | NICHOLAS | HOBBS | NATHAN | LAFFERTY |
| FRED | BOWER | BRIAN | CUMMINGS | MIKE | FRANOVICH | TIMOTHY | HOEG | PAUL | LAFLAMME |
| GREGORY | BOWMAN | RONALD | CURETON | RANI | FRANOVICH | BOBBY | HOLBROOK | TAYLOR | LAMB |
| SCOTT | BOYNTON | BRIAN | CUSHMAN | THOMAS | FREDETTE | ZACHARY | HOLLCRAFT | MICHAEL | LANGELIER |
| JOHN | BOZGA | ALAN | DAHBUR | THOMAS | FREDRICHS | MELVIN | HOLMBERG | RONALD | LANGSTAFF |
| DANIEL | BRADLEY | TRAVIS | DAUN | MARVIN | FREEMAN | STACEY | HORVITZ | RYAN | LANTZ |
| JOSEPH | BRADY | BRADLEY | DAVIS | BRIAN | FULLER | CHRISTOPHER | HOTT | D | LANYI |
| JAVIER | BRAND | MARLONE | DAVIS | JUSTIN | FULLER | M | HUBER | JULIO | LARA |
| JEFFREY | BREAM | NEIL | DAY | VINCENT | GADDY | CHAD | HUFFMAN | G | LARIZZA |
| TERRENCE | BRIMFIELD | TIMOTHY | DEBEY | WILLIAM | GARDNER | GORDON | HUNEGS | GRANT | LARKIN |
| THOMAS | BRILEY | JOSEPH | DEBOER | ALEXANDER | GARMOE | CHRISTOPHER | HUNT | J | LAUGHLIN |


# Shout Out to Our Resident Inspectors – Past & Present!

## Our Residents - On the Front Lines Protecting Our Safety

| FIRST | LAST | FIRST | LAST | FIRST | LAST | FIRST | LAST | FIRST | LAST |
|---|---|---|---|---|---|---|---|---|---|
| R | LAURA | IVY | NETZEL | FRANCES | RAMIREZ | BRIAN | SCRABECK | ROSS | TELSON |
| MATTHEW | LEARN | GARRETT | NEWMAN | R | RASMUSSEN | THOMAS | SETZER | SARAH | TEMPLE |
| JAY | LENNARTZ | CHRISTOPHER | NEWPORT | STEVEN | RAY | JESSE | SEYMOUR | R | TEMPS |
| PATRICK | LESSARD | CHING | NG | WILLIAM | RAYMOND | SCOTT | SHAEFFER | DANIEL | TESAR |
| DAVID | LEW | RAYMOND | NG | CAREY | READ | STEVE | SHAFFER | BINESH | THARAKAN |
| WILLIAM | LEWIS | APRIL | NGUYEN | JAMES | REECE | NIRODH | SHAH | DOUGLAS | THARP |
| TONYA | LIGHTY | PHILLIP | NIEBAUM | DUSTIN | REINERT | SWETHA | SHAH | AARON | THOMAS |
| BRIAN | LIN | HO | NIEH | GEORGE | REPLOGLE | ATIF | SHAIKH | CHRISTOPHER | THOMAS |
| CHRISTINE | LIPA | PAUL | NIZOV | DUSTIN | RETTERER | MELVIN | SHANNON | FABIAN | THOMAS |
| CHRISTOPHER | LONG | BARRY | NORRIS | BRANDON | REYES | MINA | SHEIKH | MEGHAN | THORPE-KAVANAUGH |
| WADE | LOO | CHARLES | NORTON | JOSE | REYES | STUART | SHELDON | DOUGLAS | TIFFT |
| DAVID | LORDS | SARAH | OBADINA | JOHN | REYNOSO | BETH | SIENEL | JENNIFER | TIFFT |
| RAYMOND | LORSON | PHILIP | O'BRYAN | TRAVIS | RHOADES | WAYNE | SIFRE | BRIAN | TINDELL |
| PATRICK | LOUDEN | KATHLEEN | O'DONOHUE | BLAKE | RICE | DOUGLAS | SIMPKINS | MARGARET | TOBIN |
| DAVID | LOVELESS | JOSEPH | O'HARA | DANIEL | RICH | MARK | SITEK | JOYCE | TOMLINSON |
| SHIATTIN | MAKOR | TIMOTHY | O'HARA | SARAH | RICH | ANDREW | SIWY | RYAN | TREADWAY |
| NESTOR | MAKRIS | CORNELIUS | O'KEEFE | MARK | RICHES | TERESA | SKAGGS RYAN | ANDREY | TURILIN |
| GEORGE | MALONE | DAVID | OLIVER II | JOHN | RICHMOND | CHRISTOPHER | SKINNER | GREG | TUTAK |
| JOSEPH | MANCUSO | TYRONE | OSPINO | KIMBERLEY | RICO | RICHARD | SKOKOWSKI | THERESA | VALENTINE |
| KEVIN | MANGAN | ROBERT | ORLIKOWSKI | KENNETH | RIEMER | JAMES | SLOAN | PETER | VANDOORN |
| MARK | MARSHFIELD | DANIEL | ORR | ERIC | RIGGS | PHILLIP | SMAGACZ | GERARD | VASQUEZ |
| DELZA | MAS-PENARANDA | JOHN | ORR | MARCUS | RILEY | BRADLEY | SMALLDRIDGE | JUSTIN | VAZQUEZ |
| JOSEPH | MAYNEN | MICHAEL | ORR | GREGORY | ROACH | BRIAN | SMITH | JOHN | VERA |
| SAMMY | MCCARVER | MATHEW | OSBORN | JOHN | ROBBINS | CLINT | SMITH | RENE | VOGT-LOWELL |
| TIMOTHY | MCCONNELL | CLYDE | OSTERHOLTZ | DARRELL | ROBERTS | CRAIG | SMITH | PATRICIA | VOSSMAR |
| GERALD | MCCOY | GEOFFREY | OTTENBERG | STEVEN | ROBERTS | DESIREE | SMITH | JACQWAN | WALKER |
| KATHERINE | McCURRY | DEAN | OVERLAND | KEVIN | ROCHE | GALEN | SMITH | SHAKUR | WALKER |
| BRIAN | MCDERMOTT | JASON | PARENT | JAVIER | RODRIGUEZ | MICHEAL | SMITH | WAYNE | WALKER |
| JAMES | MCGHEE | BRIAN | PARKS | REINALDO | RODRIGUEZ | RICHARD | SMITH | RAYMOND | WALTON |
| PHILIP | MCKENNA | DAVID | PASSEHL | CHRISTOPHER | ROETTGEN | STACY | SMITH | NICOLE | WARNEK |
| RAYMOND | MCKINLEY | AMAR | PATEL | RONALD | ROLPH | WARD | SMITIH | GREGORY | WARNICK |
| LOUIS | MCKOWN | AMI | PATEL | THIERRY | ROSS | WINSTON | SMITH | KATHY | WEAVER |
| ANTHONY | MCMURTRAY | JIGAR | PATEL | MATTHEW | ROSSI | PETER | SNYDER | CHRIS | WELCH |
| PETER | MEIER | CHARLES | PATTERSON | DAVID | ROTH | JEFFREY | SOWA | BLAKE | WELLING |
| DANIERA | MELENDEZ-COLON | ERIC | PATTERSON | SEITZE (JEFF) | ROTTON | MARK | SPECK | DAVID | WERKHEISER |
| JAMES | MELFI | ROBERT | PATTERSON | ERIC | RUESCH | CHRISTOPHER | SPEER | GEOFFREY | WERTZ |
| LINDSAY | MERKER | ANDREW | PATZ | ADAM | RUH | JAMES | SPETS | LARRY | WHEELER |
| DANIEL | MERZKE | CHARLES | PEABODY | ROBERT | RUIZ | DAVID | SPINDLER | MALCOLM | WIDMANN |
| LAURA | MICEWSKI | MICHAEL | PECK | JOHN | RUSSELL | CHARLES | STANCIL | CHRISTOPHER | WILLIAMS |
| CHRIS | MILLER | PAUL | PELKE | SCOTT | RUTENKROGER | MICHAEL | STAFFORD | GORDON | WILLIAMS |
| ERIC | MILLER | DAVID | PELTON | JOHN | RUTKOWSKI | NECOTA | STAPLES | MEGAN | WILLIAMS |
| GEOFFREY | MILLER | NEIL | PERRY | STEVEN | RUTLEDGE | JOELLE | STAREFOS | LEONARD | WILLOUGHBY |
| KENNETH | MILLER | JEROMY | PETCH | ANDREW | SABISCH | R | STARKEY | ADAM | WILSON |
| MARY | MILLER | NICHOLAS | PETERKA | CHRISTOPHER | SAFOURI | TIMOTHY | STEADHAM | GEORGE | WILSON |
| MICHAEL | MILLER | VANCE | PETRELLA | NANCY | SALGADO | DONALD | STEARNS | GERALD | WILSON |
| DANIEL | MILLS | JONATHAN | PFINGSTEN | MONICA | SALTER-WILLIAMS | JAKOB | STEFFES | JACOB | WINGEBACH |
| STEPHEN | MONARQUE | CHARLES | PHILLIPS | ALFRED | SANCHEZ | THOMAS | STEPHEN | THEODORE | WINGFIELD |
| ROBERT | MONK | STEPHEN | PINDALE | STEVEN | SANCHEZ | JEFFERY | STEWARD | JULIE | WINSLOW |
| JONATHAN | MONTGOMERY | RICHARD | PINSON | ELBA | SANCHEZ-SANTIAGO | JAMES | STEWART | BRIAN | WITTICK |
| RICHARD | MONTGOMERY | W | POERTNER | DUANE | SAND | GREGORY | STOCK | JACQUELYN | WOJEWODA |
| ROSS | MOORE | JAMES | POLICKOSKI | SHANE | SANDAL | KARLA | STOEDTER | GEOFFREY | WRIGHT |
| JAMES | MOORMAN | ERIC | POWELL | CARLEEN | SANDERS | ANN MARIE | STONE | DAVID | WRONA |
| MICHAEL | MORGAN | RAYMOND | POWELL | DANIEL | SARGIS | CHAD | STOTT | DAVID | YOU |
| EDDIE | MORRIS | PETER | PRESBY | APRIL | SCARBEARY | IRADJ | STROBLE | CALE | YOUNG |
| ROBERT | MORRIS | PAUL | PRESCOTT | WILLIAM | SCHAUP | LADONNA | SUGGS | MATTHEW | YOUNG |
| SCOTT | MORRIS | LUNDY | PRESSLEY | WAYNE | SCHMIDT | THOMAS | SULLIVAN | JOHN | ZEILER |
| THOMAS | MORRISSEY | MICHAEL | PRIBISH | STEPHEN | SCHNEIDER | ROBERT | SUMMERS | K | ZELLERS |
| JOEL | MUNDAY | ROBERT | PRINCE | JOSEPH | SCHOPPY | MARVIN | SYKES | ADAM | ZIEDONIS |
| MICHAEL | MURPHY | DAVID | PROULX | DANIEL | SCHROEDER | DARIUSZ | SZWARC | TRACEY | ZIEV |
| ROBERT | MURRAY | TROY | PRUETT | JASON | SCHUSSLER | JEREMY | TAPP | MICHAEL | ZIOLKOWSKI |
| RANDALL | MUSSER | WILLIAM | PURSLEY | MARK | SCHWIEG | JOSEPH | TAYLOR | CHARLES | ZOIA |
| JARED | NADEL | KEVIN | PUSATERI | SCOTT | SCHWIND | NICHOLAS | TAYLOR | PAUL | ZURAWSKI |
| JAMES | NANCE | JOYLYNN | QUINONES-NAVARRO | CHRISTIAN | SCOTT | RYAN | TAYLOR | | |
| JAMES | NEURAUTER | LILIANA | RAMADAN | MICHAEL | SCOTT | THOMAS | TAYLOR | | |

Your work has not gone unnoticed!

Thanks for all you have done and all that you continue to do!

**If we missed a current or former resident inspector, contact Bridget Curran to have their name added**

# Knowledge Management, Homegrown in the Regions

**By: Jenny Tobin**
**NRR/DORL/LPL1**

In all of the craziness of COVID-19 and mandatory telework, you may have missed the March 5th debut of the National Reactor Safety Knowledge Management sessions, which are voluntary sessions held weekly.

All of the regionally-based sessions have been (and will continue to be) recorded and managed on our Nuclepedia page and Microsoft Stream channel. This initiative stems from the Innovation Greenhouse and has been nurtured by a Skills Marketplace project that established a working group (representative of all four regions) to "sow the seeds of knowledge," and continue to develop the knowledge of reactor safety staff.

Regional representatives take turns securing a presenter for "their week" and arrange for the recording of the Skype session for posting on our group sites (linked above). The upcoming calendar is on our Sharepoint site but we're open to volunteers for future sessions! If you have questions or concerns, please contact Jennifer Tobin in NRR/DORL by either e-mail or phone (jennifer.tobin@nrc.gov) or 301-415-2328), or your regional representative noted below. We're open to both suggestions and feedback.

| Upcoming Sessions | Presenter-Date | Regional POCs |
|---|---|---|
| Notice of Enforcement Discretion Refresher | April 2nd @ 2:00 p.m. EDT | Sherlyn Haney, Region I |
| Endangered Species Act | April 9th @ 2:00 p.m. EDT | Paula Cooper, Region II |
| Fermi Special Inspection | April 16th @ 2:00 p.m. EDT | Jeffrey Foltz, Region III |
| Accident Sequence Precursor Trending | April 23rd @ 2:00 p.m. EDT | Harry Freeman, RIV |

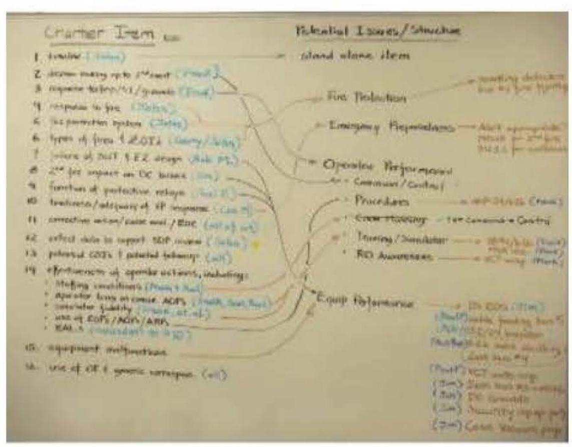
## Region III Resourceful Inspector Teleconferences with Licensees Amid COVID-19 Response

In response to the agency guidance mandating telework, Jorge Corujo-Sandín, a Region III Reactor Inspector, took it upon himself to add tools to the newly created remote inspection tool bag. Jorge successfully established web connections for videoconferencing and sharing computer screens with licensees of his region. Initially, he was only successful at Skyping with some licensees. Through perseverance, he was able to establish Skype connections with additional licensees who initially appeared to only have internal Skype capabilities. Some licensees also shared their screen with him using the Avaya Conference web service. Thank you Jorge!

## ROP Memories (photos provided by John Hanna, RIII/DRP)

Robinson Fire Damage, 2010


AIT Team after the 2010 fire




** We all know that the photographs in the Inspector Newsletter provide great training value! The Editorial Board encourages staff to get permission prior to using any photos that appear in an Inspector Newsletter article.**

# The ABCs of TCPs

**by: Justin Hawkins, Salem SRI, and Jigar Patel, Hope Creek Resident Inspector**

Background: Following the Brown's Ferry Nuclear Station fire on March 22, 1975, the NRC initiated an evaluation of the need for improving the fire protection programs at all nuclear power plants. As part of this evaluation, the NRC published NUREG-0050 "Recommendations Related to Brown's Ferry Fire" in February 1976. This report recommended that improvements be made in fire prevention, detection, and suppression systems in all existing nuclear power plants and that consideration be given to design features which would increase the ability of nuclear plants to withstand fires without the loss of safety-related functions. In order to implement these recommendations, the NRC initiated a program for re-evaluation of fire protection programs at all licensed nuclear power stations. Subsequently, the NRC issued new guidelines for fire protection that reflected the recommendations in NUREG-0050. As these guidelines were issued, all licensees were requested to: (1) compare their fire protection programs with the new guidelines; and (2) analyze the consequences of a postulated fire in each plant area. A licensee's Fire Hazards Analysis (FHA) should be a living document that demonstrates that the nuclear power plant can be safely shutdown for any postulated fire at the plant and that the level of fire protection provided is commensurate with all regulatory requirements.

The need for transient combustible permits (TCPs): The FHA conclusions are based in part on the amount of combustible material in each fire zone and ultimately each fire area. In most cases, the respective fire zone data sheets assume that certain recurring activities, such as maintenance and surveillance, will introduce additional limited amounts of transient combustibles and accounts for this in the fire loading. It is recognized that there may be times when it is necessary to introduce additional transient combustibles to support more extensive online maintenance, a plant outage, or a modification project. Introduction of these combustibles should be controlled by the licensee's "Control of Combustibles" procedure which should include guidelines for when a TCP is needed. The TCP is usually reviewed by a Fire Protection Engineer or designee and may impose conditions such as fire watches or limiting hot work in the area. The TCP should describe the transient material authorized, the amount approved, the plant area, and the duration (including start and end dates).

Several recent NRC identified TCP-related performance deficiencies highlight the importance of continued inspector vigilance in this risk significant realm. On a rainy day in November 2019, the Salem residents (**Justin Hawkins** and **Matt Hardgrove**) were walking down the auxiliary building looking for roof leaks and identified approximately 3500 cubic feet of wooden railroad ties (dunnage) staged for the movement and use of a crane (see picture below). The licensee had an approved TCP for the dunnage staged in the proximity of the work; however, upon further review, the inspectors found that the TCP was actually approved for work on the turbine deck, a non-safety related building with a floor that is not fire rated, and not the auxiliary building roof which is part of a safety-related building. The inspectors further noted that the dunnage was staged directly above the Unit 1 and 2 common control room area, a critical area with a ceiling that is not fire rated. The inspectors estimated that the fire loading for the 3500 cubic feet of dunnage was approximately 1.45 billion BTUs. The licensee documented this issue in the CAP. Their associated evaluation noted that Salem is committed to Appendix A to BTP APCSB 9.5-1, BTP B.2 which states that "*Effective administrative measures should be implemented to prohibit bulk storage of combustible materials inside or adjacent to safety related buildings or systems during operation or maintenance periods.*" PSEG procedure FP-AA-011 states "*Bulk transient combustibles should not be stored adjacent to critical structures. Some exterior boundaries of safety related structures are not designated as fire barriers.*" The licensee determined that the dunnage that existed on the auxiliary building, service building, and turbine building roofs should be considered bulk [transient combustibles] and removed ASAP. The Salem transient combustible load limit in all areas excluding the battery and diesel generator control rooms is 5 million BTUs, and may be exceeded with prior engineering approval. In this case, engineering had not reviewed and approved the storage of these bulk combustible materials (290 times the fire loading limit) on the roof of the auxiliary building above the control room area. See NRC Inspection Report 05000272/311/2019004 for more details.

In September 2019, during a pre-refueling outage walkdown of a risk significant fire area in the reactor building, the Hope Creek resident inspector (**Jigar Patel**) identified five 55-gallon drums of lube oil unattended, and without a TCP staged in proximity of the EOC-RPT breaker cabinet, which was contrary to requirements in the licensee's transient combustible control procedure. Upon further review, the inspectors noted that the licensee's procedure establishes a transient combustible load limits of 4,480,000 BTU per room in any area of the plant. The procedure also provides estimated heat content of common transient combustibles. For flammable liquid, the estimated heat content is 90,000 BTU per gallon. The inspectors independently calculated that five 55-gallon drums of lube oil equate to 24,750,000 BTU of heat load, which far exceeded the combustible load limits established in the transient combustible control procedure. Additionally, the inspectors noted that the procedure allows transient combustible load limits to be exceeded with prior engineering approval. However, in this case, engineering had not reviewed and approved the storage of these combustible loads in the reactor building. After identification, the inspectors promptly informed operations of the oil drums staged without an approved TCP, and the licensee removed the oil drums later the same day. The inspectors also identified transient combustible materials stored in a designated transient combustible free zone. (Trick question: when is a transient combustible free zone not a transient combustible free zone? Answer: when you store transient combustibles in the zone without proper approval). On September 11, 2019, during a walkdown of the service water traveling water screen upper room, the inspectors identified cables, plastic buckets, wood, cardboard boxes, rags and insulation materials, and other transient combustible materials left unattended in the area without a TCP. For all of the additional examples of transient combustible materials, the licensee immediately removed the materials and entered the issue in their CAP. Special shout out to the entire **Millstone TFP Team** as Jigar was aware of their recent TCP-related finding and effectively applied the operating experience in his daily walkdowns at Hope Creek (see the January Inspector Newsletter for more on the Millstone TFP Team's finding). See NRC Inspection Report 05000354/2019004 for more details.

In October 2019, during an inspection associated with the Unit 2 control room ventilation system, **Tom Morrissey**, St. Lucie SRI, observed fire-retardant wood above the Unit 2 control room suspended ceiling. The wood consisted of plywood, and many pieces of lumber. The licensee's fire protection coordinator inventoried the wood and estimated the weight at 400 pounds (lbs.). A licensee extent-of-condition inspection found an additional 20 lb. piece of fire-retardant plywood in the overhead of the Unit 2 control room above the shift manager's office. The licensee entered the issue into their CAP, posted a TCP in the Unit 2 control room, and notified the operators of the presence of the transient combustibles. The licensee's investigation determined that in 1999, a change request notice (CRN) was issued to support the use of the combustible material (i.e. fire-retardant wood) as decking to support installation of a permanent modification. The CRN stated that the use of the material was temporary; however, the CRN did not provide removal instructions and therefore, the transient combustibles were not removed. The licensee's transient combustible control procedure designated the Unit 2 control room as an ordinary risk fire zone and stated that "Up to 100 lbs. of Class A combustible materials may be brought into and left unattended in Ordinary Risk fire zones without a TCP." The procedure defines "attended" as "personnel in the work area using the combustible/flammable materials to perform work or are monitoring the materials and are aware of the storage requirements." The transient combustibles found above the Unit 2 control room suspended ceiling did not meet the requirements of being an "attended" transient combustible and the weight of the combustibles exceeded the procedural 100 lb. limit for an ordinary risk fire area. In addition, the Unit 2 control room was not designated as a permanent transient combustible storage area. See NRC Inspection Report 05000389/2019004 for more details.

In February 2019, the Salem PI&R Team (**Nik Floyd**, **Jeff Rady**, **Justin Vazquez**, & **Joe Schoppy**) identified a minor violation of Salem Unit 1 License Condition 2.C.(5) and Salem Unit 2 License Condition 2.C.(10) of the respective facility operating licenses for failure to implement and maintain in effect all provisions of the approved Fire Protection Program. Specifically, the inspectors performed walkdowns of the Salem units and identified several TCPs that were expired within the plant. The licensee failed to adequately administratively control the initial request, approval, and close-out of TCPs associated with online and outage work activities within several risk significant fire areas. The licensee promptly performed an extent-of-condition review and identified 14 additional expired TCPs at Salem Units 1 and 2. See NRC Inspection Report 05000272/311/2019010 for more details.

Inspector Best Practices noted above:

- When it's outage "pre-season," get out in the plant and see if the licensee is losing focus of Mode 1 nuclear safety with a mindset for gaining outage efficiencies by staging items such as lube oil drums, temporary lighting, scaffolds, etc.
- Talk to licensee staff "in the moment" to get their insights – why did they stage the transient combustibles where they did? Were they aware of the TCP process?
- Spend time with other inspectors in the plant. Two sets of eyes and two questioning minds are better than one.
- Effectively using the licensee's own procedures and industry standards to logically and methodically support your safety concern provides a more solid regulatory foothold and helps highlight licensee performance deficiencies.
- Maintain a questioning attitude. Make sure that your field observations align with the design basis and good engineering judgment.

Unattended and unapproved transient combustibles on roof above Salem control room.

# 'Tis the Season...For Operating Experience

**By: Julie Winslow, NRR/DRO/IOEB**

Spring is in full swing and with that comes April showers, heavy Spring storms, and the potential for flooding. Flooding caused by snow melt, ice jams, and heavy rain on already saturated soil can have a lasting impact that may not always be readily apparent. It's a coast-to-coast threat, which doesn't necessarily end when Summer starts. In 2019, the Summer precipitation totals for the U.S. ranked among the upper third of the record.

IOEB (the Operating Experience, or 'OpE' Branch) has seen plenty of operating experience associated with flooding and water intrusion affecting safety systems and plant operation, operational readiness for heavy rainfall, and deficiencies with equipment, procedures, and analyses relied on to prevent or mitigate external flooding. In some cases, licensees previously recognized degraded conditions but had not adequately resolved them in a timely manner. The timely corrective actions to assess and prevent deficiencies can help maintain operational readiness, prevent significant events, and ensure nuclear plant safety.

Provided below is some of the recent OpE associated with flooding and water intrusion, along with some links to find more information on this topic. If you have any OpE-related questions on this or other topics, please contact any IOEB member for additional information.

Recent OpE Regarding Flooding and Water Intrusion Impacts on Plant Equipment

**Cooper**: On December 6, 2019, Cooper was unable to establish service water (SW) flow through the Reactor Equipment Cooling (REC) Heat Exchanger 'B'. On December 8, 2019, the licensee discovered that they were also unable to establish flow through the No. 2 emergency diesel generator (EDG-2). The licensee discovered at least 15 feet of silt in the SW discharge canal that prevented flow through Division 2. They had experienced historically high Missouri River levels for prolonged periods in 2019. Region IV staff put together a slideshow regarding flooding impacts on Cooper and Fort Calhoun. As the river levels receded, this likely resulted in silt buildup near the discharge canal. Additionally, Division 1 had remained online, creating a flow path through the silt, while Division 2 had been taken out of service in October, allowing silt to build up and block its discharge path.

On December 12, 2019, the licensee began dredging the canal and restored operability for Division 2 service water on December 13, 2019. Region IV performed a special inspection during the week of January 13, 2020. Preliminary findings from the SIT identified that modifications made to the SW discharge lines in 2014 did not adequately consider past silting operating experience at the site. (LER 05000298/2019-003-00, ML20043D739). IOEB also issued an internal communication, or "COMM" on this event, ML20090A022.

Barge Conducting Dredging of Discharge Canal at Cooper

Silting at Cooper

**Fermi 2:** On April 14, 2018, while at full power with heavy rain and wind in the area, a lockout of station service transformer 64 occurred that resulted in a partial loss of feedwater and an automatic reactor scram. Additionally, the lockout caused a loss of power to the Division 1 4160V safety buses, which caused emergency diesel generators 11 and 12 to automatically start. The cause of the event was determined to be water intrusion into a degraded, metal-clad enclosure for Bus 1-2B switchgear in the Division 1 120kV switchyard that ultimately resulted in the transformer lockout. A contributing cause to this event was the licensee's failure to adequately maintain the metal-clad enclosure for Bus 1-2B. Operations, maintenance, and engineering management tolerated low standards for the material condition of the outdoor switchgear and did not recognize the inherent risk of a water intrusion event. This despite routine walkdowns and inspections of the Division 1 switchyard and procedural guidance from Detroit Edison that specifically addressed the inspection of metal-clad switchgear enclosures on a monthly basis and the performance of any necessary maintenance based on operating experience. (IR 05000341/2018004, ML19044A632).

**Turkey Point**: On September 10, 2017, while the site was experiencing wind driven rain from Hurricane Irma, Unit 4 was manually tripped from 88% RTP due to lowering level in steam generator C and an unresponsive failed closed 4C main feedwater regulating valve (MFRV).
The root cause analysis identified that a hand selector switch (HSS) enclosure for the 4C MFRV redundant positioners was flooded. Although the HSS electrical enclosure was appropriate for extreme environments, water was able to enter the enclosure through a flexible conduit fitting installed on the top. The conduit penetration was not in a preferable location (side or bottom), it was not sealed, and there were no weep holes at the bottom of the enclosure. Water intrusion in the enclosures caused the wetted equipment and corrosion of electrical conductors. (IR 05000250,251/2017004, ML18039A046)

Recent OpE Regarding Operational Readiness for Flooding

**Fermi 2**: NRC inspectors identified a difference in the reference datum between site design documents and currently-used Lake Erie water level measurements that was not accounted for. Specifically, Fermi's Updated Final Safety Analysis Report (UFSAR) used a mean Lake Erie water level reference point based on 1935 New York Mean Tide (NYMT) to ensure that SSCs are protected from flooding. However, when determining water levels for the potential for or extent of external flooding, the site uses National Weather Service data that is based on the 1985 International Great Lakes Datum (1985 IGLD). The 1985 IGLD provides lake levels that are 1.3 feet lower than those calculated using 1935 NYMT. As a result, actual lake level, including any predicted maximum lake level during a flood watch or warning, was determined to be 1.3 feet higher during a flooding event than what was calculated. This required additional calculations by the licensee to ensure the protection of onsite equipment. (IR 05000341/2019003, ML19310E673)

**Summer**: NRC inspectors identified a failure of Summer to accomplish their operations administrative procedure, OAP-109.1, "Guidelines for Severe Weather." During a walkdown, the inspectors identified that security seals on sandbag containers outside the protected area (PA) were compromised. These sandbags are used for ground level plant building access door protection during maximum precipitation events. The seals expedite the process to bring the boxes into the PA. During a re-inventory of these containers, it was discovered that the sandbags, relied upon to preclude water intrusion in safety-related component areas during adverse rainfall events, had degraded such that they were no longer able to maintain their integrity and could not be used as specified. (IR 05000395/2017004, ML18044A413)

Baseline Inspection Program References

IP 71111.01, "Adverse Weather," provides opportunities to choose inspection samples that cover the above scenarios. Inspectors should review site design and operating experience to determine appropriate samples.

Previous OpE Products

IN 2015-01, "Degraded Ability to Mitigate Flooding Events," ML14279A268
IN 2011-12, "Reactor Trips Resulting From Water Intrusion Into Electrical Equipment," ML110450487
OpE COMM: Cooper Nuclear Station – Clogging of Division 2 Service Water Discharge Line ~~(MLXXXX)~~
(b)(5)
OpE COMM: Non-Nuclear OpE – Hurricane Flooding Causes Loss of Power and Cooling at Arkema Chemical Plant Resulting in Unplanned Chemical Reaction, Fire, and Release to Environment (ML17256A015)
POE 2016-02: Water Intrusion from Heavy Rains Causes Davis-Besse Reactor Trip with Complications (ML17005A168)
POE 2015-02: Waterford - EDG Vent Pipe Corrosion (ML15147A501)

# Safety Culture History

**By: Molly Keefe-Forsyth, NRR/DRO/IRAB**

The NRC has long known the importance of a strong nuclear safety culture. In 1989, in response to an incident at the Peach Bottom Nuclear Power Plant, the NRC issued a "Policy Statement on the Conduct of Nuclear Power Plant Operations," which described the NRC's expectation that licensees place appropriate emphasis on safety in the operation of nuclear power plants. That policy statement placed an emphasis on the personal dedication and accountability of all individuals engaged in any activity that has a bearing on the safety of nuclear power plants. Additionally, the policy statement underscored management's responsibility for fostering the development of a healthy safety culture at each facility and for providing a professional working environment in the control room—and throughout the facility—to ensure safe operations.

In 1996, following an incident at the Millstone Nuclear Power Station in which workers were retaliated against for whistleblowing, the Commission issued another policy statement, "Freedom of Employees in the Nuclear Industry to Raise Safety Concerns without Fear of Retaliation." This policy statement described the NRC's expectation that all NRC licensees establish a safety conscious work environment (SCWE). A SCWE is an environment in which workers feel free to raise nuclear safety concerns without fear of harassment, intimidation, retaliation, or discrimination. A SCWE is an important attribute of a strong nuclear safety culture.

In 2002, investigations into the discovery of degradation of the reactor pressure vessel head at Davis-Besse Nuclear Power Station revealed that safety culture weaknesses were a root cause of the event. The NRC took significant steps within the Reactor Oversight Process (ROP) to strengthen the agency's ability to effectively monitor licensee performance and detect potential safety culture weaknesses during inspections and performance assessments. Regulatory Issue Summary 2006-13, "Information on the Changes Made to the Reactor Oversight Process To More Fully Address Safety Culture," was issued on July 31, 2006, to provide information to reactor licensees on the revised ROP. Most notably, the NRC revised the existing cross-cutting areas of human performance, problem identification and resolution, and SCWE to incorporate aspects that are important to safety culture. The intent of the revisions to the ROP was threefold:

1. To provide better opportunities for the NRC staff to consider safety culture weaknesses and to encourage licensees to take appropriate actions before significant performance degradation occurs.

2. To provide the NRC staff with a process to determine the need to specifically evaluate a licensee's safety culture after performance problems have resulted in the placement of a licensee in the degraded cornerstone column of the action matrix.

3. To provide the NRC staff with a structured process to evaluate the licensee's safety culture assessment and to independently conduct a safety culture assessment for a licensee in the multiple/repetitive degraded cornerstone column of the action matrix.

In 2004, also in response to events at Davis-Besse Nuclear Power Station, INPO published a document titled, "Principles for a Strong Nuclear Safety Culture," which described principles and attributes of a healthy nuclear safety culture as developed by an industry advisory group. In 2009, in partnership with NEI and INPO, the nuclear power industry began an initiative to enhance safety culture. The industry's process for monitoring and improving safety culture used INPO's principles and attributes of a healthy nuclear safety culture as a framework and was described in the document NEI 09-07, "Fostering a Strong Nuclear Safety Culture."

In 2008, at the direction of the Commission, the NRC staff began an effort to expand the Commission's safety culture policy to address the unique aspects of security and ensure applicability to all licensees and certificate holders. The NRC engaged in a unique collaborative effort with stakeholders, including Agreement States, to develop a definition of nuclear safety culture and a list of traits that describe that safety culture. The goal of this effort was to develop a model that could be applied to any of the diverse stakeholders responsible for the safe and secure use of nuclear materials.

The final NRC Safety Culture Policy Statement (SCPS) was published on June 14, 2011. This SCPS provides the NRC's expectation that individuals and organizations performing regulated activities establish and maintain a healthy safety culture that recognizes the safety and security significance of their activities and the nature and complexity of their organizations and functions. Because safety and security are the primary pillars of the NRC's regulatory mission, consideration of both safety and security issues, commensurate with their significance, is an underlying principle of the SCPS.

The NRC maintains a public safety culture website:

http://www.nrc.gov/about-nrc/safety-culture.html. The website allows the public to access outreach materials that can be used to educate stakeholders about safety culture and the NRC's Safety Culture Policy Statement.

In March 2014, the staff published NUREG-2165, "Safety Culture Common Language," which documents the outcomes of public workshops to develop a common language to describe safety culture in the nuclear industry. The purpose of this initiative was to align terminology used by both licensees and the NRC when describing safety culture at nuclear power facilities. These workshops, held in December 2011, April 2012, November 2012, and January 2013, included subject matter experts from the NRC, the nuclear power industry, and the public. The Common Language was finalized and agreed upon at the January 2013 workshop. The NRC staff uses the agreed-upon common language to implement elements of its programs that provide oversight of regulated activities. Parts of the common language were incorporated into the ROP for operating nuclear reactors. All changes to oversight programs, including the ROP, have been documented in their associated Inspection Manual Chapters and Inspection Procedures.

## Reminisce about the Transition from SALP to the ROP

**By: Russ Gibbs, DRO/IRSB**

I remember one of my first meetings at NRC was in 1996 in Region I where I observed a SALP meeting for Vermont Yankee. As a former STA/SRO at the Brunswick Plant in Region II and PRA analyst for Carolina Power & Light Company, I was frankly astounded on the proceedings of the SALP - so incredibly subjective! Frankly, I was not impressed on how the NRC decided upon "scores" for VY that day. I thought to myself, "you gotta be kidding me. This is how this is done?" I left the meeting very disappointed. Of course, we made a major improvement to our oversight program with the ROP and it has withstood the test of time as it approaches its 20th anniversary. We should all be very proud of the ROP!

# Answer to "What's Wrong with This Picture?"

(Page 2)

### Answer to "What's wrong with this picture #1"

The picture was plucked off of Goggle online and may not even be at a US nuclear power plant. The worker appears to be using a tool to modify a pipe and appears to be wearing the appropriate PPE (hard hat, safety glasses, face shield, hearing protection, long sleeve shirt, & gloves). However, what you can't see is a hot work permit, fire watch, and fire extinguisher in the immediate area. These items may have existed at the job site in the picture; however, they did not exist at the work site when **Roy Elliott**, Dresden Resident Inspector, toured the drywell during the Dresden U2 refueling outage on November 6, 2019. Roy observed contract pipe-fitters performing grinding work, using a flapper wheel, which resulted in visible sparks inside the drywell. The two workers were preparing to install small bore piping for the 2A reactor recirculating pump nozzles. Roy did not see a hot work permit, fire watch, or fire extinguisher in the work area, prompting him to ask one of the workers if he was the fire watch and if there was a fire extinguisher available for the hot work. The worker replied he was not the fire watch and that hot work had not yet started. Roy politely informed the workers that visible sparks are considered hot work. While one worker continued with the grinding, the other worker searched the work area for a fire extinguisher and then exited the drywell to continue searching for a fire extinguisher. After approximately ten minutes, Roy exited the drywell and again informed the worker that grinding was still occurring without a hot work permit present, a fire watch, or a fire extinguisher. At this time, the worker returned to the work area and informed the other individual to stop the job. When back in the office, Roy reviewed several of the licensee's fire protection implementation procedures that outline the site's policies regarding the proper control of hot work. Procedure OP-AA-201-004, Section 2.3 defined, in part, "Hot Work" as work activities that involve welding, cutting, grinding and open flame operations that are capable of initiating fires or explosions. Section 4.1.9 stated, in part, that "an operable Exelon fire extinguisher appropriate for the class of fire that could occur shall be available and conveniently located in the work area." Section 4.2.4 stated, "a designated fire watch is required during the performance of all hot work operations governed by this procedure." Section 4.2.7 stated, "The fire watch shall be aware of the location of fixed fire extinguisher(s) in the area and visually observe the fixed extinguisher to confirm that it appears to be in good condition prior to starting the hot work activity…or have an additional Exelon fire extinguisher that is appropriate for the hazard readily available." Section 4.3.1 stated, "An authorized hot work permit is required before any hot work operation is started within the protected area and the permit must be properly filled out and posted at the job site before the operation commences." In addition, procedure CC-AA-501-1027, Section 2.2 defines "Hot Work" as "all processes that use or created an arc, flame, spark, or intense heat. These includes welding, cutting, gouging, grinding, and open flame operations." Based on this review, Roy determined that the work performed met the definition of "hot work" and needed to be controlled under the site's requirements for such work. In response to Roy's observations, the workers stopped the grinding activities and licensee managers met with the crew. Licensee managers informed the workers they should have stopped when they started producing sparks, acquired a fire extinguisher, established a fire watch, signed into their hot work permit, and then continued work. In addition, the licensee performed a Work Group Evaluation. Super challenge, Roy. For additional details, please see NRC Inspection Report 05000237/2019004. [KT bonus: for the picture on page x, with sparks and hot particles potentially traveling through the grating, the fire watch should be positioned below the grating and/or in a good position to observe what's happening below the grating in order to respond in a timely and appropriate manner should a fire initiate.]

### Answer to "What's wrong with this picture #2"

The picture is a fire protection sprinkler with red paint on the deflector. **Ayesha Athar**, Palo Verde Acting Resident Inspector (soon to be Diablo Canyon Resident Inspector), identified the issue of concern while acting as resident inspector at Diablo Canyon. On September 19, 2019, during a fire protection walkdown of the U1 motor-driven AFW room, Ayesha identified two sprinklers with red paint on the link leaf. One of the two sprinklers also had paint on the deflector. On September 25, during a plant status walkdown of the U1 CCW HX room, Ayesha identified two sprinkler heads speckled with red paint. One of the two sprinklers was also speckled with red paint on the deflector. On September 28, during a plant status walkdown of the U1 turbine-driven AFW room, Ayesha identified two sprinklers with red paint on the deflectors. One sprinkler also had paint on the soldered cup. In each of these cases, the licensee evaluated the as-found condition of these sprinklers and determined that they were not functional per Equipment Control Guideline (ECG) 18.4, "Spray and/or Sprinkler Systems," entered the required 1-hour action per ECG 18.4 and established a continuous fire watch in the impacted room until the sprinklers were replaced. Equipment Control Guideline 18.4.6 requires the licensee to visually inspect the sprinkler heads in safety-related areas outside of containment every 18 months to verify their integrity. The licensee's associated surveillance test procedure provides guidance on performing these visual inspections. For sprinklers, one of the visual inspection criteria states, "No paint on operating element, bulb, or deflector." Paint on sprinkler components reduces the ability of the sprinkler to function as it was designed. The concern with paint on a deflector plate is that it could impact the spray pattern and spread of water to the hazard below. The concern with paint on the operating element or bulb may affect both the mechanical and thermal responses of the sprinkler head. To address these issues, the licensee performed extent-of-condition walkdowns for sprinklers in all safety-related areas. Furthermore, a representative sample of eight sprinklers was sent to Underwriters Laboratories for testing. Thanks for sharing, Ayesha, and nice work in and out of the field. [For additional details, please see NRC Inspection Report 05000275/2019004.]

Throw out the challenge flag when it doesn't seem right or if it doesn't pass the reasonableness test.

# The OpE Fishing Hole:
## New INPO Failure Database: "Fewer calories, same great information"

**By: Eric Thomas, NRR/DRO/IOEB**

**New INPO Failure Database: "Fewer calories, same great information"**

Last fall, INPO upgraded its industry failure database to a system called IRIS (Industry Reporting and Information System). In addition to having a more P.C. acronym than its predecessor (ICES), IRIS features a much more intuitive user interface and search function. INPO staff provided training to NRC in October at the PDC, and some regional participants tuned in by Webinar. The training slides are available here. A new feature that resident inspectors or first line managers may find useful is the *Station Subscription* tool. Rather than querying IRIS, a user can instead set up a subscription which will notify them daily of new records available at one or more sites of interest. Contact a member of the OpE branch for assistance using this or any other features in IRIS. Another useful feature of IRIS feature is that any licensee causal evaluations related to a report will be added as attachments at the bottom of an IRIS record. Contact Eric Thomas or John Lane to obtain a user account for IRIS. Once you have an account, access the application using Chrome browser at iris.inpo.org.

**OpE and Inspection Dashboards**

Wouldn't it be convenient to have easy access to graphs and tables that show trends in things like scrams, findings, and generic communications? Wouldn't it be even *more* convenient to be able to drill down into the data and sort by year, region, site, cornerstone, or procedure; and then be able to click on a link that takes you to the data source? What if you could also access information from the Plant Risk Information Book in the same dashboard, and use it and your data search to risk-inform the samples for your upcoming inspection?

If this all sounds pretty neat, we'd encourage you to check out our Dashboard Tools. Please contact a member of the OpE Branch to get a virtual tour of these new resources. In addition to giving you a taste of the dashboards at the counterparts meetings, we have also briefed NRR management and the EDO, and they are "all in." We continue to develop new features and are always open to suggestions on how to improve the tool and add new features.

**On the Scope: What's New in OpE?**

Here's a rundown of what events, trends, and other issues are making news on the OpE front in Headquarters. If you attended the regional counterparts meetings, some of this may sound familiar.

***NRR Executive Team Significant Topics Briefing on FLEX Diesel Operational Challenges***

After River Bend experienced a variety of challenges operating their FLEX diesels last fall, Rayo Kumana and Brian Parks gave an outstanding overview of event at the Region IV counterparts meeting. Clinton also had a FLEX diesel-related finding last summer, and Waterford 3 had one in 2017. These events relate to several of the topics covered in NEI 12-06 (ML12242A378), which licensees generally used as their guidance to comply with NRC's Order 12-049 for Mitigating Systems.

The OpE Branch put together this ET Significant Topics Briefing with the help of Rayo, Brian, Ryan Alexander, and Rick Deese (Region IV); Jim Beavers, Daniel Sargis, and Laura Kozak (Region III); and staff from the Division of Risk Assessment here at HQ. We also published an OpE COMM, and plan to issue an Information Notice once final inspection results are available for River Bend and Clinton. Stay tuned.

***Willful Misconduct***

The staff noted an increase in the number of enforcement actions related to willful misconduct involving both licensed and non-licensed operators over the past three years. At Wolf Creek, a maintenance worker and supervisor both closed out a maintenance action to remove, clean and reinstall control rod drive mechanisms (CRDMs) that were coated with boric acid following a leak above the reactor vessel head (see picture below). However, the work was not completed; three of the CRDMs were not removed and cleaned. At Callaway, a licensed reactor operator noticed that he had missed a step to close a valve during an evolution. Instead of notifying the watch team of his mistake, he shut the valve without informing anyone. This led to confusion among the watch team who believed that the valve was leaking. The operator compounded the problem by later filing a false condition report. Vogtle, Grand Gulf, River Bend, and Waterford all discovered instances where non-licensed operators responsible for entering areas of the plant to perform operator rounds on safety-related equipment logged their rounds without actually entering those spaces.

The OpE Branch issued an OpE COMM on these issues in late 2019, which links to the relate inspection reports and confirmatory orders. Since then, we have discussed the trend with the Office of Enforcement, briefed NRR management and the EDO, and drafted an information notice. Additional instances of willful misconduct from 2015 onward have come to light in early 2020 (e.g. OI investigation at Watts Bar and confirmatory order at Robinson). Residents can review their licensee's procedures regarding accurate and truthful reporting of plant conditions and ensure any related administrative controls are being enforced.

***Contact and Feedback***

We welcome any feedback on the Fishin' Hole. Is it useful, useless, and how can it be improved? If you want to propose topics for inclusion in future editions, please reach out to a member of the branch.

***OpE Branch Points of Contact:***

**Region I:**
Mark King
**Region II:**
Al Issa
**Region III:**
Julie Winslow
**Region IV:**
Huda Akhavannik/ Steve Pannier

**INPO/Inspector Newsletter:**
Eric Thomas
**Part 21:**
Steve Pannier
**Generic Communications:**
Brian Benney/Liliana Ramadan
**Dashboards:**
Jason Carneal/Rebecca Sigmon

The NRR Operating Experience (OpE) Branch will use this space to provide periodic updates on topics such as:

- Data Access and Data Analytics tools for inspectors and other staff
- Highlights from recent management briefings
- Recent and in-process OpE products (COMMs, Smart Samples, generic communications, etc)

## Read about our Reactor Stars in Region IV on the Reactor Star Share Point page:

(b)(7)(F)

# Task Interface Agreement (TIA) Revitalization

**By: Booma Venkataraman**
**NRR/DEX/EICA**

NRR's Office Instruction, COM-106, Rev. 5, "Control of Task Interface Agreements [TIA]" (ADAMS Accession No. ML15219A174), governs the policy to ensure that questions raised by other NRC organizations are resolved and communicated in a timely manner with an effort commensurate with the safety significance of the issue. Currently the TIA program is being revitalized.

**Key Messages**

- The TIA process rebranded as the Technical Assistance Request (TAR), is being restructured as a fact-gathering exercise that informs NRC processes such as inspection, enforcement, and backfit. This revitalization will offer a graded, risk-informed approach to screen, scope and evaluate potential TAR issues with early alignment on the path forward for operating reactors.
- This enhancement will include applications to new reactors (Construction TARs).
- The effort is related to, and interfaces with, the NRR's initiative on low safety significance issue resolution (LSSIR). Further, the TIA effort has interfaces with the revised backfit process (MD 8.4), and the risk informed decision-making (RIDM) effort.

**Updates**

- Training sessions were conducted in the regional counterpart meetings in December 2019 on the proposed TAR process and the companion LSSIR effort.
- Currently the draft COM-106 is in formal concurrence review. The final updated COM-106 guidance is expected to be completed by June 2020 after an engagement with industry. To view the latest package in ADAMS, visit here.
- The WG is planning on outreach with the regions on more training (Possible Skype sessions) regarding the updated COM-106 (e.g., intake forms, LSSIR interface).

Please visit NRR TIA Revitalization SharePoint for more information on the project and specifics.

**Project Contacts and Potential TIA Support**

An inclusive agencywide WG was established in January 2019, with participation from NRR, NRO, all four Regions, OGC and OE . The Regional representatives on the WG include:

- Paul Cataldo, RI
- Wesley Deschaine, RII
- Mel Holmberg, RIII
- Ray Kellar, RIV

If you have any questions about the COM-106 update, you are encouraged to contact your organization's representative as listed above or the project team lead, Booma Venkataraman, at Booma.Venkataraman@nrc.gov or (301) 415-2934. If during this effort you identify a plant specific issue that may warrant a TIA request, please contact the NRR TIA (TAR) Coordinator, Booma Venkataraman.

**ROP Memories** **(photos provided by John Hanna, RIII/DRP)**

Fort Calhoun Site Overview June 2011

Fort Calhoun NSSS Component (no date given)

## Help Us Celebrate 20 Years of the ROP!
## 2000 -2020

We are looking for articles, snippets, and pictures that reflect the transition from the Systematic Assessment of Licensee Performance (SALP) program to the Reactor Oversight Process (ROP) Inspection Program. Submit your perspectives to the Inspector Newsletter
e-mail address: InspectorNewsletter@nrc.gov

# The "Wild Life" of an Inspector's Job!

## Eagle Eyes Award

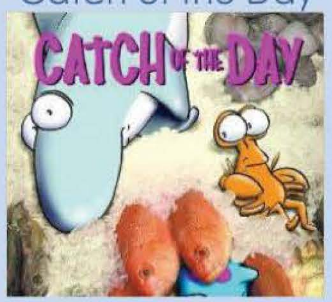
Nominated by: Joe Schoppy, RI/DRS/EB1

This quarter's Eagle Eyes Award goes out to **Matt Hardgrove**, Salem Resident Inspector. On December 30, 2019, during a plant status walkdown of the auxiliary building, Matt observed that the oil in all three FLEX AFW pump oilers appeared very dark compared to other oilers (see pictures below). Matt promptly informed the control room SRO who initiated actions to have the oil replaced and sampled. On January 10, the licensee received the sample results that indicated that the pre-existing oil was not of the correct viscosity or water content. The FLEX AFW pumps have not been tested since coming onsite in November 2015, no oil sampling was planned in the future, and the pump casing internals were not made of corrosion resistant material. The licensee's additional corrective actions included replacing the oil in all three FLEX AFW pumps and creating periodic maintenance plans that ensure that the oil in the pumps is sampled. The inspectors identified an associated licensee performance deficiency as the licensee did not follow their procedures for periodic testing and oil sampling of the FLEX AFW pumps. For additional details, check out IR 05000272 & 311/2020001. **Great catch, Matt!**

FLEX AFW Pump #1 Oil Bubbler

FLEX AFW Pump #3 Oil Bubbler

## Catch of the Day




Nominated by: Jeff Kulp RI/DRS/EB1

This quarter's "Catch of the Day" recognition goes out to **Joe DeBoer**, DRS Reactor Inspector. During the January 2020 Salem Design Bases Assurance Inspection, Joe was assigned the non-safety related MSPI AFW pump as a plant modification sample. This sample was selected due to the impact the pump has on Salem's overall operational risk as well as the PRA risk models. The pump was installed in December 2016 with the objective of maintaining "Green" operational risk when a safety-related steam driven AFW pump is taken out of service for maintenance or testing. The modification installed an electrically driven 8-stage centrifugal pump capable of feeding two steam generators at the same time in either unit, a dedicated 2500 kw Caterpillar diesel generator, and the associated piping to deliver the flow to the feedwater system. The licensee scoped this system into the Maintenance Rule program because it is referenced in their Emergency Operating Procedures. During a CAP review, Joe noted that the Maintenance Rule coordinator had identified in October 2018 that testing was required for this SSC, but that no corrective actions were taken yet. As a result of interviews and document reviews, Joe identified that the licensee had not performed any significant periodic maintenance or testing on the pump or diesel since the post maintenance test was completed in December 2016. The licensee was able to produce a periodic test procedure that had been developed for the diesel and pump; however, it was never implemented. Later in the inspection, the licensee was able to show that an annual PM was performed on the diesel generator. Based upon Joe's questions (which included a methodical risk-informed case for periodic testing to support crediting the function in the PRA and online risk), the licensee elected to perform a surveillance run on the MSPI diesel and pump during the team's inspection. The diesel generator and pump ran successfully by recirculating water to and from the condensate storage tank. This "Good Catch" demonstrates the value of having a questioning attitude and being thorough in your document review. Joe's questions resulted in the generation of approximately 20 condition reports, performing a surveillance run on the MSPI AFW pump to demonstrate functionality, and performing an extent-of-condition review on Hope Creek and both Salem Units for SSCs that may not be maintained or tested in accordance with the Maintenance Rule with a focus on recent modifications. **Way to go, Joe!** [KT bonus: The team identified a violation of 10 CFR 50.65(a) as the licensee did not implement either testing or preventive maintenance to monitor the performance of the MSPI AFW pump which was scoped into the Maintenance Rule. The team determined that this violation was minor because the licensee demonstrated that the SSC was able to perform its function during a system test performed during the inspection and therefore did not adversely affect the Mitigating Systems cornerstone objectives.]

Inspector Mailbox

**Send your questions and comments to the Inspector Mailbox. The Newsletter Editorial Staff is happy to answer any newsletter questions, comments or concerns that you may have.**

**InspectorNewsletter@nrc.gov**

http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0326/br0326.pdf

**Support Our Troops**

**Special "Shout Out & Thank You" to all of the NRC employees currently serving our country on Active Duty. Stay safe and come home soon!**

**Welcome Home to all of the NRC employees who have recently returned home to us safely! We're glad to have you back and inspecting with us!**

# Newsletter Editorial Board

***We are looking for articles, as well as your feedback!!!***

***Contact any one of us by using the new Inspector Newsletter e-mail account!!!***

Joe Schoppy, RI

Edwin Lea, RII

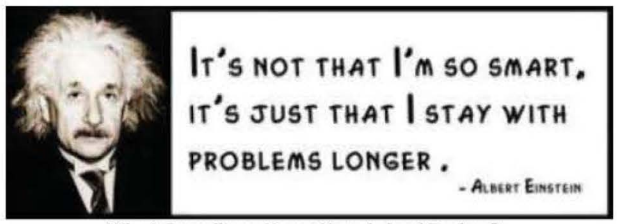
Jamnes Cameron, RIII

Leanne Flores, RIV

Bridget Curran, HQ

## *Many Thanks to Our January 2020 Newsletter Contributors!*

Thomas Wellock, Tom Hipschman, Marc Ferdas, Eric Miller, Daniel Mills, Jackie Harvey, Justin Fuller, Louis Dumont, Ken Kolaczyk, John Hughey, Edgardo Torres, Glenn Dentel, Zach Hollcraft




**What Questions Have You Asked Today?**

# Other Useful Information:

## Quarterly ROP Changes?

If you'd like to read about summaries of (very high level) significant (not editorial) recent changes in ROP guidance since the last newsletter let us know and we'll include them!

***Send us your feedback and your articles! You could be one of the contributors to the next Inspector Newsletter!***

***We're on the Web! Check us out at:***

(b)(7)(F)

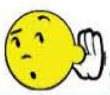
or find the current and previous newsletter articles on Share Point

**Another ROP Memory by John Hanna**

Ft. Calhoun Site Overview June 2011

***Providing useful information to our inspectors, by our inspectors!***

**~~FOR INTERNAL USE ONLY~~**



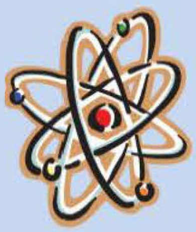
What have you heard around the plant lately? Let us know in five lines or less!

# Inspector Newsletter

**July 2020**

***Providing useful information to our inspectors, by our inspectors!***

~~FOR INTERNAL USE ONLY~~



## Table of Contents:



# Staying Risk Smart

**By: Eric Miller,**
**R1/ Fitzpatrick Senior Resident Inspector**

On November 21, 2019, operators performed ST-4E, "HPCI and SGT Logic System Functional and Simulated Automatic Actuation Test." This test is performed once every two years, and involves opening breakers associated with nine HPCI valves and two standby gas treatment (SGT) system valves to prevent operation during testing. The inspectors identified that performance of this test historically would result in reclassification of station risk to an elevated condition due to HPCI not being available. However, the licensee attempted to reclassify station risk to the normal baseline during performance of the test by briefing an equipment operator on which HPCI valves would need to be restored if the HPCI system was called upon for a design basis event. Exelon procedure WC-AA-101-1006, "Online Risk Management and Assessment," provides direction for making changes to the base calculation of configuration risk for the station. The inspectors noted there was no documentation for the change in risk determination, and approvals were not obtained as required by the procedure. In addition, Exelon procedure WC-AA-101, "Online Work Control Process," provides guidance to make a system available through operator action. The guidance directs an "evaluation to take into consideration the number of actions required, and the environment conditions are expected." [**KT bonus**: NEI 99-02 and NUMARC 93-01 provide guidance on crediting operator actions to maintain monitored functions.] The inspectors found that by not having an approved evaluation and procedure containing restoration actions, the elevated risk condition had not been properly mitigated. The inspectors determined that HPCI may trip when called upon, if not restored in a specific sequence that would allow the system to start up and operate properly. The licensee entered this condition into the corrective action program and updated the model work order to have a dedicated operator briefed, stationed, and with no other concurrent duties. The licensee also initiated an operations crew learning update regarding the event, and guidance regarding the importance of having adequate compensatory actions associated with risk mitigation actions. Teamwork shout outs to: **Michael Montecalvo** (Risk Analyst – NRR) who was backfilling at Ginna as Resident and provided his insights on the risk assessment piece and licensee process for risk assessment changes; **Frank Arner** (RI SRA) for his input to not only the risk assessment piece of this, but to the detailed assessment of the operational impact to HPCI by not having effective compensatory measures; and **Chris Lally** (SPE, RI/DRP1) who stepped in as a new SPE, with his Ops background, provided insight and assessment of the Ops compensatory actions and licensee responses. (See NRC Inspection Report 05000333/2020001 for more details.)

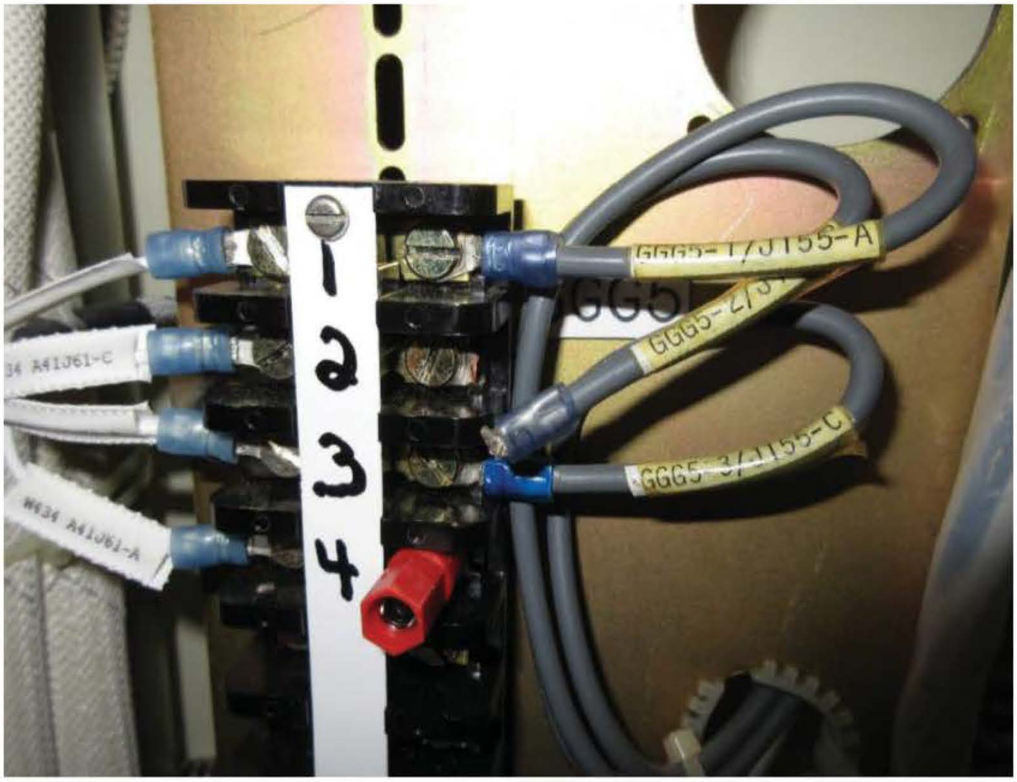
<u>Inspector Best Practices noted above:</u>

- Never underestimate the value of focused, risk-informed, daily plant status walkdowns and log reviews. Inspector smoothly transitioned from plant status to a risk-informed inspection sample (Win-Win: inspector tracks issue through the licensee's CAP and concurrently makes progress in the ROP baseline).
- Throw out the challenge flag when it doesn't seem right or if it doesn't pass the reasonableness test.
- When you know what "normal" looks like, then "abnormal" will jump right out at you.
- Go the extra mile. This may involve reviewing the system history (including testing & operating experience), the licensee's CAP database, and operating and work control procedures.
- Knowledge is power. Effectively using the licensee's own procedures and industry standards to logically and methodically support your safety concern provides a more solid regulatory foothold and helps highlight licensee performance deficiencies.
- Phone a friend. Remember that the DRS & DRP regional staff, other residents, NRR OpE Clearinghouse, and the NRR staff are excellent resources to tap to help put your issue in perspective.

Read about our Reactor Stars in Region IV on the Reactor Star Share Point page:

(b)(7)(F)

# What's Wrong with This Picture?




What's wrong with the above picture? After pondering the picture for a few minutes, flip back to page 11 for the answer.

** We all know that the photographs in the Inspector Newsletter provide great training value! The Editorial Board encourages staff to get permission prior to using any photos that appear in an Inspector Newsletter article.**

---

# Speed of Trust and Inspector Best Practices


**Speed of Trust Action Card #2** – Demonstrate respect. Genuinely care for others. Respect the dignity of every person and every role. Treat everyone with respect, especially those who can't do anything for you. Don't attempt to be "efficient" with people.

**Inspector Best Practices** - (1) Be approachable. If people feel intimidated by you, they are far less likely to talk to you. (2) Learn to listen; listen to learn. Every person in the field knows something about the plant that you don't; find out what it is. (3) Remain professional. Unless there is an immediate safety concern, there is no reason to interrupt a licensee's meeting and/or briefing. Following the meeting, promptly seek out the senior licensee representative and/or shift manager and calmly, clearly, and concisely state your concern. (4) Operator engagement is essential. Routinely talk to operators to get their thoughts on plant performance, work for the day, resolution to previous issues, and operator burdens and challenges. (5) Seek first to understand, then to be understood (Covey Habit #5). Always be willing to listen to the licensee's perspective before jumping to conclusions and/or demanding to be heard.

For more inspector best practices, please see NUREG/BR-0326, "NRC Inspector Field Observation Best Practices." http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0326/br0326.pdf

Please contact Bridget Curran, NRR/DRO/IRSB, if you'd like a hard copy of the "NRC Inspector Field Observation Best Practices"

# COVID-19 Has You Down? Region II Has a Digital Work Around!

**By: Ken Kolaczyk**
**NRR/DRO/IRSB**

Although everyone has varying opinions about the NRC inspector qualification program, almost everyone who has gone through the program will agree that the signoff verification process is time consuming. The current process is paper-based and requires both trainers and trainees to meet in-person and document task completion by placing their signatures in blocks located in a qualification status sign-off sheet as tasks are completed. The inefficiency of the current process was aggravated by the arrival of COVID-19, which has a placed a hold on in-person signoff activities. Not to be outdone by COVID-19 and recognizing an opportunity to nudge the inspector qualification program into the 21st century, Casey Smith a Region II reactor engineer modified the IMC1245 Appendix A qualification signoff sheet to make it electronic signature friendly. The newly developed sheet, along with electronic signature sheets for both Appendices B and C-1 are located in the DRO/IRSB SharePoint site, but will be moved to ROP Digital City, under the "Communications and Training Tab" in the near future and are ready to be used by our future inspectors. Well done Casey!

# SPAR Models and SAPHIRE Software – Now More Available to Everyone

**By: Matthew Leech,**
**NRR/DRA/APHB**

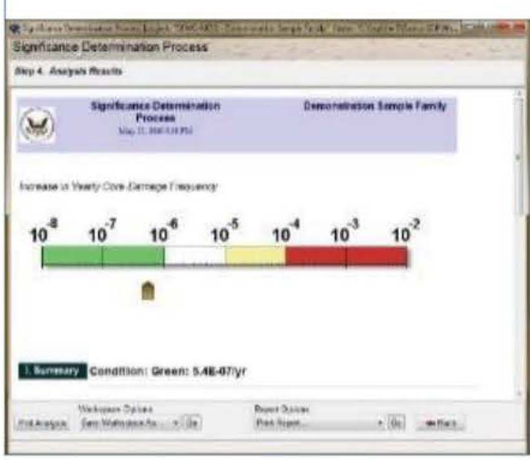
**<u>Background:</u>** The NRC, along with contractors at the Idaho National Lab (INL), maintains probabilistic risk assessment (PRA) models for all operating commercial nuclear plants in the U.S. This set of models, referred to as the SPAR[1] models, is used by NRC staff to support the Reactor Oversight Process and other risk-informed regulatory activities performed throughout the agency. The NRC also develops its own PRA software application that is used with the SPAR models, called SAPHIRE[2].

A recent initiative has been implemented to make SAPHIRE software readily available to all employees, and in October 2019, SAPHIRE was placed on all NRC employee's computers (located in the Windows 10 Software Center). This project was done as a result of feedback we received from our Futures Jam. Additionally, three videos have been created to show employees the basics of using SAPHIRE.

The first video details how to load SAPHIRE onto your desktop from the software center and obtain a copy of the specific plant SPAR model that you need. The second video shows the basics of getting started with a simple risk assessment using the SDP Workspace tool. The third video goes over the Plant Risk Information e-book (PRIB) and how to use the risk insights from the PRIB. These videos are a great way to learn how to get started with SAPHIRE.

The videos are located on the Be riskSMART – Reactor Safety Portal, a new site that has been set up with an emphasis on numerous risk-informed tools focused toward reactor safety. (b)(7)(F) This effort supports the agency wide Be riskSMART framework that provides for the advancement of consistent policies and guidance that give staff confidence in accepting well-managed risks in decision making without compromising the NRC's mission.

The Reactor Safety Portal site contains a lot of risk information and tools including: links to current NRC risk initiatives; the videos to get you started using SAPHIRE; PRIBS; and lots of other risk-related information that should be of interest to inspectors.




If you would like additional information about SPAR and SAPHIRE, there are several people you can contact for assistance. Regional NRC staff should contact their Regional SRAs, who are expert-level users of the SPAR models. For, non-regional staff, contact the Office of Nuclear Regulatory Research staff responsible for the SPAR and SAPHIRE programs: Michelle Gonzalez, Michelle.Gonzalez@nrc.gov, 301-415-5661 and Jeffery Wood, Jeffery.Wood@nrc.gov, 301-415-0953.

←---Example of SDP Workspace analysis results using SAPHIRE

---

1 SPAR is an acronym for *Standardized Plant Analysis Risk*.
2 SAPHIRE is an acronym for *Systems Analysis Programs for Hands-on Integrated Reliability Evaluations*.

# OpE Points to Ponder


## How many operators should it take to change out a light bulb?

**Operating experience**: In September 1994, the NRC issued Information Notice 94-68, "Safety-Related Equipment Failures Caused by Faulted Indicating Lamps," to inform licensees of the possibility that indicating lamp failures in safety-related circuits could cause safety-related equipment to become inoperable. The IN provided several examples including a local indicating lamp for a motor control center that short-circuited in such a manner that it resulted in an inoperable charging pump room cooler (Wolf Creek) and another that caused a short-circuit that blew a DC control power circuit fuse which adversely impacted a safety injection pump, a containment spray pump, two containment fan cooler units, an essential service water pump, a component cooling water pump, and one train of safety-related MOVs (Indian Point Unit 3).

**Licensee learning and NRC value-added**: On February 3, 2020, a Wolf Creek non-licensed operator noted a burnt-out bulb associated with the train B emergency diesel generator (EDG) fuel oil transfer pump motor. In the process of removing the bulb, the glass shattered, and the fuel oil transfer pump control circuitry was shorted, which blew the breaker's fuses. Control room operators declared the train B EDG inoperable. Following troubleshooting, the blown fuses were replaced, and the train B EDG was returned to service several hours later. The inspectors noted that the non-licensed operator replaced the bulb with the panel energized and without entering the maintenance process. In subsequent discussions with the inspectors, the operations manager, current and former shift managers, and licensed and non-licensed reactor operators indicated that they expected non-licensed operators to replace light bulbs as part of their rounds without the use of a work order. The inspectors interviewed multiple licensed and non-licensed operators and noted that the only instruction or procedure operators referenced for changing out light bulbs was an open-ended preventive maintenance work order for changing out safety-related panel indicating light bulbs in the control room and applicable remote panels as required. The inspectors noted that the work order did not identify any safety-related functions that may be adversely impacted by light bulb changes or identify precautions to be used when safety-related functions may be impacted. This work order was not utilized for changing out the subject bulb. Interviewees also indicated that normal station practice is for non-licensed operators to replace burnt out local light bulbs unless the non-licensed operator notes a reason to elevate the light bulb changeout activity. The licensee's conduct of operations procedure described non-licensed operator tour activities which included validating that local control panel lights are not burned out and that replacement bulbs are the correct size and style. However, the procedure did not include instructions, precautions, or limitations to be used when safety-related functions may be impacted when light bulbs are changed. The inspectors noted that this guidance appeared to rely on the individual operator to recognize the risk and act appropriately to mitigate that risk rather than properly preplanning those light bulb replacements that involved risk. The inspectors and the licensee's equipment performance evaluation also noted substantial internal and external operating experience existed related to light bulb changes impacting safety-related equipment. However, this operating experience was not used to ensure this activity was properly preplanned and implemented or to identify equipment where a safety-related function could be adversely affected. For example, the licensee did not provide instructions or establish precautions or limitations that might help minimize the chances of breaking the bulb or blowing the fuse(s), nor were the susceptible components identified and required to have light bulb changes properly preplanned. See NRC Inspection Report 05000482/2020001 for more details.

**Inspector best practices**: (1) Crediting "skill of the craft" should be a red flag for work on safety-related SSCs. It may be okay, but often there's more specific guidance in plant procedures, vendor manuals, and/or drawings (or perhaps there should be). (2) Learn to listen; listen to learn. Operator engagement is essential. Routinely talk to operators to get their thoughts on plant performance, work for the day, resolution to previous issues, and operator burdens and challenges. (3) Hold operators to the licensee's STAR (Stop-Think-Act-Review) expectations. Ensure that operators think about what they're doing and consider what can go wrong before doing it. (4) Maintain a questioning attitude when performing panel walkdowns in the control room and throughout the plant. Do not assume that the lack of an indicating light is due to a burnt-out light bulb (yes, 99% of the time it will be, but that other 1% could make a big difference). (5) Review the inspection and operating history for your plant (sometimes issues have a way of coming back around).

For more inspector best practices, please see NUREG/BR-0326, "NRC Inspector Field Observation Best Practices."
http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0326/br0326.pdf

# Resident Inspector List Corrections from the April 2020 Inspector Newsletter

| First Name | Last Name | First Name | Last Name | First Name | Last Name |
|---|---|---|---|---|---|
| | | | | | |
| Danny | Billings | Bill | Guilderman | Cynthia | Pederson |
| Charlie | Brown | Phil | Harrell | Shannon | Phillips |
| Howard | Bundy | David | Hartland | Greg | Pick |
| Elise | Burket | Wayne | Kropp | Ted | Rebelowski |
| Joe | Callan | Bruce | Little | Mike | Skow |
| Dwight | Chamberlain | Paul | Michoud | Mary | Thomas |
| Bud | Cummins | Ken | O'Brien | Tony | Vegel |
| Bob | Farrell | Mike | Parker | Jimi | Yerokun |
| Jack | Giessner | | | | |
| | | | | | |

**Thanks to those staff members who are helping the Inspector Newsletter Editors with this important information!**
Your additions to the list are very important, and we welcome them.

# Is That Your Final Answer?

## (CAP Contributing Cause Creates Consternation)

**By: Chris Highley**
**R1/Millstone Resident Inspector**

Just before 7:00 AM on Sunday December 1, 2019, the safety-related service water supply to the Millstone 2A EDG began to leak from a flanged joint (see picture below). This portion of the service water system provides cooling water to the EDG lube oil and jacket water heat exchangers. A security officer on rounds discovered the leak and promptly notified the control room. The shift manager dispatched plant equipment operators (EOs) to investigate. Upon arrival to the 2A EDG room, the EOs located the leak and immediately requested that control room operators secure all service water to the 2A EDG. While communicating with the control room, the water spray from the leak caused an electrical fire in an emergency lighting electrical outlet, which was immediately extinguished by the EOs (fire brigade). The isolation of service water to the 2A EDG rendered the diesel inoperable and the licensee entered a 72-hour Technical Specification LCO action statement. The inspectors responded to the site on that Sunday to assess licensee corrective actions, repair activities, and reportability. The inspectors reviewed the licensee's subsequent causal evaluation and questioned the licensee's assessment of the contributing cause. Initially, the licensee attributed the cause to a previous design change that had reduced the orifice thickness by a half of what it was. The licensee stated that this reduced thickness created a gap which caused the uneven compression of the gasket. Based on the inspector's questions, the licensee re-performed a causal evaluation (causal evaluation) and determined that the maintenance procedure for work control practices for threaded fasteners failed to provide adequate acceptance criteria for the tightening of the joint. Specifically, the licensee determined that the failure of the gasket material on the flange was attributed to uneven compression when it was installed on October 11, 2018. The maintenance procedure only provided vague criteria for visual indication of bulging around the bolts, which with this type of flange could not be seen. Additionally, no torque values were specified in the procedure for use of red rubber gaskets. The licensee replaced the failed gasket using a procedure with appropriate acceptance criteria to ensure that the tightening was satisfactorily performed. The licensee also created corrective actions to: 1) replace the gaskets on a 12-month interval with appropriate torque values specified by engineering, 2) conduct a review to determine whether a different gasket type material would be more suitable for this application, and 3) performed an extent-of-condition investigation for similar joints and systems on both Units 2 and 3 EDGs. (See NRC Inspection Report 05000336/2020001 for more details.)

Inspector Best Practices noted above:

- Independently verify when possible. There is no substitute for being there and seeing first hand. What did the licensee overlook or fail to consider?

- Maintain a questioning attitude. It is difficult to arrive at a different end point (conclusion) if you travel down the same identical path as the licensee (have you adequately explored other paths, what else could explain the observed conditions, have you considered all the facts).

- Keep a low threshold and do not easily let the licensee "explain it away." If it does not seem right…it probably isn't. Be professional, but be doggedly persistent when it comes to nuclear safety.

- Crediting "skill of the craft" should be a red flag for work on safety-related SSCs. It may be okay, but often there's more specific guidance in plant procedures, vendor manuals, and/or drawings (if there's not, maybe there should be).

- Procedure reviews are important to verify that the conditions observed are either acceptable or not. Procedures should align with acceptable industry guidance and the plant specific design basis. Procedures should not be written to accept deficient conditions. Sometimes, you may need to challenge the procedure guidance if there are disconnects with respect to the design and licensing basis, industry guidance, and/or NRC requirements.

- The devil is in the details. Sometimes, you've got to dig a little bit deeper to unearth hidden facts, discover additional clues, and/or identify disconnects.

You're the inspector, find the leaking flange above.

**For more Inspector Best Practices, take a look at NUREG/BR-0326, Rev 1, "NRC Inspector Field Observation Best Practices."**

# Need Help on an Inspection? These HQ Staff Members are 1245/1246/1247/1252 Qualified Inspectors

| Name | Inspector Qualification Program | Fully-Qualified Inspector Description | Qualification maintained Yes/No | Partial Qualification Inspector Description/ Fully Qualified Complete |
|---|---|---|---|---|
| **DANU** | | | | |
| Steve Lynch | IMC 1245 Qualification Program | | Yes | Basic (App A) |
| Mike Balazik | IMC 1245 Qualification Program | C2: Reactor Engineering Inspector Program | Yes | Complete |
| Craig Bassett | IMC 1245 Qualification Program | C5: Research and Test Reactor Program | Yes | Complete |
| Michael Takacs | IMC 1245 Qualification Program | C5: Research and Test Reactor Program | Yes | Complete |
| William Schuster | IMC 1245 Qualification Program | C5: Research and Test Reactor Program | Yes | Complete |
| Kevin Roche | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | Yes | Complete |
| Phil O'Bryan | IMC 1245 Qualification Program | | | Basic (App A) |
| **DE** | | | | |
| Samir Darbali | IMC 1245 Qualification Program | | | Basic (App A) |
| Calvin Cheung | IMC 1252 Qualification Program | Construction Inspector Program | Yes | Complete |
| Evan Davidson | IMC 1245 Qualification Program | | | (App A, B, C) |
| Kerby Scales | IMC 1245 Qualification Program | C8: Vendor Inspector Program | No | Complete |
| Shavon Morris | IMC 1245 Qualification Program | C2: Reactor Engineering Inspector Program<br>C8: Vendor Inspector Program | No<br>Yes | Complete |
| Dan Hoang | IMC 1245 Qualification Program | | | Basic (App A) |
| Nadim Khan | IMC 1245 Qualification Program | | | Basic (App A) |
| Brian Wittick | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program<br>C2: Reactor Engineering Inspector Program | No | Complete |
| Angela Buford | IMC 1245 Qualification Program | | | Basic (App A) |
| Samual Cuadrado de Jesús | IMC 1245 Qualification Program | | | Basic (App A) |
| Dawn Mathews Kalathiveettil | IMC 1245 Qualification Program | | | Basic (App A) |
| **DMLR** | | | | |
| James Gavula | IMC 1245 Qualification Program | C2: Reactor Engineering Inspector Program | No | Complete |
| Araceli Billoch | IMC 1245 Qualification Program | | | Basic (App A) |
| William Gardner | IMC 1245 Qualification Program | | | Basic (App A) |
| Mark Yoo | IMC 1245 Qualification Program | | | Basic (App A) |
| Nancy Martinez | IMC 1245 Qualification Program | | | Basic (App A) |
| **DORL** | | | | |
| Andy Hon | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | No | Complete |
| Audrey Klett | IMC 1245 Qualification Program | C2: Reactor Engineering Inspector Program | No | Complete |
| Martha Barillas | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | No | Complete |
| Dave Wrona | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | No | Complete |
| Mike Markley | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program<br>C3: Health Physics Inspector Program | No | Complete |
| Eva Brown | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | No | Complete |
| Margaret O'Banion | IMC 1245 Qualification Program | | | Basic (App A)<br>General (App B)<br>Rx Operations (App C.1) |
| Michael Orenak | IMC 1245 Qualification Program | | | Basic (App A) |
| Ed Miller | IMC 1245 Qualification Program | | | Basic (App A) |
| Dennis Morey | IMC 1247 Qualification Program | C1: Fuel Facilities Inspector Program | No | Complete |
| Jason Paige | IMC 1245 Qualification Program | | | Basic (App A) |
| Gregory Croon | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | Yes | Complete |
| Milton Valentin | IMC 1245 Qualification Program | | | Basic (App A) |
| **DRA** | | | | |
| Michael Levine | IMC 1245 Qualification Program | | | Basic (App A) |
| David Garmon | IMC 1245 Qualification Program | | | Basic (App A) |
| Micheal Smith | IMC 1245 Qualification Program | | | Basic (App A) |
| Antonios Zoulis | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | Yes | Complete |
| Edgardo Torres | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program<br>C8: Vendor Inspector Program | No | Complete |
| Ching Ng | IMC 1245 Qualification Program | | | Basic (App A) |
| Jermaine Heath | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program<br>C8: Vendor Inspector Program | Yes | Complete |
| Alexander Schwab | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | Yes | Complete |
| Jennifer Whitman | IMC 1245 Qualification Program | | | Basic (App A) |


# Need Help on an Inspection?
# These HQ Staff Members are 1245/1246/1247/1252 Qualified Inspectors (cont.)

| Name | Inspector Qualification Program | Fully-Qualified Inspector Description | Qualification maintained Yes/No | Partial Qualification Inspector Description/ Fully Qualified Complete |
|---|---|---|---|---|
| **DRO** | | | | |
| Mark King | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | No | Complete |
| Stephen Campbell | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | | Complete |
| Ross Telson | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | No | Complete |
| Russell Gibbs | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | No | Complete |
| Dan Merzke | IMC 1245 Qualification Program | C2: Reactor Engineering Inspector Program | Yes | Complete |
| Theresa Buchanan | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | Yes | |
| Molly Keefe-Forsyth | IMC 1245 Qualification Program | C12: Safety Culture Assessor Program | Yes | Complete |
| Brian Tindell | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | Yes | Complete |
| Alfred Issa | IMC 1245 Qualification Program | C2: Reactor Engineering Inspector Program | No | Complete |
| Christopher Cauffman | IMC 1245 Qualification Program | | | Basic (App A) |
| David Beaulieu | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | No | Complete |
| Jonathan Ortega-Luciano | IMC 1245 Qualification Program | C8: Vendor Inspector Program | Yes | Complete |
| Nicholas Savwoir | IMC 1245 Qualification Program | C8: Vendor Inspector Program | Yes | Complete |
| Andrea Keim | IMC 1245 Qualification Program | C8: Vendor Inspector Program | Yes | Complete |
| Aaron Armstrong | IMC 1245 Qualification Program | C8: Vendor Inspector Program | Yes | Complete |
| Manuel Crespo | IMC 1246 Nuclear Material Safety and Safeguards Program<br>1247 Fuel Facility Inspector | C1: Fuel Facility Operations Inspector Program<br>C5: Fuel Facility Material Control and Accounting Program | Yes | Complete |
| Thomas Herrity | IMC 1245 Qualification Program | C8: Vendor Inspector Program | Yes | Complete |
| Douglas Bollock | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program<br>C8: Vendor Inspector Program | No | Complete |
| Raju B. Patel | IMC 1245 Qualification Program | C8: Vendor Inspector Program<br>C15: Construction Inspector Program | Yes | Complete |
| Brian Hughes | IMC 1245 Qualification Program | Resident inspector<br>Chief Operator Licensing Examiner<br>Certified Public Official ACRS | No | Complete |
| Dong Park | IMC 1245 Qualification Program | C8: Vendor Inspector Program | | Basic (App A & B) |
| Yamir Diaz-Castillo | IMC 1245 Qualification Program | C8: Vendor Inspector Program<br>C12: Safety Culture Assessor Program | | Complete |
| David Aird | IMC 1245 Qualification Program | | | Basic (App A) |
| Paul Prescott | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program<br>C8: Vendor Inspector Program | C1: No<br>C8: Yes | Complete |
| Joylynn Quinones-Navarro | IMC 1245 Qualification Program | C2: Reactor Engineering Inspector Program | Yes | Complete |
| Greg Galletti | IMC 1245 Qualification Program | C8: Vendor Inspector Program | Yes | Complete |
| Alex Garmoe | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | Yes | Complete |
| Carla Roque Cruz | IMC 1245 Qualification Program<br>IMC 1246 Qualification Program | C2: Reactor Engineering Inspector Program;<br>C8: Vendor Inspector Program<br>B2: Storage and Transportation Program | C2: No<br>C8: Yes | Complete |
| **DSS** | | | | |
| Caroline Tilton | IMC 1245 Qualification Program | C2: Reactor Engineering Inspector Program | No | Complete |
| James Hickey | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | No | Complete |
| Steve Jones | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | No | Complete |
| Robert Lukes | IMC 1245 Qualification Program | | | Basic (App A) |
| Diana Woodyatt | IMC 1245 Qualification Program | | | Basic (App A) |
| Terrence Brimfield | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | Yes | Complete |
| **NRR** | | | | |
| Candace De Messieres | IMC 1245 Qualification Program | | | Basic (App A) |
| Taylor Lamb | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program<br>C.5: Research and Test Reactor Inspector Program<br>C.8: Vendor Inspector Program<br>C.10: Operator Licensing (OL) Examiner Program | Yes | |
| Veronica Rodriguez Alfonso | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | No | Complete |
| **OE** | | | | |
| Carmen Rivera | IMC 1245 Qualification Program<br>IMC 1247- Fuel Facility Inspector | C1: Reactor Operations Inspector Program | Yes | Complete |
| Pete Snyder | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | No | Complete |

Thanks for all you have done and all that you continue to do!

**If we missed a current or former 1245/1246/1247/1252 qualified inspector, contact Bridget Curran to have their name added**

# Excerpts from "A Day in the Life of a Resident During the Pandemic"

**By: Ayesha Athar**
**R4/Diablo Canyon Resident Inspector**

Plant Status Activities:
How do you perform plant status activities? And how much time on a typical day do you spend?

Most resident inspectors have remote access to the operating reactor licensee's computer network which provides them with the same access they would have to this network while onsite. This network allows them to perform reviews of a variety of licensee documentation, such as; work schedules, online risk profiles, clearance orders, narrative logs, calculations, drawings, procedures, daily plant status packages, and condition reports. They also have real-time remote access to view plant parameters such as reactor power and temperature, emergency core cooling systems flow rates, containment temperature and pressure, as well as radiological conditions throughout the plant.

Some resident inspectors can view certain parts of the plant via a network of non-security cameras throughout the site. This allows them to quickly and efficiently see various safety systems and components in the plant to observe their conditions as well as ongoing work activities.

Additionally, licensing personnel at some sites upload daily key documents necessary for plant status if the licensee computer is not functioning properly.

Most residents are spending around 2 hours each day on plant status. Residents are being asked to spent time daily checking on the licensee's COVID status and actions, which has increased total time spent in performing Plant Status.

Most licensees have moved their meetings to teleconferences, which residents attend. For licensee Plan of the Day meetings (or OCC briefings for units in an outage), the presenter will share their screen, so residents can view (real time) the schedule and emergent items as they are discussed. Residents are using Plan of the Day meetings the same way they did while they were onsite—to inform their information-gathering for plant status activities and to inform changes or course corrections for sample selection for that day and week.

Of course residents are not able to walk down the control room each day, but daily phone calls are made to the shift manager and/or control room supervisor to discuss what their priorities are, as well as ask about any differences or clarifications from what was heard in the daily morning meetings—largely the same conversations that residents used to have with control room staff when they visited the control room. Residents will also call the OCC staff for units in an outage.

Many of these technologies were available to most resident inspectors prior to the mandatory telework conditions driven by the federal, state, and local responses to COVID-19. The technologies and processes that were not already available required time and diligence to ensure the information available to them onsite would be available to them remotely. Working with the operating reactor licensees to make these available to the resident inspectors helped prepare them for their inspections. These preparations will yield dividends as these new strides in the execution of their inspections can be used indefinitely.

Inspection Preparation:
Is there much change to how you prepare for inspections and how long it takes to prepare remotely? With limited time on site, do you spend more time prioritizing and planning your time in the plant?

Inspection planning has not changed significantly, since inspection planning is mostly done on the licensee computer anyway: getting procedures, P&I drawings, design basis documents, etc. Since most resident inspectors have access to licensee networks via VPN, loaned laptops, or other means, obtaining the information necessary for inspection preparation is no different than it would be on-site. Residents are routinely communicating with licensing personnel who are very responsive in uploading requested documents that cannot be found through their network access—some residents have even noted that licensing personnel seem to be more prompt in responding to requests while they are working at home. Many inspectors use CERTREC for information requests, which is accessible while working from home, so that hasn't changed either.

The only thing that takes longer is really just internet slowness (especially with significant others also working from home, with multiple remote-sessions running on the household WiFi). So, it can take a bit longer when trying to download/review certain documents or programs on the licensee's remote system.

Many resident offices have uploaded inspection sample trackers (excel file) and frequently used documents (Tech Specs, UFSAR, System Training manuals for their facility) onto their site-specific SharePoint sites; this allows preparation to go more smoothly and efficiently.

The bottleneck (time and efficiency penalty) is the limited amount of time spent on site and in the plant. Site visits must be much more strategically planned and prioritized than normal trips into the plant. Some resident offices are having discussions prior to each resident spending time on site to ensure that areas toured are not duplicated and that items of importance are visually observed in the field.

Anecdotes from Residents on Performing Remote Inspections:
Provide anecdotes of your experience performing any IP remotely and dig into some aspect that grabs your attention.

General Comments on Inspections:
It is reasonably possible to perform most resident baseline inspections, but they take longer than normal. The IPs contain adequate flexibility to make adjustments to how to inspect. In addition to the obvious delay in waiting for a suitable opportunity to perform and allowable onsite inspection portions of the IP, there is a generic amount of time increase to locate unfamiliar documents or get into contact with licensee personnel. The residents are currently well up on the learning curve at this point, but the time penalty still exists as a cost of teleworking. Some IPs will have an inherent "quality penalty" suffered because of the use of alternative means of completing one or more of the inspection objective(s). For example, the 71111.07 heat sink inspection sample can be performed by reviewing completed documentation of an internal inspection and/or test, but the performance-based elements will not be observable under current restrictions. The same is true for PMTs (71111.19) and surveillance testing (71111.22).

Most IPs are fairly good candidates for inspection under the existing restrictions because they either are plant walkdowns that do not require close contact with plant workers or are amenable to record reviews. These include Adverse Weather (71111.01), Equipment Alignment (71111.04), Fire Protection (71111.05 – except fire drill observations), Flood Protection (71111.06), Heat Sink (71111.07), Maintenance Effectiveness (71111.12), Maintenance Risk Evaluations (71111.13 ), and Operability Determinations (71111.15), Modifications (71111.18), PI&R (71152), and event review/LER (71153).

The IPs that have created challenges doing the inspection most are Refueling Outages (71111.20 – relies on a lot more in-plant activities), Equipment Alignment (71111.04 – mostly a time challenge since we are keeping site visits to several hours each), Licensed Operator Requalification (71111.11 – requires simulator and control room observations and actual training to be performed, although video tapes can be reviewed for simulator training), and EP Drills (71124 – nobody is running EP drills currently).

Diablo Canyon:
Residents are routinely identifying issues of concerns and enhancements even though their time on-site is limited. Examples include: During a 71111.19 Post Maintenance Test inspection, issues were identified with procedural differences in how a turbine driven auxiliary feedwater pump linkage was greased (high risk significant component). A meeting was requested and performed remotely via teleconference between the residents and maintenance and licensing personnel. Licensee personnel agreed with the discrepancy and initiated a notification for resolution.

During a 71111.18 Modifications inspection, the residents identified an issue in which the licensee appears to have improperly performed a 50.59 applicability determination on a change to the Technical Requirements Manual. The residents held a teleconference with licensee personnel and the licensee is currently developing a position paper to explain their logic prior to a final regulatory position being reached.

Comanche Peak:
Residents are performing a 12Q sample (maintenance rule) on CP safety chilled water. The resident was able to access plant health reports, CAP documents, maintenance rule database and work orders from his Luminant laptop remotely (my kitchen table). The residents scheduled a meeting with the system engineer to discuss system performance against the goals, his tracked items (e.g. WOs he'd like to implement, CAP documents he is tracking, and long-term projects). In short, there was no difference from doing remotely vs. in the resident office.

Residents are performing a 15 (operability) sample. They have access to design basis documents, TSs, FSAR, procedures, maintenance records, causal evaluations. In short, there was no difference from doing remotely vs in the resident office.

Waterford:
I find I'm able to be more focused and dive more thoroughly into basis documents and underlying calculations of IP samples. Being at the plant is distracting, because there's always something going on that can pull your attention away—emergent work, people dropping into the office, in-person meetings, etc. Doing work remotely has let me give undivided attention to the in-office portion of many IPs. I've also found that licensee personnel are more receptive to questions and more open to impromptu calls and meetings—they're new to working remotely too and seem more eager to call and discuss issues to make sure we're all communicating clearly and comprehensively with a common understanding of facts.

The expense of this is not being able to spend as much time physically in the plant doing the aspects of IPs that aren't suitably done remotely. For some IPs that's actually been a benefit and for some it's been a detriment or made it impossible to complete the IP requirements.

# Operator Errors

By: **Julie Winslow, NRR/DRO/IOEB**

On June 2, 2020, INPO issued IER L3 20-4, "Operator-Induced Events." It notes that, although overall industry performance has improved since the 2017 timeframe, some events over the last year showed lapses in the application of operator fundamentals. In 2017, INPO issued IER L1 17-5, "Line of Sight to the Reactor Core," along with other actions to improve operator fundamentals performance. Many of the actions to improve performance contained in IER L1 17-5 are beyond the scope of NRC regulations; however, resident inspector awareness of events and their causes that do fall within the scope of regulations is warranted.

(b)(5)

Provided below is some of the recent OpE associated with licensed operator errors, along with links to more information. If you have any OpE-related questions on this or other topics, please contact any IOEB member.

Recent OpE Associated with Licensed Operator Errors

**Brunswick 1**: On March 22, 2020, with the unit in Mode 2 and stabilized at 2% power during startup from a refueling outage, all four main turbine bypass valves (BPV) fully opened unexpectedly. The operating crew inserted a manual reactor scram, which was uncomplicated.

The direct cause of the BPVs fully opening during startup was the Turbine Control System pressure setpoint being set incorrectly during the Prestartup Checklist. The Prestartup Checklist requires the pressure setpoint to be 100 psig, however, the pressure setpoint was found set at 1 psig. The error went undetected until the low main condenser vacuum isolation signal to the BPVs cleared during the startup sequence, at which time the BPVs fully opened (LER 05000325/2020-001-00).

**Hanbit-1 (International)**: On May 10, 2019, during low power physics testing, reactor power rapidly increased to 18.06% at a nuclear power plant in South Korea. Steam generator (SG) level increased beyond the hi-hi level setpoint and caused a main feedwater isolation and a trip of all main feedwater pumps.

The following issues were associated with this event: 1) one of the control rods deviated from demand position due to the mis-operation by the reactor operator; 2) during troubleshooting, one of the control rod assemblies indicated stuck; 3) a control bank was withdrawn with less care than was needed by the operator; and 4) the reactor power rapidly increased up to 18.06%, beyond the technical specification (TS) limiting value of 5%.

When reactor power increased above the limit, the TS limiting condition for operation (LCO) action required immediate shutdown. However, when the operator recognized the condition, rods were manually inserted to the zero-power state instead of opening the reactor trip breaker as required. Approximately 11 hours after the transient, the reactor was manually shutdown for the inspection and investigation.

As a result of the event investigation, it was confirmed that the step deviation of the rod was caused by the operator's mis-understanding of rod manipulation and the withdrawal of the control bank was caused due to the improper maintenance work process for the troubleshooting. Additionally, the failure to meet the required action of TS LCO was caused by omitting a pre-job meeting when the shifts turned over and insufficient understanding of the TS LCO during the test. It was assessed that the stuck rod resulted temporarily from latch jam or CRUD. This event received an INES Level 2 rating (IAEA News Article).

**McGuire 1**: On May 3, 2019, the reactor was operating near 100% following several days at reduced power to support repairs to the 1 B main feed pump. Operators were restoring pressurizer (PZR) heaters to their normal alignment, which required securing two heater groups and placing the PZR pressure master controller in manual.

Automatic control of the PZR pressure master controller raises pressure by raising the desired setpoint using the 'Increase' button and the 'Decrease' button lowers pressure. However, when the controller is in manual, the buttons function instead to control the error signal between actual pressure and reference pressure. Depending on the actual plant parameters, this can cause different control functions, including some backup heaters and spray valves to actuate to restore pressure back to the reference value, regardless of actual PZR pressure.

With the controller in manual, the operator mistakenly pressed the 'Increase' button, attempting to raise pressure. The actual impact on the plant – an increase in positive pressure error, created an increased demand for PZR spray valves with two heater groups secured. As the operator continued to press the 'Increase' button, spray valves continued to open until the PZR pressure reached the over-temperature delta-temperature (OTDT) runback setpoint, and then the OTDT scram setpoint. The licensee identified issues with operator adherence to established administrative standards, not sustaining a leadership culture where standards adherence is valued, and insufficient procedural guidance (LER 05000369/2019-001-00).

**Browns Ferry 3**: On March 9, 2019, a reactor operator attempting to lower incoming reactive power on the main generator operated the incorrect handswitch, taking the automatic voltage regulator (AVR) from automatic to manual. Placing the AVR in manual removed system protection against under-excitation, and as the operator continued to lower reactive power, the generator circuit breaker tripped on under excitation, resulting in reactor scram and loss of offsite power (LER 05000296/2019-001-01).

Related OpE Documents

IER L3-20-4, "Operator-Induced Events," (Proprietary) ML20157A242

IER L1-17-5, "Line of Sight to the Reactor Core," (Proprietary) ML17171A309

IN 2018-04, "Operating Experience Regarding Failure of Operators to Trip the Plant when Experiencing Unstable Conditions," ML17269A262

IN 2018-03, "Operating Experience Regarding Failure to Meeting Technical Specifications Requirements for Changing Plant Conditions," ML17303A791

OpE COMM: McGuire Unit 1 & Callaway: Reactor Scrams Caused by Licensed Operator Errors, ML19252A314

OpE COMM: Loss of Offsite Power, Unusual Event, and Reactor Scram with Multiple System Anomalies, ML19120A065

OpE COMM: Adverse Trend in Events Resulting from Weaknesses in Operator Fundamentals, ML16294A505

**For more Inspector Best Practices, take a look at NUREG/BR-0326, Rev 1, "NRC Inspector Field Observation Best Practices."**

# PLUM PMT Bears Fruit

**By: Jigar Patel,**
**R1/Hope Creek Resident Inspector**

The design: Hope Creek Generating Station has four Class 1E emergency load sequencers (ELSs), one for each of the four Class 1E power divisions. Each channelized ELS consists of two individual solid-state sequencers, one for the loss of power (LOP) sequence and one for the loss-of-coolant accident (LOCA) sequence. The LOP and LOCA sequencers each have two redundant solid-state logic timers, a primary and a backup, powered from redundant internal power supplies. The ELS generates sequential start signals for required electrical loads following LOP or LOCA events, upon closure of the EDG output breaker. The LOP and LOCA logic timers are Programmable Logic Universal Modules (PLUMs) of identical design, with differences in the timing configuration depending on the LOP or LOCA application. The primary and backup PLUMs receive simultaneous input signals; however, a watchdog timer holds the output of the backup module to an off state if the primary module is functional. If the primary module fails, the watchdog timer automatically releases the backup module output signal. The backup PLUM is not required to satisfy single failure general design criteria but rather is a design feature to increase EDG reliability. Each module has a light emitting diode (LED) to indicate availability of the module to perform its design function.

The opportunity: From May 2019 to September 2019, PSEG documented in their CAP three occurrences of a failed primary LOP module associated with the D ELS. A nuclear equipment operator identified these three cases when they noted an LED extinguished on the LOP module card during their rounds (see picture below). For each occurrence, operators performed an immediate operability determination for the D ELS. PSEG documented that the ELS system was completely redundant, and therefore the D LOP backup module can perform all required design functions. The licensee was able to restore the primary PLUM following troubleshooting which included replacing several components on the circuit cards and performing a post maintenance test (PMT), as applicable.

NRC value-added: The inspectors reviewed the associated corrective action notifications (i.e., condition reports) for each occurrence, and reviewed the immediate operability screenings against TS 3.8.1.1, "AC Sources – Operating." The inspectors noted that for each of the failures, PSEG concluded the D EDG ELS was "operable but degraded." On September 25, 2019, the inspectors were in the field observing the PMT for the most recent failure and noted that the licensee's PMT did not sequence the backup timer card. As a result, the inspectors questioned whether the periodic TS surveillance procedure covered the backup timer card testing. Based on additional review, engineering determined that the ST did not check the function of the backup PLUMs and that they had never demonstrated functionality of the backup timer cards. The inspectors challenged the licensee's taking credit for the functionality of the backup timer cards for continued operability without ever having tested the backup cards. [The inspectors noted that they would not have identified this issue of concern by reviewing the PMT paperwork alone as it was not obvious whether the quarterly ST, used for the PMT, included sequencing of both primary and backup timer cards.] On September 26, during a focused plant status walkdown, the inspectors identified a fourth instance when they noted an LED extinguished on the D ELS LOP primary module card. The licensee entered the issue into their CAP and again concluded the D EDG ELS was "operable but degraded." In response to the inspector's test concern, the licensee entered the issue into their CAP and subsequently developed a test plan for the backup cards but is still waiting for some spare parts to cover contingent failures during the backup card tests. Based on a review of the UFSAR, Technical Specifications, and additional licensing basis documents, the inspectors did not identify a violation of Technical Specifications due to the lack of testing the backup module cards. However, after coordination with other Region 1 senior inspectors, the resident inspectors noted the backup cards were classified as safety-related, and therefore determined that they were subject to Appendix B Test Control requirements.

NRC teamwork shout out: **Gene Dipaolo**, who pointed out that GL 96-01, "Testing of Safety-Related Logic Circuits," discusses requirements to test the EDG load shedding and sequencing logic circuits, including the parallel logic. **Joe Schoppy**, who provided insights to Appendix B, Criterion XI, "Test Control," requirements, which we ended up documenting. (See NRC Inspection Report 05000354/2020001 for more details.)

<u>Inspector Best Practices noted above:</u>

- Independently verify when possible. There is no substitute for being there and seeing first hand. What did the licensee overlook or fail to consider?

- Maintain a questioning attitude. Make sure that your field observations align with the design basis and good engineering judgment. Is the associated PMT appropriate, properly implemented, and adequate to ensure continued operability/functionality of the SSC?

- Throw out the challenge flag when it doesn't seem right or if it doesn't pass the reasonableness test.

- When you know what "normal" looks like, then "abnormal" will jump right out at you.

- Follow up periodically to ensure corrective actions adequately addressed the problem. In addition, for identified deficiencies that are not promptly corrected, follow up periodically until the issues are resolved to ensure conditions do not degrade further.

- Maintain a questioning attitude when performing panel walkdowns in the control room and throughout the plant. Do not assume that the lack of an indicating light is due to a burnt-out light bulb (yes, 99% of the time it will be, but that other 1% could make a big difference).

- Phone a friend. Remember that the DRS & DRP regional staff, other residents, NRR OpE Clearinghouse, and the NRR staff are excellent resources to tap to help put your issue in perspective.

D ELS Cabinet with all LEDs illuminated. Picture taken by MK1 Mod 0 HC SRI, Adam Ziedonis.

Contribute to the Inspector Newsletter! Write an article that pertains to Inspections! Next Inspector Newsletter will be issued in October 2020. Submissions are due September 30, 2020. We look forward to hearing from you!

# Answer to "What's Wrong with This Picture?"

(Page 2)

On February 14, 2020, operators manually scrammed Susquehanna Unit 2 in response to low condenser vacuum conditions. Following the scram, operators were unable to reset the Division 1 RPS. Initial inspection revealed a broken/disconnected wire in an electrical cabinet in the upper relay room (righthand side of the picture labeled GGG5-2/J155-B). The red plastic "jack" is likely a permanently installed test jack and called a "binding post." Normally one would see a separate permanent ID number on it (e.g. "TP4"), but the "4" is fairly clear and okay in this application (see EPRI NP-6209 which is a good document for best practices and discusses effective plant labeling). Test jacks are fairly common, and most are more permanent and appear to be part of the vendor chassis (looks more like it was part of the terminal board). The one in the picture was likely an afterthought and probably installed by an I&C mod. When initially establishing such a permanent test jack location, engineering should disposition the acceptability through their design and configuration control process. Things to consider: (a) impact on circuit design (where to best put test point, unintended circuit consequences), (b) wiring interference, and (c) potential seismic impact (will it break off and what would that do). Other potential concerns in the picture: (1) J155-C is using another type of crimp connection (darker blue). It's an outlier. May be wrong application or material. If this is safety-related application, you can't use just any connector. (2) The righthand side cabling bend radius is too tight. Bend radius provides stress relief to the cables and connector. This may have contributed to connector failure (metal fatigue). IEEE 576 is a good guide, but mainly for power cables. A rough rule of thumb is bend radius should be ≥ 5X the cable diameter. (3) Terminal Block labeling is on right and obstructed by cables, for improved readability it should be located in area above the terminal block. This could potentially present a human error trap. Shout out to **Dave Werkheiser**, RI/DRS/EB2, for providing a thorough snapshot assessment of the picture for sharing with others. Thanks, Dave.

# COVID-19 Pandemic Lessons Learned and Best Practices Survey on Reactor Oversight

**By: Russ Gibbs**
**NRR/DRO/IRSB**

Thanks to all inspectors, staff, and managers who responded to the survey. The survey ended on July 15. Although these last months have been challenging, they have also taught us a great deal about ourselves and our abilities to continue to provide effective oversight of the operating reactor fleet in very difficult situations! We conducted the survey to take advantage of these times for the future.

The next steps involve reviewing the information obtained from the survey and completing focus interviews with key internal stakeholders. From the information gathered, the WG will identify lessons learned and best practices. As well as make recommendations to help ensure the inspection program is adequately prepared for future health emergencies and identify processes and activities that can also be utilized during "normal" operations to make us a more modern, effective, and efficient regulator. The team's regional representatives include:

Region 1 – Josephine Ambrosini, Rodney Clagg
Region 2 – Brad Bishop
Region 3 – Diana Betancourt, Roy Elliot, Dariusz Szwarc
Region 4 – Ray Azua

There will be additional opportunities to share your experiences as we continue to transition to our "new normal" going forward. The Sharepoint site below is available to share these experiences working with your regional representative(s).

(b)(7)(F)

The WG is targeting the end of September to have its report completed. If you have any questions concerning the WG, contact Russell Gibbs at russell.gibbs@nrc.gov or by Skype.

Stay safe and healthy!

Keep your eagle eyes open in the field. If it doesn't look right, it probably isn't.

# The OpE Fishing Hole:
## OpE and Inspection Dashboards

**By: Julie Winslow, NRR/DRO/IOEB**

Do you ever get frustrated searching for generic communications, findings, or other OpE documents that you know are out there, somewhere, but you just don't know where?

IOEB would like to encourage you to check out our brand new ROP Dashboard SharePoint site! All of the dashboard tools that you've been hearing about are now conveniently located in one place. Think there were a lot of scrams during this spring? Check out the latest trends on the Scrams Dashboard. Want to know which inspection procedure has had the most findings?

Take a look at the Findings Dashboard. Recall there was an Information Notice on Target Rock Safety Relief Valves, but can't seem to find it? Search for generic communications on the OpE Docs Dashboard. Please contact a member of the OpE Branch to get a virtual tour of these new resources. We continue to develop new features and are always open to suggestions on how to improve the tool and add new features.

**What's New in OpE?:**

Here's a rundown of what events, trends, and other issues are making news on the OpE front in Headquarters.

New OpE COMMs:
Palisades – Reactor Vessel Pressure Head Penetration Through-Wall Leakage Lessons Learned Leads to Industry Enhancements (ML20129J941)

Westinghouse CRDM Thermal Sleeve Flange Wear, Cracking, and Rod Malfunction (Update) (ML18309A119)

FLEX Diesel Generator Operational Challenges at River Bend, Clinton, and Waterford 3* (ML20045C280)
*Look for upcoming updates soon!

**Contact and Feedback:**

We welcome any feedback on the Fishin' Hole. Is it useful, useless, and how can it be improved? If you want to propose topics for inclusion in future editions, please reach out to a member of the branch.

**OpE Branch Points of Contact:**

**Region I:**
Mark King
**Region II:**
Al Issa
**Region III:**
Julie Winslow
**Region IV:**
Huda Akhavannik/ Steve Pannier

**INPO/Inspector Newsletter:**
Eric Thomas
**Part 21:**
Steve Pannier
**Generic Communications:**
Brian Benney/Mark Lintz
**Dashboards:**
Jason Carneal/Rebecca Sigmon

The NRR Operating Experience (OpE) Branch will use this space to provide periodic updates on topics such as:

- Data Access and Data Analytics tools for inspectors and other staff
- Highlights from recent management briefings
- Recent and in-process OpE products (COMMs, Smart Samples, generic communications, etc)

**ROP Memories (photos provided by John Hanna, RIII/DRP)**

This is what a small ECCS strainer looks like

Bob Monk, the Regulator

## Help Us Celebrate 20 Years of the ROP!
## 2000 -2020
## Last chance to celebrate in the October Inspector Newsletter!

We are looking for articles, snippets, and pictures that reflect the transition from the Systematic Assessment of Licensee Performance (SALP) program to the Reactor Oversight Process (ROP) Inspection Program. Submit your perspectives to the Inspector Newsletter e-mail address: InspectorNewsletter@nrc.gov

# A Song of OI and Fire

**By: Amy Beasten, PhD**
**R2/DRP/RPB3**
**Resident Inspector—Robinson**

H.B. Robinson Nuclear Plant (RNP) is a single unit pressurized water reactor (PWR) owned and operated by Duke Energy. It is one of the oldest currently operating sites in the nation, with an operating license issued in 1970. As such, construction and operation began prior to the implementation of the General Design Criteria, which requires, in part, that structures, systems, and components (SSCs) important to safety be designed and located to minimize the probability and effect of fires and explosions. At RNP, train separation between SSCs important to safety (e.g. safety injection pumps, emergency switchgear) is minimal, and fire is the biggest contributor to core damage frequency (CDF), making it a significant focus area during plant status walkdowns.

Following the 2017 refueling outage, RNP shifted from using contractors for fire watches to assigning fire watches to Duke personnel, including non-licensed watchstanders known as auxiliary operators (AOs). This was a planned transition and coincided with the implementation of NFPA 805 requirements. The procedure RNP uses to conduct fire watches is a fleet procedure, and requires, in part that:

- Hourly fire watches be conducted every 60 minutes, with a 25% (15 minute) grace period.
- For fire watches conducted outside of the allowed grace period, a condition report (NCR) is required to be initiated.
- All fire watch logs be reviewed at the end of the shift by the Work Control SRO or control room supervisor (CRS).

On September 15, 2017, the $CO_2$ suppression system for the 'A' and 'B' Emergency Diesel Generators (EDGs) (480V Fairbanks Morse Opposed Piston engines) was taken out of service due to a cylinder common to both EDG rooms failing the weight test. This weight test ensures adequate $CO_2$ inventory is maintained to protect the EDGs in the event of a fire. The lead time for obtaining a replacement cylinder was determined to be approximately two weeks. While the $CO_2$ system was inoperable, an hourly fire watch was established for both the 'A' and 'B' EDGs, in accordance with site procedure. This compensatory action was assigned to the Inside AO (IAO), who already had several other compensatory actions assigned in conjunction with normal rounds, surveillances, and other routine activities.

I noted the burden on the IAO and questioned why the hourly fire watch couldn't be assigned to one of the other AOs with fewer compensatory actions. I was told the IAO had been assigned the fire watches because the EDGs are located in the IAO watchstation area. Over the course of the week of September 18, 2017, the IAO continued to perform the hourly fire watches on the 'A' and 'B' EDG rooms. The week was very busy, and every time I was in the auxiliary building, where the EDGs are located, I observed the IAO working on a different surveillance, activity, or task. I found myself, on multiple occasions, wondering whether the fire watches were being completed on an hourly basis, as required.

On September 21, 2017, with my spidey senses continuing to tingle, I decided to perform an inspection on the 'A' EDG room, using the guidance provided in Inspection Procedure (IP) 71111.05Q. Section 03.01.j.2 states, "Fire watches are typically tracked via a fire watch log. The log can be checked against the security key card entry records to validate proper completion of the fire watches." The 'A' and 'B' EDG rooms are not card reader controlled, so I would not have been able to cross-check the fire watch logs with the card readers. There are five separate card reader doors that can be used to access the aux building, and all I would be able to do would be demonstrate the IAO was in the building or not during the time of the recorded fire watch. So, in accordance with IP 711111.05Q, I decided to use the alternate inspection method and wait in the hallway between the two EDG rooms for the IAO to complete the fire watch. Nearly two hours passed before the IAO came by to complete the fire watch.

Knowing that per procedure the fire watch logs should have been reviewed by the Work Control SRO or CRS at the end of each shift, I requested the completed fire watch logs. Neither Work Control nor the control room were able to provide me with any completed fire watch logs from September 15 through September 21 when I requested them.

When I did receive the completed logs, the discrepancies were apparent from the beginning. There were numerous instances of fire watches being performed well outside the grace period, with no NCR to document the condition, as required by the procedure. As was evident when I requested the logs, no supervisory review of the logs had been performed prior to my request. More concerning, however, was the fact that the start and end times for a number of fire watches occurred concurrent with the IAO's attendance at mandatory shift turnover meetings, and the completion time for the fire watch conducted the day I waited was different than the time I witnessed.

At this point, it was apparent the issue was entering allegation space by way of staff suspected wrongdoing, as I had reasonable assurance that at least one individual signed the fire watch log without having completed the fire watch as documented. After the allegation I submitted to the Region was accepted and presented to the Allegation Review Board, the Region requested that I review door card reader logs for the period of September 15-21, 2017. Despite not being able to determine if the IAO was present in the EDG rooms at the times stated on the fire watch logs, several additional discrepancies came to light during the review of the card reader logs for each of the five entry points to the aux building.

Multiple fire watches were recorded as being completed when the responsible individual was not located in the aux building at all. What's more, one or two individuals had missed up to three consecutive fire watches on multiple occasions.

The Office of Investigations (OI) and Duke performed concurrent investigations of the issue, and Duke extended its review to encompass the entire fleet as well as a review of RNP operator rounds logs. Additional discrepancies were identified at Brunswick, and within RNP operator rounds. In all, seven individuals failed, on multiple occasions, to conduct one or more required fire watches and/or operator rounds.

In September 2019, Region 2 sent a choice letter to RNP with one Green NCV, three Apparent Violations (AVs) identified for consideration of escalated enforcement, and a proposed base civil penalty. Robinson opted for alternative dispute resolution (ADR) in response to the choice letter, which was held in December 2019. The ADR was pretty straightforward, with the vast majority of Duke's commitments and requests known to Region 2 staff in advance. Duke and Region 2 reached a consensus before lunchtime on the commitments Duke would make, both at Robinson and across the entire fleet (e.g., quarterly sampling of fire watches, random fire watch observations, training on 50.9 for all Duke and contractor staff, and fleet procedure revisions), and the concessions Region 2 would agree to (e.g., no civil penalty, no escalated enforcement of the AVs). The afternoon was spent in negotiations between the lawyers, discussing the verbiage and legalese of the Confirmatory Order (CO) that would be issued. Everything wrapped up before dinnertime. The finalized CO was issued in March 2020, and RNP and Duke as a fleet are currently implementing the agreed upon commitments. It will be interesting to see if/how COVID-19 impacts the implementation...

<u>Inspector Best Practices and Takeaways</u>

- Maintain an awareness of plant conditions and operator burdens. A busy work week paired with time-consuming comp actions can lead to mistakes or shortcuts.
- Know what is in the IP and go the extra mile. The guidance exists for a reason, and going the distance is often worth the extra work.
- Be patient. I won't say walking up and down that narrow hallway for two hours was the most fun I have ever had onsite, but the end result was definitely worth the wait.
- Know how to recognize an allegation, especially when it is NRC identified. More importantly, know when to stop inspecting an issue that is potentially an allegation. Just because the IP said pulling card reader logs was an option doesn't mean it is something the resident should do without first talking to the SRI/BC.
- Maintain a questioning attitude. Trust your instincts. If the spidey sense is tingling, don't ignore it. Your gut hasn't evolved enough to second guess itself. Chances are, there is something worth finding if you ask the right questions.

**For more Inspector Best Practices, take a look at NUREG/BR-0326, Rev 1, "NRC Inspector Field Observation Best Practices."**

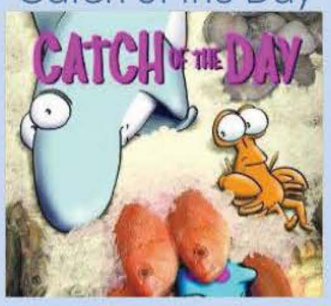
# The "Wild Life" of an Inspector's Job!

## Eagle Eyes Award

Nominated by: Joe Schoppy, RI/DRS/EB1

This quarter's Eagle Eyes Award goes out to **Doug Dodson**, Wolf Creek Senior Resident Inspector. On February 25, 2020, Doug walked down protected equipment during turbine-driven auxiliary feedwater train maintenance, which included walking down the safety-related 125 Vdc battery banks. Eagle Eye Doug identified that cells 20 and 42 (non-pilot cells) associated with battery bank NK014 had electrolyte level at and below the minimum level indication mark. Technical Specification (TS) 3.8.6 requires battery cell parameters for train A and train B batteries to be within limits of Table 3.8.6-1, "Battery Cell Parameters Requirements." Table 3.8.6-1 specifies that electrolyte level for each connected cell (non-pilot cells) shall be greater than the minimum level indication mark. Doug promptly informed the shift manager and noted that other cells were also very close to the minimum level indication mark. Operators entered TS 3.8.6 for the degraded condition, initiated a correction action condition report (CR), and restored all battery cell parameters to within the TS limits. Operators also initiated an additional CR when their extent-of-condition review identified an additional cell on safety-related battery bank NK011 below TS 3.8.6 electrolyte level requirements and numerous other cells "near the lower limit" on safety-related battery bank NK012. In following up the issue, Doug also reviewed the results of the weekly battery surveillance for battery NK014 performed the day prior to his battery room walkdown. Doug noted that the procedure required checking parameters for the four pilot cells but was vague with respect to how to check for abnormal conditions on the remainder of the battery. Additionally, licensee interviews determined that maintenance technicians had noted that the electrolyte level in a number of cells was close to the low limit and called the system engineer to report this, but neither the technicians, nor the system engineer, wrote a CR. For additional details, check out IR 05000482/2020001. **Great catch, Doug!**

## Catch of the Day




Nominated by: Justin Hawkins RI/Salem Senior Resident Inspector

This quarter's "Catch of the Day" recognition goes out to **Scott Wilson**, Senior Health Physicist, RI/DNMS. On February 25, 2020, operators tripped Salem Unit 1 from 20 percent power due to equipment challenges associated with a steam generator tube leak. In response to Salem's emergent forced outage, Scott Wilson reached out to the resident inspectors to discuss and coordinate an inspection of the potential high risk evolutions. He demonstrated initiative and thorough planning in performing an unscheduled inspection during a period of high risk RP/HP evolutions and led directly to the identification of program weaknesses in LHRA controls. On March 12, 2020, Scott identified two potential performance deficiencies (PDs) during his one-day inspection. The PDs involved U1 TS 6.12.2 High Radiation Area controls. Scott found two locations that were not adequately controlled: the reactor head stand and the secondary hand-holes on steam generator 12 (see pics below). The areas were posted and controlled as locked high radiation areas (LHRAs); however, the barriers could be defeated easily and found to be less than adequate when challenged by an RP Tech. In other words, the areas could be accessed by any individual extending his/her arm into the area. The reactor head stand has shielded access doors to allow entry under the head. The access doors were secured by one long chain around the circumference of the stand, weaving through three access doors and locked with a padlock. The access doors could still be opened approximately four inches, allowing for an individual's arm to be placed in the LHRA. Regarding the steam generator hand-hole access ports, when the port covers are removed a lockable plug is placed in the opening and locked to secure the LHRA from entry. When the plugs were challenged by pulling on them, two of them came out of the ports leaving the LHRA unlocked and accessible. No individuals had entered these LHRAs inadvertently or purposely that were not authorized. The head stand chain was secured preventing the doors from being opened, the locking plugs were secured adequately, and the licensee entered the issue into their CAP following Scott's identification. **Great catch, Scott!**

SG hand hole plug.

Gap in the locked doors leading to the RX head stand area.

Inspector Mailbox

**Send your questions and comments to the Inspector Mailbox. The Newsletter Editorial Staff is happy to answer any newsletter questions, comments or concerns that you may have.**

**InspectorNewsletter@nrc.gov**

http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0326/br0326.pdf

**Support Our Troops**

**Special "Shout Out & Thank You" to all of the NRC employees currently serving our country on Active Duty. Stay safe and come home soon!**

**Welcome Home to all of the NRC employees who have recently returned home to us safely! We're glad to have you back and inspecting with us!**

# Newsletter Editorial Board

***We are looking for articles, as well as your feedback!!!***

***Contact any one of us by using the new Inspector Newsletter e-mail account!!!***

Joe Schoppy, RI

Edwin Lea, RII

Jamnes Cameron, RIII

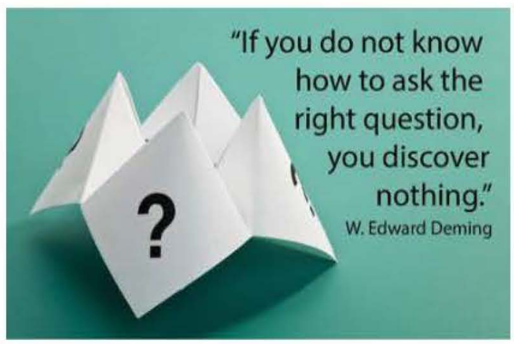
Leanne Flores, RIV

Bridget Curran, HQ

## *Many Thanks to Our April 2020 Newsletter Contributors!*

Doug Bollock, Tom Hipschman, Russ Gibbs, Scott Bussey, Matthew Emrich, Ken Kolaczyk, Lindsay Merker, Jenny Tobin, John Hanna, Justin Hawkins, Jigar Patel, Julie Winslow, Molly Keefe-Forsyth, Eric Thomas, Booma Venkataraman,

**You can contribute to the quarterly Inspector Newsletter! Send an inspection related article to InspectorNewsletter@nrc.gov**




**What Questions Have You Asked Today?**

## NRR/DRO Operator Licensing

NRR/DRO/IOLB has developed a monthly OL newsletter – *The eXaminer Files* – to provide another way to share information with all NRC examiners.

### eXaminer Files Newsletter

Contact Lauren Nist (lauren.nist@nrc.gov) for more information!

# Other Useful Information:

## Quarterly ROP Changes?

No new ROP Changes this quarter.

If you'd like to read about summaries of (very high level) significant (not editorial) recent changes in ROP guidance since the last newsletter let us know and we'll include them!

***Send us your feedback and your articles! You could be one of the contributors to the next Inspector Newsletter!***

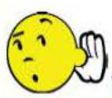
***We're on the Web! Check us out at:***

(b)(7)(F)

or find the current and previous newsletter articles on Share Point

***Providing useful information to our inspectors, by our inspectors!***





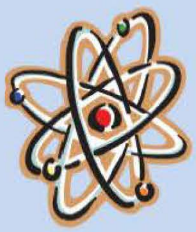
What have you heard around the plant lately? Let us know in five lines or less!

# Inspector Newsletter

**October 2020**

***Providing useful information to our inspectors, by our inspectors!***

~~FOR INTERNAL USE ONLY~~



## Unexpected Power and Chemistry Changes Observed During Resin Intrusion Events

By: Stephen J. Pannier, DRO/IOEB

(b)(4)

**Table of Contents:**



Read about our Reactor Stars in Region IV on the Reactor Star Share Point page:

(b)(7)(F)

# What's Wrong with This Picture: #1?

What's wrong with the above picture? After pondering the picture for a few minutes, flip back to page 7 for the answer.

# What's Wrong with These Pictures: #2?


What's wrong with the above pictures? After pondering the pictures for a few minutes, flip back to the Eagle Eyes Award on page 10 for the answer.

** We all know that the photographs in the Inspector Newsletter provide great training value! The Editorial Board encourages staff to get permission prior to using any photos that appear in an Inspector Newsletter article.**

# Obstacle Course

**By: Russ Bywater**
**Palo Verde Resident Inspector**

The containment hydrogen recombiner system at Palo Verde is designed to limit the amount of hydrogen in containment to less than 4% following a LOCA. Although it's not a very risk significant system, it still is an important design feature for preventing a challenge to the third fission product barrier, the containment. Palo Verde is unusual in that the three units share a pair of containment hydrogen recombiners that are installed in the Unit 1 auxiliary building. If there were a LOCA in Unit 2 or Unit 3, the hydrogen recombiners would have to be removed from Unit 1, transported to the LOCA unit, and placed in service within 100 hours following the LOCA.

When the 'A' hydrogen recombiner was out of service for maintenance and testing, I decided to perform an equipment alignment inspection of the 'B' hydrogen recombiner per inspection procedure 71111.04. Because of the unusual design that required transporting the recombiners to another unit, I completed this sample from the perspective of whether this activity could be performed. The hydrogen recombiners are on a skid approximately 6 feet wide and 10 feet long, and 8 feet tall. The skid weighs about 11,000 pounds. The 'B' recombiner skid is shown in the first photo.

**'B' Hydrogen Recombiner Installed in Unit 1 auxiliary building (Note the wall-mounted placard on the left side of the photo, shown enlarged later).**

I reviewed the licensee's procedure for removal and installation of the hydrogen recombiners. Although the procedure was very detailed in its instructions for removal and reinstallation of piping, ventilation ductwork, and electrical controls, the procedure was silent on how the recombiner would be physically moved from Unit 1 to the LOCA unit. The next photo shows the travel path the recombiner would have to take to be removed from the auxiliary building. I noticed that it didn't look physically possible for the recombiner to be moved through the auxiliary building without removal of a permanently installed battery bank used for emergency lighting and other interferences. I also checked out the travel path in the Unit 2 and Unit 3 auxiliary buildings and found the same battery banks and an additional permanently-mounted fire protection system electrical panel that would prevent transport of the recombiner unless they were removed. The licensee's procedure had nothing to say about the presence of these obstacles, their need for removal, or any plant impact as a result.

**'B' Hydrogen Recombiner Unit 1 Travel Path (battery bank directly ahead and hand rails on left block travel)**

**'B' Hydrogen Recombiner Unit 2 Travel Path (wall mounted panel on left and battery bank on right block travel)**

After taking some confirmatory measurements with a tape measure, I took his concern with this equipment transportability concern to operations department management so functionality of the hydrogen recombiner system could be assessed for all three units. (The hydrogen recombiner system is required to be functional per the Technical Requirements Manual). The licensee completed its own walkdowns of the units, identified the equipment interferences and requirements and impacts of their removal, and concluded the hydrogen recombiner system remained functional. This was based primarily on the ample amount of time available to install the hydrogen recombiner in the LOCA unit and minimal plant impact of removing the obstructions. The licensee also initiated a procedure change to address the inadequate procedural instructions for moving the recombiner (See NRC Inspection Report 05000528/2020001 for more details).


**Placard mounted on wall in several locations in each Unit's auxiliary building. The obstructions were installed in the 2017-2019 time frame.**

Inspector Best Practices

- Just because a system is not a risk-significant contributor to CDF doesn't mean you should never look at it. The hydrogen recombiners still play an important role in protecting the containment barrier following a LOCA. Also, taking a look at a system that hasn't been inspected in a long time (or ever) helps keep the licensee on their toes to not take these systems for granted.

- Take independent measurements (non-intrusively, of course) and photos. Having objective evidence is extremely helpful to explain your issue to the licensee, who initially may have doubts whether your issue is real.

- Look for the unusual. Tasks that have never been done (like moving a hydrogen recombiner), may have been always been assumed possible. Maintain a questioning attitude and challenge assumptions.

# Risk-Informed Decision-Making

**By: Jake Dolecki,**
**NMP Resident Inspector**
**(previous Acting SRI at VC Summer)**

The 2019 4th quarter inspection report at Virgil C. Summer (Integrated Inspection Report 05000395/2019004) contained one Severity Level (SL) IV Traditional Enforcement (TE) Violation against 10 CFR 50.9, "Completeness and Accuracy of Information." The violation was a result of operators with fire watch responsibilities in accordance with licensee procedures inaccurately documenting that specific fire watch roving activities were being performed (shout-out to **Eliza Hilton** for identifying the issue). The fire watch log readings were recorded as being completed at times and locations when the NRC inspectors observed that fire watches had not been conducted. This was the third SL IV TE Violation within the same area of impeding the regulatory process issued in the past 12-month period (January 1, 2019, to December 31, 2019).

The first SL IV TE violation was issued in the 1st quarter inspection report (05000395/2019010) against 10 CFR 50.73, "Licensee Event Report System." As a result of an inoperable safety-related SSC and the licensee performing actions prohibited by technical specifications during periods in 2017 and 2018, the licensee failed to issue an LER within the 60-day period. The second SL IV TE violation was issued in the triennial inspection of evaluation of changes, tests and experiments inspection report (05000395/2019010) against 10 CFR 50.59. The licensee, in 1993, made a change to a station procedure that involved a change in the technical specifications and did not submit an application for an amendment to the license pursuant to 10 CFR 50.90. As a result of these three violations all being within the area of impeding the regulatory process, a Traditional Enforcement Follow- Up inspection as detailed in IMC 0305 and the Enforcement Policy was to be considered during the end-of-cycle review. IMC 0305 provides discretion to the staff to consider whether a follow-up inspection is appropriate. In accordance with IMC 0305, Section 13, IP 92723 "Follow Up Inspection for Three or More Severity Level IV Traditional Enforcement Violations in the Same Area in a 12-Month Period" is to be considered. The purpose of the IP 92723 inspection is to ensure that the causes of the group of the violations are understood and that the licensee has adequately evaluated the extend of condition.

The VC Summer Resident Office reviewed the information surrounding the three SL IV TE violations against the IMC 0305 criteria and IP 92723 inspection objectives. Did this follow-up inspection make sense to perform? Is the estimated time of 16 to 24 man-hours to complete the IP an appropriate and warranted use of resources?

This decision was an excellent opportunity to use our risk-informed decision-making process. Following discussion with the region, it was determined that a follow-up inspection in accordance with IP 92723 was not appropriate. The inspectors and region decided the objective of IP 92723 had been completed.

The inspectors determined that VC Summer understood the causes of the multiple SL IV TE violations, had adequately evaluated the extent-of-condition, and had taken adequate corrective actions to address the violations. Although the three violations had all been issued in a 12-month period, not all of the violations were a result of licensee decisions in the previous 12-month period, nor were they all related to each other. Therefore, the three violations did not fit the description in IP 92723.

The rationale for this decision was also documented as an annual in-focus PI&R inspection sample in the 2020 1st quarter inspection report (05000395/2020001).

Inspector takeaways:

- Use risk-informed decision-making whenever possible
- Know the objectives of IPs
- Use a questioning attitude -- Question whether a regulatory response makes sense

# Elevated Temperature Monitoring and Life Expectancy

**By: Jon Lilliendahl, Senior Emergency Response Coordinator, RI/DRS**

Peach Bottom Unit 2 and 3 Technical Specification Surveillance Requirement (SR) 3.8.6.6 states, "Verify battery capacity is greater than or equal to 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test." This surveillance is required every 48 months in accordance with the Surveillance Frequency Control Program, and every "24 months when battery has reached 85% of the expected life with capacity greater than or equal to 100% of manufacturer's rating." The Peach Bottom DBAI team reviewed the licensee's 125 Vdc battery discharge performance test to assess their process for adjusting the performance test frequency as the 2B battery approached the end of its expected life. The team noted that step 7.2.5 of the procedure listed the date for reaching 85% of the expected life as 17 years (December 2020), which is 85% of the manufacturer's service life of 20 years for a battery that is operated at 77 degrees Fahrenheit. Operating lead calcium storage batteries above this temperature results in a reduced expected life below the maximum service life. The team requested documentation to justify using the maximum service life as the expected life since the battery rooms are not always maintained at the optimal temperature. [**KT bonus**: IEEE 450-2002, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," Section 6.2.b states, in part, "When establishing the interval between tests, factors such as design life and operating temperature (see Annex H) should be considered." IEEE 450 Annex H, "Effects of Elevated Electrolyte Temperatures on Vented Lead-Acid Batteries," provides a formula that integrates annual temperature variations by calculating the months of aging at elevated temperatures versus months of life at normal [25 °C (77 °F)] temperature.]

Engineering reviewed historical battery temperatures and calculated an expected life of 16.5 years for the 2B battery which corresponds to approximately 14 years being the 85% of expected life which should have triggered battery testing every 24 months in December 2017. Engineering performed an extent-of-condition review and determined that all eight safety-related 125 Vdc batteries were in the increased testing frequency interval; however, the licensee was unaware as they had not adequately temperature-derated the batteries' expected lives. Based on the installation of the eight safety-related batteries between 2003 and 2005, and battery testing occurring in various outages (usually train dependent), engineering's review determined that four of the safety-related batteries (2B, 2D, 3A, and 3C) had missed surveillances. The other four batteries (2A, 2C, 3B, and 3D) were beyond 85% of expected life but had a test within the last 24 months. The licensee's short-term corrective actions included entering TS SR 3.0.3 for the missed surveillances, performing a risk assessment to defer testing to the next outage of sufficient duration, and entering the condition into their CAP. The licensee's long-term corrective actions include modifying their next U2 and U3 refueling outage schedules to test all four 125 Vdc batteries (vice just two batteries) on each unit. Special shout out to **Jennifer Tobin**, PBAPS Project Manager, NRR/DORL/LPL1, for her timely support for an associated TS battery testing question. (See NRC Inspection Report 05000277 & 278/2020011 for more details.)

# How I Spent My Summer Vacation

**By: Jake Dolecki, NMP Resident Inspector (previous Acting SRI at VC Summer)**

Background: On April 13, 2020, while in a scheduled refueling outage, V.C. Summer entered a Yellow shutdown risk condition due to lowering reactor coolant system (RCS) inventory to remove the reactor vessel head. At the time of this activity, the licensee determined the time to boil of the RCS was approximately 25 minutes. The licensee had declared this activity a high risk evolution (HRE), as stated in their shutdown safety plan, and also identified the 'A' and 'B' trains of engineered safety feature (ESF) equipment as protected during this HRE in their plant status Plant Information Meeting (PIM) documentation. The 'A' and 'B' trains of ESF equipment consists of an assortment of structures, systems, and components (SSCs), including the high head safety injection function which is provided by the charging pumps, and associated suction and discharge valves and breakers, in the chemical and volume control system (CVCS).

Plant specific requirements: Operations Administrative Procedure (OAP)-114.1, "Protected Equipment Program," is written, in part, to meet the requirements of 10 CFR 50.65(a)(4) to provide reasonable assurance that work activities minimize plant risk. This procedure applies to both online and shutdown conditions with the goal of maintaining plant and shutdown risk within acceptable levels by maintaining defense in depth of key safety functions. Key safety functions include decay heat removal, inventory control, power availability, reactivity control, and containment. OAP-114.1, Section 4.3 defines "protected equipment" as any SSC which has been identified as being essential to ensure that defense-in-depth of key safety functions or overall risk levels can be maintained.

NRC value added walkdowns: V.C. Summer remained in a Yellow shutdown risk condition from April 13 to April 15, during which time the inspectors conducted system walkdowns of the protected equipment. Based on observations in the field and in the control room, the inspectors identified that operators had not placed any postings or barriers on or surrounding the 'A' and 'B' train ESF equipment to clearly indicate that it was protected to prevent inadvertent maintenance from being performed in the areas, as required by Section 6.4 of OAP-114.1. Specifically, the inspectors observed that all three charging pumps and the associated breakers were not protected in the field or on the main control room boards (see pictures below). In response to the inspectors' concerns, the licensee initiated a corrective action condition report (CR).

Initial licensee response: Initially, the licensee didn't feel they were doing anything wrong and stated that it did not affect activities. They provided the perspective that they differentiate between what was considered "protected" and what was considered "placarded." Also, the licensee stated that placarding that much equipment would be too resource intensive. Lastly, the licensee stated no maintenance activities on or near the protected equipment were performed. In their initial CR they made a statement that this is something they have been doing for a very long time (inspector red flag). This proved a bit eye opening for the inspectors. There's certainly many ways to manage risk (Millstone for example makes regular announcements over their PA system); however, this is what VC Summer stated was their way to manage risk in their procedures. They just simply weren't doing what was outlined in their procedures and the inspectors were adamant and professional in holding them to those procedures. The licensee was creating interpretations of their procedures that were not consistent with their procedures (e.g., protected vs. placarded). When all was said and done, the licensee eventually saw the error in their ways and the Site Vice President made multiple strong messages to enforce the importance of this observation.

NRC value added digging: The inspectors reviewed the activities performed during the HRE and determined that on April 14, 2020, licensed operators performed surveillance test procedure (STP)-130.005O, "Charging, Letdown, and RCP seal Return Valve Operability Testing (Mode 5)" from 1:14 AM to 2:30 AM. The procedure was originally scheduled to be performed April 11, 2020, before the site entered a Yellow risk condition. This procedure includes, in part, the stroke-time testing of valves in the 'A' or 'B' ESF trains of CVCS, specifically, the charging pump discharge header isolation valves. These valves are in series downstream of all three pumps and were part of the primary RCS boration flow path (one of two credited flow paths) identified by the licensee in the reactivity control shutdown risk assessment and the April 13th night-shift PIM. This testing rendered the flow path inoperable for a short period of time. As required in OAP-114.1, Step 6.6, work on protected equipment will not be allowed unless the work activities have been approved by appropriate personnel using the Protected Train Work Approval Form (another busted barrier due to the failure to adequately protect the equipment). Similarly, as required in safety-related Station Administrative Procedure (SAP)-1403, "Outage Management and Execution," Step 6.4, schedule changes affecting high risk activities or key safety functions shall have an individual Refuel Outage Scope Change Request as well as a Key Safety Function/Shutdown Safety Review performed to assess the impact (another busted barrier). The inspectors noted that the work order generated to perform the charging pump STP stated the task impacts reactivity management and may affect boration flow paths; however; the surveillance was rescheduled and performed while in a Yellow shutdown HRE without correctly assessing and managing the risk by completing the required documentation in accordance with OAP-114.1 and SAP-1403. Thus, the inspectors determined that the licensee failed to correctly assess and manage the risk prior to performing maintenance activities to ensure that key SSCs were capable of performing their intended safety function. The licensee generated an additional CR to capture the inspectors' concerns with the performance of STP-130.005O during the Yellow shutdown risk condition and initiated actions to evaluate changes to the site procedures for protecting and placarding equipment.

Maintenance Rule (a)(4) requirement: The 10 CFR 50.65(a)(4) requirement is a very unique requirement that can be challenging to enforce and write a violation against. The regulation states "the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities." What makes this unique is that the regulation does not give guidance on what constitutes an adequate risk assessment or how to adequately manage risk. As such, in order to disposition the issue as a violation of the regulation, there needs to be a technically justifiable reason as to why the assessment of risk and/or management of risk was inadequate. Reviewing the licensee's procedure and seeking guidance from others is paramount to make this determination. Please see Section 2.1.11 of the Enforcement Manual and Section 8 of IMC 0612 Appendix E for more information and guidance.

NRC teamwork: Special shout out to **Katie McCurry**, Region II Fuel Facility Inspector, and **Andy Rosebrook**, Region II SRA, for their outstanding support in documenting the finding and assessing the significance. Katie was the acting resident inspector from January through February, but then also supported the resident inspectors for this issue as an amazing opportunity to get a Maintenance Rule and 50.65(a)(4) sign off for her quals. This may be the best Maintenance Rule qualification sign-off in NRC history. See NRC Inspection Report 05000395/2020002 for more details.

Inspector Best Practices noted above:

- Use risk-informed decision-making. During the COVID-19 pandemic, knowing when to go or not go onsite is especially challenging. Risk-inform this decision by knowing the risk-significant work onsite and whether your direct observations are needed to adequately perform the inspection.

- Independently verify when possible. There is no substitute for being there and seeing firsthand. What did the licensee overlook or fail to consider?

- Maintain a questioning attitude. Make sure that your field observations align with the expected plant status, risk management actions, system operating procedures, and technical specifications. Thorough plant status walkdowns are essential following plant transients, prior to mode changes, during plant outages, and following significant maintenance.

- Sometimes, it's not a matter of "what's there" but "what's not there that should be." (Like protected equipment barriers and/or postings).

- Ensure that you share your field observations with Operations and/or Engineering, as appropriate, in a timely manner. Do not analyze the condition for them or lower your standards.

- Effectively using the licensee's own procedures and industry standards to logically and methodically support your safety concern provides a more solid regulatory foothold and helps highlight licensee performance deficiencies.

For more inspector best practices, please see NUREG/BR-0326, "NRC Inspector Field Observation Best Practices." http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0326/br0326.pdf

Please contact Bridget Curran, NRR/DRO/IRSB, if you'd like a hard copy of the "NRC Inspector Field Observation Best Practices"

# List Corrections from the July 2020 Newsletter HQ Staff Members are 1245/1246/1247/1252 Qualified Inspectors

| Name | Inspector Qualification Program | Fully-Qualified Inspector Description | Qualification maintained Yes/No | Partial Qualification Inspector Description/ Fully Qualified Complete |
|---|---|---|---|---|
| **DEX** | | | | |
| Nicholas Hansing | IMC 1245 Qualification Program | C2: Reactor Engineering Inspector Program | Yes | Complete |
| | | | | |
| | | | | |
| **DRA** | | | | |
| Michael Montecalvo | IMC 1245 Qualification Program | A: Basic-Level Training and Qualification Journal<br>B: General Proficiency-Level Training and Qualification Journal<br>C1: Reactor Operations Inspector Program | Yes | Complete |
| | | | | |
| **DRO** | | | | |
| Jesse Seymour | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program<br>C8: Vendor Inspector Program<br>C10: Operator Licensing Examiner<br>C12: Safety Culture Assessor | Yes | Complete |
| Julie Winslow | IMC 1245 Qualification Program | C1: Reactor Operations Inspector Program | Yes | Complete |
| **DSS** | | | | |
| Alexandra Siwy | IMC 1245 Qualification Program | | | Basic (App A)<br>General (App B) |
| | | | | |

# Resident Inspector List Corrections from the July 2020 Inspector Newsletter

| First Name | Last Name | First Name | Last Name | First Name | Last Name |
|---|---|---|---|---|---|
| | | | | | |
| Luis | Reyes | | | | |
| | | | | | |

Thanks for all you have done and all that you continue to do!

# What's Wrong with this Picture #3?

What's wrong with the above picture? After pondering the picture for a few minutes, flip back to page 10 for the answer.

## Answer to "What's Wrong with This Picture #1?"

(Page 2)

The subject of the photo is a fire door coordinator device. A door coordinator is a simple mechanical device that ensures that the two leaves of a double-leaf fire door close and latch the proper sequence. While performing a fire protection 71111.05 inspection tour of the lower cable spreading rooms of Units 1, 2, and 3, Palo Verde Resident Inspector Russ Bywater observed that four out of six door coordinators were missing the rubber roller on the active leaf side of the door coordinator arm. These fire doors, held open by magnetic locks and interlocked with a halon fire suppression system, separate rooms with the halon-protected rooms with potential ignition sources from the cable spreading rooms. Without the rubber rollers, the door coordinator arm causes a deepening indentation each time the door closes. If the door coordinator arm were to become stuck, the fire door would not close and latch as required. Russ brought this deficiency to the licensee's attention. The licensee tested the doors to prove they would still close properly when needed, and repaired the door coordinators by replacing the rubber rollers.

Fire door showing minor damage caused over time by door coordinator arm striking the door without a rubber roller.

Restored door coordinator.

# Remote Use of Cell Phones to Review X-ray Films of a Weld

**By: Alain Artayet**
**R-II/DCO/Senior Construction Inspector**

During the COVID-19 pandemic in the second quarter of 2020, I developed a plan to use a cell phone camera to review radiographic X-ray films. I coordinated with my licensee contact to perform inspections of the final closure weld for the Vogtle Unit 3 containment vessel manway plate section using a high-quality live video application with two cell phones. The manway plate section was cut-out to allow safe egress during welding of the circumferential seam between the containment top head and upper shell ring. The live cell phone video review of the X-ray films and techniques were performed remotely using an X-ray film viewer with calibrated densitometer and step wedge. This was possible with cooperation by one of the responsible Chicago Bridge and Iron (CB&I) certified Level II evaluators, as well as with coordination by Southern Nuclear Operating Company (SNC). The CB&I evaluator positioned his cell phone directly over the film. Then slowly moved along the weld length area of interest during live communication with my cell phone. This enabled me to observe the weld identification and location markers with three wire image quality indicator locations (center and near ends of film). Additionally, I reviewed the image quality of the X-ray films to verify that the final acceptance and documentation by the CB&I certified evaluators was in compliance with the requirements of ASME Code Sections III and V for radiographic examination of metal containments.

(Pictures of this remote inspection are not allowed to be shared)

When you know what "normal" looks like, then "abnormal" will jump right out at you.


Contribute to the Inspector Newsletter! Write an article that pertains to Inspections! Next Inspector Newsletter will be issued in October 2020. Submissions are due September 30, 2020. We look forward to hearing from you!

# The OpE Fishing Hole:
## OpE and Inspection Dashboards

By: Brian Benney,
NRR/DRO/IOEB

**Load Following Restriction Not Incorporated into Plant Procedures**
During a recent Triennial Inspection of Evaluation of Changes, Tests, and Experiments at Prairie Island, the inspectors identified a Green finding associated with the licensee's failure to incorporate a restriction to prohibit load following (a.k.a., flexible power operations) into plant procedures. Due to Unit 1 operations beyond 12 effective full power years (EFPY) starting in June 2019, the licensee was relying on a vendor analysis to assure capability of the rod cluster control assemblies (RCCA) to perform their design functions. The vendor analysis identified base load operations (with no load following) as a restriction to preclude additional absorbed neutron fluence and swelling of rodlets that would occur during load following as the RCCA are intermittently inserted into fuel assemblies. However, the licensee did not incorporate this restriction into operating procedures and had performed flexible power operations more than 30 times in Unit 1 since September 2019. More details are available in IR 05000282/2020012 (ML20211L852).

**Increased Electronic Equipment Issues after Electrostatic Cleaning**

Due to the COVID-19 pandemic, (b)(5) [redacted] mployed an electrostatic spraying technique, also known as an anti-viral "fogger," in their training facilities and simulator on a weekly basis.

After starting the treatment, simulator personnel noted an increase in the frequency of simulator equipment issues. The issues included sticky pushbuttons, intermittent Rod Step Audio indication, and pump and valve control switch / touch screen control panel problems. The equipment issues identified had been previously seen periodically in the simulator; none were different or new to the licensee's simulator staff. However, there were more occurrences of these equipment issues at a higher frequency (i.e., several in a month vs. quarterly) noted.

For more information:

- (b)(5) [redacted]
- Information Notice 2020-01: Increased Electronic Equipment Issues after Electrostatic Cleaning (ML20232C703)

**FLEX Diesel Generator Operational Challenges**
On April 1 and 16, 2020, the licensee at River Bend attempted to perform an uncoupled surveillance test of FLEX pump P-1 with FLEX diesel generator EG-5 providing electrical power to the pump. After failing to successfully power FLEX pump P-1 from the EG-5 diesel generator on April 1st, the equipment vendor replaced a failed voltage regulator and a failed diesel fuel pump on EG-5.

After the second failed test on April 16th, the licensee and vendor determined that EG-5 was unable to handle the starting current of the uncoupled pump motor, and they adjusted the generator output breaker undervoltage time delay setpoints. The licensee determined that four other FLEX diesel generators at River Bend were subject to the same undervoltage trip condition. Region IV performed a Special Inspection (SIT) May 18-22, 2020 for this issue.

For more information:

- OpE COMM Supplement: FLEX Diesel Generator (EG) Operational Challenges – Special Inspection at River Bend Station (ML20210M085)
- Information Notice 2020-02: FLEX Diesel Generator Operational Challenges (ML20196L822)

**Dashboards**

Need to search for LERs and don't know where to go? The ROP Dashboard is your answer!
Search OpE Documents, Findings, and find details on the Accident Sequence Precursor program all at your fingertips:
https://usnrc.sharepoint.com/teams/ROPDashboard
See current Scram trends on the Scrams Dashboard:
https://www.internal.nrc.gov/opE-Dashboards/ScramsDashboard.html
Have feedback or items you would like to see on the dashboards? Contact Jason Carneal or Rebecca Sigmon.

**What's New in OpE?**

New OpE COMMs:

- Duane Arnold – Notification of Unusual Event Due to Loss of Off-Site Power (ML20241A069)
- Surry Unit 2 – White Finding Due to Auxiliary Feedwater System Check Valve Failure to Close and Subsequent Loss of Safety Function (ML20224A301)

**Contact and Feedback**

We welcome any feedback on the Fishing Hole. Is it useful? How can we improve it? If you want to propose topics for inclusion in future editions, please reach out to a member of the branch.

**OpE Branch Points of Contact:**

**Region I:**
Mark King
**Region II:**
Huda Akhavannik
**Region III:**
Julie Winslow
**Region IV:**
Steve Pannier
**Branch Chief:**
Lisa Regner

**INPO/Inspector Newsletter:**
Eric Thomas
**Part 21:**
Steve Pannier
**Generic Communications:**
Brian Benney/Mark Lintz
**Dashboards:**
Jason Carneal/Rebecca Sigmon
**Inspector Newsletter:**
Brian Benney

The NRR Operating Experience (OpE) Branch will use this space to provide periodic updates on topics such as:

- Data Access and Data Analytics tools for inspectors and other staff
- Highlights from recent management briefings
- Recent and in-process OpE products (COMMs, Smart Samples, generic communications, etc)

Thank you for Helping Us Celebrate
20 Years of the ROP!
2000 -2020

# Resident Inspector Relocation Incentives

**By: Alison Tallarico**
**OCHCO**

**Introduction**
We are pleased to report the agency has adjusted the relocation incentives that Nuclear Regulatory Commission Resident Inspectors and Senior Resident Inspectors receive. Resident Inspector and Senior Resident Inspector positions are unique within NRC in that they involve mandatory relocation after a maximum of seven years. To attract and retain the high caliber of staff needed for this key program and to help offset negative aspects of mandatory moves, more than 25 years ago the NRC established a relocation incentive program for these positions. (Please note that *relocation incentives* are separate and in addition to *relocation expenses.*)

**Background**
In 1994, the Agency established new relocation incentive provisions for Resident and Senior Resident Inspectors assigned to reactor sites. In 1995, Resident and Senior Resident Inspectors assigned to fuel cycle facilities were approved to be included as members of a resident inspector group subject to the same relocation incentives provisions. Every five years NRC reevaluates the appropriateness of continuing, as well as the methodology for determining, relocation incentives for the resident sites.

**Agency Adjusts Resident Inspector Relocation Incentives**
In January 2020, the agency established a working group consisting of representatives from each region, the Office of Nuclear Reactor Regulation, the Office of Material Safety and Safeguards, the Office of the Chief Financial Officer, and the Office of Chief Human Capital Officer. The working group reviewed the existing program and made recommendations for:

- revised relocation incentive amounts for sites based on 3 recruiting difficulty categories – Low (15%); Medium (20%), and High (30%); and
- establishment of a supplemental 2% or 5% added to the site relocation incentive amount for current resident and senior resident inspectors who relocate laterally to a Low/Medium and High recruiting difficulty site, respectively.

The changes based on the 2020 review were approved by the Executive Director for Operations on September 9, 2020, and became effective on September 13, 2020.

The following documents can be found (see the "Relocation" tab) on the Office of the Chief Human Capital Officer "Incentives" Web page here:

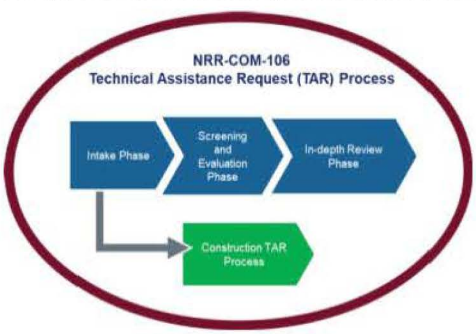
- Alphabetical listing of relocation incentives
- Regional listing of relocation incentives
- Questions and answers about resident inspector relocation incentives
- Resident Inspector Relocation Determination Guidelines

.

# New Avatar of TIA Launched

It is the policy of the Office of Nuclear Reactor Regulation (NRR), governed by revised office instruction, COM-106, Revision 6, "Technical Assistance Request (TAR) Process," (ADAMS Accession No. ML19228A001) to address questions raised by other Nuclear Regulatory Commission (NRC) organizations in a timely manner with a level of effort commensurate with the significance[1] of the underlying issue. As such, the TAR process is used to offer information assistance to organizations within the NRC regarding operating nuclear reactors and their related regulatory and oversight programs under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, production and utilization facilities and reactors under construction either under 10 CFR Part 50 construction permits or 10 CFR Part 52 combined license processes for nuclear power plants. The process ensures that NRR responses and recommendations are promptly communicated to appropriate stakeholders.

The new TAR process, rebranded from the Task Interface Agreement (TIA) process, merges relevant portions of the process contained in NRO Office Instruction, NRO-COM-108, Revision 1, "NRO Construction Inspection Interfaces with Region II" (ADAMS Accession No. ML113220316) into COM-106, Revision 6. NRO-COM-108, Revision 1, is rescinded with this update. Additionally, it incorporates a new graded approach with enhanced guidance and streamlined tools to address program lessons learned and focus resources commensurate with the significance of the issue to meet stakeholder needs effectively and efficiently.




Please visit the NRR Technical Assistance Request SharePoint Site for more information, including historical TIA and Construction TAR data.

If you identify a plant specific issue that may warrant a TAR request, please contact, NRR/DORL TAR Coordinator, Booma Venkataraman, at Booma.Venkataraman@nrc.gov or (301) 415-2934.

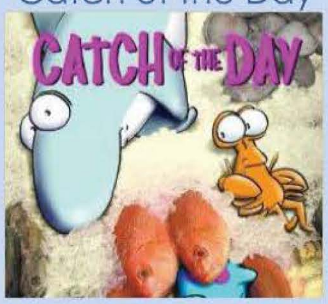
# The "Wild Life" of an Inspector's Job!

## Eagle Eyes Award

Nominated by: Joe Schoppy, RI/DRS/EB1

This quarter's Eagle Eyes Award goes out to **Amar Patel**, RI/DRS/EB1. On July 15, 2020, during a PBAPS DBAI plant walkdown related to his OpE sample (NRC Information Notice 2018-07), Amar observed that the Unit 3 RCIC turbine oil level in the sight glass was above the maximum level mark and that the 3B standby liquid control (SBLC) pump crankcase oil level was above the maximum static level mark (see pics below). In response to these observations, operations personnel initiated corrective action issue reports for the adverse conditions and promptly drained oil from the respective oil reservoirs to establish the proper oil level. The DBAI team assessed the 3B SBLC performance deficiency and quickly screened it as minor using IMC 0612 Appendix E (example 3h). However, the RCIC oil level concern required much more deliberation due to the small margin above the standby band at which there is a potential to impact RCIC system operability. Specifically, the RCIC vendor stated that the oil level should be maintained low in the band and there should be at least 1/8" clearance between the bottom of the overspeed trip disc and the top of the standby band to preclude oil aeration (foaming) when operating. This condition may result in interruption to bearing drain flow or air entrainment to the lubricating and control oil process piping via the shaft driven oil pump. This could cause erratic turbine control and potentially an unexpected turbine trip. In this case, engineering determined that the as-found level was approximately 1/8" higher than the maximum level mark and that the overspeed trip disc was also located 1/8" higher than the maximum level mark. As a result, the condition provided the potential for oil to contact the overspeed trip disc which could have induced oil aeration during RCIC operation. Since there was a reasonable doubt of operability, engineering performed a detailed technical evaluation to assess past operability and subsequently concluded that RCIC maintained operability. Engineering's associated technical evaluation determined that the oil level was likely above the maximum level mark since operators added oil on June 11, 2020. Based on this, the team noted that equipment operators had numerous opportunities to identify the degraded condition (high oil level) on their daily rounds between June 11 and July 15 when Amar identified the degraded condition. Operations completed a work group evaluation to determine why equipment operators did not identify the high oil level until NRC inspectors identified it and established actions to re-enforce equipment operator standards in identifying oil level issues. (See NRC Inspection Report 05000277 & 278/2020011 for more details.) **Great spot, Amar!**

## Catch of the Day




Nominated by: Amar Patel, Senior Reactor Inspector, RI/DRS/EB2

This quarter's "Catch of the Day" recognition goes out to **Brandon Pinson**, Reactor Inspector, RI/DRS/EB2. During the initial prep week for the PBAPS DBAI in July, Brandon targeted a planned walkdown of the seismic restraints for 480V load center breaker hoists as an onsite field verification item based on a review of an associated 1995 Seismic Qualification Utility Group (SQUG) evaluation and modification documentation. Subsequently, during an onsite walkdown of the U3 480V load center breaker hoists, Brandon observed that the breaker hoists were located within their designated storage locations near various Unit 3 480V switchgear cabinets, but could not identify the hoist restraints that were installed as part of a 1998 mod implemented to address a seismic vulnerability. Brandon questioned the currently installed hoist configuration, and whether the previously installed restraints were still required. In response, engineering determined that new hoists of a different design had been purchased and installed in June of 2016, and that the previously installed restraints were not compatible. Additionally, engineering determined that when subjected to design basis seismic forces, the hoists would experience forces large enough to cause them to overturn if not properly restrained. The licensee's corrective actions included entering the adverse condition into their CAP, promptly removing the U2 and U3 breaker hoists away from any safety-related equipment, performing an extent-of-condition review, performing a past-operability assessment, and initiating actions to develop a modification to install seismically qualified restraints for the new breaker hoists. (See NRC Inspection Report 05000277 & 278/2020011 for more details.) **Great catch, Brandon!**

## Answer to "What's Wrong with this Picture #3"

(page 2)

The picture shows one end of a mechanical snubber. A mechanical snubber is a mechanical device designed to protect components from excess shock or sway caused by seismic disturbances or other transient forces (e.g., water hammer). During normal operating conditions, the snubber allows for movement in tension and compression in response to thermal loads. When an impulse event occurs, the snubber becomes activated and acts as a restraint device. The device becomes rigid, absorbs the dynamic energy, and transfers it to the supporting structure (the concrete floor in this case). The operational readiness of snubbers is established by the combination of inservice inspection (ISI), testing, and service life monitoring as required by 10 CFR 50.55a and the applicable ASME BPV Code or ASME OM Code. During a routine VT-3 pre-outage inspection, licensee ISI personnel identified that one of the Hilti anchor bolts was loose on an RHR piping support (the Hilti bolt backed out of the concrete). The licensee entered the condition into their CAP, performed a past operability evaluation, conducted an extent-of-condition review, and repaired the support. Inspectors should keep an eye out for snubber and/or support issues during normal plant status walkdowns; and be extra vigilant during complete equipment alignment walkdowns (71111.04), following system maintenance and/or refueling outages, and following plant transients. [KT bonus: see NRC Information Notice 2015-09, "Mechanical Dynamic Restraint (Snubber) Lubricant Degradation Not Identified due to Insufficient Service Life Monitoring," for recent industry operating experience on snubbers.]

Inspector Mailbox

**Send your questions and comments to the Inspector Mailbox. The Newsletter Editorial Staff is happy to answer any newsletter questions, comments or concerns that you may have.**

**[InspectorNewsletter@nrc.gov](mailto:InspectorNewsletter@nrc.gov)**

[http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0326/br0326.pdf](http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0326/br0326.pdf)

**Support Our Troops**

**Special "Shout Out & Thank You" to <u>all</u> of the NRC employees currently serving our country on Active Duty. Stay safe and come home soon!**

**Welcome Home to <u>all</u> of the NRC employees who have recently returned home to us safely! We're glad to have you back and inspecting with us!**

# Newsletter Editorial Board

***We are looking for articles, as well as your feedback!!!***

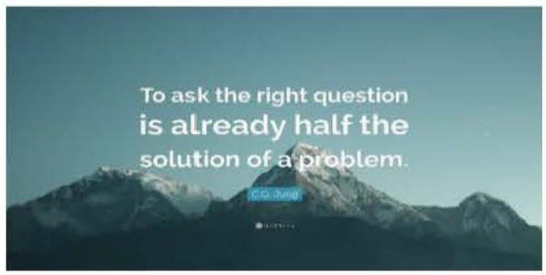
***Contact any one of us by using the new Inspector Newsletter e-mail account!!!***



## *Many Thanks to Our July 2020 Newsletter Contributors!*

Eric Miller, Ken Kolaczyk, Matthew Leech, Chris Highley, Ayesha Athar, Julie Winslow, Jigar Patel, Russ Gibbs, Amy Beasten,

**You can contribute to the quarterly Inspector Newsletter! Send an inspection related article to [InspectorNewsletter@nrc.gov](mailto:InspectorNewsletter@nrc.gov)**




**What Questions Have <u>You</u> Asked Today?**

## NRR/DRO Operator Licensing

NRR/DRO/IOLB has developed a monthly OL newsletter – *The eXaminer Files* – to provide another way to share information with all NRC examiners.

<u>eXaminer Files Newsletter</u>

Contact Travis Iskierka-Boggs (<u>travis.iskierka-boggs@nrc.gov</u>) for more information!

# Other Useful Information:

## Quarterly ROP Changes?

No new ROP Changes this quarter.

If you'd like to read about summaries of (very high level) significant (not editorial) recent changes in ROP guidance since the last newsletter let us know and we'll include them!

***Send us your feedback and your articles! You could be one of the contributors to the next Inspector Newsletter!***

***<u>We're on the Web! Check us out at:</u>***

(b)(7)(F)

or find the current and previous newsletter articles on Share Point

***Providing useful information to our inspectors, by our inspectors!***

~~FOR INTERNAL USE ONLY~~

What have you heard around the plant lately? Let us know in five lines or less!