The Next ICE Age Has Arrived

NPCC Compliance Workshop
November 7, 2018

Ben Eng/NPCC
Manager, Entity Risk Assessment
'Assuring BES Reliability through Risk and Controls Management'
NPCC ERA Presentation

• NPCC ERA Group
• ICE Oversight
• Process Improvements
• Process Flow Diagrams
• NPCC ICE Working Group
• NPCC Complementary Controls
• Learnings
NPCC Entity Risk Assessment

- Ben Eng – Manager, ERA
- Duong Le – Sr. Compliance Engineer, ERA
- Lee Budd – Risk Consultant
  (♪ “thanks for the memories” ♫ )
- Mike Bilheimer – Sr. CIP Analyst
- ICE Teams – SMEs from Audit Group
  (Jim Castle, Phil Creech, John Ravalli, Will Houston, Lou Maiocco, Jim Pirro, Emile Khan, Val Ayers)
ICE Oversight

2017 NERC Oversight Report

• Focus on ICE Team Workpapers to support conclusions in ICE Report

• Liked Process Flow Diagrams

• AFI: Wants to see more sampling of how entity determines the effectiveness of the control design.

• AFI: See more basis for the deferral of requirements from scope of upcoming engagements
ICE Oversight

2018 NERC Observation of Eversource Energy ICE

• Review of NPCC processes, tools and skilled human capital to implement IRA and ICE.
• Review of entity submittals, onsite walkthrough, NPCC ICE team workpapers and draft ICE Summary Report.
• Review of communication between NPCC ICE Team results and NPCC Compliance Audit Team.
ICE Oversight

2018 NERC/FERC 2 day IRA/ICE meeting

• Review of processes, tools and skilled human capital to implement IRA and ICE.
• Review of 2 recent ICE – entity submittals, NPCC ICE team workpapers, NPCC ICE Summary Reports.
• Confirmation of NPCC’s improvements
• Acknowledge the role of Complementary Controls offered by NPCC.
ICE Oversight

2018 NERC Internal Audits Group and CCC audit of NPCC ICE

- Questionnaire answers and supporting documentation provided to NERC via NPCC secure portal upload on October 30, 2018.
- Meeting scheduled for December 13\textsuperscript{th} 2018
- CCC attendees (2) not from the NPCC Region
Process Improvements

2017 NERC Oversight

• NPCC: Developed Workpaper Forms for ICE Team capture of documentation demonstrating entities’ implementation and effectiveness of controls.

• NPCC: Developed ICE Working Group

• NPCC: Proposed the development and cataloging of NPCC Complementary Controls
Process Improvements

2018 NERC/FERC 2 day IRA/ICE

• NPCC: Implemented ICE Workpapers and incorporated questions into onsite ICE Walkthroughs for two entities.

• ICE Working Group developing draft template to catalog SP-7 Working Group’s process flow and controls as example of NPCC Complementary Controls

• Waiting for report to capture other process improvements prior to updating NPCC ERA Compliance Instructions for IRA and ICE.
Process Flow Diagrams

- Examples provided in NPCC ERA Webinar 4/19/18, and other NPCC Workshop presentations

https://www.npcc.org/Compliance/Entity%20Risk%20Assessment/Forms/Public%20List.aspx

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<td>sample ICE Invitation Letter - 2019</td>
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<td>2019 NERC Risk Elements and Associated Areas of Focus</td>
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<td>Sample Flow Diagram template - CIP-010 (partial)</td>
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<td>Sample EGO - Protection System Analysis and Misop Reporting - PRC-004</td>
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<td>ERA NPCC 2018 Spring Workshop - ICE Better Practices, Lessons Learned, Lookahead</td>
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<td>NPCC 2017 Fall Workshop - Ontario IESO Internal Controls</td>
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The primary objective of ICE is not Scope Reduction/Deferral (although some entities still think so). Scope Reduction/Deferral for Compliance Monitoring is merely a byproduct of ICE fully implemented controls. We feel the purpose and value of ICE is to:

- Make you more Risk Aware and understand the internal control controls and designs that mitigate risks
- Provide a free gap analysis to help them become a High Reliability Organization
- Provide non-binding recommendations to enhance entity controls to:
  - Meet/exceed compliance to the NERC Reliability Standards
  - Enhance Reliability and Resilience
- You have told us it is useful as training and succession planning
- Brings other parts of your organization together to identify and strengthen communications, handoffs and deliverables
When does ICE “Season” Begin?

2.4.2 ICE Timing and Selection of Internal Controls
The ICE process involves collaboration and coordination between the CEA and a registered entity. CEAs typically conduct an ICE outside of a compliance monitoring activity. The CEA will work with the registered entity to determine the timing of ICE activities. For example, an ICE may occur prior to a scheduled compliance audit to help refine the scope of the audit or inform testing of compliance with NERC Reliability Standards during the audit. As another example, an ICE may occur after a compliance audit if the registered entity and CEA have identified internal controls that could inform future compliance monitoring and the COP.

- “an ICE may occur prior to a scheduled compliance audit to help refine the scope of the audit or inform testing of compliance with NERC Reliability Standards during the audit.”
- “an ICE may occur after a compliance audit if the registered entity and CEA have identified internal controls that could inform future compliance monitoring and the COP.”

ICE is a voluntary process, and registered entities, regardless of size, may participate in an ICE. The complexity of internal controls will vary across registered entities, and the CEA evaluation of such internal controls will be adjusted according to the registered entity’s BPS risk.
When does ICE “Season” Begin?

“an ICE may occur prior to a scheduled compliance audit to help refine the scope of the audit or inform testing of compliance with NERC Reliability Standards during the audit”

<table>
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<th>Activity for Entity - Excellent Generator Operator (EGO)</th>
<th>Target Date</th>
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<tr>
<td>NPCC’s EGO Pre-ICE Webinar: [approximately 1 week after receipt of ICE Logistics Letter] (t-185 days)*</td>
<td>December 2018</td>
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<tr>
<td>EGO’s ICE Worksheets, Process Flow Diagrams and Supporting Docs Completed and sent to NPCC: (t-155 days)*</td>
<td>January 25, 2018</td>
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<td>ICE Team Walkthrough of EGO Controls: (t-141 days) *</td>
<td>February 8, 2019</td>
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<td>ICE Summary Report Issued to EGO: (t-127 days)</td>
<td>February 22, 2019</td>
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<td>EGO Audit Notification Letter: (t-120 days)</td>
<td>March 1, 2019</td>
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<tr>
<td>EGO Onsite Audit Start Date: (t)</td>
<td>July 1, 2019</td>
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* In all cases, “the sooner the better” to allow more time
Audits

• Audit interested in Pass/Fail, No Finding (NF) or Possible non-Compliance (PnC)
• Once pass/fail, NF/PnC is determined, there may be additional items provided to improve reliability (e.g. Areas of Concern, Recommendations, Suggestions)
  – RSAWs do not lend themselves to pointing out the key controls (and your monitoring their effectiveness) for meeting compliance
  – RSAWs do not credit controls to ensure “compliance” margin
  – No leading questions from auditor
• Backward looking (Audit Period)
• (New) Emphasis has been placed on the review of internal controls during compliance audits
  – (Good news) NPCC has been checking for the presence of controls during monitoring. Auditors ask for procedures, qualifications, who performs actions in a timely manner, how does the entity know when actions have been completed etc. to enable the entity to show compliance.
Internal Controls Evaluations

• Very interested in the (preventative) controls you have in place that enable you to ensure
  – passing the audit by meeting the requirement.
  – exceeding the requirements to improve reliability
• Interested in how you are aware of degradation in reliability or identify drift from compliance (detective controls)
• Interested in the controls in place to mitigate non-compliance once it has been confirmed (corrective controls)
• ICE is not Pass/Fail, it is a *Graduated Scale* (Fully, Largely, Partially...)
• Real time and forward looking
• Uses Process flow diagrams, ICE Worksheets and ICE Workpapers
• Candid conversations and Leading questions to tease out controls, identify key controls and how their implementation/testing is done
• Non-binding recommendations to improve controls
• ICE is **not** a pre-Audit
• NPCC’s separate ICE prior to the engagement fosters the above.
Audit vs ICE  
(Compliance vs Reliability/Resilience)

• Does being compliant mean you are reliable?
• Does being compliant mean you have controls in place to remain compliant?
• Can you develop controls to meet/exceed compliance?
• Are there controls offered by 3rd parties that complement reliability?
Let’s have an audit of PRC-004

1. **Title:** Protection System Misoperation Identification and Correction

2. **Number:** PRC-004-5(i)

3. **Purpose:** Identify and correct the causes of Misoperations of Protection Systems for Bulk Electric System (BES) Elements.

   R1. Each Transmission Owner, Generator Owner, and Distribution Provider that owns a BES interrupting device that operated under the circumstances in Parts 1.1 through 1.3 shall, within 120 calendar days of the BES interrupting device operation, identify whether its Protection System component(s) caused a Misoperation: 


   1.1 The BES interrupting device operation was caused by a Protection System or by manual intervention in response to a Protection System failure to operate; and
   
   1.2 The BES interrupting device owner owns all or part of the Composite Protection System; and
   
   1.3 The BES interrupting device owner identified that its Protection System component(s) caused the BES interrupting device(s) operation or was caused by manual intervention in response to its Protection System failure to operate.
Audit Results

• Entity A (GO) has not had a protection system operation since it began operation 6 years ago. It has been a record run. Therefore there have been no protection system operations to analyze during the audit period nor any misoperations to report.

• Audit result: No Finding
Let’s talk controls

• Does being compliant mean you are reliable?
• Do you have any controls in place to remain compliant?
• Do you have evidence on implementation, monitoring, or determining the status/effectiveness of the control?
• Are there controls offered by 3rd parties that complement reliability?
Process Flow Diagram – PRC-004

Legend:
1. EGO-PCE-001, Protection System Analysis, Rev. 0
2. EGO-PCE-002, Corrective Actions, Rev. 1
3. EGO-PHN-007, Plant Modifications, Rev. 13
4. EGO-CMPL-003, Potential Non-Compliance and Self Reporting, Rev. 3

[Annotate to flow diagram]
Let’s talk controls (cont’d)

• Does being compliant mean you are reliable?
  – EGO provided audit evidence (no events) and controls demonstrating how they would meet compliance IF a qualifying event were to occur

• Do the requirements instill qualitative rigor to enhance Reliability?
  – Compliance = Identify misop, notify others, develop/implement Corrective Action Plan with timeliness criteria
But wait.... There’s more!

- Are there controls offered by 3\textsuperscript{rd} parties that complement reliability?

What is this?
Process Flow Diagram – SP7

NPCC SP-7 WORKING GROUP – PROTECTION SYSTEM OPERATIONS/ANALYSIS (Complementary Controls)

LEGEND:
- Policies and Procedures
  1. NERC Introduction to Misoperation Information Data Analysis System (MIDAS)
  2. NERC R&P Section 1600 Data Request, Request for Data or Information, Protection System Misoperation Data Collection
  3. NPCC SP-7, Scope
  4. NPCC C-45, Procedure for Analysis and Reporting of Protection System Misoperations
  5. NERC Glossary and Q&A for Misoperations
  6. Adequate Level of Reliability ALR 4-1 Correct Protection System Operations

- Tools and Skilled Human Capital:
  1. NERC Misoperation Information Data Analysis System (MIDAS)
  2. MIDAS/SFCS Reporting Templates (Tab 1, Operations; Tab 2, Misoperations)
  3. NPCC Registered GOs, TOs, DPs
  4. NPCC SP-7 Roster (Protection System Engineers, various entities and NPCC)
  5. NPCC Task Force System Protection (TFSP)
Governance – SP7

From SP7 Scope

Responsibilities

- Review the analysis of misoperations of protection systems on the bulk electric system to ensure a misoperation cause has been identified by the system protection owner. This review will determine whether further analysis or data is needed. Based on the data submitted by the entities, SP-7 will confirm that the event is a misoperation and all applicable data has been submitted. The SP7 review comments will be communicated to the entity. After a consensus is reached the misoperation report will be transferred by NPCC to NERC as part of the quarterly submission.

From NPCC Guide C-45

The NPCC Protection System Misoperation Review Working Group SP-7 will review all BES Protection System Misoperations on behalf of the Task Force on System Protection (TFSP) and the Chair of the SP-7 will report to the TFSP at each meeting in accordance with the SP-7 Terms of Reference (work scope).

For Misoperation causes involving relay system malfunctions, the review will confirm that mitigation is defined and scheduled in order reduce the potential for Misoperation reoccurrence.
Controls Questions for the NPCC SP-7 Working Group’s ICE

- How does the entity know to enter Operations and Misoperations data into MIDAS quarterly?
- What if the entity forgets to provide quarterly data?
- How often does SP-7 meet? Do they review all misoperations that occur during each quarter?
- How does SP-7 maintain its expertise?
- Obtain proof that they do their analysis and reporting on a regular basis as specified in their charter, policies, procedures, guides etc.
- What ensures consistency for input, analysis and output?
- Who has oversight over SP-7?
- How often are reports provided to TFSP, RCC and NERC?
- How does SP-7 act as a Complementary control to enhance reliability?
Audit vs ICE
(Compliance vs Reliability/Resilience)

• The Registered Entity is still responsible for meeting its Compliance obligations or Self-Log, Self-Report as necessary.
• Being compliant to the requirement may not enhance reliability
• Be cognizant of Complementary Controls offered by NPCC Task Forces and Working Groups to enhance Reliability and Resilience
ICE Working Group

• Has taken on the challenge to develop a catalog of **Complementary** controls offered by other NPCC Task Forces and Working Groups
• The process flow diagram, governance, and controls questions and answers for SP7 activities will be captured and documented.
  – These will be used as a template for other NPCC TFs, WGs that enhance Reliability and Resilience. (e.g. SS-37, SS-38)
• It will be made clear that the Registered Entity is still responsible for meeting its Compliance obligations or Self-Log, Self-Report as necessary.
• ICE Working Group and NPCC ERA Group collaborative effort
What is Reasonable Assurance?

As described in the ERO Enterprise Guide for Compliance Monitoring\(^5\), the ERO Enterprise recognizes that internal controls cannot provide absolute assurance of compliance with Reliability Standards. CEAs may modify the nature, timing, or extent of compliance monitoring activities based on their understanding and evaluations of internal controls.

The NERC ICE Guide acknowledges that “internal controls cannot provide absolute assurance of compliance with NERC Standards.”

**Reasonable\(^*\) Assurance:** Conclusions based on evidence that is sufficient and appropriate to support the CEA’s conclusions. *Note: Emphasis on “reasonable”, not “complete” or “absolute” assurance.*

**Walkthrough:** A procedure used during an evaluation of an entity’s internal control to gauge the effectiveness of an internal control. A walkthrough traces a process step-by-step from its inception to the final disposition.
Assessment Criteria

- NPCC ICE team review of entity ICE worksheets and supporting documents
  - Offsite review (develop questions, actions for onsite walkthrough)
  - Onsite ICE walkthrough and interviews (“tease out” and document “unacknowledged/taken for granted” control designs)

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**Assessment Criteria**
The CEA may use a binary effective/not effective method for assessing implementation effectiveness, or it may use a measured approach to assess internal control implementation. CEAs should have a documented methodology for assessing implementation, and this methodology may include, but is not limited to, the following:

- The automation of internal controls
- Compensating and supporting internal controls
- Registered entity identification of key controls
- The level of available internal control documentation
- Peer review of key controls within the registered entity
- Feedback on control design processes
- Registered entity’s internal review and testing of existing internal controls
Internal Controls

• Attributes of good controls design
  – Address Single Point of Failure
  – redundancy/alternate means to achieve objective
  – Confirmation of expected actions or timely response
  – Layering - Institute of Internal Auditors strongly suggests combination of all three types (P, D, C).
  – Enables consistency, repeatability, resiliency
  – Automation, early warning reminders
  – Frequent monitoring/shorter intervals
"It deosn't mttær in waht oredr the ltteers in a wrod are, the olny iprmoetnt tihng is taht the frist and lsat ltteer be at the rght pclae. The rset can be a toatl mses and you can sitll raed it wouthit porblem. Tihs is bcuseae the huamn mnid deos not raed ervey lteter by istlef, but the wrod as a wlohe."

Someone said earlier that the brain is an amazing tool. It certainly is!
Internal Controls

But it may be a little too amazing
Lessons Learned

• Process Flow Diagrams can be segmented/modularized
• If your procedures cross reference specific NERC requirements in the body, that’s a good start for building the process flow
• Independent checker to confirm the applicable 5Ws and 1H questions.
• Document implementation testing
• How do you monitor effectiveness of controls once installed?
• Controls can be overridden or degrade over time
  – Control Designs are living and dynamic, not static
  – Apply Change Management
  – Has the control objective changed?
  – Have the Risks changed?
Closing Remarks

• The 2\textsuperscript{nd} ICE Age has arrived
• The future of Compliance Monitoring is being driven by the IRA and ICE processes
• Internal Controls factor into Enforcement decisions
• Compliance alone may no longer be enough to answer whether you are Reliable and Resilient
Questions

Please email questions and/or feedback to ERA@npcc.org

More information available at NPCC ERA webpage

https://www.npcc.org/Compliance/Entity%20Risk%20Assessment/Forms/Public%20List.aspx

If interested in joining the SP7 Working Group contact Rafael Sahiholamal (rsahiholamal@npcc.org)

Thank you!!!