Inherent Risk Assessment (IRA)
Internal Controls Evaluation (ICE)
Presentation A – IRA and ICE Status
Ben Eng/NPCC
Presentation B – NSPI ICE Experience
Nicole Mosher/Nova Scotia Power Inc.
Presentation C – Internal Controls Exchange
Ben Eng/NPCC
Topics

• Status of Inherent Risk Assessments (IRA) and Internal Controls Evaluations (ICE)
• ERO Direction for IRA and ICE
• Statistics
• Industry Feedback
Intro and Background

In 2015, Risk-based Compliance Monitoring and Enforcement Program was implemented.
Intro and Background

• Inherent Risk Assessment (IRA) is performed by Regional Entities to identify areas of focus and the level of effort needed to monitor a registered entity’s compliance with selected enforceable NERC Reliability Standards.
  – The Regional Entities follow the process described in the ERO Enterprise Inherent Risk Assessment Guide (IRA Guide).
  – The IRA Guide serves as a common approach for Regional Entities to implement and perform an IRA.

• NPCC has a corporate goal to conduct IRAs for all 200+ registered entities in the NPCC Compliance Registry by end of 2016.
IRA

- The IRA is a review of potential risks posed by an individual registered entity to the reliability of the bulk power system (BPS).
- The assessment requires identification and aggregation of individual risk factors related to each registered entity, and consideration of BPS reliability impact for those identified risks.
- Risk factors include assets, systems, geography, interconnectivity, prior compliance history, and overall unique entity composition.
IRA

• The IRA Summary Report is a snapshot in time showing:
  – A summary of the entity’s inherent risk ratings for several Risk Factors. These risk factors are subsequently used to determine levels and focus areas for oversight.
  – A listing of monitored standards and requirements that would be an entity’s preliminary scope for an audit if one were to occur in the year the IRA Summary Report is issued.

• Upon receipt of the report, you have the opportunity to comment/question the results of the IRA.
IRA Status

Number of Entities vs. IRAs Completed

- # of Registered Entities: 217
- # of IRA Assessments Completed: 216
- # of IRA Assessments Not Yet Completed: 1
- # of IRA Reports Ready To Be Issued: 215
- # of IRA Reports Need To Be Prepared: 1
- # of Actual IRA Reports Issued: 209
IRA Status

%IRA Reports Issued vs. % IRA Reports Not Yet Issued

96.3%
3.7%

% Actual IRA Reports Issued
% Actual IRA Reports Not Issued
IRA Change Management

• The IRA list is the “baseline” plus/minus items specific to the entity for audit.
• NPCC “refreshes” the IRA on a periodic basis, with the frequency based on a variety of factors, including
  o changes to a registered entity’s functions/assets
  o significant changes to reliability risks, or
  o emergence of new reliability risks (focus areas)
  o compliance history
  o new standards/requirements coming into effect.
• Priority given to entities on next years audit schedule.
Internal Controls Evaluation (ICE)

• A voluntary process used to further determine the focus and selection of appropriate monitoring tools used by NPCC for risk based CMEP.
• Candidates for ICE are those requirements identified by the entity’s IRA.
• Through the ICE process, the NPCC ICE Team evaluates a registered entities’ implementation of governance practices and preventative/detective/corrective controls. When reasonable assurance that compliance with mandatory NERC Reliability Standards are achieved and risks to Bulk Power System reliability are reduced, the monitoring method may be adjusted.
# ICE Metrics

## INTERNAL CONTROL EVALUATION STATISTICS

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<th># of Reqs. (Pre-ICE)</th>
<th># of Reqs. Deferred to Alternate Monitoring Method(s) due to ICE</th>
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11/14/2016
ERO Direction for IRA and ICE

Inherent Risk Assessments

• ERO IRA/ICE Working Group Review and revise IRA Guide and Risk Factors
• Reduced to 18 Risk Factors including CIP.
• More meaningful quantitative Risk Factors.
• Previous qualitative Risk Factors are now considerations.
• Seamless to Registered Entity.
• More consistent approach.
ERO Direction for IRA and ICE

Internal Controls Evaluation

- ERO IRA/ICE Working Group Review and revise ICE Guide
- Regions will be reviewing controls during monitoring.
  - Weak or absence of controls may be noted in Audit Report.
  - NPCC has been checking for the presence of controls during monitoring. Auditors ask for procedures, qualifications, and who performs actions in a timely manner, etc. to enable the entity to show compliance.
- NPCC will continue offering and encouraging separate ICE.
- NPCC believes offering you a separate ICE is more effective than giving you a “cold” (controls on location detection)
Industry Feedback

Internal Controls Evaluation

• Participants in ICE have told NPCC verbally that there have been benefits aside from the quantitative deferral of monitoring from audit scope to alternate monitoring methods.
• Vermont Transco presented their ICE experience at the 2015 Spring NPCC Workshop.
• Nova Scotia Power Inc. will present their ICE experience shortly.
• Stanley Kopman shared with me some positive feedback from the CCC (Compliance and Certification Committee).
• It is our cooperative relationship with you, and focus on improving reliability, that makes NPCC successful in implementing ICE as defined in the Framework.
• We will continue offering ICE and encouraging your voluntary participation.
• For 2017, NPCC will develop and implement an ICE program for CIP.
QUESTIONS?
Thank You
Step 1 – NSPI Ops & Planning Audit Preparation

Inherent Risk Assessment

The IRA is meant to develop a risk profile of the entity and help “map” appropriate standards for monitoring.

- NSPI Successfully completed documentation to identify areas of focus and level of effort needed to monitor compliance. NPCC identified 102 standards and 520 requirements applicable to NSPI. Of these, the result of our IRA identified 24 standards and 96 requirements that were inherent to the entity's risk profile.
Step 2 – Internal Control Evaluation (ICE)

Within our package from NPCC to complete IRA, NSPI received all information on the **Internal Control Evaluation** with clear instructions if we wish to proceed.
The objective of the Internal Control Evaluation is to assess the design, implementation, and effectiveness of NSPI’s internal controls/internal control designs for a set of selected standards (IRA) applicable to its registered functions.

ICE process determines if your entity has implemented an internal control program containing sufficient controls that provide reasonable assurance of compliance.

Spring 2016, NSPI took advantage of this opportunity for the first time, and NPCC ICE Team arrived on-site April 2016.
HOW DID NSPI LEARN ABOUT ICE?

NPCC hosted a Compliance and Standard Workshop in the fall of 2015. This was the first NPCC Workshop I’ve attended. During this workshop Ben Eng, NPCC Manager delivered a presentation describing all of the benefits entities could gain from going through this process. While attending this workshop I was able to meet other professionals and discuss with them their experiences with ICE.

As Ben Eng was delivering his presentation, I thought **What's the catch?** There was no catch! I immediately came back to Nova Scotia and was excited to share this process with our Team.

Some NSPI Benefits:

- Exceeding standards and requirements
- Alignment of staff performance to Key Performance Indicators
- Targeted BES reliability risk-focused scoping
- Reduction in audit scope and duration
- Enhanced entity communication and interaction across organizational business functions
- Improve risk and control awareness
- Gained relationships with NPCC staff
The ICE process is a volunteer evaluation. The scope of the ICE assessment was actually determined by NSPI. NSPI was able to pick and choose to offer the Internal Controls design for one, few, many or all of the standards in the proposed scope of our upcoming audit, for assessment.

What were some of the things that we considered making the decision:

- How much extra work will this add?
- Is there is a cost?
- List our pro’s and Con’s
- What do WE gain as a utility by participating?
- How much time do we have to prepare, and complete?

It was a team decision at Nova Scotia Power between Management, Compliance, and Subject Matter Experts. Once we determined we will take advantage, within a couple of weeks NPCC sent us all information and materials to move forward to complete ICE.
Once we made the decision to participate in ICE, NSPI notified NPCC. Within a short time frame I received a notification email with all the information and expectations.

- Review Participation Acknowledgement
- Attached 3 different worksheets
- Minimum ICE Actions
- ICE Worksheets Submittal Instructions
- ICE Outreach and Support
- ICE Schedule Proposal
  - NPCC Pre-ICE Webinar Date
  - ICE worksheets/flowcharts completed and returned to NPCC
  - NPCC ICE Team Onsite date
  - Audit notification letter
  - Audit date
ICE – Team Effort NSPI

TEAM EFFORT = SUCCESSFUL RESULTS

- Ongoing Communication with Subject Matter Experts
- Active communication with NPCC ICE Support
- One on one meetings with Subject Matter Experts to review worksheet and flowcharts
- Compliance dedicates time to support Subject Matter Experts
- Plan weekly meetings for everyone to get into a room and review each others work, make suggestions, and double check work
- Send out ICE Tips daily
- Compliance staff to be involved and noticeable
- Compliance staff to assist where needed
Internal Control Evaluation vs Audit

Was there more work required in ICE than preparing for an audit?

There was no more work required in ICE than preparing for an audit. If an entity decides to go through the ICE process, be prepared for the value added work. NPCC will give your team a certain amount of time to submit your worksheets and flowcharts (typically 4 weeks). The time pulling together information for each standard we choose (which was all of them) was value added work. We did not think of ICE as extra work.

Being Compliant is very important, the ICE team supported us by:

- WebEx support calls
- Support line available when needed questions answered
- Clear material, and communication
- ICE support had taken the time to review workflows and made suggestions when needed
- Knowledgeable
- ICE team when on site, made suggestions and helped us through each review
Internal Control Evaluation vs Audit

Is the extra work, efforts, and time worth participating in the Internal Control Evaluation?

NSPI take compliance very seriously. Think of ICE as a free evaluation on how your entity is doing.

- ICE is not an audit. The ICE team does not reflect their recommendations, or interviews in your upcoming audit.
- This free evaluation will prepare you for your audit.
- ICE will determine where you may need to strengthen processes. The ICE team will give you that information, which then your team can work on towards your audit.
- Again, ICE is not an audit! However, ICE will prepare you for your audit.
- The ICE team goal is to help you obtain reasonable assurance that controls are in place for your entity.
Did the ICE team get into processes and documentation that an audit wouldn’t ask for? **YES!!**

- This is where we could communicate to the experts on our internal compliance program.
- This is the time for entities to gain suggestions from the ICE team.
- This is also where we were able to communicate with the ICE team on our processes, what we do, and why we do it.

Was the tone of the ICE the same as that of an audit?

NSPI found that the ICE was more of a collaborative effort to promote open communication between NSPIs Subject Matter Experts, Compliance team, and NPCC ICE team.
Did the ICE team encourage open dialogue?

The ICE team and support assisted NSPI and took the extra time to offer and critique sample ICE documentation (flow diagrams and references). Their team offered this earlier than due date so that our Subject Matter Experts and other resources time would not be wasted.
The ICE team requires an onsite walkthrough to meet Subject matter Experts, Support Staff, and Compliance. This walkthrough was a benefit to NSPI while going through the ICE interviews, at that time we could explain each areas of our business and ICE team could relate (Backup control center, Transmission, Energy, Distribution, and Hydro).

Entities should understand that when the ICE team conducts a walkthrough, this is to tease out and document all the features of the internal control designs, so they can be evaluated accurately. This is a great learning experience.
ICE Summary Report

The ICE Summary contains:
- Executive Summary
- ICE Purpose
- Entity Profile
- ICE Scope
- ICE Methodology
- ICE Results
- ICE Recommendations
- ICE Team Closing Remarks

Shortly after the ICE summary we received our revised 2016 Operations & Planning Audit schedule.

NPCC ICE Team evaluated NSPI on 24 standards and 96 requirements with a successful result of 60% reduction on the 2016 NPCC Audit. 60% reduction consists of 19 standards and 40 requirements. Turned our original 5 day audit to a 2.5 day audit in duration.
NSPI was pleased with the results from ICE. This was the first time NSPI has participated in ICE.

Working on ICE with NPCC identified areas that may needed straightening. The team guided us. The biggest benefit for me in compliance is, we know what NPCC is looking for in terms of internal controls. We know what to expect for next time. We definitely plan to participate again, we know what needs improvement, and we have a goal to reach a higher percentage. 60% for our first year…. Plan to reach 80% next time.

I would highly recommend other entities to volunteer for ICE.
Closing

QUESTIONS
ICE is Beautiful
Internal Controls Exchange

NPCC Compliance Workshop
November 16, 2016

Ben Eng
NPCC
Manager, Entity Risk Assessment
“Give a person a fish, and that person eats for a day”
“Teach a person to fish, that person eats for a lifetime”

Teach a person to “ICE-fish” and.....???
Intro and Background

• We all use Internal Controls. We may not recognize them.
• We take Internal Controls for granted
• We use Internal Controls at different levels (implementation)
• Internal Controls increase our ability to be successful in achieving a goal
• Level of Internal Controls Design or their use may be context sensitive.
• Everybody is an ICE “expert” (my goal is to make that a true statement at the end of this session)
Surprise Audit

• You don’t realize it but there was an audit being conducted this morning.
  – A new regional standard came into effect at midnight about meetings: MTG-001-NPCC, *Attending Meetings and Workshops*
  – Applicable to personnel who directly perform or support compliance related activities in the NPCC footprint.
  – Requirement R1: Attendees must be present at the start of NPCC meetings and workshops.
Audit Results

• I am pleased to announce that you were compliant with the requirement.
• What was the audit evidence since you didn’t have to provide any documentation?
  – List of registered attendees and workshop agenda
  – I had cameras aimed at each doorway recording you as you entered the room.
  – I had snapshots taken of all of you in your seats with a time/date stamp.
  – Requirement R1: Attendees must be present at the start of meetings and seminars (Result = No Finding)
Audit Evidence

• The evidence demonstrating compliance is what?
  (Requirement R1: Attendees must be present at the start of NPCC meetings and workshops)
  – Snapshot of attendees in their seats with a time/date stamp.
  – List of registered attendees and Workshop agenda/schedule

• But that’s just for today’s meeting. What about future NPCC meetings/workshops?
Q1: True or False?
Requirement = Controls

The audit evidence demonstrating compliance to the requirement is the same as the control evidence.

Therefore, by doing the audit, we have done an internal controls evaluation at the same time.
Control Questions

• What processes/tools enabled you to meet this requirement?
• Who performs the action(s)? Are there any additional actions by supporting people to help you meet this requirement? Do the actions require training or any special skills?
• Where do you have to be to meet this requirement? Local?
• When? Are there actions to be performed in a timely manner? Is an annual review and approval required?
• How? Do you know when required actions are completed or done in a timely manner and if qualified/trained personnel were required? How do you know and manage changes?
• How do you detect a possible non-compliance and determine the need to Self-Report?
Controls
Controls Design

Requirement R1: Attendees must be present at the start of meetings and seminars

Planning phase:

• Daily work routine: Review calendar for meetings/workshops
• Schedule in Outlook; Approval required? Obtain approval
• Travel required? Obtain approval; reserve lodging and transportation. Enter into travel log.
Controls Design

Travel phase:

• Pack for trip the night before. Refer to packing list.

• Confirm destination and transportation needs.

Controls Design

On location:

- Alarm clock, cell phone, or wakeup call
- Get dressed, shower, brush teeth, shave
- Breakfast and coffee (not a key control 😊)
- Confirm meeting room and time.
- Note taking tools (pad, pen/pencil, laptop)
- Go to meeting. Document arrival time.
Q1: True or False?

Requirement = Controls

The audit evidence demonstrating compliance to the requirement is the same as the control evidence. Therefore, by doing the audit, we have done an internal controls evaluation at the same time.

FALSE – from the preceding slides, we see that internal controls evaluation asks many more and different questions than audit evidence.
Q2: True or False?

Controls Design documentation is Less than Audit Documentation
Q2: True or False?

Controls Design documentation is Less than Audit Documentation

Controls design documentation has a different purpose than audit documentation.
Audit

• Audit is mainly interested in Pass/Fail, No Finding or Possible Non-Compliance
• Did you meet the requirement? Once that is determined, there may be additional items provided to improve reliability (e.g. Areas of Concern, Recommendations, Suggestions)
• Backward looking (Audit Period)
• Auditors will ask pertinent control questions (e.g. procedures, tools, and skilled human capital) to achieve compliance.
"Please move along once you have received your inspection sticker"
Internal Controls Evaluation

Gives you the opportunity to showcase the features of your internal control design to mitigate risks to reliability of the Bulk Power System

• Preventative controls in place to
  – pass audits
  – **exceed** the requirements to improve reliability

• Detective controls to indicate degradation in reliability or identify drift from compliance

• Corrective controls confirm and mitigate non-compliances

• Real time and forward looking

• Performed separately from the Audit
Controls Design Documentation

To provide reasonable assurance that implementation of the controls will ensure that the goal is met consistently.

ICE conclusions may determine alternate monitoring method, increased interval between audit, and/or reduced sampling.
Control Design Silos

Policies and Procedures

System Application Tools

Skilled Human Capital
All Controls are not created equal
Q3: True or False?

If an internal control is part of the requirement, then there’s no internal controls for it.
Illustrative Example 2

• A new regional standard came into effect about fires: HOT-001-NPCC, *Fire Prevention and Detection*
  – Applicable to owners and operators of homes, hotels and permanent housing.
  – Requirement R1: Have a program to address Fire Prevention and Detection. Program shall be reviewed at least annually.
  – Requirement R2: Fire detection equipment shall be located in all kitchens, living rooms and bedrooms.
  – Requirement R3: Fire fighting equipment shall be provided.
Audit Evidence

• HOT-001-NPCC, *Fire Prevention and Detection*
  – Requirement R1: Have a program to address Fire Prevention and Detection. Program shall be reviewed at least annually. **Program document provided containing all program aspects, showing revision history and authorized annual approvals. No Finding**
  – Requirement R2: Fire detection equipment shall be located in all kitchens, living rooms and bedrooms. **Onsite walkthrough showed smoke detectors in all rooms. No Finding**
  – Requirement R3: Fire fighting equipment shall be provided. **Onsite walkthrough showed fire extinguishers in the kitchen and bedroom. No Finding**
Audit Results

• HOT-001-NPCC, *Fire Prevention and Detection*

  Good news
  – Overall Conclusion: Audit showed No Findings for R1, R2, R3

  Bad news
  – This high risk standard has just become a **Focus Area** due to the proliferation of fires. All owners and operators of hotels, multi-dwellings, schools, factories, meeting facilities will be audited to this standard **every year** (because their IRA shows H).
  – All others will be audited **every 3 years** (because their IRA shows M).
What can I do?

“I don’t have the resources to prepare for an audit every year. I have my regular work to do. Are they insane?!”
“I’ve been compliant to these requirements since the beginning.”
“I have controls in place to ensure I meet compliance and exceed the requirement to improve reliability. How do I get credit for that?”

Under Risk Based Compliance Monitoring, you can volunteer for Internal Controls Evaluation. Reasonable Assurance that controls are in place and implemented to mitigate risks will enable the ICE Team to determine the appropriate monitoring method, extend monitoring interval, and/or reduce sampling population.
Controls

• HOT-001-NPCC, *Fire Prevention and Detection*
  – Requirement R1: Have a program to address Fire Prevention and Detection. Program shall be reviewed at least annually.
  – The requirement is to have a program (document) addressing prevention and detection of fires, AND that it be reviewed at least annually.
  – Ask the 5W and 1H questions. They have a Document Management System that reminds the program document owner 3 months prior to it’s annual review due date. Program owner’s management is copied on the DMS reminder. DMS sends weekly reminder until document is revised or reviewed. Then DMS sends it on to independent checker and does same until it goes to the Fire Dept Mgr
Controls

• HOT-001-NPCC, *Fire Prevention and Detection*
  – Requirement R3: Fire fighting equipment shall be provided. **Onsite walkthrough showed fire extinguishers in the kitchen and bedroom. No Finding**
Types of Controls pertaining to Kitchen Fires

Corrective Controls = Good
Types of Controls - Kitchen Fires

Detective Controls = Better

Protect life and property
Types of Controls - Kitchen Fires

Preventative Controls = Best

(Procedures, signage, training, monitoring/situational awareness, limit access)
All Controls are not created equal
FIRE EXTINGUISHING EQUIPMENT INSTALLATION
PROCESS FLOW DIAGRAM

Work Tracking System
1st Qtr Annual Reminder

Determine Fire Extinguishing Equipment Locations – annual survey (Ref. 1)

Fire Protection Group Manager approves closure of Work Tracking System Ticket. Generates new WTS Ticket for next year

Notify Fire Protection Group Manager

Review of Database by Independent Reviewer

Determine appropriate type(s) of Fire Extinguishing Equipment (Ref. 1)

Large Area?

Y

Perform Study for Sprinkler System

Sprinkler System appropriate solution?

Y

See Project Management Process Flow

N

Contact Project Management to develop and schedule installation

N

Install appropriate Fire Extinguishing Equipment

Testing/Operability Determination

Testing/Operability Confirmed?

Y

Update/Maintain database of Fire Extinguishing Equipment, Location, Last Tested, Next Test date, Issues

[HOT-001-NPCC R3]

NOTES:
1. Ref. 1: Procedure FE-001, Fire Equipment
2. All actions performed by Entity A Fire Protection Group unless otherwise indicated

11/18/2016
Q3: True or False?
If an internal control is part of the requirement, then there’s no internal controls for it.

FALSE – In the example above, Fire Prevention Equipment (which are tools) are addressed in the Fire Prevention Detection Program (R1). However, the tools are a requirement of R3, and they have internal controls.
Attributes of Internal Controls

• What is the goal (control objective)?
  – Identify the controls and control design to help you achieve the goals
  – Refer to the control silo diagram to identify your control components and design.
    • Remember, controls are not just the procedure/policy to meet the goal. Controls usually consist of a combination of procedures/actions, tools, and skilled human capital.
  – Determine which of those controls are “key”
    • In other words, there may be a single or primary path of processes, tools and skilled human capital to achieve the control objective. Ask the 5W and 1H question for each of the key controls.
    • Demonstrate to yourself that these key controls are fully implemented. Document your justification (e.g. tested the controls and achieved the desired results)
Attributes of Better Internal Controls

• Repeatable results
  – Automated tools generally provide consistent results
  – SCADA, EMS, Work Management, Software (Databases, Queries, Reports)

• Monitoring/Early warning
  – Periodic or Real Time monitoring of planned work.
  – Reminders well in advance of deadline. Provides “margin” to meet compliance and avoid need to Self Report)

• Feedback/Closure
  – Process to ensure completion of work before approving closeout of work package/ticket/report
  – Maintain records (e.g. maintenance/test records) supporting the closeout of work tickets.
Recap

• We all use Internal Controls. We may not recognize them.
• We take Internal Controls for granted
• We use Internal Controls at different levels (implementation)
• Internal Controls increase our ability to be successful in achieving a goal
• Level of Internal Controls Design or their use may be context sensitive.
  – The ICE Guide speaks specifically to controls for meeting compliance with the NERC reliability standards
• Hopefully you are now an ICE expert (or more of an expert than when we started 😊)
Examples of Process Flow Diagrams for ICE
Examples of Process Flow Diagrams for ICE
Legend for Process Flow Diagram “Day Ahead”

### Legend

**Acronyms**

- SSO - Senior System Operator
- SOC - System Operator Coordinator
- CSO - Chief System Operator
- SO - System Operator
- EDOF - Electric Daily Operating Plan
- DARU - Day Ahead Reliability Unit
- TOA - Transmission Outage Application
- TSM - Transmission Security Management
- SRE - Supplemental Resource Evaluation

### Applicable Standards

- TOP-004-2 R1, R2, R3
- TOP-005-2 R2
- TOP-006-2 R1, R4, R6
- TOP-008-3 R1, R2, R4
- EOP-001-2 B1, B2, B3, B4
- EOP-003-2 R3
- FAC-014-2 R2, B5, B2
- IRG-004-2 R1
- TOP-007-2 B1, R4, R5, R6, R10, R11, R19

### Procedures

- SOP-01: Electric Transmission System Next Day Operations
- ISO-TO CFR Agreement - 3-3-16

### Tools

- TOA
- TSM

### Internal Controls

- P = Preventive; D = Detective; C = Corrective
- Documented Procedure: SOP-01 (P, D, C)
- TOA - Conflict check of outages (P)
- TSM - Analysis provides SOIs and inputs to cascading determinations (D, Key Controls), including included for non-convergence of cases; Transmission Planning and EMS provide backup support and alternative study cases; Contrast in force with third-party who provides technical support to model.
- ISO - Performs review with respect to TOA (IEEE element outage requests) (D); Peer checks of DARU (D) and load flows (D);
- Managerial - Each EDOF draft is reviewed (D)

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Examples of Process Flow Diagrams for ICE
Legend for Process Flow Diagram “Comm”

<table>
<thead>
<tr>
<th>Legend</th>
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<tbody>
<tr>
<td><strong>Legend</strong></td>
</tr>
<tr>
<td><strong>Acronyms</strong></td>
</tr>
<tr>
<td>CSO – Chief System Operator</td>
</tr>
<tr>
<td>SO – System Operator</td>
</tr>
<tr>
<td>SCADA – Supervisory Control and Data Acquisition</td>
</tr>
<tr>
<td>EHL – Extended Hot Line</td>
</tr>
<tr>
<td>SSO – Senior System Operator</td>
</tr>
<tr>
<td>TOA – Transmission Outage Application</td>
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<td>ISO – Transmission Switching Order</td>
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<td><strong>Reliability Risk</strong></td>
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<td><strong>Procedures</strong></td>
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<tr>
<td>SOP-07: Voice and Data Telecommunications</td>
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<td><strong>Tools</strong></td>
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<td>SCADA</td>
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<td>TOA</td>
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<td>OATI webCompliance</td>
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<td>(P = Preventive, D = Detective, C = Corrective)</td>
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<td>SCADA (P, D, C) – Key Control</td>
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<td>Physical Security – PFS (P)</td>
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<td>Communication technology redundancy (P, C)</td>
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<td>Communications Equipment and System Testing (P, D, C) – Key Control</td>
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<td>ISO collaboration (P, D, C)</td>
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<td>OATI webCompliance annual email alert (P)</td>
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Examples of Process Flow Diagrams for ICE
Legend for Process Flow Diagram “Outage Coord”

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<td>Internal Controls</td>
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<td>(P = Preventive: D = Detective: C = Corrective)</td>
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<td>(P, D)</td>
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### Examples of Internal Control Design

#### TELECOMMUNICATIONS

**ISO Emergency Hotline**

<table>
<thead>
<tr>
<th>Type</th>
<th>Voice</th>
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<tbody>
<tr>
<td>Description</td>
<td>The ISO uses the emergency hotline to communicate with regional power utilities for notifications and directives. The ISO will initiate contact on the hotline to inform regional utilities of notifications or directives, which will be acknowledged by the intended utility.</td>
</tr>
<tr>
<td>Interface</td>
<td>The emergency hotline has Voice over IP (VoIP) phones that are located at the System Operator or the Transmission Operator positions at the Backup CC and Main CC to communicate with the ISO.</td>
</tr>
<tr>
<td>Redundancy/Diversity</td>
<td>Each emergency hotline phone has a different telephone company carrier to ensure redundancy between the System Operator and Transmission Operator positions. (ISO doc MP-02.003)</td>
</tr>
<tr>
<td>Security</td>
<td>The emergency hotline phone lines are dedicated circuits that are controlled and maintained by ISO. The emergency hotline phones for the System Operator and Transmission Operator are owned by ISO.</td>
</tr>
<tr>
<td>Maintenance Plan</td>
<td>The ISO conducts weekly tests of the ISO Emergency Hotline by establishing contact with each Transmission Owner via this communication channel. The test is conducted weekly and is recorded in the System Operator log. System Operation Technical Support conducts monthly recording tests to ensure that the emergency hotline is recorded on the system. (ISO doc MP-02.003)</td>
</tr>
<tr>
<td>Troubleshooting Plan</td>
<td>The ISO monitors the dedicated communication circuits for the emergency hotline. (ISO doc TP-01.001)</td>
</tr>
<tr>
<td>Disaster Recovery</td>
<td>The emergency hotline phones are available at both the Backup CC and Main CC for the System Operator and Transmission Operator. (Procedure DR-001)</td>
</tr>
<tr>
<td>NERC Standard</td>
<td>COM-001 R3.7</td>
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</table>

11/18/2016
QUESTIONS ?
Thank You