

Communication Protocols

Response to NERC Board of Trustees Questions by the Independent Experts

Question 1. Proposed COM-002-3 Reliability Standard provides a standard that addresses communication protocols in an emergency. Are there circumstances that are not an emergency (as defined in COM-002-3) that can lead to reliability risks if not appropriately addressed by a standard? If so, what are these circumstances and how important is it that there be a standard to address them?

Answer 1. Yes, there are circumstances that are not an emergency that can lead to reliability risks if the communications are not clearly understood and followed. It is for this reason that the Independent Experts believe that the Standards must address clear protocols for all circumstances. Some examples are as follows:

- Communications where the recipient of the command is expected to act to change or preserve the state, status, output, or input of an Element or Facility of the Bulk Electric System can put the BES at risk if the instruction is not understood correctly. This is possible even if the BES is not currently experiencing an Emergency or an Adverse Reliability Impact. For example, the action could put the BES in an insecure state for the next contingency.
- While operators must always be aware of the consequences of actions they take, they should not be required to categorize the current situation or potential consequence as an Emergency or Adverse Reliability Impact to decide what communication protocol is appropriate. In addition, it may be clear that action is required even before the operator has determined that the BES is facing an Emergency or an Adverse Reliability Impact.
 - This confusion will remain if there are different communication protocols for actions under a Reliability Directive and other situations with the proposed definition of Operating Instruction.
- Most entities require safety related communications, such as closing a breaker, to use three-part communications regardless of the impact on the BES. Inconsistent protocols for a subset of reliability related actions can cause confusion.
- For peak human performance, communication protocols should be as consistent as possible, having no distinction between emergency and non-emergency situations.

The bottom line is that the Independent Experts believe that it is very important for the Standards to address communications protocols for non-emergency situations.

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Question 2. Does the latest draft of the COM-003-1 Reliability Standard address such circumstances appropriately? Is it a “quality standard” on the basis of the criteria that are being used to assess existing and future standards by the Independent Experts Panel?

Answer 2. As written, COM 003-1 Draft 6 does not address non-emergency communication appropriately since it allows for the development of non-consistent communication protocols across RCs as well as providing for a difference in communication protocols between emergency and non-emergency conditions.

- Non-consistent communication protocols can hinder coordination between adjacent RCs, as well as the TOPs and BAs in their respective RC footprints, thus negatively impacting reliable operations
- The current COM-003-1 as drafted does not align with IRO-014-1, IRO-015-1 and IRO-016-1, which require coordination between RCs, as adjacent RCs could have different communication protocols.
- FERC Order 693 P. 532 determined “We also believe an integral component in tightening the protocols is to establish communication uniformity as much as practical on a continent-wide basis. This will eliminate possible ambiguities in communications during normal, alert and emergency conditions.”
- Providing for a difference in protocol between emergency and non-emergency conditions creates a situation where an Operator must not only focus on what they are saying but also must make a decision as to what is the appropriate communication protocol to use.
- COM 003-1 R2 and R3 do not support a reliability objective; rather they only serve to mitigate compliance risk.

The Independent Experts scoring and comments are in Attachment 2. We find that COM 003-1 draft 6 is not a “quality standard”. Requirement 1 received a content score of zero out of three and a quality score of 7 out of 12. Requirements 2 and 3 should be deleted. The key deficiencies are as described above.

Question 3. Are there changes you would recommend to improve the current draft of the COM-003-1 Reliability Standard? Describe how the enhancements would address any gaps in bulk-power system reliability.

Answer 3. Following is a summary of our recommendations for COM-002-2, COM-002-3 and COM-003-1. Example language for an improved combined COM standard is in Attachment 1.

While the recommendations below allow situations where three-part

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communications is not required we believe this will not cause confusion. The distinction between an Operating Instruction and other communications such as discussion of alternatives or providing information where no action is to be taken should be clear.

- There should be only one communications protocol standard that covers both emergency and non-emergency situations.
 - **Combine COM-002-2, COM-002-3 and COM-003-1.**
- To the greatest extent practical the standard should provide for a **consistent continent-wide set of communications protocol.**
 - One exception would be the time zone for verbal and written operating communications.
- Expand applicability of COM 003-1 draft 6 to include GOs and TOs.
- Retire the term Reliability Directive in the Glossary of Terms¹.
 - Develop a new Glossary definition for **Operating Instruction:**
Communication with the intent to change or maintain the state, status, output, or input of an Element or Facility of the Bulk Electric System.
- **Describe the attributes of three-part communications.**
- Address other communications protocols (see Attachment 1).
- Matters used to demonstrate compliance or to mitigate compliance risk should not be a Requirement in the Standard but should instead be provided elsewhere in the Standard.
- **This Standard is a candidate for an internal controls compliance assessment pilot project where corrected deficiencies are not necessarily reported as violations.**
- Some versions of COM-003-1 addressed "all call" or "blast" messages. We believe that the requirement for three-part communications should only apply to communications between two parties. It is not practical to have responses to "all call" or "blast" messages.

Question 4. Should the proposed COM-002-3 Reliability Standard approved by the Board be rescinded and a new standard developed that addresses communications during both emergency and non-emergency conditions? If so, what key issues would

¹ Retirement of the term Reliability Directive will require minor, non-substantive edits to IRO-001-3, TOP-001-1 and TOP-001-2.

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it address, including an appropriate definition of “non-emergency conditions”?

Answer 4. Yes. The Independent Experts recommend that COM-002-2, COM-002-3 and COM-003-1 be combined to address both emergency and non-emergency conditions. As proposed by the Independent Experts there is no need to specifically define “non-emergency conditions.” Please see detailed recommendations in response to Question 3.

Question 5. Do you have any additional input regarding the development of the COM-003-1 Reliability Standard for the Board to consider in its deliberations on next steps?

Answer 5. The Independent Experts considered whether communication protocols could be managed by the use of a guideline, but determined that a guideline is not appropriate because:

- 3-part communications and other uniform communication protocols are crucial to maintain reliability when the state of the system is changed or maintained; and
- while 3-part communication and other uniform communication protocols are typically used today, they are not uniformly applied. A guideline would not ensure application; and
- a guideline would not fulfill the FERC directives in Order No. 693.

After reviewing responses to the five questions, the Independent Experts are recommending the Board should rescind approval of COM-002-3 and direct a redraft to combine COM-002-2, COM-002-3 and COM-003-1. Given the disparate views that have delayed completion of this work the Board should describe the expected attributes of a revised Standard and set a limited timeline for bringing the revised Standard to the Board for approval.

The Independent Experts also recommend that internal controls become the cornerstone for compliance assessment of a combined COM standard but should not be a Requirement in the Standard. The level and method for internal controls is left to the entity’s discretion but would be a good candidate for a guideline. Controls might include:

- Implementing a training program;
- Implementing a management process to periodically verify performance; and
- Taking corrective actions when needed in a timely manner.

The more effective an entity’s controls, the more benefit can be realized by the entity during compliance assessment. Therefore, the Experts recommend that this standard become the FERC-approved pilot for risk-based compliance monitoring. In

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this pilot, a determination of whether a possible violation (PV) would be assessed would be based on consideration of an entity's internal controls, as described below. Consideration of internal controls and internal compliance programs are basic auditing concepts and principles designed to be forward-looking. These concepts follow the Government Auditing Standards.²

Under this compliance assessment method, not all acts of non-compliance with the Requirements are reported as possible violations or violations. This transfers focus to accomplishing the reliability related task of providing clear, accurate communications and eliminates compliance concerns regarding zero-defect tolerance. While details should be provided in the NERC petition that reflect the Reliability Assurance Initiative (RAI) effort, high level concepts include:

- Compliance Enforcement Authorities' (CEAs) would communicate with an entity to understand the entity's internal controls.
- The level of evidence review (sample size) would be determined by the strength of an entity's internal controls and would be drawn from recent communications.
- Where non-compliant communications were in the gathered samples, the CEA would see if the entity's internal controls had identified the root cause of the non-compliance and whether the entity had taken corrective action to address the cause. If so, the CEA would note the non-compliance and verify that improved internal controls to prevent this cause were effective at the next compliance assessment. No PV would be assessed.
- Where non-compliant communications were not addressed, were prevalent or systemic, or were addressed but improved internal controls were not able to prevent recurrence, a PV would be assessed.

Again, this compliance assessment method would be detailed and included for FERC approval in the NERC petition for this standard.

²Available at: <http://www.gao.gov/products/GAO-12-331G>, April 2012.

Attachment 1
Example Requirements for Combined COM Standard

Applicable Functional Entities:

Reliability Coordinator
Balancing Authority
Transmission Operator
Generator Operator*
Distribution Provider*
Transmission Owner*
Generator Owner*

*These functional entities are to be subject to this Standard for communication protocols regarding BES Elements and Facilities, but there is no requirement for these entities to be certified under PER-003, and applicability to this standard is not intended to suggest otherwise. For Distribution Providers this Standard only applies to communication protocols regarding UVLS, UFLS and load shedding equipment.

Revise Definition:

Operating Instruction — Communication with the intent to change or maintain the state, status, output, or input of an Element or Facility of the Bulk Electric System.

R1. Each Applicable Functional Entity shall use the following three-part protocol when communicating an Operating Instruction internally or externally:

1.1. The issuer states an Operating Instruction.

1.2. The receiver of an Operating Instruction shall take one of the following actions:

1.2.1. Repeat the Operating Instruction and wait for confirmation from the issuer that the repetition was correct.

1.2.2. Request that the issuer reissue the Operating Instruction.

1.3. The issuer shall wait for a response from the receiver. After the response is received, or if no response is received, the issuer shall take one of the following actions:

1.3.1. Confirm the receiver's response if the repeated information is correct (not necessarily verbatim).

1.3.2. Reissue the Operating Instruction if the repeated information is incorrect or if the receiver does not issue a response.

1.3.3. Reissue the Operating Instruction if requested by the receiver.

- R2.** Each Applicable Functional Entity shall use the following protocols when communicating an Operating Instruction internally or externally:
- 2.1.** Use the English language for all communications between and among operating personnel responsible for the real-time control and operation of the interconnected Bulk Electric System unless otherwise required by law or regulation.
 - 2.2.** Use the 24-hour clock format when referring to clock times.
 - 2.3.** To the extent that a common time zone is not in use for each of the three interconnections – Eastern, Western and ERCOT, every communication that includes a clock time shall include the time zone.
 - 2.4.** Use common nomenclature of interface Elements and/or Facilities.
 - 2.5.** Use NATO or other alpha-numeric clarifiers when issuing an oral Operating Instruction in instances where the nomenclature of Facilities or Elements are in alpha-numeric format (e.g. a circuit breaker designated as “12B”).

Attachment 2 Independent Experts Score for COM 003-1 draft 6

Standard Number	Req Number	Text of Requirement <i>(If text is incomplete, please see entire requirement posted on NERC.com)</i>	Passed the Reliability Principle test?	Passed the Para 81 or Guide test?	Content Score 0-3	Quality Score 0-12	IE top 16 priority standards to improve	Identified as one of the key impactful requirements (high is whatever top #)
COM-003-1	R1	R1. Each Balancing Authority, Reliability Coordinator, and Transmission Operator, in each Reliability Coordinator area, shall develop, subject to the Reliability Coordinator's approval, documented communication protocols for the issuance of Operating Instructions in that Reliability Coordinator's area. The documented communication protocols will address, where applicable, the following: The use of the English language when issuing or responding to an oral or written Operating Instruction, unless another language is mandated by law or regulation. The instances, if any, that require time identification when issuing an oral or written Operating Instruction and the format for that time identification. The nomenclature for Transmission interface Elements and Transmission interface Facilities when issuing an oral or written Operating Instruction. The instances, if any, where alpha-numeric clarifiers are necessary when issuing an oral Operating Instruction and the format for those clarifiers. The instances where the issuer of an oral two party, person-to-person Operating Instruction requires the receiver to repeat, restate, rephrase, or recapitulate the Operating Instruction and the issuer to: Confirm that the response from the recipient of the Operating Instruction was accurate; or Reissue the Operating Instruction to resolve a misunderstanding.	Yes	Yes	0	7	Yes	High
COM-003-1	R2	Each Balancing Authority, Reliability Coordinator, and Transmission Operator shall implement its communication protocols developed in Requirement R1 so that the failure to use the protocols by the issuer of an Operating Instruction does not result in an operating condition that requires the issuance of a Reliability Directive by the original issuer of the Operating Instruction or by another Balancing Authority, Reliability Coordinator, or Transmission Operator.	No					N/A
COM-003-1	R3	Each Balancing Authority, Transmission Operator, Generator Operator and Distribution Provider shall repeat, restate, rephrase, or recapitulate an Operating Instruction when required by the issuer of an Operating Instruction in its communication protocols developed in Requirement R1 so that the failure to repeat, restate, rephrase, or recapitulate the Operating Instruction does not result in an operating condition that requires the issuance of a Reliability Directive by the original issuer of the Operating Instruction or by another Balancing Authority, Reliability Coordinator, or Transmission Operator.	No					N/A

Independent Experts Content Score Details for COM 003-1 draft 6

Standard Number	Req Number	Supports a Reliability Objective (as defined by the Reliability Principles) (Yes/No/Maybe)	Para 81 Retire requirement?	Appropriate as a guide rather than a standard?	Is everything covered?	Are the correct Functional Entities Identified?	Does the content seem to be technically correct? (Including correct level of actions for accountability - Who, What, When)	Passed the Reliability Principle test?	Passed the Para 81 or Guide test?	Content Score 0-3
COM-003-1	R1	Yes - #1, 3	No	No	No - this should cover both emergency and Normal communications. *Protocols should not be unique to each RC; there should be continent wide consistency for the protocols. These protocols should be identified in the standard. (supported by FERC Order No. 693 P.532). *Protocols need to be strengthened/tightened - see answers to questions. **"All-calls" should be addressed in the requirement separate from 3-part communication. *3-part communication should be used whenever an RC, TO or BA requests action to be taken on the system (BPS), regardless of whether it is identified as a Reliability Directive.	No - If standard was drafted appropriately, this requirement would lay out the protocols and all of the applicable entities would be subject to them. Currently, only the BA, DPs, GOP, RC and TOP are subject to the standard. The GO and TO functional entities should also be included.	No - this should cover both emergency and Normal communications. *Protocols should not be unique to each RC; there should be continent wide consistency for the protocols. These protocols should be identified in the standard. (supported by FERC Order No. 693 P.532). *Protocols need to be strengthened/tightened - see answers to questions. **"All-calls" should be addressed in the requirement separate from 3-part communication. *3-part communication should be used whenever an RC, TO or BA requests action to be taken on the system (BPS), regardless of whether it is identified as a Reliability Directive.	Yes	Yes	0
COM-003-1	R2	No - this requirement only serves to mitigate compliance risk						No		
COM-003-1	R3	No - this requirement only serves to mitigate compliance risk						No		

Independent Experts Quality Score Details for COM 003-1 draft 6

Standard Number	Req Number	Should it be kept as it is and not consolidated with other standards or requirements?	Is it RBS format? Drafted as one of these requirement types: Performance, Risk-based (preventative), Capability, & Format for subparts	Is it technology neutral? (Yes/No)	Applicability - are the expectations for each function clear?	Does the requirement align with the Purpose?	Is it a higher solution than the lowest common denominator (considering cost)?	Measurability	Technical basis in engineering and operations	Complete? Self-contained	Clear language? Is RRO clarified?	Can it be practically implemented?	Consistent Terminology	Quality Score 0-12
COM-003-1	R1	No - should be collapsed with COM-002-3	Yes	Yes	Yes	No - this requirements does not reduce the possibility of miscommunications; it increases the possibility of miscommunications	No - however it would be lower if there were no protocols	Yes	No - will allow for inconsistent protocols that may hinder communications	Yes	Yes	No - conflicts with IRO-014-1, IRO-015-1 and IRO-016-1 (which may be retired under pending standards (IRO-014-2))	Yes	7
COM-003-1	R2													
COM-003-1	R3													