Information Document
Communications
ID #2012-001RS

Information documents are not authoritative. Information documents are for information purposes only and are intended to provide guidance. In the event of any discrepancy between an information document and any authoritative document[1] in effect, the authoritative document governs.

1 Purpose

This information document relates to the following authoritative document:

- reliability standard COM-001-AB-3, *Communications* ("COM-001-AB-3")

The purpose of this information document is to provide stakeholders with clarification on COM-001-AB-3.

2 Control Room (R2, R3.A1, R4.A1, R7.A1, R7.A2, R8.A1, R8.A2, R12, and R13)[2]

The obligation of each Responsible Entity to have primary and backup voice communication capability in each control room is repeated in several requirements in COM-001-AB-3.[3] This section clarifies the meaning of control room for the purposes of COM-001-AB-3.

2.1 Control Rooms for Each Operator of a Transmission Facility and Operator of an Electric Distribution System

The AESO considers a control room for an operator of a transmission facility and operator of an electric distribution system to be:

(a) a designated area that hosts operating personnel to monitor and control a transmission facility or an electric distribution system in real-time to perform reliability related tasks;

(b) used for normal and emergency operating conditions; and

(c) generally remote for designated TFOs and operators of electric distribution systems and generally local for industrial complexes.

2.2 Control Room for Each Operator of a Generating Unit and Operator of an Aggregated Generating Facility

The AESO considers a control room for each operator of a generating unit and operator of an aggregated generating facility to be:

(a) a designated area that hosts operating personnel to monitor and control one or more generating unit or aggregated generating facility in real-time;

(b) used for one or both of normal and emergency operating conditions; and

(c) either local or remote to the generating unit or aggregated generating facility.

2.3 Operating Personnel Access to Control Room Voice Communication Systems

The AESO expects each operator to have its primary and backup voice communication system easily accessible. Forwarding of the control room primary voice communication system number to a cellphone is acceptable to ensure the operator can respond to calls using the primary voice communication system while taking care of other possible duties.

Should the operator's primary voice communication system fail when the operator is not near the backup

[1] "Authoritative document" is the general name given by the AESO to categories of documents made by the AESO under the authority of the *Electric Utilities Act* and associated regulations, and that contain binding legal requirements for either market participants or the AESO, or both. Authoritative documents include the ISO rules, the reliability standards, and the ISO tariff.

[2] Included for consultation purposes.

[3] Includes requirements R2, R3.A1, R4.A1, R7.A1, R7.A2, R8.A1, R8.A2, R12, and R13 of COM-001-AB-3.

voice communication system, i.e., when the primary voice communication system is a cellphone or forwarded to a cellphone, there is a risk that the operating personnel would not be aware of the failure. In such situations, the AESO or each directly connected and adjacent operator of a transmission facility may not be able to reach the operating personnel through the operator's backup voice communication system. To mitigate this risk, the AESO suggests that the operator include flashing notification for missed backup communication system calls or broadcasting of backup communication system calls through the facility intercom.

3 Primary Voice Communication Capability (R3.A1, R7.A1, and R8.A1)

Requirements R3.A1, R7.A1, and R8.A1 of COM-001-AB-3 sets out primary voice communication capability requirements for each operator of a transmission facility, operator of an electric distribution system, and operator of a generating unit or an aggregated generating facility, respectively. This section provides clarity on primary voice communication capability options and required criteria set out in COM-001-AB-3.

3.1 Voice Communication Capability Options (R3.A1, R7.A1, and R8.A1)

The operator may choose any primary voice communication capability that meets the criteria set out in requirement R3.A1, R7.A1, and R8.A1 of COM-001-3. This includes Voice Over Internet Protocol (VoIP) service; a landline, also referred to as a twisted-pair line service; and cellphone service.

3.2 Direct Access Telephone and Public Telephone Network (R3.A1(a), R7.A1(a), and R8.A1(a))

In accordance with requirement R3.A1(a), R7.A1(a), and R8.A1(a), the term "direct access telephone" means the entities can communicate with the operator using the primary voice communication capability without going through an automated switchboard or reception desk. The operator is expected to ensure that any entity that dials the primary telephone number provided is directly connected to the control room primary telephone. The term "public telephone network" refers to the commercial telephone system.

3.3 Not Degraded by Any Other Communication Functionality or Any Other Data Transfer Activities if There is Any Shared Equipment (R3.A1(b), R7.A1(b), and R8.A1(b))

The following are two types of communication system configurations that have a risk of voice communication capability degradation:

(a) firstly, VoIP-type services that share network hardware and the bandwidth of procured communication services, such as private connections or the internet. For these services, there is the risk of degradation during congestion on the network hardware or communication service. At times of higher data usage such as during automatic data backups, the degradation can result in unavailability of the primary voice communication system and reduced voice quality. Each operator that uses VoIP-type services for its primary voice communication capability is expected to account for all applications that use its network hardware and communication service when deciding on the bandwidth capacity and network configuration. Each operator may need to consider prioritizing the voice communication capability through traffic prioritization or limitations to other services.

(b) secondly, the control room telephone line that is used for other applications, such as fax machines or dial-up modems. This type of set up can prevent the operator from receiving telephone calls when it is being used for other applications. To mitigate this risk, the AESO expects operators to use a separate control room telephone line for its primary voice communication system.

The operator is expected to ensure that its primary control room telephone line is given the highest priority in its system design in situations where the operator's phone system equipment supports the control room telephone and other phones.

4 Backup Voice Communication Capability

4.1 Testing Procedure (R9)

In accordance with the testing requirement set out in requirement R9, the AESO will determine a schedule to test all backup voice communication capability with the AESO. When available, this will be provided in Appendix 1 of this information document. The AESO may be required to postpone testing to alternative days if conditions do not allow for testing on the scheduled dates. In such situations, the AESO will advise each operator of the change as soon as practicable.

4.2 Successful Test (R9)

The AESO considers a test of the backup voice communication capability to be successful when: the test call is established, the entity responds to AESO's test call, and both parties can hear and understand each other talking. An echo or a delay of the satellite phone during backup interpersonal communication system testing does not constitute a failed test as long as each party can successfully hear and understand each other.

For generator control rooms that are not staffed under normal operation, the operator of generating unit or aggregated generating facility may initiate their backup voice communication system test when on site.

4.3 Utility Orderwire Service (R15.A1, Appendix 1, 2, and 3)

A definition of utility orderwire service is provided as a footnote to requirement R15.A1 of COM-001-AB-3. Examples of passive telecommunication infrastructure referenced in the definition includes dark fibre or a leased telecom tower, where all the active electronics remain owned and operated by one or more market participant. The intent is to ensure that, during a restoration event, each operator has voice communication capability and can maintain and restore its infrastructure for voice communication capability during restoration efforts.

4.4 Extended Power Capability (R15.A1)

Pursuant to requirement R15.A1 of COM-001-AB-3, the operator is expected to ensure that all of its equipment that is used for the operation of the satellite phone system or utility orderwire system within the control room site will remain operational during an extended main power outage of its control room service. The backup power supply for substation equipment beyond the control room site is outside the scope of R15.A1 of COM-001-AB-3.

Examples of supporting documents that the operator may provide to show compliance with requirement R15.A1 include load calculation documents and equipment specifications, such as, battery, phones, switches. If the backup power supply that is used to meet requirement R15.A1 is also used as a backup power supply for other equipment, then it is expected that the operator will include the load associated with this equipment in their load calculation.

4.5 Satellite Telephone System Options (Requirement R14.A1, Appendix 1, 2, and 3)

As set out in Appendix 1, 2, and 3 of COM-001-AB-3, satellite telephone systems may be used to comply with the backup voice communication capability requirement.

The AESO approves for use 2 satellite telephone systems: Mobile Satellite (MSAT) and Iridium. Each entity, that uses a satellite telephone system to meet its backup voice communication capability requirements set out in Appendix 1, 2, and 3 of COM-001-AB-3 is expected to use one of these systems. If an entity would like to use a different satellite telephone system, please contact the AESO at rfi@aeso.ca. The AESO will consider adding to the list of approved systems after consultation with each impacted operator of a transmission facility.

Each operator of a transmission facility that uses a satellite telephone system to meet its backup voice

communication capability requirements set out in Appendix 2, is expected to decide on and agree to a common system to use with each entity that is directly connected to its transmission facility. The AESO expects each operator of a transmission facility to reasonably accommodate any satellite telephone system that has sufficient interest from directly connected operators.

4.6 List of Transmission Facilities referenced in Appendix 1, 2 and 3 of COM-001-AB-3

As referenced in Appendices 1, 2, and 3 of COM-001-AB-3, the list of transmission facilities are as follows:

-list of transmission facilities will be added after it is finalized

4.7 Backup Control System Options for Generating Unit and Aggregated Generating Facility Control Rooms (Appendix 3)

When determining the backup control system requirements for a control room as set out in Appendix 3 of COM-001-AB-3, the operator of one or more generating unit and aggregated generating facility is expected to consider the total synchronous generation and inverter-based generation that can be controlled at the control room. Two examples have been provided below to assist the operator in determining the requirement for each of its control rooms.

Example 1: An operator with a control room that can control 200 MW of synchronous generation and 400 MW of inverter-based generation may use either a satellite telephone service or a utility orderwire service to meet its backup voice communication capability requirement at that control room.

Example 2: An operator with a control room that can control 350 MW of synchronous generation and 100 MW of inverter-based generation is expected to use a utility orderwire service to meet its backup voice communication capability requirement at that control room.

5 NERC Guidance Material for NERC COM-001-3

The AESO generally agrees with the NERC guidance found in NERC COM-001-3.[4] The AESO is providing the following modified NERC guidance for clarity to ensure stakeholders are aware of how to apply this NERC guidance to Alberta. This modified guidance takes into account differences in: the scope of COM-001-AB-3 when compared to NERC COM-001-3; AESO's *Consolidated Authoritative Document Glossary* when compared to NERC's *Glossary of Terms*; and AESO and NERC functional entity types.

5.1 Rationale for Requirement R12

The focus of the requirement is on the capabilities that an entity must have for the purpose of exchanging information necessary for the reliable operation of the interconnected electric system. That is, the entity must have the capability to communicate internally by, "any medium that allows two or more individuals to interact, consult, or exchange information."[5] The standard does not prescribe the specific type of capability (i.e., hardware or software). The determination of the appropriate type of capability is left to the entity. Regardless, the entity must[6] have the capability to exchange information whenever the internal interpersonal communications may directly impact operations of the interconnected electric system. Therefore, the applicable entities must have the capability to exchange information between control rooms of that functional entity. For example, an operator of a transmission facility with multiple control rooms that are geographically separated must have the capability to communicate internally between or

[4] NERC, COM-001-3 Communications, Supplement Material section (PDF pg. 17 and 18), Effective Date: October 28, 2016, Available at: www.nerc.com.
[5] NERC, Glossary of Terms, Definition of "Interpersonal Communication" (PDF p.15), Effective: October 1, 20215. Available at: www.nerc.com.
[6] NERC language has been maintained where possible. This includes authoritative words, such as "must" and "should". The AESO is notes that information document content is not authoritative.

among those control rooms.

The communication capability may occur through any medium that supports interpersonal communication, such as land line telephone, cellular device, VOIP, satellite telephone, radio, or electronic message. Also, applicable entities must have the capability to exchange information between each control room and field personnel. For example, operator of a transmission facility operating personnel providing instruction to a field personnel to perform a reliability activity, such as switching a system element. In the course of normal control room operation, operating personnel within a single control room communicate as needed to ensure the reliability of the interconnected electric system, including face-to-face communications. These internal communications are ongoing and occur throughout the day as part of day-to-day operations. However, these types of communications are not the focus of this requirement. The focus is on the capability of an entity to communicate internally where face-to-face communications are not available.

5.2 Rationale for Requirement R13

In this requirement, control room has the meaning provided in section 2 of this information document. Examples of an operator of an electric distribution system exchanging information necessary for the reliable operation of the interconnected electric system include operator of an electric distribution system included in restoration plans, load shed plans, load reconfiguration, and voltage control plans. The operator of an electric distribution system must have the capability to exchange information whenever the internal interpersonal communications may directly impact operations of the interconnected electric system. Therefore, the operator of an electric distribution system must have the capability to exchange information between control rooms, as necessary. For example, an operator of an electric distribution system with multiple control rooms that are geographically separated, where face-to-face communications are not available, must have the capability to communicate internally between or among those control rooms.

6 Distributed Energy Resource Voice Communication System Requirements

There are currently no defined voice communication system requirements in COM-001-AB-3 for a distributed energy resource. However, the AESO recommends that, at minimum, each operator of a distributed energy resource has primary voice communication capability to communicate with the operator of the electric distribution system that is directly connected to its distributed energy resource and with the AESO. Each operator of a distributed energy resource may also be subject to voice communication system requirements by the operator of the electric distribution system.

Revision History

Posting Date	Description of Changes
TBD	Updated to add clarity on: the meaning of control room, primary and backup voice communication capability requirements, extended power system capability, list of transmission facilities per Appendix 1, 2 and 3 of COM-001-AB-3, the applicability of NERC guidance material, and voice communication system capability for operators of distributed energy resources. Removed content relating to COM-001-AB-1.1 as it is not applicable to COM-001-AB-3.
2013-10-01	Updated the authoritative document reference and combined the “Background” section with the “Purpose” section.
2012-03-07	Initial release.