



# Communication Protocols

## Communication Protocols

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### *Student Guide*

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# Objectives

- Identify the various PJM communication protocols and procedures
- Evaluate the use of PJM Communication Protocols in sample communication exchanges

# Overview of PJM Communication Protocols

## PJM Communication Protocols



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## PJM Communication Protocols

- PJM Communication Protocols align with:
  - **NERC Standard COM-002-4:** Operating Personnel Communication Protocols
  - **PJM Manual 01:** Control Center and Data Exchange (Section 4.5)
    - Applicable to all Operators/Dispatchers who issue/receive Operating Instructions
- The purpose of the PJM Communication Protocols is to improve communications when issuing and receiving Operating Instructions

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# Operating Instructions

## PJM Communication Protocols

An **Operating Instruction** is a command by operating personnel responsible for the Real-Time operation of the interconnected Bulk Electric System to ***change or preserve the state, status, output or input*** of an Element of the Bulk Electric System or Facility of the Bulk Electric System.



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## Examples

### Operating Instructions\*

- Ordering transmission equipment in or out of service
- Load shed instructions
- Ordering generation MW/MVAR output changes
- Ordering generation online or offline (either in real time or scheduled in advance)

*\*Partial List*

### Non-Operating Instructions\*

- Confirmation of ratings or power flows
- Discussions of operational options
- Discussions of generator status or availability

*\*Partial List*

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# Member Responsibilities

## PJM Communication Protocols

*What are the requirements of a Member Operator when issued an Operating Instruction?*

- PJM Members who are unable to comply with an operating Instruction should communicate this to PJM **immediately**
  - May include restrictions based on safety, loss of life, or damage to equipment
  - It is important to provide notification and reasoning as soon as possible

# Operating Instructions During Emergencies

## PJM Communication Protocols

- System Operators must use proper communication protocols for the issuing and receiving of Operating Instructions
- NERC COM-002 has a zero tolerance for failures to use 3-Part Communication during an Emergency
  - Compliance implications for not utilizing 3-part communication are more severe during an emergency



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## PJM Communication Protocols

Point at which the Emergency Begins	Point at which the Emergency Ends
Any real-time (actual) IROL exceedance	Real-time IROL exceedance ended
Any real-time (actual) SOL exceedance above a facility's emergency thermal rating	When the real-time SOL exceedance is below the emergency thermal rating
Any real-time (actual) SOL exceedance below a facility's emergency low voltage rating	When the real-time SOL exceedance is above the emergency low voltage rating
<i>Capacity Emergencies: Steps 1 — 10</i>	When the final step is cancelled
<i>Transmission Security Emergencies: Steps 1 — 10</i>	When the final step is cancelled
Load Shed issued	Load shed has mitigated the emergency condition

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# Operator Identification

## Operator Identification

- *Last name* should always be used for identification (at a minimum), along with company name
  - Best practice is to also include *first name*





# Equipment Identification

## Equipment Identification

- **Transmission Lines** - Terminal to terminal, voltage level and line number
- **Other Equipment/Substation** - Station name, equipment number, equipment type
- **Generating Station** - Station name, unit number



# Time References & Phonetic Alphabet

## Time References & Phonetic Alphabet

12-to-24 Hour Conversion Table	
12:00 AM = 00:00	12:00 PM = 12:00
1:00 AM = 01:00	1:00 PM = 13:00
2:00 AM = 02:00	2:00 PM = 14:00
3:00 AM = 03:00	3:00 PM = 15:00
4:00 AM = 04:00	4:00 PM = 16:00
5:00 AM = 05:00	5:00 PM = 17:00
6:00 AM = 06:00	6:00 PM = 18:00
7:00 AM = 07:00	7:00 PM = 19:00
8:00 AM = 08:00	8:00 PM = 20:00
9:00 AM = 09:00	9:00 PM = 21:00
10:00 AM = 10:00	10:00 PM = 22:00
11:00 AM = 11:00	11:00 PM = 23:00

ALPHA	HOTEL	OSCAR	VICTOR
BRAVO	INDIA	PAPA	WHISKEY
CHARLIE	JULIET	QUEBEC	X-RAY
DELTA	KILO	ROMEO	YANKEE
ECHO	LIMA	SIERRA	ZULU
FOXTROT	MIKE	TANGO	
GOLF	NOVEMBER	UNIFORM	

# 3-Part Communication

## 3-Part Communication



- The use of 3-Part Communication is **required** when issuing or receiving an Operating Instruction, during both normal and emergency operations
  - Best practice is to use 3-Part Communication for all exchanges
- In all steps, **both** the sender **and** the receiver play a role in making sure the message is clear, understood and all steps are completed
- Internal audits are performed to verify the use of 3-Part Communication

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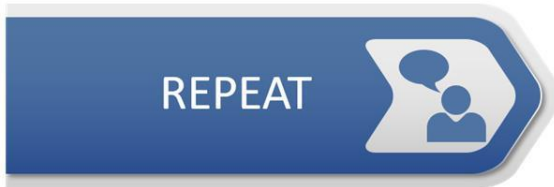
## 3-Part Communication



- Speak slowly
- Clear and Concise
- Start over (if recipient appears confused)

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### 3-Part Communication



- Ask for clarification if necessary
- Does the recipient *understand* the information
- Repeat back information correctly and thoroughly
- **Note:** Provider/Sender of information should prompt repeat of information if not done voluntarily

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### 3-Part Communication



- Repeat message if necessary
- Correct receiver if information is repeated incorrectly
- Provide *proper* confirmation

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# Communication Exercise

## Communications Review

### *"You be the Auditor"*

- Review the following transcripts of operator calls
- Evaluate the use of PJM Communication Protocols during the exchange
- Audit each call individually
- Answer assigned questions and discuss audit results in groups
- Debrief

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## Communications Review

### Debrief Questions

- How would you rate the use of 3-Part Communication? (Consider NERC Standards and PJM Manual 1 requirements )
- What communication practices used in this call could be improved? How?
- Were there any communication practices which were interpreted/scored differently?

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## Call #1

<b>Member Operator</b>	X Energy, this is Kris
<b>PJM Operator</b>	Kris, Douglas at PJM
<b>Member Operator</b>	Yes, sir.
<b>PJM Operator</b>	For E-Dart 225746, I ran a study removing the 138KV A-91 Firestone-Gate. No issues, you can go ahead and proceed with that outage.
<b>Member Operator</b>	I understand we have PJM's permission then to proceed with removing from service the Firestone-Gate line.
<b>PJM Operator</b>	All correct.
<b>Member Operator</b>	Alright, Thank you sir.
<b>PJM Operator</b>	Thank you, Bye.
<b>Member Operator</b>	Talk to you later, Bye.

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## Call #2



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X Energy	X Energy, this is Matt.
Power Co.	Matt, Taylor at Power Co.
X Energy	Hey Taylor, how's it going, man?
Power Co.	Good, man. Hey, calling uh about my front two Mountain View Units.
X Energy	Ok.
Power Co.	Uh, PJM is requesting Mountain View CTs 1, 2, and 3 online for economics, uh 0500.
X Energy	Ok
Power Co.	Uh, can we stagger those, like you know, ten, fifteen minutes apart?
X Energy	Definitely can. So, do you want the first one online at 0500 or...
Power Co.	First one hit the line...0500.
X Energy	Ok, alright. Ummm, here, I got a question after this, but I'll repeat this back to you real quick. Umm, at uhh 0050, uh, PJM has requested Mountain View Units 1, 2, and 3 online for economics uhh starting at 0500.
Power Co.	That's correct.
X Energy	Staggered ten to fifteen minutes apart.
Power Co.	Yep, that's all correct.
X Energy	Umm..so do you guys have a plan on the Hilltops yet?
Power Co.	Ahh, we're looking at it right now.
X Energy	OK

Power Co.	Ahh, we're looking...I have my Power Director looking at it. I'm going to look at trying to bring a couple of them...so...I mean, I see the price has escalated on 'em, but um...
<b>X Energy</b>	Well here's the thing. I guess just to kinda give you background, they had went ahead and...and same with Mountain View. They had bought the gas to run this morning because you guys had called like the scheduling guys I guess? Maybe Bradley did.
Power Co.	Yeah
<b>X Energy</b>	For conservative operations
Power Co.	OK, so you bought gas to run the...
<b>X Energy</b>	Yea, that's my understanding, that you guys called your scheduling, maybe? I think it was maybe Bradley White, I'm not sure
Power Co.	OK
<b>X Energy</b>	And they said, you know, hey we want you guys to run from 0500 to 1000 on all the Hilltop and all the Mountain View. They went and bought the gas already, I mean very expensive, obviously.
Power Co.	What uh, how, how many run hours do they have at Mountain View for the fuel?
<b>X Energy</b>	On the fuel, on gas, uh, they have, uh, it'd be from this gas, today's gas from 0500 to 1000.
Power Co.	OK and then you guys can put two or more gas if needed
<b>X Energy</b>	And then they have, let's see, here's the thing, let me get my exact wording here that I got handed down to me. So uhh yeah...so it'd be from like, uh, 0500 to 2100
Power Co.	Correct
<b>X Energy</b>	And this, yead, and this gas is purchased. I guess you guys used conservative operations.

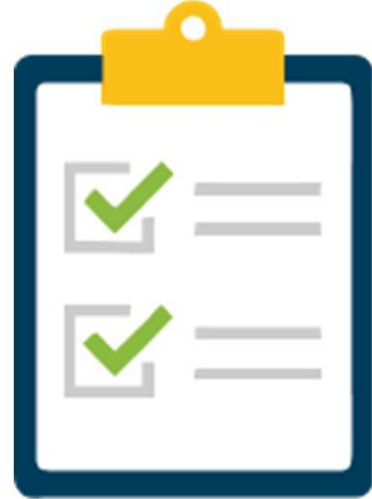


Power Co.	Yeah, OK
X Energy	Yeah
Power Co.	Let me, uh, like I said I'll give ya, I have the Power Director looking at the Hilltops right now
X Energy	OK
Power Co.	Umm, but so far Mountain View, uhh...is the only one that I can commit at this time
X Energy	OK, alright, thank you
Power Co.	Thanks, man
X Energy	Bye

# Knowledge Check!

## Knowledge Check!

Let's Review!



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1. **Acceptable reasons for not complying with an Operating Instruction include:**
  - a. *There is no financial benefit*
  - b. *The Member Company does not agree with the Operating Instruction*
  - c. *Damage to equipment*
  - d. *It is not normal procedure*
  
2. **3-Part Communication is required for all Operating Instructions during both emergency and non-emergency conditions.**
  - a. *True*
  - b. *False*

# Summary

## Questions

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