

Transmission ITP

Communications

PJM State & Member Training Dept.

Objectives



The student will be able to:

- Identify the various PJM communication protocols and procedures
- State the function and use of the PJM All-Call System

PJM Communication Protocols

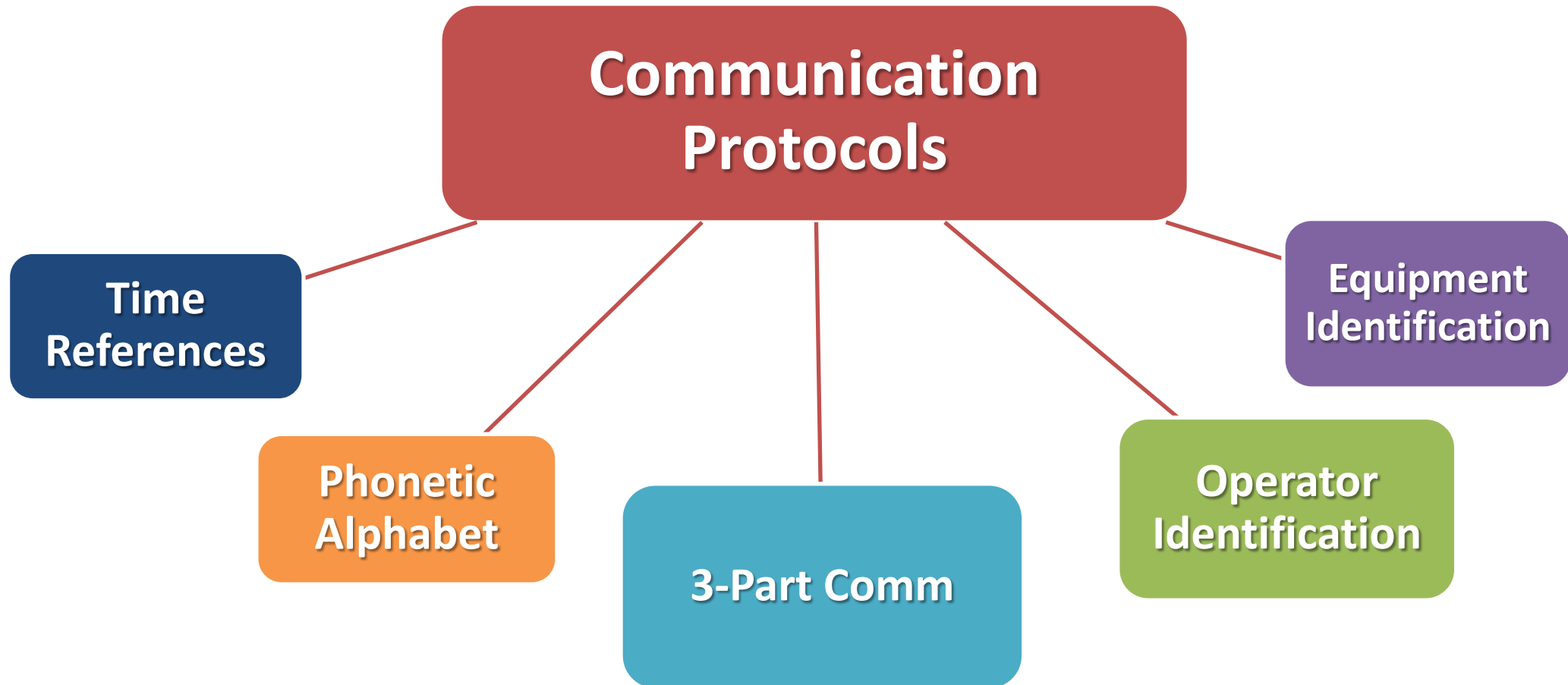
3-Part Communication

PJM Communication Protocols

- PJM Communication Protocols coincide with NERC Standard COM-002-4*
- Communication Protocols from PJM Manual 1
- The purpose is to improve communications when issuing and receiving Operating Instructions

*PJM Manual-1, Section 4.2.4
COM-002-4 effective 7/16/16

PJM Communication Protocols



PJM Communication Protocols

- Communication protocols are based on issuance of an Operating Instruction
- The use of 3-part communication would be required when issuing or receiving an Operating Instruction
- This would apply during both normal and emergency operations

*PJM Manual-1, Section 4.2.4

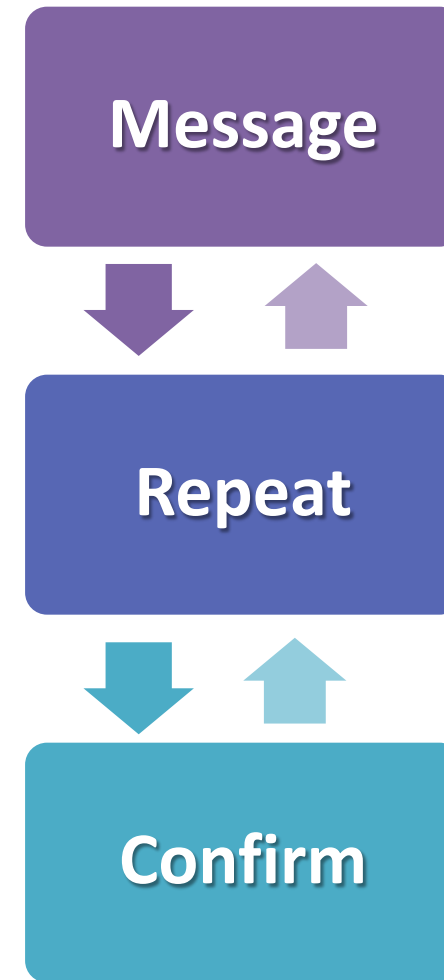
PJM Communication Protocols

Operating Instruction Definition

- 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

3-Part Communication

- “Operating Instructions” as defined in M-1 required the use of 3-Part Communication
- Internal audits are performed to verify use of 3-Part Communication
- Best practice:
 - Use of 3-Part Communication for all exchanges



3-Part Communication

Message



- ✓ Clear & Concise
- ✓ Speak Slowly
- ✓ Re-start communication process when signs of confusion are present

3-Part Communication

Repeat



- ✓ Ask for clarification if necessary
- ✓ *Understand* information
- ✓ Repeat back information correctly and thoroughly

Note: Provider/Sender of information should prompt repeat of information if not done voluntarily

3-Part Communication

Confirm

- ✓ Repeat message if necessary
- ✓ Correct receiver of information if repeated incorrectly
- ✓ Provide proper confirmation

Acceptable	Unacceptable
Yes, that is correct	Yeah, man
Ok, that is correct	OK
Correct	Alright, yeah, bye

PJM Communication Protocols

Operating Instruction Examples*

Ordering Transmission equipment in or out of service

Load shed instructions

Ordering generation MW/MVAR output changes

Ordering generation online or offline (real-time or in advance)

*Partial List

PJM Communication Protocols

Non-Operating Instruction Examples*

Confirmation of ratings or power flows

Discussion of operational options

Discussions of generator status availability

*Partial List

PJM Communication Protocols

Additional Protocols & Requirements

- Last name should always be used for identification (at a minimum) along with company name
- All-Call Messages will be confirmed based on confirmation of acknowledgement of message
 - Indicated by Operators selecting “2” to acknowledgement the message

PJM Communication Protocols

Additional Protocols & Requirements (con't)

- Time references should be stated in 24 hour format using time zones when appropriate
- Phonetic alphabetic may be used to clarify information as necessary

PJM Communication Protocol

Equipment & Transmission Line 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

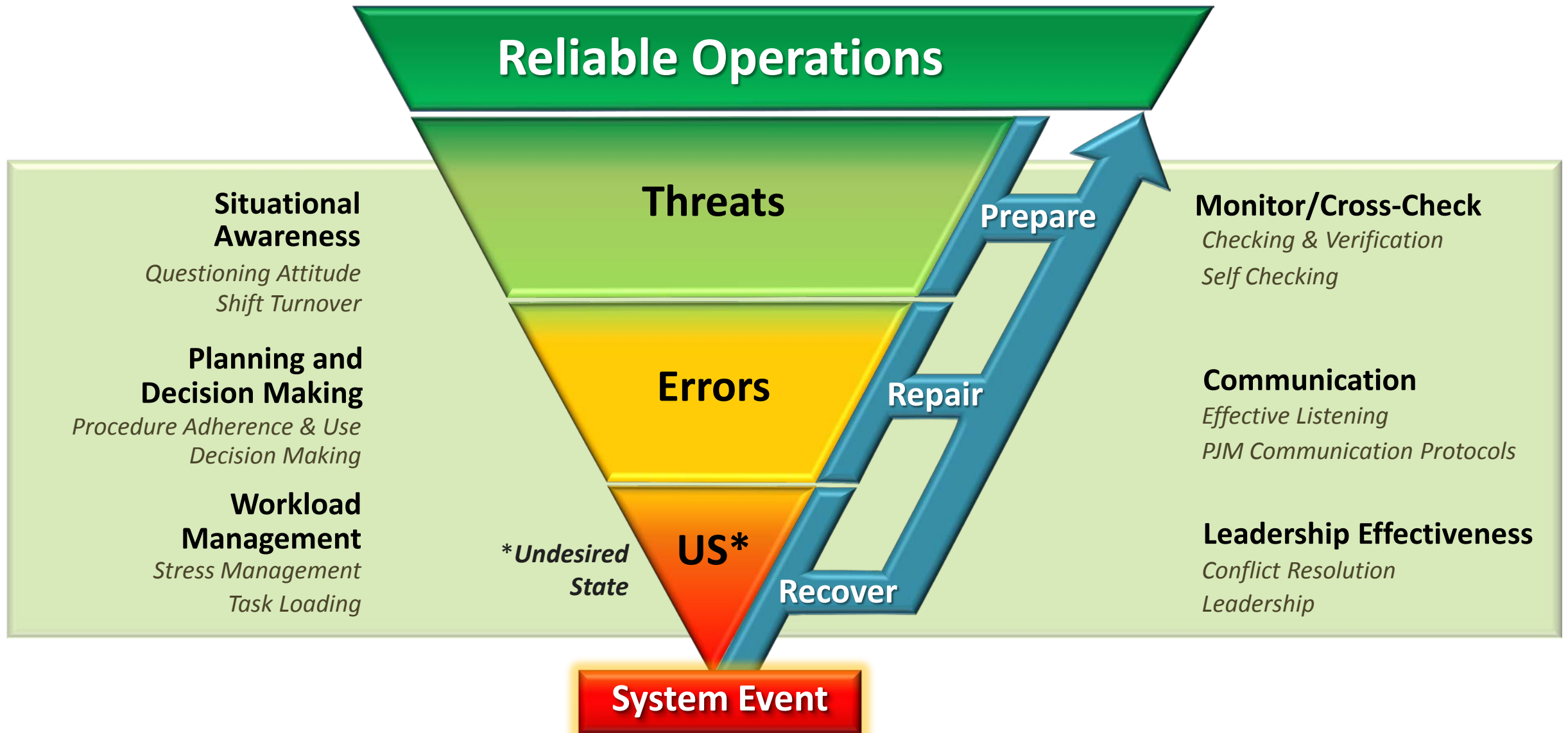
PJM Operating Instructions

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

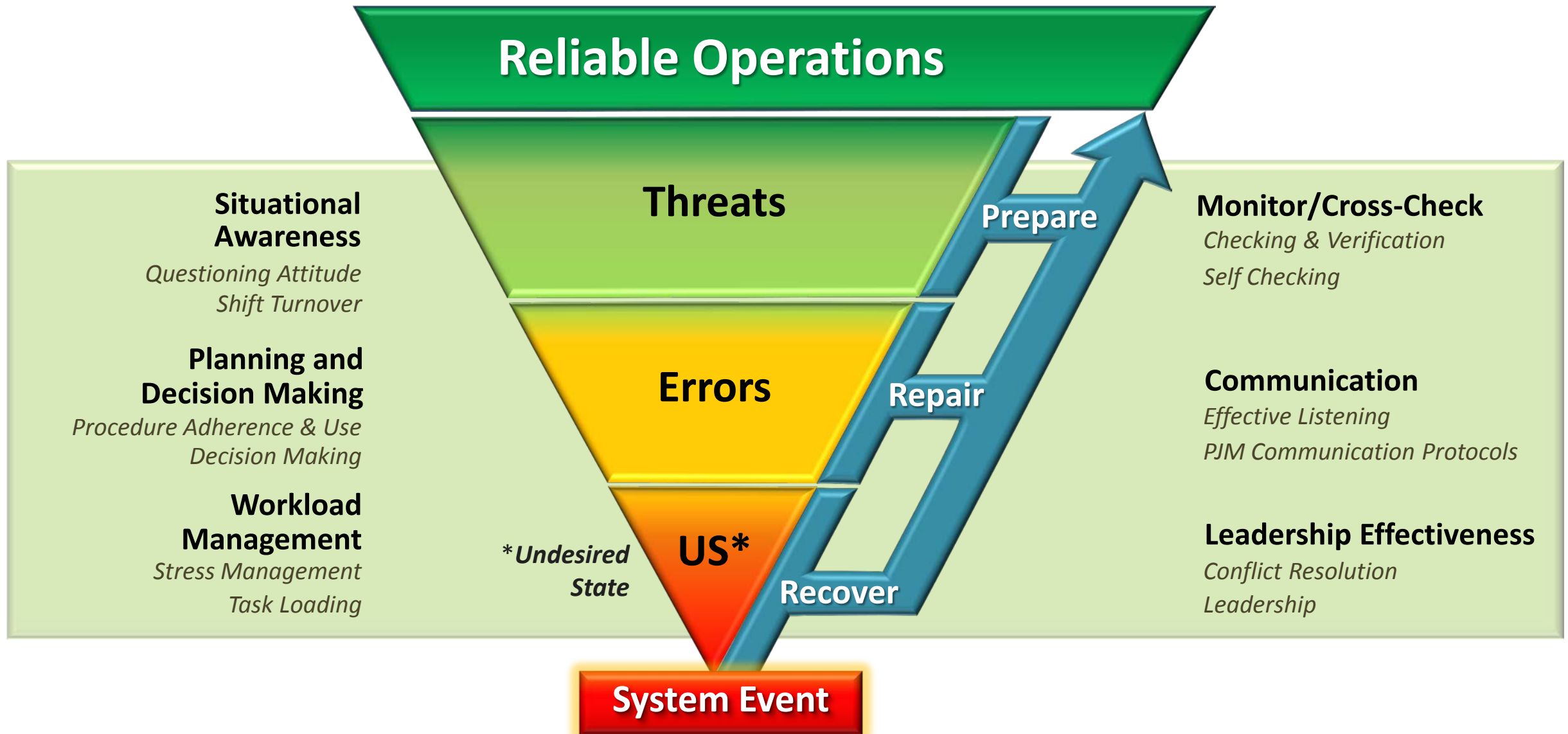
- PJM Members who are unable to comply with an Operating Instruction should communicate this to PJM immediately
- Restrictions based on ***safety, loss of life, or damage to equipment*** would fall into this category
- If a Member Operator is unable to comply with an Operating Instruction, it is important for them to provide their reasoning as soon as possible

PJM CRM-TEM Model

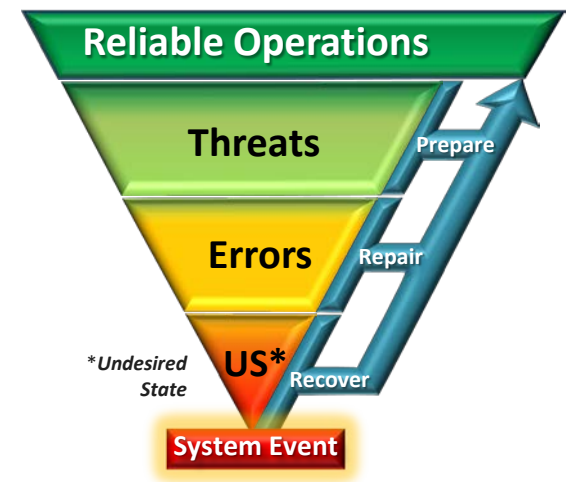
PJM CRM-TEM Model



PJM CRM-TEM Model



PJM CRM-TEM Model

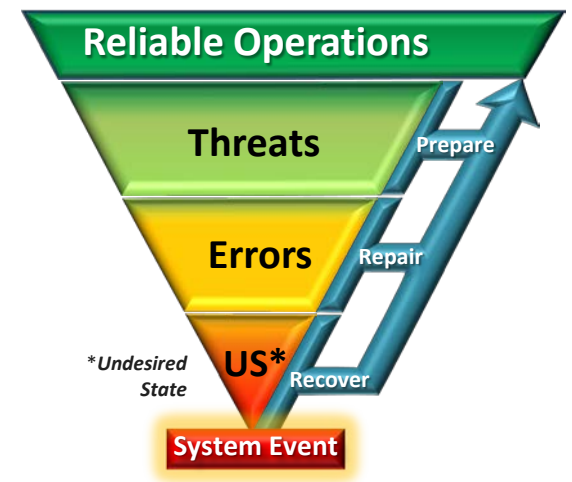


Situational Awareness *Questioning Attitude* *Shift Turnover*

Consistently and correctly assesses the current and anticipated environment; identifies and anticipates threats and errors

- Ask questions
- Stop when unsure
- Avoid situations where you hear “I think” or “I assume”
- Over-communicate
- Write it down
- “What would I want to know”
- Ask questions

PJM CRM-TEM Model

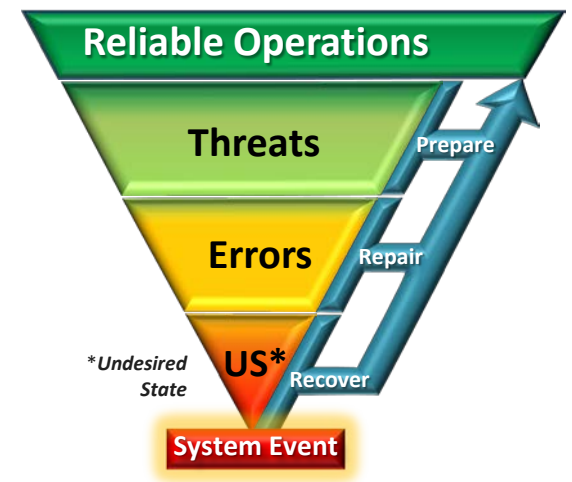


Planning and Decision Making *Procedure Adherence & Use Decision Making*

Incorporates relevant information, develops operational strategies and chooses the best course of action consistent with safe, reliable, and efficient operations

- Use current version
- Appropriate for condition
- Follow in sequence
- Identify and correct deficiencies
- Resources
- Gather Recommendations
- Best idea
- State intentions
- “Bottom Lines”
- Resolve Conflicts

PJM CRM-TEM Model



Workload Management

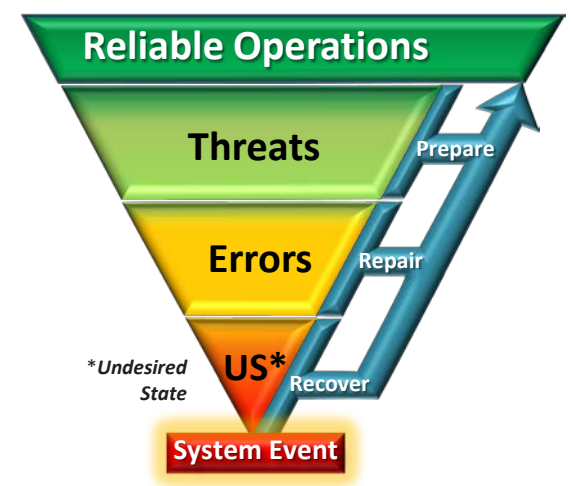
Stress Management

Task Loading

Effectively manages tasks to optimize overall performance

- Anticipate
- Recognize stress
- Acknowledge confusion & realign
- Communicate calmly
- Avoid if possible
- Anticipate, get help
- Write it down
- Checklists
- Memory Prompts

PJM CRM-TEM Model



Monitor/Cross-Check

Checking & Verification
Self Checking

Actively verifies systems and other team member actions;
resolves inconsistency and uncertainty

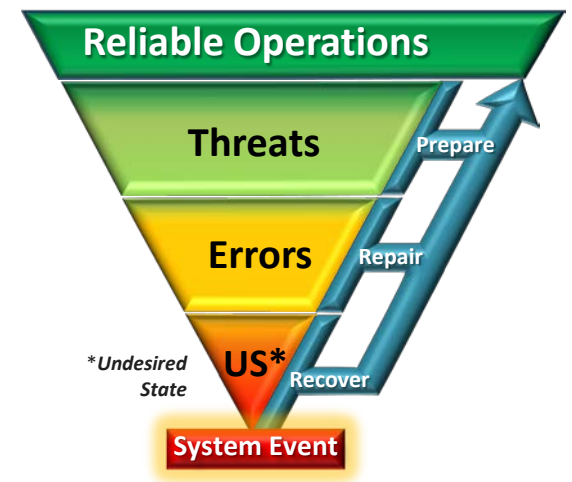
Peer Check

- Concurrent
- Independent

STAR

- Stop
- Think
- Act
- Review

PJM CRM-TEM Model



Communication

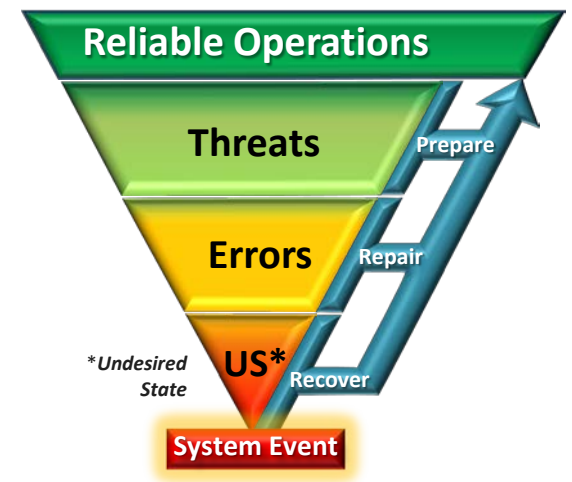
Effective Listening

PJM Communication Protocols

The exchange of ideas, information, and instructions in a clear and timely manner

- Ready
- Receive
- Review
- Respond
- Remember
- Operating Instruction
- 3 Part Communication

PJM CRM-TEM Model



Leadership Effectiveness

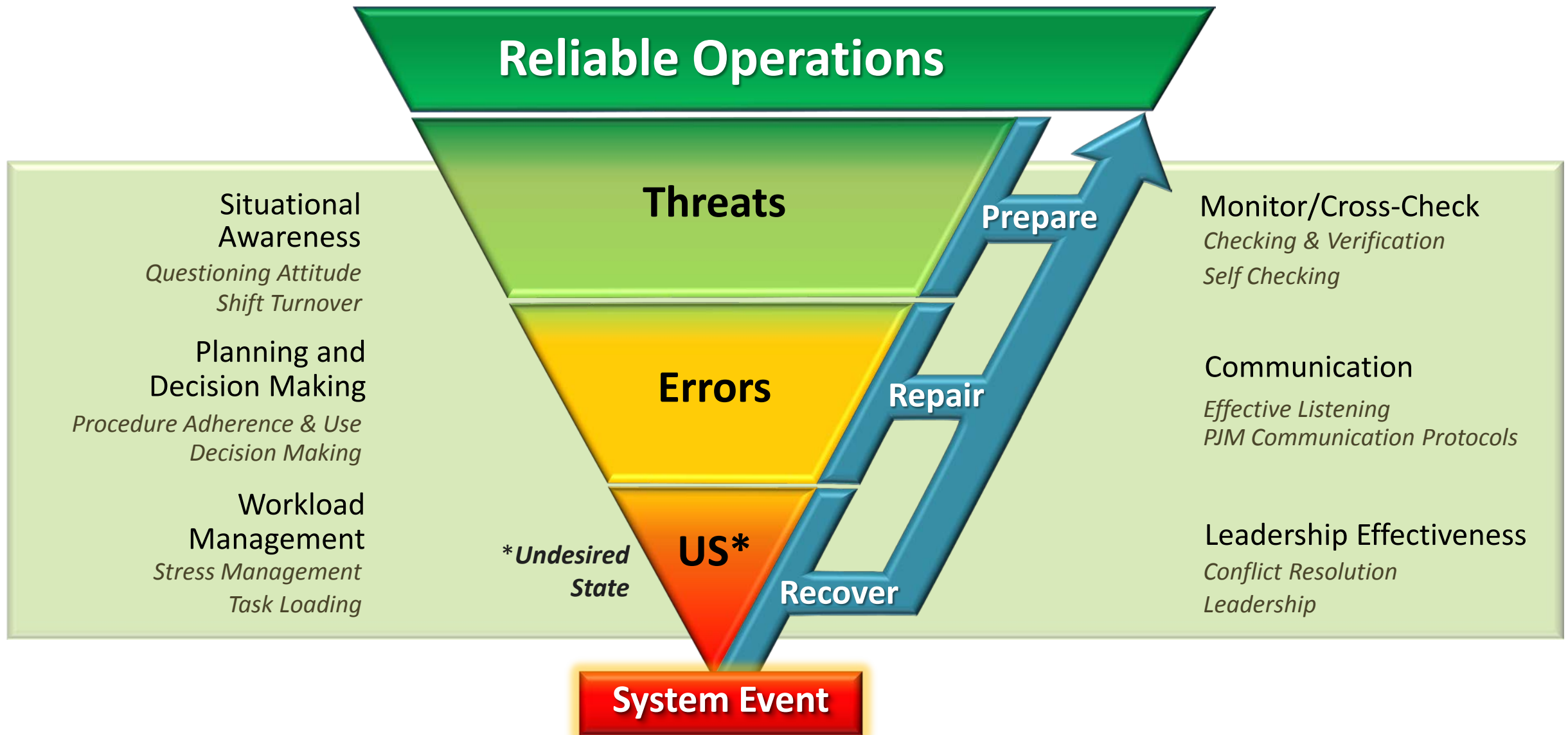
Conflict Resolution

Leadership

Effectively exercises responsibilities in a manner that promotes teamwork, professionalism, and mentoring

- Define Issue
- Communicate
- Use Open Tone
- Respect Expertise
- Assign Clear Roles
- Plan & Anticipate

PJM CRM-TEM Model



Communications Review

“You Be The Auditor”

1. Review Transcripts for Actual Operator Calls
2. Audit the calls individually
3. Answer assigned questions and discuss audit results in groups
4. Debrief



Communications Review

Debrief Questions

1. How would you rate the use of 3-Part Communication?
(Consider NERC and PJM Manual 1 requirements)
2. What communication practices used in this call could be improved? How?
3. Were there any communication practices which your group members interpreted differently/scored differently?
4. What CRM-TEM skills were utilized or could have been utilized during this call?

Summary

Review of PJM Communication Protocols

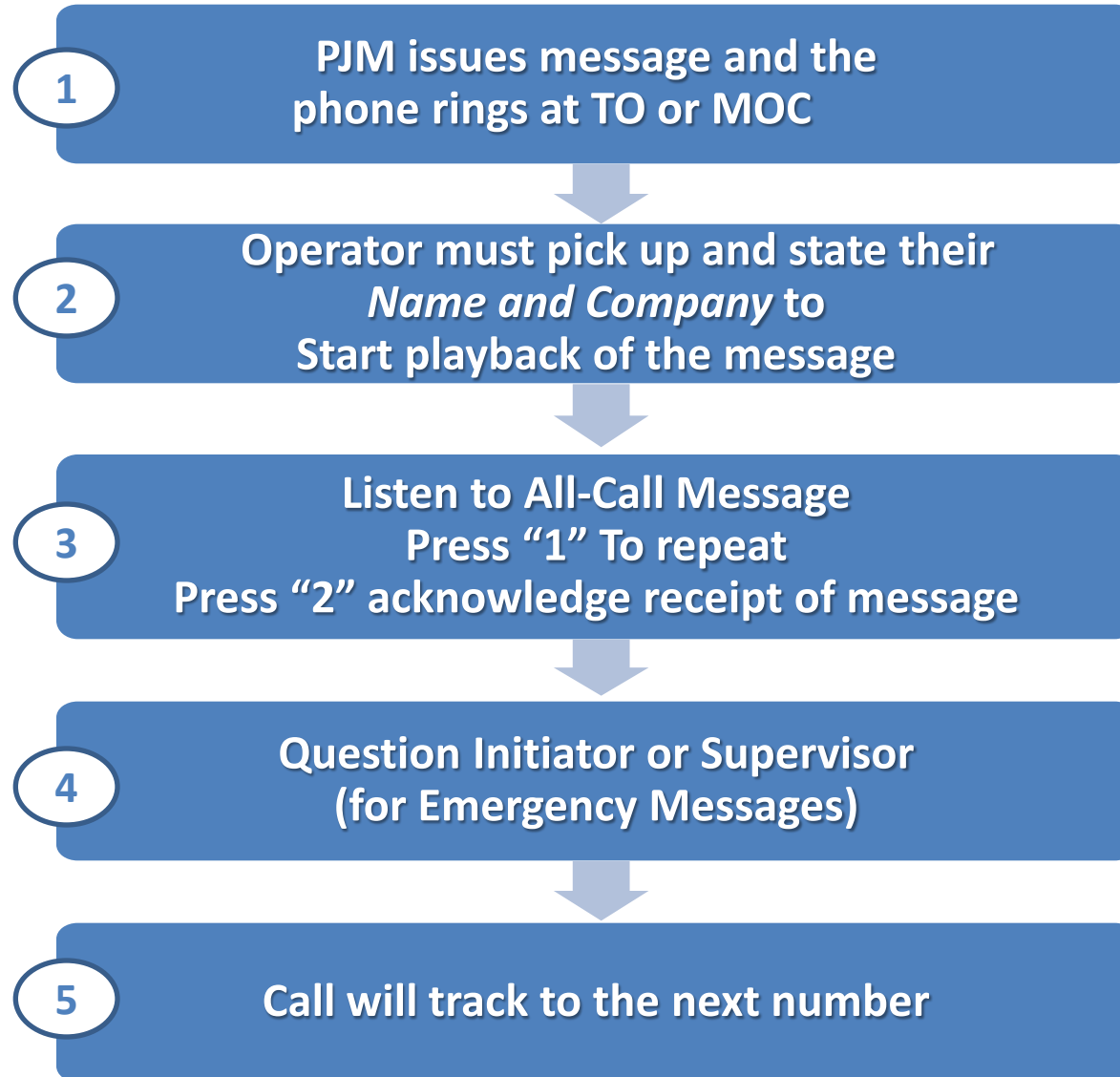
- Definition of Operating Instruction
- Requirements for use of Communications Protocols
- Review of 3-Part Communication Steps
- Application of PJM CRM-TEM Model

PJM All-Call Process

PJM All-Call Process

- The PJM All-Call process is a one-way communication system used to send messages to member companies
- PJM All-Call messages are issued during both normal and emergency conditions
- PJM Member Control Centers are required to have a dedicated line for the primary All-Call number

Receiving PJM All-Call Messages



Message Categories

There are 3 categories for All-Call Messages:

- Operational
- Informational
- Emergency Procedures

Message Categories

Operational Messages	
General Information	Generation Dispatcher, Power Dispatcher, Master Coordinator or Shift Supervisor depending on message
General Dispatch	Generation Dispatcher
Instantaneous Reserve Checks	Generation Dispatcher
Off-cost Operations	Power Dispatcher
Geo-Magnetic Disturbance Information	Generation Dispatcher
Time Correction Information	Power Dispatcher/Gen Dispatcher
500 kV and Above Switching	Power Dispatcher
Regulation Information	Master Coordinator

Message Categories

Informational Messages	
Scheduling Information	Master Coordinator

Message Categories

Emergency Messages	
Emergency Alerts, Warnings, and Actions	Generation Dispatcher, Power Dispatcher, Master Coordinator or Shift Supervisor depending on message
Minimum Generation Information	Master Coordinator or Generation Dispatcher
Synchronized Reserve Activations	Generation Dispatcher
Supplementary Status Report	Master Coordinator

Contact Information:

PJM Client Management & Services

Telephone: (610) 666-8980

Toll Free Telephone: (866) 400-8980

Website: www.pjm.com



The Member Community is PJM's self-service portal for members to search for answers to their questions or to track and/or open cases with Client Management & Services

Resources and References

- PJM. (2017). PJM Manual 1: Control Center & Data Exchange Requirements (rev 35). Retrieved from <http://pjm.com/~media/documents/manuals/m01.ashx>