API Cybernetics Symposium

Operating from the Back-up Control Center

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Operating from the Back-up
Presentation Overview

- Background
- Readiness Cycle
- Outside Factors
- Key Learning's from Past Events

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Background
Shell Pipeline Control Center

- Control Center located in Houston
- Operate approximately 100 pipelines and terminals from 7 operating consoles
- 4-5 Controllers are assigned to each console
- Control, Monitor and perform CPM on Crude, Refined Products, and Chemical pipelines
- Total Staff of over 60 people (including Technical staff)

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Background

Shell Pipeline Control Center

- Short Term Back-up Facility in Houston
- Long Term Back-up Facility outside of Houston
- Operations Supervisors, Managers and Technical Staff can securely access SCADA system remotely

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Background
Back-up Control Center Experiences

- Operated from Long Term Back-up facility seven times since 2002
- Operated from Short Term Back-up facility more than seven times since 2002

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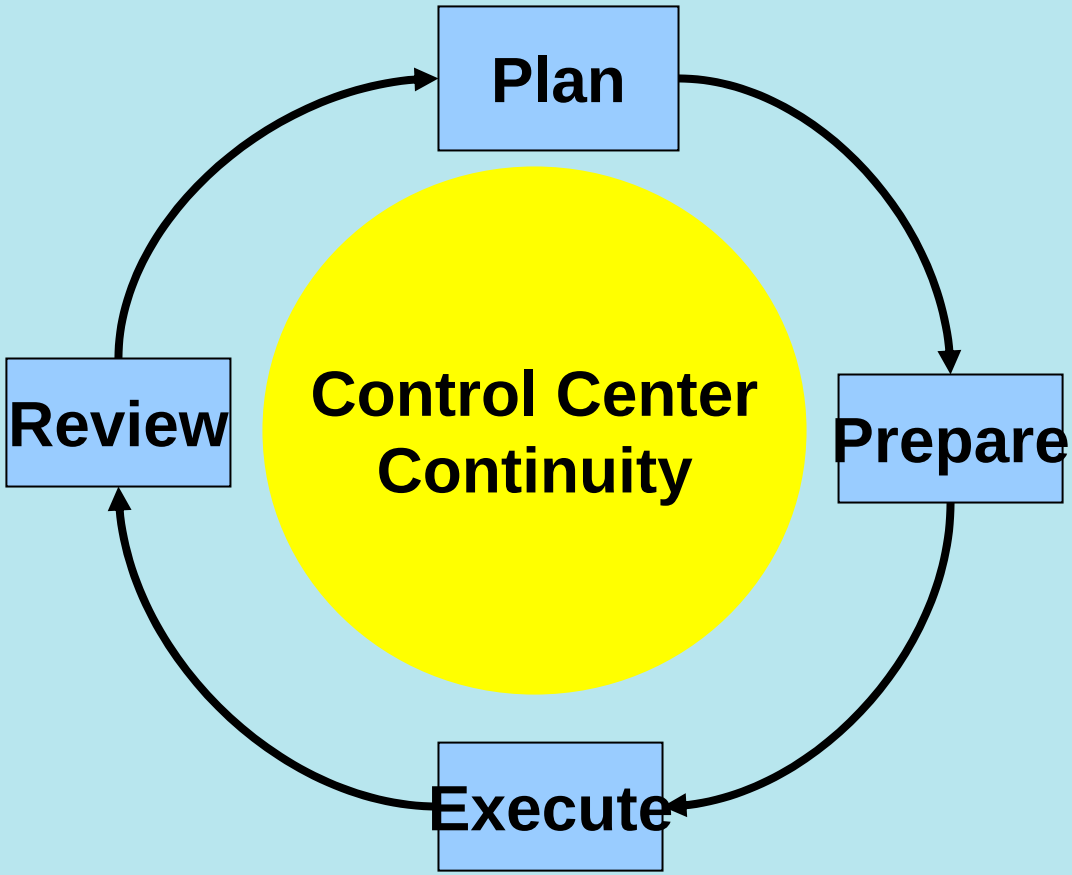
Operating from the Back-up
Readiness Cycle



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Control Center Continuity Process

Plan

- Well defined and documented set of plans
- Accessible by Control Center staff
- Plans address
  - When decisions on evacuation must be made
  - Key roles and responsibilities during evacuation
  - How decisions will be made
  - Testing requirements
  - Preparation requirements
  - Transition to Back-up operations
  - Transition back to normal operations

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Control Center Continuity Process

Prepare

- Assign roles to personnel
- Perform training as required
- Provide evacuation packages to essential staff that support training
- Ensure that technology supports plan
- Test backup equipment and facilities
- Perform evacuation drills

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Control Center Continuity Process

Execute

- Clearly communicate when you're invoking crisis plan
- Follow your plans
- Document decisions made during event
- Identify any situations not covered by plan
- Ensure everyone clearly understands their role during the event

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Control Center Continuity Process

Review

- Review process on periodic basis
- Review after any crisis event
- Review after any changes that may impact plan
- Identify strengths and areas for improvement
- Document changes made based on review

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Outside Factors

Factors that impact plans

- Early notification – Hurricane vs. Earthquake
- When an event occurs – Weekday vs. Weekend
- Scale of event – One building vs. City
- Impact of event on others – Single company vs. All companies located along Houston Ship Channel
- Personnel availability – Typical work week vs. Thanksgiving week

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Key Learning's from Past Events

Leadership

- Keep track of your personnel during crisis
  - Document where individuals plan to locate
  - Conduct periodic meetings with your staff
  - Understand personal situations
- Keep your personnel informed
  - Communicate on status of crisis periodically

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Key Learning's from Past Events

Leadership

- Do not over analyze situations
  - Predetermined decision making process helps
  - Plan on having limited time
- Be prepared to make decisions without all information you need
  - In absence of all information, assume practical worst case
  - Expect each crisis to have different challenges

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Key Learning's from Past Events
Leadership

- Ensure that the roles and responsibilities of your essential staff are understood
  - Utilizing an incident command structure can aid defining roles
  - Communicate to all staff of their role during a crisis event periodically
  - Performing drills can aid in understanding of roles

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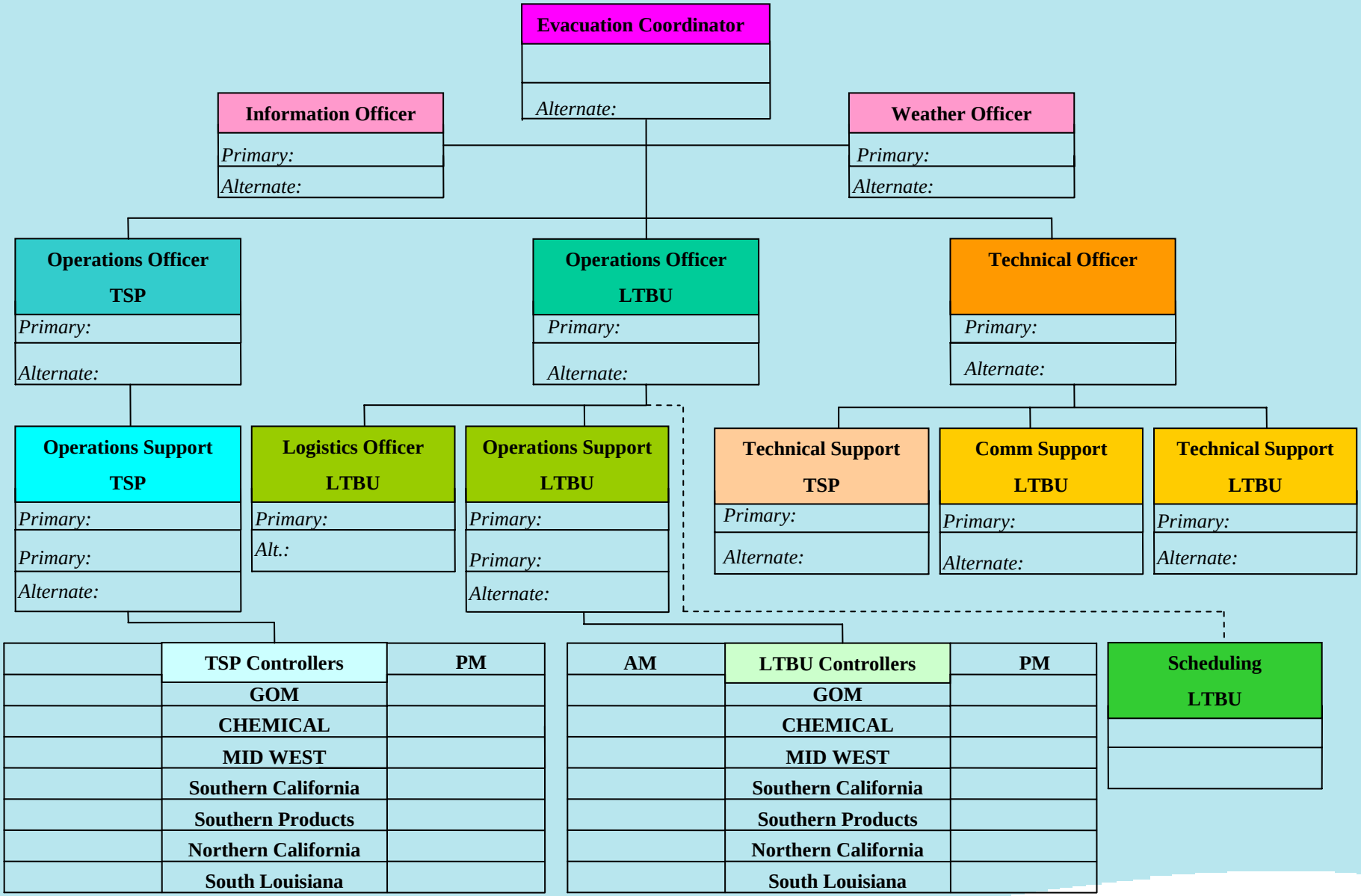
CONTROL CENTER EVACUATION COMMAND MATRIX



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Key Learning's from Past Events
Transition

- Confidence in ability to operate from back-up facility is important
  - Test back-up equipment periodically
  - Operate from back-up location periodically
  - Be prepared to repair/replace equipment at back-up facility

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Key Learning's from Past Events

Technology

- Telecommunications will be impacted during a major crisis event
  - Cell phone communications can become unreliable
  - Text messaging can have success when voice communications is not reliable
  - Telecommunications redundancy (even through carrier diversity) may still be challenged during a crisis

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Key Learning's from Past Events
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Key Learning's from Past Events
Human Factors

- Provide similar functionality to back-up consoles as primary
  - Minimize learning required by Controllers
  - Provide comfort during a crisis situation
  - Minimize Controller distractions

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