

**LESSONS LEARNED
WITH RECOMMENDATIONS AND OPR'S
HURRICANES CHARLEY, FRANCES, AND JEANE**

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Purpose Is To Improve Our Processes

- Many solutions have already been accomplished!
- Many are already in progress
- Others we need your assistance
- Did not include internal lessons that can be corrected by organization
- Only major lessons are included

Categories of Concerns

- Leadership/Supervision
- Communications
- Safety
- Traffic
- Facilities
- Planning
- Power
- Logistics
- Miscellaneous

Leadership/Supervision

- Lesson: Hurricane preparations not synchronized between Cape & KSC causing confusion for work force response

Recommendation: Senior management set condition(s) dependent upon their current operations/situation

OPR: KSC CD/45SW/CC

- Lesson: Need regular organizational staff meetings to identify implications of possible actions/non-actions during HURCONs 4, 3, and 2

Recommendation: Update CCEMP to include tasking organizations to hold meetings

OPR: JBOSC Emergency Preparedness/Organizational senior management

Leadership/Supervision (con't)

- Lesson: Organizations should conduct exercises prior to season to discuss and make critical decisions per your plans
Recommendation: Update CCEMP to include internal exercises
OPR: JBOSC Emergency Preparedness/Organizational senior management
- Lesson: Coordination of DART and assignment of leads for DART activities in each organization having DART members needs to be coordinated prior to evacuation of Spaceport
Recommendation: Update CCEMP to include tasking organizations with DART coordination and lead assignments
OPR: JBOSC Emergency Preparedness/Organizational senior management

Communications

- Lesson: When a HURCON is “modified” explain the modification
Recommendation: Senior management setting modified condition include explanation with declaration
OPR: KSC CD/45SW/CC
- Lesson: Recorded messages too short and provided conflicting information. Need supporting information, date & time
Recommendation: Only two official recordings to be coordinated with NASA EPO, 45 Det 1 MSG, and EOC
OPR: JBOSC Emergency Preparedness/NASA EPO, 45 Det 1 MSG

Communications

- **Lesson**: Personnel called EOC instead of the recorded lines or their hurricane coordinators/Supervisors for info, tying up EOC lines/personnel

Recommendation: Update CCEMP to include section advising Hurricane Coordinators to brief their organization's personnel to call recordings for information and not the EOC

OPR: JBOSC Emergency Preparedness/ Organizational Hurricane Coordinators

Communications (con't)

- **Lesson:** Some hurricane coordinators waited until storm to find they couldn't access WebEOC reporting system
Recommendation: All coordinators log on to WebEOC at start of season and again when they first receive initial notification of a named storm and report problems to JBOSC Emergency Preparedness
OPR: Organizational Hurricane Coordinators/JBOSC Emergency Preparedness
- **Lesson:** Terminology from 45SW Script 4 message caused confusion in releasing Cape non-essential personnel
Recommendation: 45SW Battlestaff review messages to include clear direction for Cape and contractors
OPR: 45 Det 1 MSG

Communications (con't)

- Lesson: Local TV/radio stations did not provide enough information on KSC/CCAFS status, especially DART recall

Recommendation: Use recorded messages as primary means of disseminating Spaceport status, media as alternate. Advise populace of messages via Emergency Preparedness Bulletin, organization's Hurricane Coordinators

OPR: JBOSC Emergency Preparedness/Hurricane Coordinators

- Lesson: Supervisors need cell phone/pager numbers for evacuated personnel since home numbers not of use

Recommendation: Organizational management develop phone lists

OPR: Organizational Hurricane Coordinators

Communications (con't)

- Lesson: Need to enhance DART communications through pagers and text messaging
Recommendation: Organizations need to compile lists of pager/pager web addresses for their DART leaders/crews
OPR: Organizational Hurricane Coordinators/management
- Lesson: Consider leaving up networks after HC2
Recommendation: Leave networks up as long as there are ride-out teams on the Spaceport
OPR: NASA IT/JBOSC IT

Communications (con't)

- Lesson: "Mission essential/critical" open to interpretation

Recommendation: Organizational management determines who is critical/mission essential

OPR: Organizational Hurricane Coordinators/
management

- Lesson: Establish a toll-free number for employees to access information.

Recommendation: A toll-free number through MSFC has already been established

OPR: N/A

Safety

- Lesson: When are construction contractors released?
Recommendation: At HURCON 3 unless performing critical work/securing for storm. No later than start of HURCON 2
OPR: Organizational Hurricane Coordinators/ management
- Lesson: Some employees felt they should have been released earlier
Recommendation: Issue is situational dependent. Senior management release personnel as early as possible
OPR: KSC CD/ 45SW/CC/Organizational Management

Safety

- Lesson: Need to review the number of ride-out personnel. Too many personnel at risk
Recommendation: Top level management direct a reduction in ride-out personnel at Spaceport
OPR: KSC CD/45SW/CC
- Lesson: Some ride-out personnel stayed at location(s) other than in plan making accountability difficult
Recommendation: CCEMP is a guide. Deviations from plan must be approved by EOC
OPR: JBOSC Emergency Preparedness

Safety (con't)

- Lesson: Ensure mission essential personnel have time to prepare families/homes for an evacuation order
Recommendation: Issue is situational dependent. Senior management release personnel as early as possible
OPR: KSC CD/ 45SW/CC/Organizational Management
- Lesson: Riding out storm off-site jeopardizes team safety by staying in facility not designed for that strength storm
Recommendation: Ride-out storm in approved location(s) based on CCEMP
OPR: KSC CD/45SW/CC

Safety (con't)

- Lesson: Provide weather information for DART activities
Recommendation: 45SW Weather provide weather advisories to EOC/JBOSC Duty Office/USA STM for area pages to update DART in field
OPR: 45SW Weather

Traffic

- Lesson: May want to pre-stage Security traffic control before release announcement
Recommendation: EOC coordinate traffic control with Security prior to release
OPR: JBOSC Security
- Lesson: Consider staggering evacuation for better traffic flow
Recommendation: Issue is situational dependent. Senior management consider staggered release if feasible
OPR: KSC CD/45SW/CC/Organizational Management

Traffic

- **Lesson**: Need bus service to return employees to their work place after relocating GOVs to SSPF Parking Area

Recommendation: Update CCEMP HURCON 3 actions to include JBOSC Transportation provide buses from SSPF to CCAFS work areas

OPR: JBOSC Emergency Preparedness/JBOSC Transportation

- **Lesson**: Relocate GOVs earlier than HURCON 3 as many organizations are short on personnel by then

Recommendation: CCEMP be updated to reflect that organizations may relocate GOVs early that are not needed for preparations

OPR: JBOSC Emergency Preparedness

Facilities

- **Lesson**: EOC should have 6 or more master keys for DART sign-out to augment Security in opening facilities for assessment
Recommendation: Because of security concerns, issue is under further evaluation
OPR: JBOSC Emergency Preparedness
- **Lesson**: Sandbags only deployed to critical facilities/space flight hardware. Personnel angry when their request denied
Recommendation: Organizational Hurricane Coordinators/ management review CCEMP's sandbag plan prior to start of season and coordinate issues with JBOSC Emergency Preparedness.
OPR: Organizational Hurricane Coordinators/ management

Facilities

- **Lesson:** Mechanical rooms need to be prepared against flooding to ensure no failures when systems are powered up
Recommendation: JBOSC Facilities evaluate and determine feasibility
OPR: JBOSC Facilities
- **Lesson:** Confusion over who should walk down and report problems (interior/exterior) with major institutional facilities such as KSC HQ
Recommendation: Multiple DART crews perform checks of HVAC, electrical, etc. of interior/exterior institutional facilities
OPR: N/A

Facilities (con't)

- Lesson: Re-assess alternate parking for response vehicles in VAB due to potential for falling debris
Recommendation: Response organizations re-assess situation/alternate parking site(s)
OPR: JBOSC Security/JBOSC Fire/EMS/JBOSC Emergency Preparedness
- Lesson: Construction Safety personnel noted issues with trailer tie-downs and the trailer tie-down standard
Recommendation: Re-evaluate trailer tie-downs and standard
OPR: NASA Safety (Construction)

Planning

- **Lesson:** Employees should not wait until “go home” announcement to make family/home preparations
Recommendation: Organizational Hurricane Coordinators/ management stress issue with their personnel
OPR: Organizational Hurricane Coordinators/ management
- **Lesson:** Everyone should read /understand hurricane plan and their internal procedures prior to storm
Recommendation: Organizational Hurricane Coordinators/ management stress issue with their personnel
OPR: Organizational Hurricane Coordinators/ management

Planning

- Lesson: Confusion over whether ride-out team needs DART badges
Recommendation: Issue DART Badges to all ride-out team members to facilitate their re-entry to relieve DART during recovery operations
OPR: Organizational Hurricane Coordinators/management

Planning (con't)

- Lesson: Supervisors need “calling trees” to call in additional help if needed
Recommendation: Organizational Hurricane Coordinators/management stress issue with their shops
OPR: Organizational Hurricane Coordinators/management
- Lesson: Organizations using outside contractors as part of DART should coordinate access with the EOC prior to the contractor showing up at the gates
Recommendation: Organizational Hurricane Coordinators/management stress issue with their shops
OPR: Organizational Hurricane Coordinators/ management

Power

- Lesson: Need better coordination of power outages.
Recommendation: Convene Joint Power Team Meeting at HURCON 4 per CCEMP
OPR: NASA EPO
- Lesson: Need to develop a power management strategy that specifically details what is shut off at what hurricane level
Recommendation: Convene special Joint Power Team Working Group to develop strategy
OPR: NASA EPO

Logistics

- Lesson: Don't wait until storm to request support to pick-up scrap materials or other potential projectiles
Recommendation: Organizational Hurricane Coordinators/management stress issue to their shops
OPR: Organizational Hurricane Coordinators/management
- Lesson: Pick up hurricane supplies at start of season
Recommendation: Organizational Hurricane Coordinators/management stress issue to their shops
OPR: Organizational Hurricane Coordinators/management

Logistics

- **Lesson**: Locate ride-out supplies at ride-out locations or have Logistics deliver supplies to ride-out location
Recommendation: JBOSC Logistics to determine feasibility
OPR: JBOSC Logistics
- **Lesson**: Ensure gas stations have gas and power to pump gas
Recommendation: Update CCEMP to ensure notification of fuels delivery at HURCON 4. Add fuel stations to generator list
OPR: JBOSC Emergency Preparedness/Maytag & Citgo Fuels/JBOSC Generator Shop

Miscellaneous

- Lesson: Confusion over definition of “All Clear”
Recommendation: Update CCEMP with a more specific definition
OPR: JBOSC Emergency Preparedness
- Lesson: Back of DART badge could be used for emergency phone numbers, other useful information
Recommendation: New DART badges will have phone numbers, other information on back side when printed
OPR: JBOSC Emergency Preparedness

QUESTIONS

