



CCAFS 45 MSG LAUNCH SUPPORT PROCESS



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Darrell "D" Miller
Director, CCAFS Emergency Management

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OVERVIEW



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- **CCAFS LAUNCH EOC**
 - **Mission**
 - **Core Functions**
 - **Team Composition**
 - **Disaster Response Force**
- **CCAFS LAUNCH OPS PROCESS**
- **CCAFS LEOC COMMUNICATIONS**
- **CCAFS LAUNCH ACCIDENTS**
- **RECOVERY**

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CCAFS LEOC - MISSION



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- **Specialized response and support team pre-positioned for all launches to recover and safe a launch complex following nominal launches / landings Or respond to a launch / landing anomaly**

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CCAFS LEOC CORE FUNCTIONS



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- **Coordination**
 - **Pre-launch support activities**
 - **Post-launch safing or emergency response**
- **Communications**
 - **FCA/FHA, MOC, KSC EOC & Brevard EOC**
- **Information collection, analysis and dissemination**
 - **Pre-launch issues, i.e. safety violations, viewing area status, etc.**
 - **Post-launch issues, i.e. fires, safety inspections**

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CCAFS LEOC TEAM MEMBERS



TITLE	NAME	ORGANIZATION	PHONE
Launch EOC Director		45MSG Det 1/CC	3-3219
EOC Manager/EM Director	Mr. Darrell ("D") Miller	FEMS III Emg Mgt	3-6008
Emergency Management Analysts	Ms Debbie Curtis Mrs Stephanie Hansen	FEMS III Emg Mgt	3-6007
Fire Services		FEMS III Fire	6-3303
Security Forces		45 SFS/S3L	6-3306
Environmental Health		IHA	6-3310
5 SLS (Atlas & Delta)		5 SLS/DEI	6-3309
ULA		ULA Safety	6-3305
SpaceX		SpaceX Safety	6-3305
EOD		45 CES/CED	6-3302
Pad Safety		MANTECH	6-3304
Pad Safety Manager		MANTECH	6-3308
U.S. Coast Guard		U.S.C.G.	6-3311
Public Affairs		45 SW PA	3-6511
Brevard County Fire		Brevard County	3-9809



LEOC DIRECTOR



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- **The 45 SW MSG Det 1/CC, or authorized representative, serves as the LEOC Director during launch / landing support operations**
- **The LEOC Director is responsible for the actions of the LEOC Team during launch / landing support operations as well as emergency response operations**
- **The LEOC Director provides oversight for the 45 SW/CC to support and control emergency response to incidents**

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LEOC DIRECTOR



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- **In the event of an anomaly the LEOC Director has overall responsibility for the emergency response and remains in control of the accident scene until it is determined to be safe and secured**
- **Once the area has been declared as safe and secured the LEOC Director will transfer the responsibility of the site to the Interim Safety Board President (ISBP) or appropriate authority**

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EMERGENCY SUPPORT FUNCTIONS - (ESFs)



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- Provide structure for coordinating launch / landing incident support from the LEOC
- Provide support and resources as required
- Personnel assigned must be:
 - Functional experts in their area of expertise
 - Have decision-making authority
 - Have authority to commit resources

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CCAFS DISASTER RESPONSE FORCE (DRF) ORGANIZATION



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- **Elements**
 - **Crisis Action Team (CAT) – PAFB Senior Staff**
 - **Base Defense Operations Center (BDOC - 911)**
 - **CCAFS Cape Support**
 - **Launch Emergency Operations Center (LEOC)**
 - **Incident Commander (IC)**
 - **First Responders**
 - **Emergency Responders**
 - **Emergency Support Functions (ESF)**
 - **Specialized teams**
 - **Subject Matter Experts (SME)**

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LEOC LAUNCH SUPPORT PROCESS



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- **As a launch date approaches several organizations begin actions necessary for the 45 MSG Det 1/CC & LEOC to provide launch support**
- **AF Launch Integration Office (AFLIO) coordinates the tasks required to support launch / landing operations and lists them in chronological order in the Consolidated Launch Flight Sheet**
- **Consolidated Launch Flight Sheets produced for each mission contain launch support requirements, emergency announcements, launch shelter list, aural warning zones map and debris collection locations and POCs**

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LEOC LAUNCH SUPPORT PROCESS PAD SAFETY



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- **Validates Launch Essential Population (LEP) requirements**
- **Develops consolidated roadblock access letter and danger area maps**
- **Clearing-house for all FCA/FHA entry**
- **Conducts pad clearing via cameras for SLC-40**
- **Leads pad entry team to pad after nominal launch – SLC-37 & 41**
- **Supports LEOC as needed after catastrophic launch Abort**



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LEOC LAUNCH SUPPORT PROCESS EMERGENCY MANAGEMENT



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- **Once a launch date is posted, Emergency Management solicits from the supporting organizations the names of support personnel for that mission. These personnel are notified of key events, times and places**
- **The LEOC team is notified of the date & time of the launch and their reporting times at the LEOC**
 - **L-90 & L-30 briefings**
- **The Launch EOC Team is notified of the date, time and location of the MSG LRR and the Tabletop Exercise (TTX)**

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LEOC LAUNCH SUPPORT PROCESS EMERGENCY MANAGEMENT



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Tabletop Exercises are conducted for launches supported by the CCAFS LEOC that present new or challenging configurations or circumstances

- **Each ESF provides their L-90 launch day briefing just as they would on launch day**
- **“Real World” issues are presented and potential problems and possible solutions are discussed**
- **Scenarios are based on realistic situations and special circumstances such as a radiological launch or expected crowds**

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LEOC LAUNCH SUPPORT PROCESS EMERGENCY MANAGEMENT



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CCAFS Launch EOC Activation/EOC Director Notes (Fallback Briefing)

Launch Vehicle: Atlas V OTV-2 EOC Director: LtC Sullivan Date: 4 Mar 2011

Complex #: SLC-41 Fallback: S-1 North Alt. Fallback: ITL Warehouse

Emergency Management

EM Lead at Fallback: Darrell Miller EM Assist at Fallback: Brenna Young

Number of personnel inside FCA/FHA R/Bs: Number of personnel at fallback:

Launch hazards posted: Yes / No - location: KSC EOC staffed: Yes / No

Other pertinent Information: Limiting Factors:

Cape Fire

Fire Representative at Fallback: Chief Kuhman Present at Fallback: Engines Pers: /

ARFF Trucks Pers: / Ambulances Pers: /

Available for response: Engines Pers: / ARFF Trucks Pers: /

Ambulances Pers: / Response Time: Mutual Aid Availability:

Special Considerations: Limiting Factors:

45th Security Forces

Security Representative at Fallback: SHAVER/PIZZIFRED Time BDA established: 1154

Security on Standby: 10 Anticipated Time BDA "All Clear" giving: 1220

Time to respond: 5 MIN Time FCA established: 1239

Boats in the water: 1 Anticipated Time FCA "All Clear" giving: 1449

Limiting Factors: NONE

Environmental Health

EH Representative at Fallback: John Sherwood Name of support personnel: 2 Specialists

Special Considerations: None Down Wind Monitors: None

NLT F-5, EM circulates an “EOC Director’s Notes” form to be completed by those ESFs/SMEs that will be supporting the launch as part of the Launch EOC Team.

This form is provided to the LEOC Director on launch day.

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LEOC LAUNCH SUPPORT PROCESS EMERGENCY MANAGEMENT



Emergency Action Notification Information
Shuttle/EELV Launches

Revision 2

This is the emergency action notification for a Shuttle or EELV Launch. If an EMERGENCY occurs during launch follow the instructions given over the Cape Aural Warning System or emergency instructions broadcast over the radio nets.

Your immediate concern is to account for **all** personnel assigned to your location. If any of your personnel are injured, missing or in immediate danger contact the **Mobile Emergency Operations Center (MEOC)** immediately; personnel located on CCAFS will call 476-5105/5106 (MEOC), **personnel located on KSC will call 867-9200 (KSC EOC).**

NOTE: If the Mobile EOC (MEOC) is relocated for any reason the EOC may be required to operate off of cell phones instead of hard-line phones. In this scenario personnel should contact one of the following cell phone numbers; 794-6557, 794-6558, or 794-6560.

Please do not contact the EOC/MEOC unless you have an immediate emergency situation. Emergency Management personnel will be contacting you with egress procedures when it can be determined that the area is safe to depart.

If the launch is scrubbed for any reason, do not leave immediately. Wait 15 minutes after the scrubbed event to allow for security posting.

CCAFS Security personnel manning launch Safety Roadblocks, in the event of an anomaly you will immediately take cover in your vehicle. Maintain "Hard Down" at your location until you receive instructions from your Security Launch Lead, "Whiskey Control," or Pad Safety. If you need immediate assistance due to an emergency situation contact "Whiskey Control" or the Mobile Emergency Operations Center (MEOC) at 476-5105/5106.

Thank You!

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**NLT F-5 EM sends an
“Emergency Action
Notification
Information Letter”
to those organizations
that will be operating
inside the FCA/FHA
roadblocks at T-0.**

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LEOC LAUNCH SUPPORT PROCESS EMERGENCY MANAGEMENT



ATLAS PERSONNEL ACCOUNTABILITY AND NOTIFICATION CALL SHEET

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POC: Robbie Robinson (853-5387) or Gina Mitchell (G-Net Photo Console: 861-7266)							Received By:
Installation	Facility Name	Facility #	Org	Projected	FCA	FHA	Personnel Names
KSC	UCS 15 (853-3015)	K8-1403	Quinetiq	3	3	0	
KSC	North Beach	J8-1821	Quinetiq	3	3	0	

POC: Steve Herrick (853-8400), Ron Davis (853-8232), or MOC Console (853-8207)							Received By:
CSR ISRO Console: 853-8691/8027							
Installation	Facility Name	Facility #	Org	Projected	FCA	FHA	Personnel Names
KSC	UCS-7 (853-3007)	J8-754	CSR	2	0	2	
KSC	UCS-15 (853-3015)	K8-1403	CSR	2	0	2	

Projected Total:	10	6	4
Actual Total:	10	6	4
Date/Time:			
Completed By:			

- Prior to each launch a “Launch Ops Accountability and Notification Call Sheet” is developed by EM from Pad Safety’s Roadblock Access List.
- This list is used to account for personnel that will be operating within the FCA/FHA at T-0 on day of launch. This list is specific to that particular mission.

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LEOC LAUNCH SUPPORT PROCESS



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Day of Launch

- **Emergency Management is on station NLT three hours prior to the opening of the launch window.**
 - **Check status of launch**
 - **Verify names inside the FCA/FHA R/Bs**
 - **Provides LEOC Director with status of LEOC**
 - **LEOC is manned @ L-120**

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LEOC LAUNCH SUPPORT PROCESS



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Day of Launch

- **ESFs/SMEs gather @ LEOC NLT L-90**
- **L-90 minute status briefing by each agency with current status and any limiting factors**
 - Any issues will be worked offline and reported at the L-30 minute briefing.
- **Launch hazards & locations of launch essential personnel inside FCA/FHA briefed (Security R/Bs, Universal Camera Sites(UCS) guests/VIPs)**
- **“What if” scenarios discussed by team, review of emergency response procedures and operations**

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LEOC LAUNCH SUPPORT PROCESS



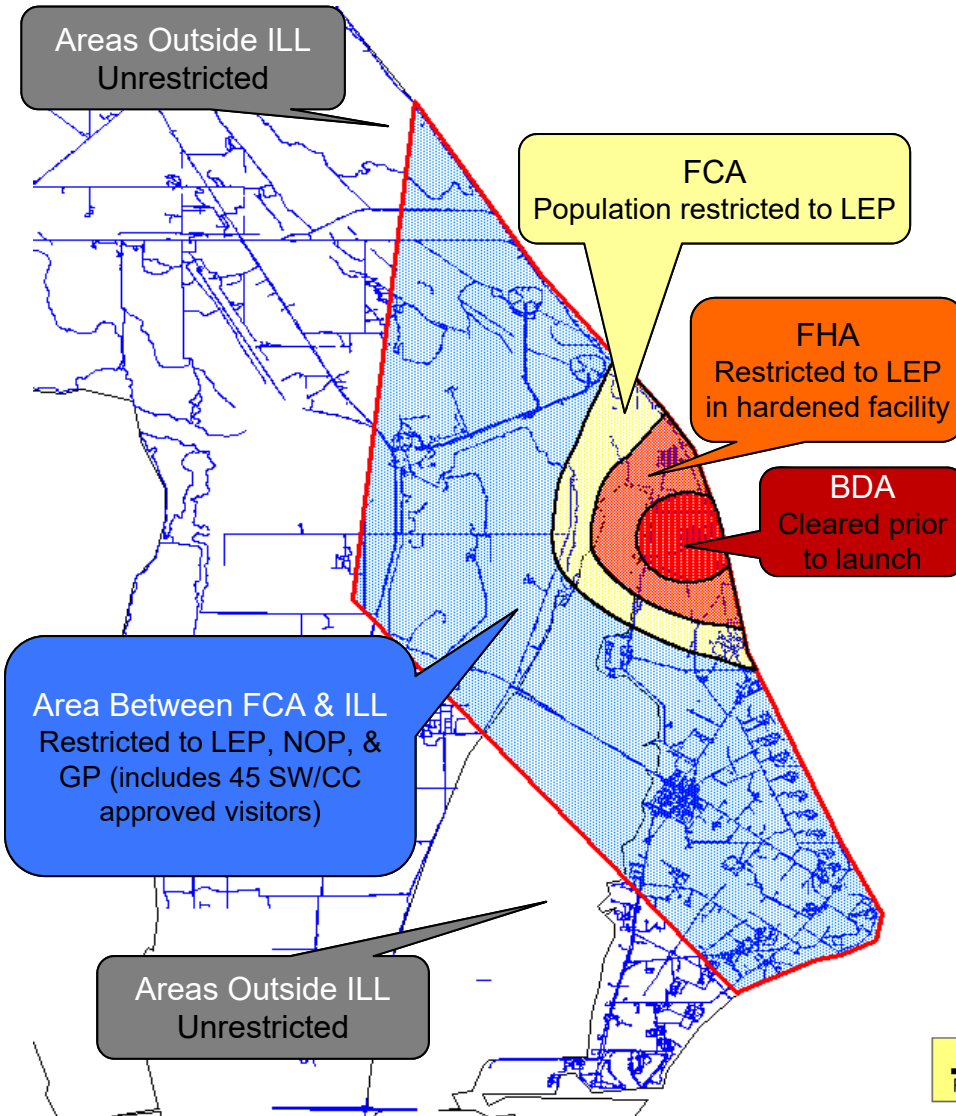
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- **L-30 minute briefing for launch status and any ESF/SME updates.**
- **Accountability roster faxed to 45SW MSG/CC after L-30 briefing**
 - **Personnel accounted for by name, location & phone**
- **45SW MSG/CC updated throughout countdown as required by the LEOC Director.**
- **Successful launch - normal pad recovery.**
 - **Launch EOC remains at Fallback until the initial safety inspection**

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HAZARD ZONES



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Blast Danger Area: Hazardous clear area established prior to a launch. This area is subject to fragment impact and direct overpressure effects resulting from an explosion.

Flight Hazard Area: Area where the risk of death or serious injury as a result of blast overpressure or debris is so significant that only launch/mission essential personnel in approved structures with adequate breathing protection are permitted.

Flight Caution Area: Only launch/mission essential personnel with adequate breathing protection are permitted.

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ATLAS V - OPS PLAN

REPRESENTATIVE

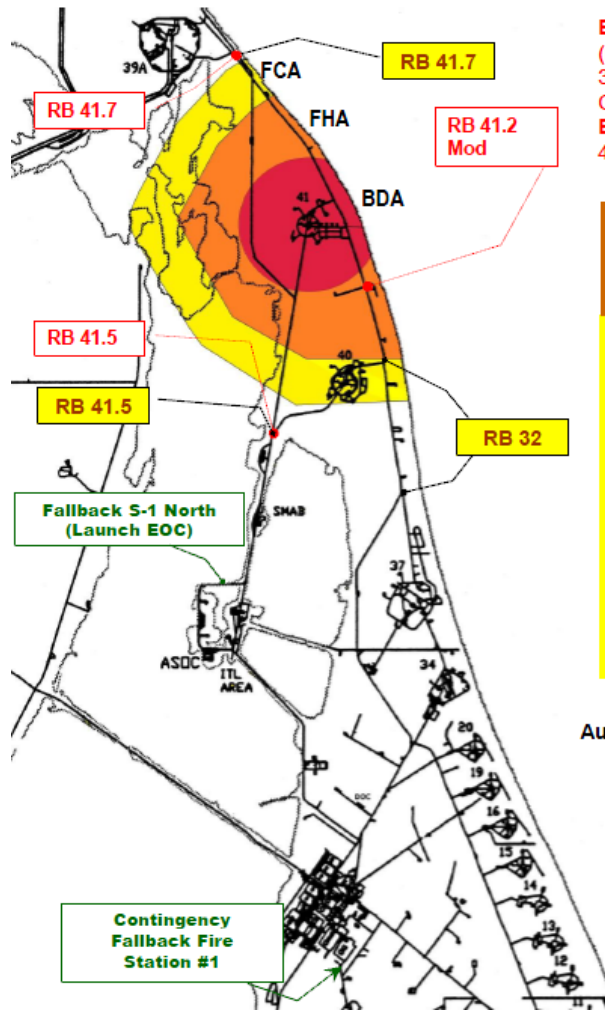


Attachment 2

Operational Plan No. 41A
Atlas V GPS IIF-7 (OPNR: A4977)

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Security/Safety Access Requirements For BDA/FCA Clear



Blast Danger Area (BDA):
(Red/No Personnel or Vehicles)
3,000 Feet, Set BDA: L-3:35
Cleared By: L-2:55
BDA Roadblocks:
41.7, 41.5, 41.2 Mod

Flight Hazard Area (FHA):
Brown Area Between BDA
and FCA (Only LEP & NOP,
No Vehicles)

Yellow - Flight Caution Area (FCA) (Only LEP & NOP):
Set: L-2:55
Cleared By: L-:50
(See Page 2 For FCA,
Manning)

FCA Roadblocks:
Roadblock 41.7
Roadblock 41.5
Roadblock 32 (Start at
Rocket Road/Phillips
Intersection and Move to
RB32 @ L-90)

Aural Warning Zones Affected: 1

Fallback (Launch EOC):
S-1 North

Contingency Fallback:
Fire Station #1



LEOC COMMUNICATIONS

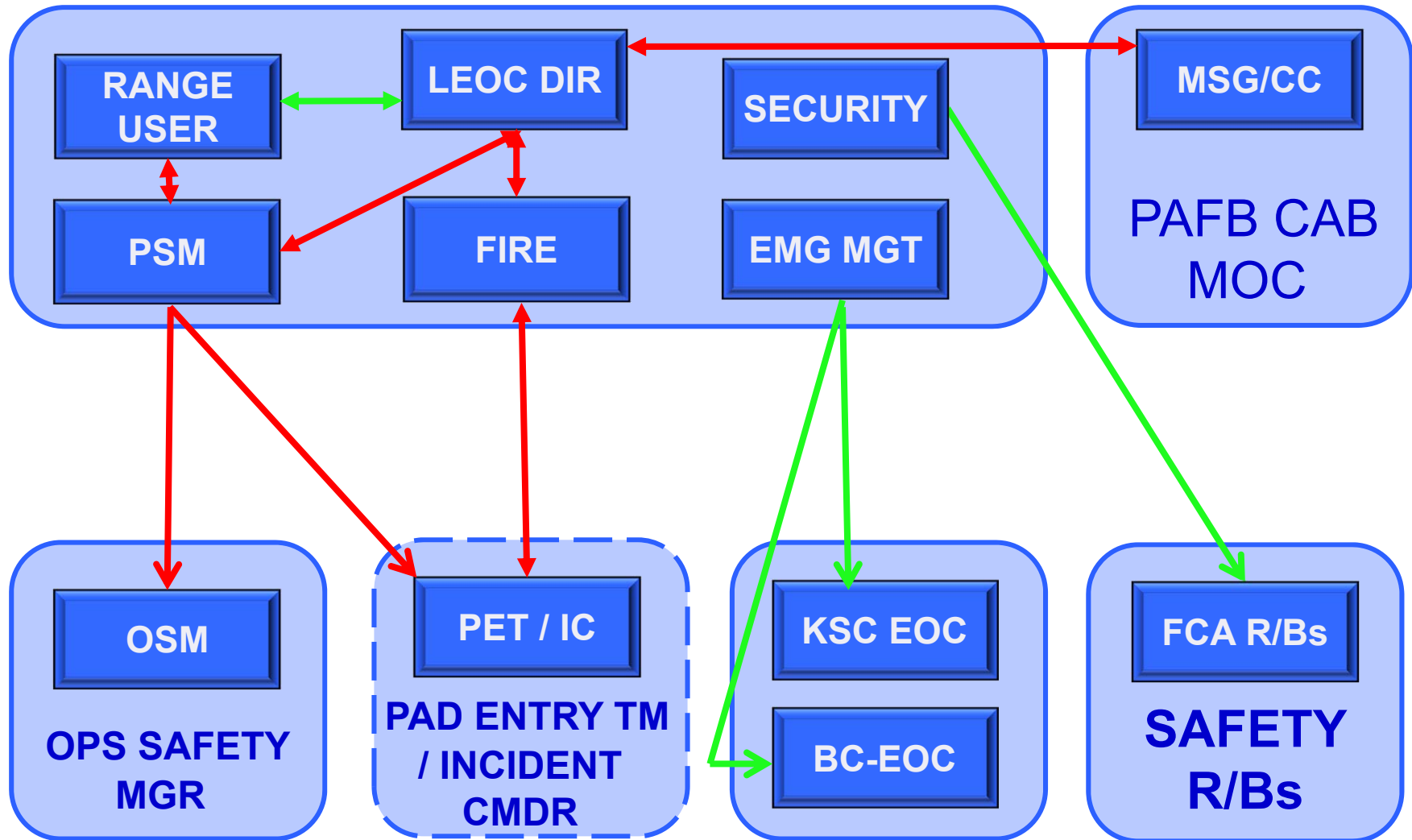
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LEOC COMMUNICATIONS





CCAFS LAUNCH ACCIDENTS



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Falcon 9 Amos 6 Static Test Fire – 1 Sept 2016

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CCAFS LAUNCH ACCIDENTS



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- **28 Jan 1986 – Space Shuttle Challenger**
- **17 January 1997 – Delta II GPS IIR-1 (13 seconds)**
- **12 August 1998 – Titan IV NROL-7**
- **1 Feb 2003 – Space Shuttle Columbia**
- **28 June 2015 – SpaceX CRS-7 (139 seconds)**
- **1 September 2016 – SpaceX AMOS-6 Static Test**
- **20 April 2019 – SpaceX Dragon 2 Static Test**

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CCAFS LAUNCH ACCIDENTS



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- **Launch EOC Team briefed to remain near the LEOC in the event of an emergency**
- **ESFs/SMEs will seek shelter in the Launch EOC**
- **Pad Entry Team/IRT will seek shelter in Fire Station #2 or LEOC depending on launch**
- **Launch accident- checklist initiated per IEMP 10-2 – Launch Incident**

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- **All LEOC personnel take immediate cover**
 - **Take necessary precautions for toxics and/or distance focusing overpressure (DFO)**

- **Obtain status of safety R/Bs, and personnel inside FCA/FHA, provide rescue or instructions (stay or go) based on the situation.**

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CCAFS LAUNCH ACCIDENTS



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- **Secure FCA/FHA and other areas as required (45 SFS)**
- **Establish command and control (LEOC DIR)**
- **The LEOC Director will establish a direct line with the 45MSG/CC console in the MOC**

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- **Assemble ESFs/SMEs – Provide initial brief to the LEOC Director to determine options (LEOC DIR)**
 - **Each ESF provides information known at that time**
 - **Each ESF briefs initial checklist requirements, NOTE any time sensitive actions**

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- **Re-assess toxics - Determine if FCA/FHA R/Bs need to be evacuated (PSM)**

- **Determine extent of hazards**
 - **Consider request for aircraft reconnaissance**
 - **Talk to 45SW/SE, PSO (camera views), Sec., those inside FHA/FCA to obtain additional information**

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- **If rescue is required (lives at stake), assemble Initial Response Team (IRT)**
 - **EOD, Fire, EH, PSO**
 - **Safety briefing (stressing hazards & comm. discipline) (PSO)**
 - **Lead IRT convoy/rescue of personnel (Fire/EMS)**
 - **Clear/mark hazards (EOD)**
 - **Triage/Treatment of casualties (Fire/EMS)**

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- **Evacuate FHA/FCA when safe to do so (45 SFS)**
 - **Coordinate with the 45 SW Risk Assessment Center (RAC)**
- **Reduce/expand the clear area when/if appropriate (45 SFS)**
 - **Coordinate with the RAC**
- **Limit fires & collateral property damage (Fire)**

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CCAFS LAUNCH ACCIDENTS



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- **Identify storage locations for hazardous components if not already accomplished (EOC)**
- **Locate & render safe, all ordnance and hazardous items (EOD, EH, PSO)**
- **Secure classified material**

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CCAFS LAUNCH ACCIDENTS



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- Turn over scene to ISBP/SIBP once scene is declared safe and secure (EOC Dir)
 - Coordinate process with 45 SW/JA
- Provide situation reports to 45SW/CC and Patrick Command Post (PCP)

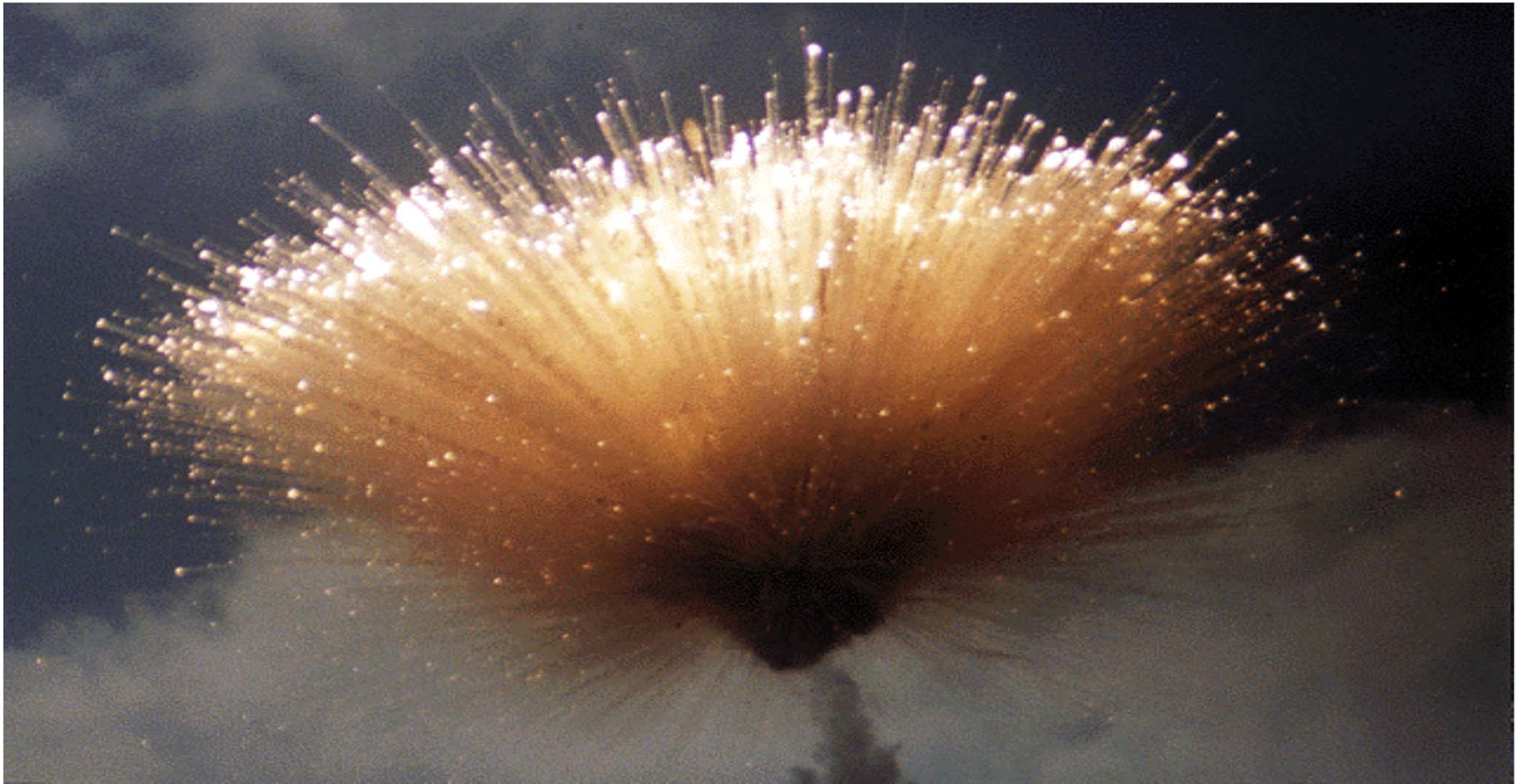
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RECOVERY



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Not going anywhere for a while ?

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RECOVERY



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- **Assign Recovery Operations Chief (ROC)**
- **Long, slow, detailed process with many players**
- **SAFETY is first priority!**
- **LEOC Team, Recovery Team and Safety Investigation Board must work together to accomplish a successful recovery**

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STATION 03

Lat. 28 Deg. 26 Min. 43.902 Sec. N

Long. 80 Deg. 33 Min. 52.986 Sec W

Roll 1, Frame 3 (PL97C-10151.03)





STATION 06
Lat. 28 Deg. 26 Min. 48.784 Sec. N
Long. 80 Deg. 34 Min. 08.379 Sec W
Roll 1, Frame 6 (PL97C-10151.06)





STATION 10

Lat. 28 Deg. 27 Min. 02.402 Sec. N

Long. 80 Deg. 33 Min. 41.406 Sec W

Roll 2, Frame 1 (PL97C-10152.01)





RECOVERY

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- **Once areas are safed, LEOC Director certifies in writing the release of the area to the SIB President**
- **LEOC Team continues to support the SIB and Recovery Team with EOD, Security, Environmental Health, HAZMAT Teams, Safety, Emergency Management, Environmental and Logistical support until their investigation is complete**

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LESSONS LEARNED

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- After any launch / landing anomaly a “Lessons Learned” session is held
- 2015 CRS-7 – 139 seconds. “Successful” launch from an LEOC perspective
- 2016 – After AMOS-6 the U.S.C.G. determined that it would be beneficial for them to be a part of the CCAFS LEOC
 - This has resulted in new relationships with the Port Authority
- Brevard County Fire has been added to the LEOC for launches that possess a toxic hazard

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SUMMARY



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- **CCAFS LAUNCH EOC**
 - **Mission**
 - **Core Functions**
 - **Team Composition**
 - **Disaster Response Force**
- **CCAFS LAUNCH OPS PROCESS**
- **CCAFS LEOC COMMUNICATIONS**
- **CCAFS LAUNCH ACCIDENTS**
- **RECOVERY**
 - **Lessons Learned**



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