TEXAS A&M UNIVERSITY CORPUS CHRISTI | LONE STAR UAS CENTER OF EXCELLENCE & INNOVATION

Texans Moving Forward after Hurricane Harvey

Tye Payne

Operations Chief

Aerospace Arizona Summit 2018

Insitu ScanEagle Over PoCC

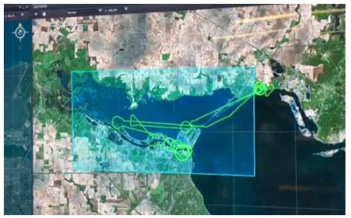
Background and Experience
Policy and Certifications

FAA Unmanned Aircraft Systems (UAS) Test Site – Lone Star UAS Center

Experience: ~3200 flights and 250+ customers

Partners:








Texas Department of Transportation

NASA

Federal Aviation Administration

City of Corpus Christi Texas 1852

Oak Ridge National Laboratory

Texas A&M Engineering Extension Service

Texas A&M University Corpus Christi

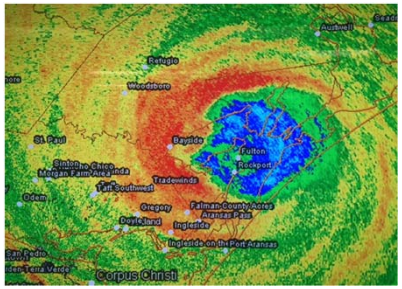
The Texas A&M University System 1876

NUASCP National Unmanned Aircraft Systems Credentialing Program

Hurricane Harvey
The Need

- Damaged areas in Texas (Storm Surge, Hurricane Wind Damage, Flooding, Tornado Wind Damage)
- All Emergency Operations Centers (EOC) were functional in an area the size of the state of New York
  - 54,000

  square miles



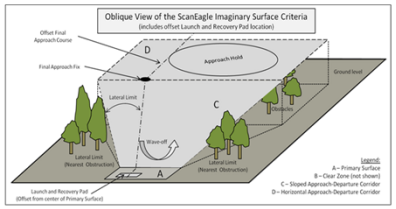
- Flooding in Houston
  - 1212 Square Miles

Hurricane Harvey
Missions

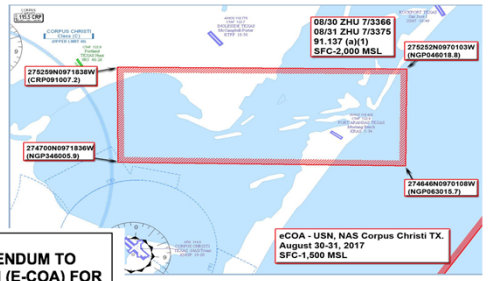
- Providing assistance to the state of Texas (County EOCS, State EOC/AOC, national entities)
- Aransas County Search, Rescue and Recovery
  - Port Aransas, Aransas Pass, Rockport, Fulton
- Survey of the Port of Corpus Christi and ship channel
  - TFR and BVLOS
- Houston flooding survey in west Houston areas with CRASAR
  - Ft Bend County, Richmond, Rosenburg, Sugarland
- Survey for the General Land Office (GLO) of oil platforms from barges
- Assessment of a Port Mansfield ship channel damaged vessel

BVLOS Operations

- Temporary Flight Restriction (TFR) and ECOA approved
  - Parties- State, FAA, US Navy, Boeing, Port of Corpus Christi, USACE, Lone Star UAS
  - Operating with a Transponder with call sign
  - Part 107 Waivers approved to 14 CFR Part 107.31, 107.41, 107.51



FAA FORM 7711-1 UAS PART 107 AUTHORIZATION
2017-AHQ-052-P107

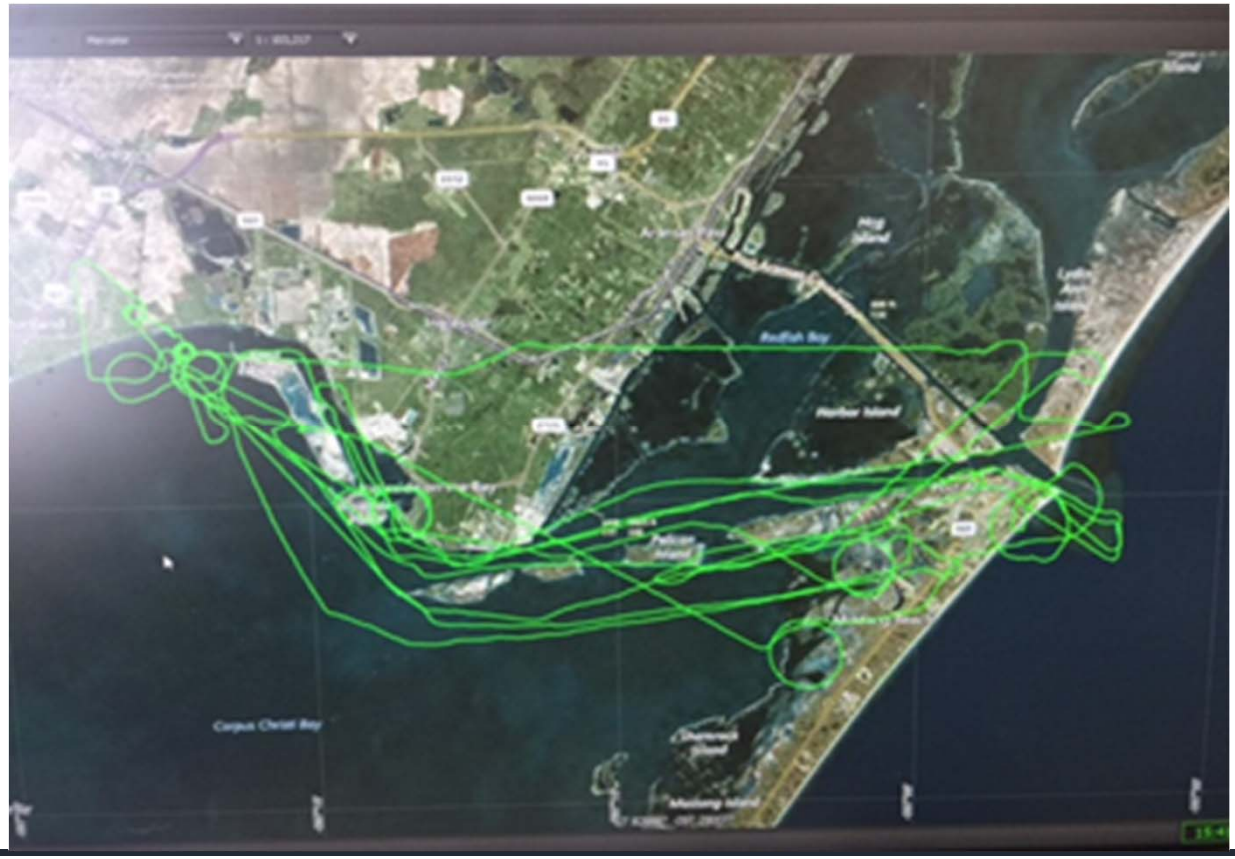


FEDERAL AVIATION ADMINISTRATION
SYSTEM OPERATIONS SECURITY

FAA REQUEST FOR AN ADDENDUM TO CURRENT COA/FAA EXEMPTION (E-COA) FOR UAS FLIGHT OPERATIONS

Operators Name, Organization/Agency and Address:

Ft Bend County TX / US Army Corps of Engineers / A&M Lone Star State UAS Center of Excellence



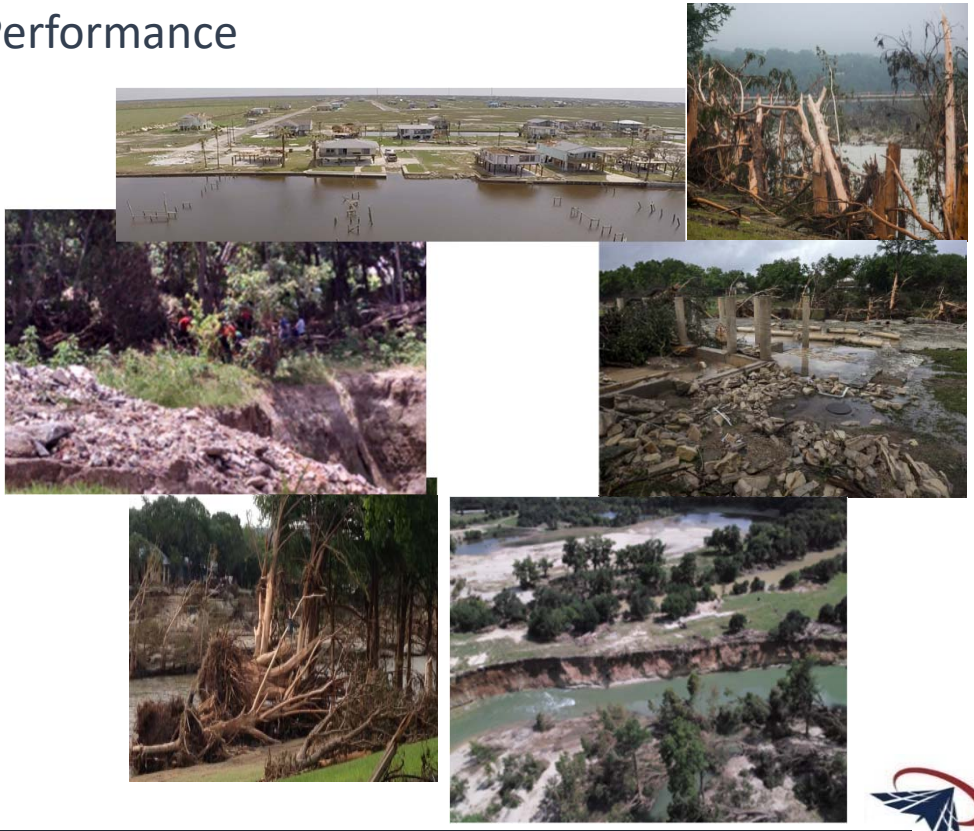
Harvey Response

Hurricane Harvey
Regulatory Lessons Learned

- It is imperative to get Temporary Flight Restrictions (TFRs) and ECOAs/Special Governmental Interest COAs in place as soon as possible
- Part 107 Waivers can be obtained quickly during a disaster (BVLOS, Operations over People, Class Airspace)
- Understanding the standup of national and regional support from the FAA is imperative
- Work within the incident structure; **No** research and marketing!!
- Credentialing of operators to support disasters is critical
- All operators must have permissions and credentials with them
- Future rescue, recovery and resiliency planning is needed
- Activate a BVLOS eCOA along the coast of Texas prior to landfall

Operations Lessons Learned

- Proper Prior Planning Prevents Poor Performance
- Be Prepared for the Unexpected
- Minimize Logistic Footprint
- Be Prepared for the Environment
- Train for Anticipated Tasks
- Tailor Communication SOPs
- Team Composition
- Safety is paramount!



Purpose

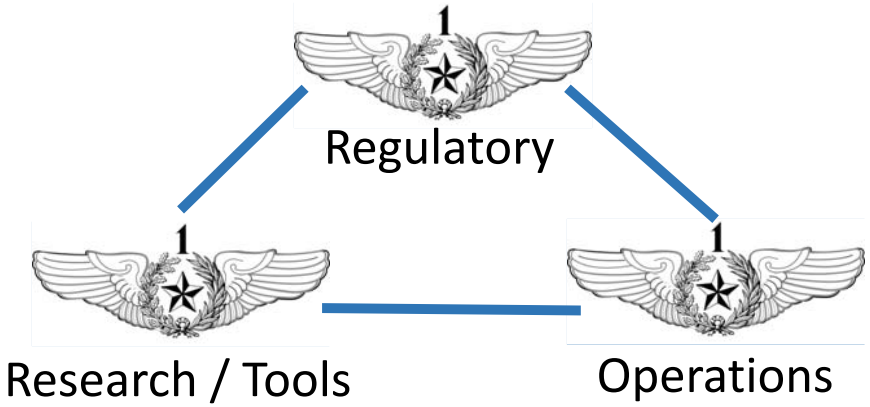
- *"A key component of continuity of government preparedness planning includes deliberate plans to ensure the continuation of essential functions through a wide range of incidents and requires a collaborated and concerted effort to coordinate provisions for federal, state, and local governmental entities, private sector, public sector, VOAD and agencies that provide critical services* ***to assist first responders in the execution of their duties*** *and those in direct support of critical infrastructure/key resources."*

Goals

- SAVE LIVES!
- Help get the public on the road to recovery faster
- Ensure the safety of responders
- Provide a resource for governmental officials

Texas Moving Forward

- Texas A&M University System was chartered by the Governor to lead Rebuild Texas
- All disasters start and end at the local level, get a TFR
- Texas has now recognized the need for using and controlling UAS as part of the state emergency response
- The LSUASC has now been selected as Texas Task Force Air Wing 1



Air Wing 1 Charter

- Serve as the State POC for UAS Operations in a Disaster Situation
- Work as a component of TX-TF1 and with the FAA
- Establish Local Air Operations Center & 'Air Boss' that controls all UAS operations for the Emergency Operations Center.
- De-conflict airspace and air ops from manned flight activities in selected Areas Of Operation.
- Create a backend data repository and central imagery storage node for near real time analysis and support planning, and post-incident triage

Disaster Recovery Objectives

- Save Lives Faster
  - Technology and process must facilitate quicker reaction search and rescue while assuring safety
- Get citizens on the road to recovery as fast as possible
  - Get Tax Assessors information on the extent of the damage
  - Facilitate local, state or FEMA response quicker
  - Improve Infrastructure
- Work as a cohesive team within local-state-national levels (Incident Structure)
- Disaster Recovery is not a time for research or marketing
- Follow FEMA guidelines and training

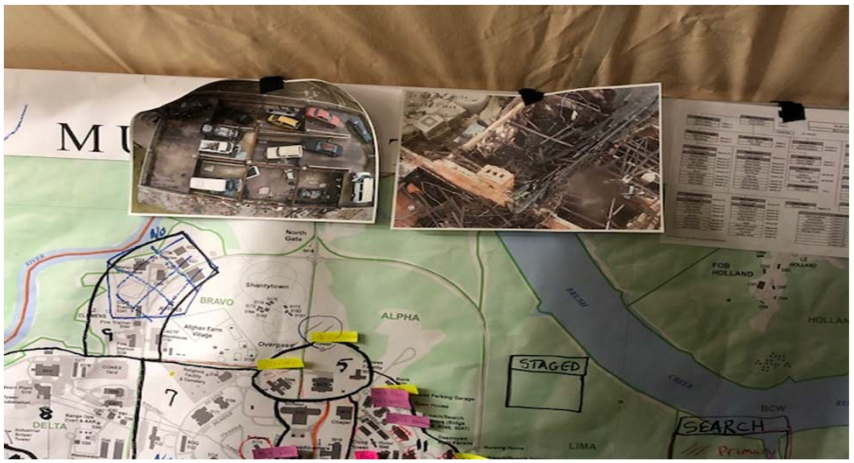
Texas Task Force Air Wing 1 Operational Missions

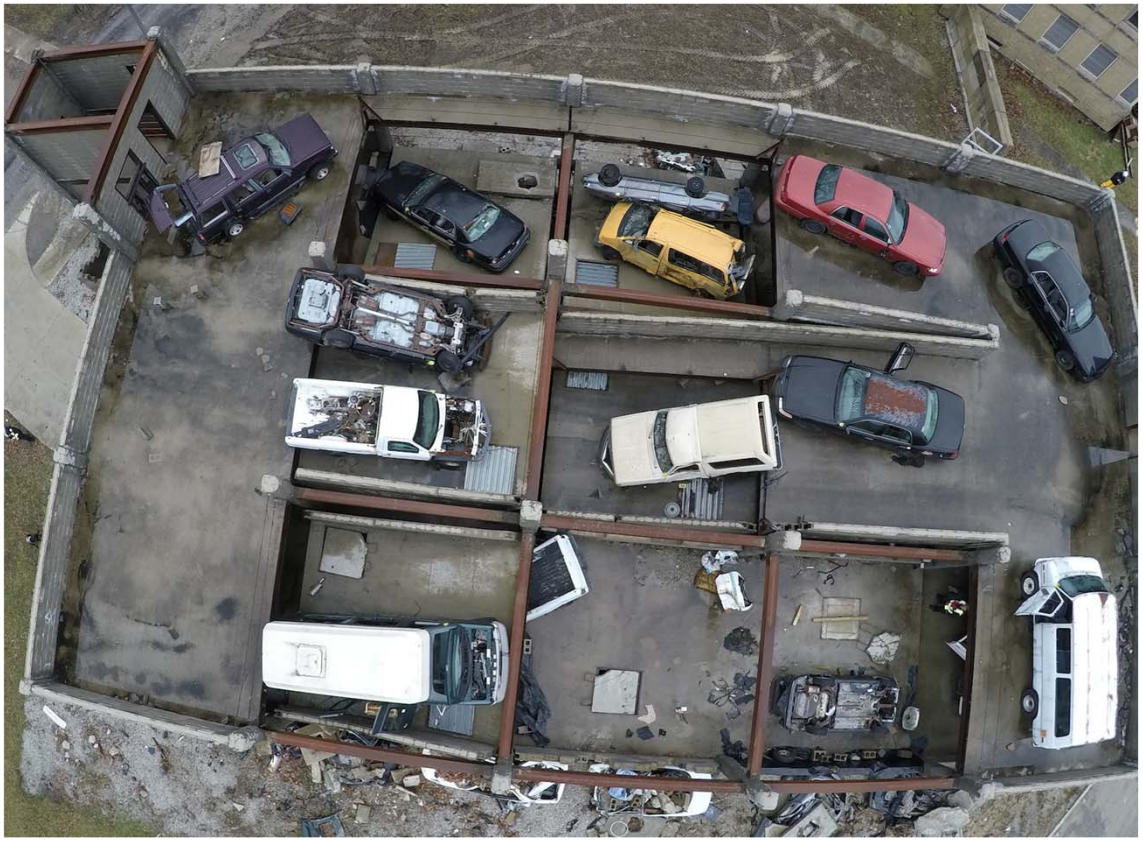
- Hurricane Response
- Regional Flooding
- Tornado Areas
- Beach Related
- Oil Rigs and Oil Disasters
- Chemical Spills
- Forest Fires
- Major Roadway Incidents
- Ports

Driving Force: Controlled, organized and **safe** UAS operations in the state of Texas in the midst of Disaster Response.

Texas Task Force 1 with Air Wing 1 (Muscatatuck Urban Training Center (MUTC))

- Three full days of Disaster Recovery integrating Air Wing 1 in as component of the Texas Task Force 1 (Feb 2018)
- Wide Scale deployment focused on an Earthquake Scenario (70 members across multiple disciplines including medical, search, structures, canine, climbers, plans, ops, logistics, finance, communications, air, IT, Hazmat





MUTC Lessons Learned

- You must be fully integrated within the Task Force (Training, Finance, Logistics, Planning and Operations)
- Disaster Recovery is NOT research or marketing! (Save lives faster, get people on the road to recovery faster)
- Use of new technology, aka UAS is a new world for FEMA Task Forces
- Prepare for the unexpected such as the changing environment
- Clear verbal communication is important
- “Air Wing 1 was accepted across the board”- FEMA Exercise Controller and Texas Task Force 1 Leader
- Air Wing 1 needs to work with our other Task Forces (not just in Texas, but nation-wide)

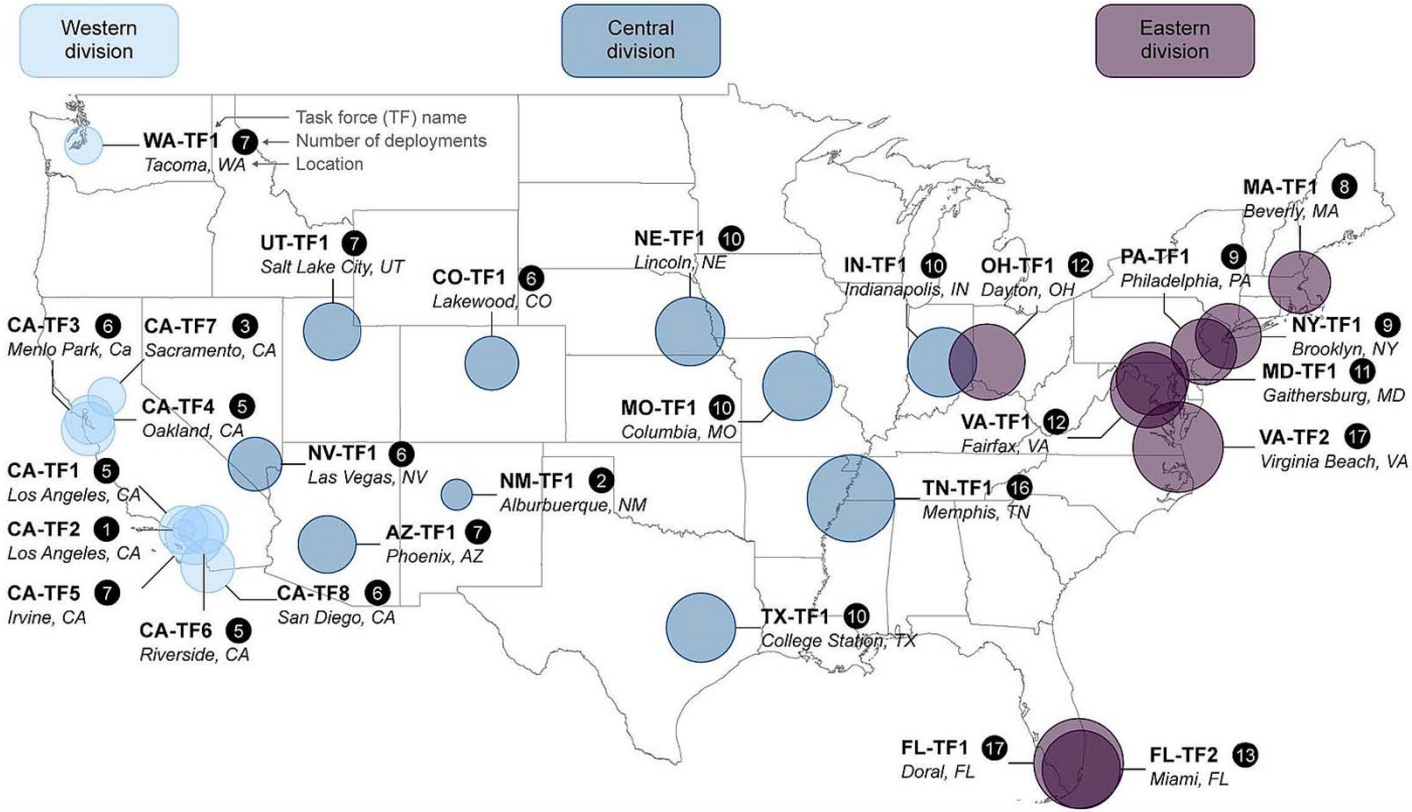
Air Wing 1 Challenges

- TFRs and SGI COA established quicker
- Proper use of regulations based on deployments
- Controlling the army of supporting UAS companies
- Understanding UAS supporting company objectives
- Credentialing of useable aircraft and operators
- Integration within Incident Structures
- Safety
- Operational environments
- Unique operations and control (BVLOS, Large UAS, Comms, Spectrum)

Texas Task Force Air Wing 1
Way Ahead

- Establish operational paradigms, FAA concurred permissions and processes
- Continue working across the state of Texas within Incident Commands Structures
- Establish Emergency Operations Center (EOC Air Ops, etc.) Air Boss that controls all UAS operations
- Conduct research on environmentally hardened operational aircraft and acquire specialized response aircraft and sensors
- Conduct research on Counter UAS Technologies to complement the mission
- Create a backend data repository and central imagery storage node for near real time analysis and support planning, and post-incident triage

National Task Forces (FEMA)
28 Task Forces



National Task Forces (FEMA)

There are many participants in the National Urban Search and Rescue Response System. These participants can be grouped into three main categories.

- FEMA - establishes policy and leads the coordination of the national system; establishes the curricula and training requirements
- Task Forces - there are 28 FEMA Urban Search and Rescue (US&R) Task Forces spread throughout the continental United States trained and equipped by FEMA
- Incident Support Teams - support the US&R Task Forces in accomplishing their mission through logistical, electronic and coordination expertise

National Task Forces Missions and Exercises

- Conduct physical search and rescue operations in damaged/collapsed structures and water
- Emergency medical rescue/care for entrapped survivors, task force personnel and search canines.
- Reconnaissance to assess damage to provide feedback to local, state and federal officials.
- Assessment/shut off of utilities to houses and other buildings, survey and evaluate hazardous material threats.
- Provide structural and hazard evaluations of buildings, stabilizing damaged structures, including shoring and cribbing.
- Hazardous Materials Equipment Push Packages (HEPP) for contaminated environment

QUESTIONS?