TECHNICAL RESCUE
DEFINITION OF A TR INCIDENT

- STRUCTURAL COLLAPSE
- ROPE RESCUE
- CONFINED SPACE RESCUE
- VEHICLE AND MACHINERY EXTRICATION
- WATER RESCUE
- WILDERNESS SEARCH & RESCUE
- TRENCH AND EXCAVATION RESCUE
Technical Rescue

- Combination of Resources:
  - Personnel
  - Equipment
  - Apparatus
Technical Rescue Management

- Advance Preparation
- Risks
- Organization
- The ‘Line Up”
- Functions of Command
- Duties & Responsibilities
Credibility versus Capability

Personal Credibility

Aspiration

Assessment

Articulation

Allocation

Attention

Accountability

Action

Organizational Capability
Proficiency Involves

• Training
• Experience
  – Certified
  – Qualified
• Judgement
• Practice, Practice, Practice...
Getting the Ball Rolling
So What’s it About?

- Maurie Cummings, Commissioner New Zealand, says it best.
- “Planning to protect, Acting to Save”
Risk Management

• Five-step process:
  – Situation awareness
  – Hazard assessment
  – Risk control
  – Decision point
  – Evaluation
\[ R = H + V - M \]

- Risks
  - Hazard
  - Vulnerability
  - Mitigation
Organizational Characteristics

Purpose

Resources

Control
Organizational Concerns

• Planning
• Equipment
• Training
• Protocols
• Dispatch
• Response
• Command
Position Descriptions

• Task Force Leader
• Planning Officer
• Safety Officer
• Team Manager
  – Search Team Manager
  – Rescue Team Manager
  – Medical Team Manager
  – Logistics Team Manager
  – Hazardous Materials Coordinators
Position Descriptions

- Tech – Info Specialist
- Logistics Specialist
- HazMat Specialist
- Rescue Squad Officer
- Rescue Specialist
- Heavy Rigging Specialist
- Canine Search Specialist
- Tech. Search Specialist
- Medical Specialist
- Support Specialist
As an IC of a TR Incident you can make a difference!!

- Be Proactive
- Be Receptive to Change
- Encourage Networking
- Develop Partnerships
- Communicate, Cooperate, Collaborate, & Demonstrate
- Create a new Vision
- “Remember L-C-E-S”
Operation’s Briefing

- Incident Objectives / Strategy
- Safety Considerations
- Search and Rescue Operations - Assignments
- Personnel Accountability
- Logistical needs

- Engagement into Incident
  - Site Assessment
  - Search
  - Live Rescues
  - Body Recovery
  - Documentation
Example

**RESCUE GROUP**

- RESCUE GROUP SUPERVISOR
  - HFD BC

  - PERIMETER CONTROL TEAM
    - Non-TR Lt. (E64)

  - RESCUE TEAM LEADER
    - TR 3 Lt. (T-3)

  - TECHNICAL SUPPORT TEAM LEADER
    - TR 3 Lt. (E-3)
RESCUE GROUP SUPERVISOR

- WORK WITH IC AND TECHNICAL SUPPORT TEAM LEADER TO DEVELOP IAP
- COORDINATE PERIMETER CONTROL, RESCUE OPERATIONS, AND TECHNICAL SUPPORT FOR OPERATIONAL OBJECTIVES
- REQUEST RESOURCES FROM THE IC WHEN NEEDED
  - REQUEST ADDITIONAL US&R TF FOR CERTIFIED RESCUER(S) OR RELIEF
- NORMALLY FILLED BY: BC or TR Officer
PERIMETER CONTROL

- NON-TR RESOURCE
- CONSULT WITH IC OR RESCUE GROUP SUPERVISOR REGARDING BOUNDARIES OF PERIMETER
- USE DOUBLE FIRELINE TAPE AS INDICATOR TO CIVILIAN & FIREFIGHTERS
- CONTROL THE SCENE
  - TRAFFIC
  - VIBRATION
  - MACHINERY
  - PERSONNEL
RESCUE TEAM

• HAZARD CONTROL MEASURES
  – EDGE PROTECTION
  – LOCK-OUT/TAG-OUT
  – MONITOR ATMOSPHERE

• ALL RESCUE, SHORING, EXTRICATION
  – PLACE SHORES
  – DIG OR REMOVE OBSTRUCTIONS

• PATIENT PACKAGING AND REMOVAL
  – “C” SPINE
  – IV ESTABLISHED

• BACK-UP RESCUER(S)
  – SAME PROTECTION AS RESCUER(S)
RESCUE TEAM LEADER

• OPERATIONAL TACTICS IN RESCUE SITE
• ESCAPE ROUTES AND SAFE ZONES FOR RESCUER(S)
• ENSURE THAT ATMOSPHERIC MONITOR INFORMATION ID DOCUMENTED
• ENSURE THAT RESCUER(S) ENTRY TIMES ARE DOCUMENTED
• IDENTIFY RESOURCES TO RESCUE GROUP SUPERVISOR
ATTENDANT

• DIRECT CONTROL OF RESCUE PERSONNEL AT ENTRY PORTALS FOR PERMIT REQUIRED CONFINED SPACE
• MAINTAINS COMMUNICATION WITH RESCUER(S) IN CONFINED SPACES
• MUST BE CERTIFIED TO CONFINED SPACE RESCUE OPERATIONS LEVEL
• USED FOR PERMIT REQUIRED CONFINED SPACE RESCUE
RESCUE TEAM

- MAY BE ONE RESCUER OR AN ENTIRE COMPANY
- PERFORM ALL HAZARD CONTROL MEASURES
- COMMUNICATE TO ATTENDANT FOR PERMIT REQUIRED CONFINED SPACE RESCUES
- MUST BE CERTIFIED TO CONFINED SPACE RESCUE OPERATIONS LEVEL FOR CONFINED SPACE RESCUES
- NO CERTIFICATION REQUIREMENTS FOR OTHER TR RELATED RESCUES
BACK-UP RESCUE TEAM

• SEPARATE AND IDENTICAL TO PERSONNEL AND EQUIPMENT STAFFING AS THE RESCUE TEAM MEMBERS
• MUST BE CERTIFIED TO CONFINED SPACE RESCUE OPERATIONS LEVEL FOR CONFINED SPACE RESCUES
• NO CERTIFICATION REQUIREMENTS FOR OTHER TR RELATED RESCUES
ATMOSPHERIC MONITOR

- Determines atmospheric condition relative to:
  - Oxygen content
  - Combustibility
  - Presence of toxins
- Monitors carried on TR
- Ensure that atmosphere is monitored periodically (e.g., every 15 minutes)
- Documents readings
TECHNICAL SUPPORT TEAM

- TECHNICAL SUPPORT TEAM LEADER
  - TECHNICAL SAFETY OFFICER
  - RIGGING CREW
  - CUTTING CREW
  - BREATHING AIR MONITOR
  - VENTILATION

Other TR Inc. - few changes to TSLT
- TSTL
- TSO
- Rigging
- Haul
- Edge
- Shore
- Stabilization
TECHNICAL SUPPORT TEAM

• SUPPORT RESCUE TEAM OPERATIONS ON AN INCIDENT SPECIFIC BASIS
• PROVIDE SUPPLIED AIR RESPIRATORS WHEN NEEDED
• PROVIDE VENTILATION WHEN NECESSARY
• OVERSEE TECHNICAL SAFETY OF INCIDENT
• SOME RESOURCES ASSIGNED MAY BE NON-TR
TECHNICAL SUPPORT TEAM LEADER

• WORK WITH IC AND RESCUE GROUP SUPERVISOR TO DEVELOP IAP
• GUIDE AND DIRECT NON-TR RESOURCES IN ACCOMPLISHING TEAM OBJECTIVES
• NORMALLY WILL BE ASSIGNED BY TR OFFICER
• GOOD RESOURCE FOR TECHNICAL RESCUE INFORMATION
TECHNICAL SAFETY OFFICER (TSO)

• RESPONSIBLE FOR OVERSEEING ALL OPERATIONS AT RESCUE SITE IN REGARDS TO TECHNICAL SYSTEMS AND SAFETY

• CHECK ANCHORS AND RIGGING

• ASSIST WITH EQUIPMENT NEEDS

• ASSIST IN DIRECTION FOR NON-TR RESOURCES

• WILL BE A TR MEMBER
RIGGING CREW

• ASSIST IN OBTAINING ANCHORS AND ESTABLISHING RESCUE LINES UNDER THE DIRECTION OF TECHNICAL SUPPORT TEAM LEADER OR TSO
• STAFF RESCUE LINES FOR HAULING OR RAISING RESCUER(S) OR PATIENTS
• MAY BE NON-TR RESOURCE
CUTTING CREW

• ASSIST IN CUTTING SHORING UNDER THE DIRECTION OF TECHNICAL SUPPORT TEAM LEADER OR TSO FOR SHORING OPERATIONS

• MAY BE TWO OR MORE INDIVIDUALS OR AN ENTIRE COMPANY

• MAY BE NON-TR RESOURSE
BREATHING AIR MONITOR

- SET UP AND MANAGE SUPPLIED AIR RESPIRATOR (SAR)
- DOCUMENT AIR USAGE BY RESCUER(S)
- TRAINED ON EQUIPMENT
VENTILATION

• PROVIDE VENTILATION BASED ON ATMOSPHERIC MONITORING
• VENTILATION MUST BE ACCOMPLISHED EARLY
• GAS POWERED BLOWERS NOT USED
• MAY BE TWO OR MORE INDIVIDUALS OR AN ENTIRE COMPANY
• MAY BE NON-TR RESOURCE
TR OPERATIONS

- BASIC AND ADVANCED TRUCK WORK
- CONSIDER TR RESOURCES ON SMALLER INCIDENTS TECHNICAL RESOURCE
- SPECIALIZED TOOLS AND EQUIPMENT
- SPECIALIZED KNOWLEDGE
FIRST RESPONDER

• SCOPE OF INCIDENT
• SPOT APPARATUS
  – VIBRATION
  – SPECIALIZED RIGS
• ESTABLISH CONTROL
  – RESTRICT ENTRY
• ESTABLISH ICS
• GATHER INFORMATION
  – WHAT, WHERE, WHEN
• STOP AND REMOVE CIVILIANS
• PROVIDE EDGE PROTECTION
  – 2 X 8 OR 2 X 10’S
• BELAY FOR MEMBERS NEAR EXCAVATIONS
• COMPANY AND SELF-DISCIPLINE
TR INCIDENTS

- STAFFING INTENSIVE
- MODERATE TO LONG DURATION
- CONSIDER LOGISTICAL SUPPORT EARLY
  - VACUUM TRUCKS, BACK HOE, CRANES
  - LIGHT UTILITY
  - REHAB UTILITY
- BEWARE OF “ALMOST HAVE HIM” SYNDROME
Low Probability/High Risk

- Structural collapse is considered a low probability but high consequence event due to:
  - Complex rescues
  - Dangerous rescues
  - Time-critical situations
  - Interface of different levels of rescue capability
Safety Considerations

- Should involve
- Preplanning and training
- Use of the Incident Command System
- Establishment of a Safety Officer, safety plan, and Rapid Intervention Crew
- Use of a personnel accountability system
- Require appropriate protective clothing and equipment
Rescuer Hazards

Potential threats include
- Physical
- Medical
- Environmental
- External
- Psychological
Unsafe Conditions

Can consist of:
- Unstable building/Secondary collapse
- Confined space
- Flammable or toxic hazard
- Oxygen-deficient atmosphere
- Ignition source
- Sharp, unstable, or irregular surface
Response Operations

• Involve
• Searching for live victims.
• Rescuing live victims. Realizing that time is a critical factor for survival.
• Considering risk/benefit factors.
• Considering safety factors.
Recovery Operations

• Involve
• Removal of deceased victims and personal property
• Realizing that time is not critical
• Using additional safety precautions (when possible)
• Using critical incident stress management
• Working with law enforcement and coroner in investigation and recovery operations
• Stabilizing and securing the incident site
Operational Phases

Major structural collapse incidents move through five operational phases:

– Phase 1: initial response
– Phase 2: expanded (reinforced) response
– Phase 3: extended response
– Phase 4: demobilization
– Phase 5: return to readiness
Phase 1: Initial Response
Involves Establishing Command

- Process includes
  - Announcing Command
  - Assuming all Command and General Staff responsibilities
  - Providing a brief radio report (location, type of structure, and situation)
  - Establishing a Command Post (CP)
Involves a Size-up

- Assessment of:
  - Survey site
  - Type of problem
  - Hazards
  - Conditions
  - Victims
  - Exposures
  - Potential for escalation
Involves Developing an Incident Action Plan

- Steps include
  - Understanding the situation
  - Establishing objectives and strategy
  - Developing tactical directions and assignments
  - Preparing the plan (ICS Form 201)
  - Implementing the plan
  - Evaluating the plan
Involves Requesting Resources

• Request of sufficient resources required to implement the IAP.
Involves Resource Deployment and Organization

Incident Commander

- Engine 1
  - Task
- Engine 2
  - Task
- Truck 1
  - Task
- Law Enforcement
Involves Resource Deployment and Organization

- Deploy resources to accomplish priority objectives
- Initiate scene management
  - Isolate the area
  - Establish zones
  - Site Recon
  - Structural Triage
  - Search & Rescue
Develop a Reconnaissance Team

- PRE-ESTABLISH TEAM
- CONSIDER ALL DISCIPLINES
- PERFORM ALL HAZARD CONTROL MEASURES
- ADDRESS STRUCTURAL INTEGRITY
- ADDRESS SAFETY CONCERNS
- COMMON COMMUNICATION
- TECHNICAL & CANINE SEARCH
- MUST BE CERTIFIED TO ALL RESCUE OPERATIONS: LIGHT/HEAVY
So, What’s the Recon Team Look Like?

**Site Assessment**
- 1 – Rescue Group Manager
- 1 – Safety Officer
- 1-2 - Hazardous Materials Specialist
- 1 - Heavy Rigger
- 1 - Structural Specialist

**Search/Recon**
- 1- Search Group Manager
- 2 – Canine Search Specialists
- 1 – Technical Search Specialist
- 1 - Hazardous Materials Specialist

**Rescue/Recon**
- 1- Rescue Squad ‘light’ (RSO + 5 RS)
- 2 – Medical Specialists
- 1 - Hazardous Materials Specialist
Structural Triage

• ... helps to identify, select, and prioritize structures to find and rescue live victims.
Structural Triage (cont'd)

- Steps:
  - Obtain precollapse intelligence.
  - Deploy reconnaissance teams.
  - Analyze and determine the best risk/benefit ratio.
    - Significant hazards drive "no go" assessment.
  - Prioritize rescue sites.
  - Reevaluate continually.
Life Safety and Personnel Considerations

- Collapse hazards consist of:
  - Structural failure
  - Nonstructural failure
  - Nonstructural damage
  - Environmental conditions

"Low occurrence/high-risk incidents injure and kill firefighters."
Structural Collapse Rescue

Five steps:

- **Step 1**—survey area for victims.
- **Step 2**—rescue surface victims.
- **Step 3**—explore voids and remove survivors.
- **Step 4**—remove selected debris.
- **Step 5**—remove general debris.
General Priority for Rescue

"Do the most good for the greatest number in the least amount of time."
Prioritizing Rescues

Factors include

– Victim viability and longevity
– Degree of difficulty and duration of rescue
– Rescue outcome potential (multiple versus single survivors)
– Safety of rescuers and victims
Involves Evaluating Response

- Requires accurate information and good communications (status/progress reports).
- Involves determining resource effectiveness in achieving objectives.
Phase 2: Expanded (Reinforced) Response
Involves an on-going Size-up

• This must
  • Be continuous
  • Anticipate the need for an extended operation
  • Document information
Involves Transfer of Command

• Consists of:
  – Communication with the officer being relieved
  – A briefing (using ICS Form 201) that contains
    - Incident conditions
    - IAP
    - Progress toward completing objectives
      - Plan A
      - Contingency Plans
    - Safety considerations
    - Resource assignments
    - Need for additional resources
    - Critical issues
Involves Scene Control

• Establishment consists of:
  • Establishing zones
  • Evacuating bystanders
  • Controlling perimeters
  • Establishing site security
  • Establishing a suitable CP
  • Establishing a Staging Area
  • Establishing a triage and treatment area
Involves Developing/Expanding an IAP

• The plan needs to provide:
  • Clear statement of objectives and actions
  • Basis for measuring work effectiveness
  • Basis for measuring progress
  • Basis for providing accountability
Involves Developing/Expanding an IAP (cont'd)

• Essential IAP elements include
  • Statement of objectives
    – Achievable
    – Measurable
    – Flexible
  • Incident organization
  • Tactics and resource requirements
  • Support plans
Involves Organization Expansion

• Expansion is based on:
  • Resource needs
  • Management needs
Phase 3: Extended Response
(24-hour operation)
Involves an Extended ICS Organization

- A structural collapse incident of major magnitude may require an incident organization that involves resources from many agencies who work in a Unified Command.

- Complex Logistical, Planning and/or Financial needs
Involves an Extended ICS Organization

- During a multi-branch response:
  - The IC assigns Logistics and Finance/Administration Chiefs.
  - Operations has established five branches.
  - Planning, Logistics, and Finance/Administration have several operational units.
Involves Interface with Emergency Operations Center

- Activated to support response agencies and coordinate multi-agency operations.
- Local government EOC's are the central point for coordination within and outside the jurisdiction.
- Field level coordination may go through dispatch.
Phase 4 - Demobilization

- Demobilization Plan
- Disengagement
- Health and Safety
- Equipment Inventory
- Logistics
- Interface with IC/Operations
Phase 5
- Return to Readiness

- Health and Safety
- Media Relations
- Documentation
- Rehab (Personnel and Equipment)
- Financial Processing
- After - Action Report(s)
Summary

Response functions for structural collapse consist of:

- Command and coordination
- Search
- Rescue
- Medical
- Technical specialists
- Safety