



GENERAL ORDER

GENERAL ORDER 330.10

Confined Space Rescue Incidents

EMERGENCY SERVICES BUREAU

Issue Date: 12/29/2008

Revision Date: 07/07/2014

1 APPLICABILITY

2 All Personnel

3 POLICY

4 The Howard County Department of Fire and Rescue Services (Department) shall set forth guidelines that
5 assist the Incident Commander in assessing the hazard, identifying the level of operational capability, and
6 establishing operational criteria when responding to Confined Space rescue incidents. The achievement
7 of these objectives will help prevent and reduce the severity of accidents, injuries, and exposures to both
8 Department members and the citizens served by the organization. The well-being of members or citizens
9 shall not be risked for any activity that is not essential to the immediate protection of life. No
10 Department member shall conduct, or participate in, an activity for which he/she is not trained and/or
11 properly equipped to handle.

12 DEFINITIONS

- 13 ➤ **Attendant** - an individual stationed outside one or more permit-required spaces who monitors the
14 Authorized Entrants and who performs all Attendant's duties assigned in the employer's Permit
15 Space program.
- 16
- 17 ➤ **Authorized Entrant** - an employee who is authorized by the employer to enter a Permit Space.
- 18
- 19 ➤ **Confined Space** - a space that:
 - 20 ○ Is large enough and so configured that an employee can bodily enter and perform assigned
21 work;
 - 22 ○ Has limited or restricted means of entry or exit (for example, tanks, vessels, silos, storage
23 bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and
 - 24 ○ Is not designed for continuous employee occupancy.
- 25
- 26 ➤ **Entry** - the action by which a person passes through an opening into a Permit-Required Confined
27 Space. Entry includes ensuing work activities in that space and is considered to have occurred as
28 soon as any part of the entrant's body breaks the plane of an opening into the space.
- 29
- 30 ➤ **Entry Supervisor** - the person (such as the employer, foreman, or crew chief) responsible for
31 determining if acceptable entry conditions are present at a Permit Space where entry is planned,
32 for authorizing entry and overseeing entry operations, and for terminating entry.

33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80

- **Hazardous Environment** - an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:
 - Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL).
 - Airborne combustible dust at a concentration that meets or exceeds its LFL. This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52 m) or less.
 - Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent.
 - Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in OSHA 1910.146 Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of this Part and which could result in employee exposure in excess of its dose or permissible exposure limit.
 - Any other atmospheric condition that is Immediately Dangerous to Life or Health.

- **Immediately Dangerous to Life or Health (IDLH)** - any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a Permit Space.

- **Inerting** - the displacement of the atmosphere in a Permit Space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible. While inerting is not a practice Department personnel shall employ, responders may encounter incidents where inerting has occurred.

- **Isolation** - the process by which a Permit Space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tag-out of all sources of energy; or blocking or disconnecting all mechanical linkages.

- **Permit-Required Confined Space (Permit Space)** - a Confined Space that has one or more of the following characteristics:
 - Contains or has a potential to contain a hazardous atmosphere;
 - Contains a material that has the potential for engulfing an entrant;
 - Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
 - Contains any other recognized serious safety or health hazard.

- **Retrieval System** - the equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from Permit Spaces.

- **Incident Commander (IC)** - is the individual responsible and accountable for managing the entire incident. There is one Incident Commander for an incident at any given time.

- **Incident Safety Officer (ISO)** - is responsible for overall incident safety throughout the rescue operation, pursuant to Department General Order 330.07: Incident Command System. This individual shall report directly to the Incident Commander. The individual assigned as ISO by the

81 IC shall meet the requirements of NFPA 1521: Standards for Fire Department Safety Officer.

- 82
- 83 ➤ **Technical Safety Officer (TSO)** - a position assigned by the Incident Commander, is responsible for
- 84 the safe conduct of all operations in the technical rescue group of the Incident Command System.
- 85 This individual shall be a Special Operations team member or an individual who possesses
- 86 knowledge, training, and experience pertinent to the type of technical rescue being conducted.
- 87 The Technical Safety Officer shall report directly to the Incident Safety Officer.
- 88
- 89 ➤ **Awareness Level** - per NFPA 1670, this level of Confined Space rescue requires the Department
- 90 member to recognize the need for Confined Space search and rescue; initiating contact and
- 91 establishing communications with victims where possible; recognize and identify the hazards
- 92 associated with non-entry Confined Space emergencies; recognize Confined Spaces; perform a
- 93 non-entry retrieval; implement the emergency response system for Confined Space emergencies;
- 94 implement site control and scene management.
- 95
- 96 ➤ **Operations Level** - per NFPA 1670, this level of Confined Space rescue requires the Department
- 97 member to perform all the techniques of the Awareness Level, plus be qualified at the Operations
- 98 Level for rope rescue and the Awareness Level for trench and excavation search and rescue; have
- 99 capabilities for sizing up existing and potential conditions at Confined Space emergencies; protect
- 100 personnel from hazards within the Confined Space; ensure that personnel are capable of
- 101 managing the physical and psychological challenges that affect rescuers entering Confined Spaces;
- 102 identify the duties of the rescue entrant(s) and backup rescue entrant(s), rescue attendant, and
- 103 rescue team leader; monitor continuously, or at frequent intervals, the atmosphere in all parts of
- 104 the space to be entered for oxygen content, flammability (LEL/LFL), and toxicity, in that order;
- 105 perform entry-type rescues into Confined Spaces meeting all of the following specific qualifying
- 106 characteristics:
- 107 ○ The internal configuration of the space is clear and unobstructed so retrieval systems can
- 108 be utilized for rescuers without possibility of entanglement.
- 109 ○ The victim can be easily seen from the outside of the space's primary access opening.
- 110 ○ Rescuers can pass easily through the access/egress opening(s) with room to spare when
- 111 PPE is worn in the manner recommended by the manufacturer.
- 112 ○ The space can accommodate two or more rescuers in addition to the victim.
- 113 ○ All hazards in and around the Confined Space have been identified, isolated, and
- 114 controlled.
- 115
- 116 ➤ **Technician Level** - this level of Confined Space rescue requires the Department member to
- 117 perform all the techniques of the Operations Level, plus develop and implement plans for
- 118 evaluating existing and potential conditions at Confined Space emergencies; ensuring that rescue
- 119 team members take part in a medical surveillance program; planning response for entry-type
- 120 Confined Space rescues in hazardous environments; implementing the planned response.
- 121
- 122 ➤ **Specialist** - an individual who has technical expertise and practical knowledge dealing with
- 123 Confined Spaces who may augment on-scene activities by providing essential information in their
- 124 specialized field.
- 125
- 126
- 127

GENERAL:

Each response to a Confined Space Rescue Incident shall be evaluated upon arrival by the Incident Commander to assess the risk to Department personnel.

132

The well-being of personnel and/or citizens shall not be risked for any activity that is not essential to the immediate protection of life.

135

The priority for rescue/safety shall be:

137

- Yourself
- Other responders
- The victim(s)

138

139

140

All operations at the scene of a Confined Space Rescue Incident shall be performed in a safe manner consistent with the identified level of operational capability. No Department member shall conduct, or participate in, an activity for which he/she is not trained, certified and/or properly equipped to handle.

144

When conducting a training exercise, body recovery, evidence search, incident involving animals, or other operations not essential to the immediate protection of life, the Incident Commander shall utilize the same procedures employed during an actual rescue operation but at a level of urgency commensurate with the risk/benefit analysis.

149

All Department career personnel shall be trained to the Operations level of Confined Space rescue. This will be accomplished by providing career personnel with the current Maryland Fire & Rescue (MFRI) Rescue Technician – Confined Space Rescue and Rescue Technician – Site Operations and Hazardous Materials Operations (or equivalent) courses.

154

- Training for volunteer personnel may be requested through the Howard County Volunteer Training Board.

155

156

Only Technician and Specialist trained and certified level personnel shall be allowed to participate in high risk situations.

159

It is the intent of this policy to follow recommendations contained within:

161

- NFPA 1670: Standard on Operations and Training for Technical Rescue Incidents
- NFPA 472: Standard for Professional Competence of Responders to Hazardous Materials/WMD Incidents
- Department General Order 300.02: Accountability
- Department General Order 300.04: Mayday
- Department General Order 300.07: Incident Command System
- Department General Order 300.11: Rapid Intervention Crew
- Department General Order 330.04: Technical Rescue Incidents
- Howard County Policy and Procedure 200.11: Confined Space Policy

162

163

164

165

166

167

168

169

170

GUIDELINES FOR INITIAL OPERATIONS:

The first arriving officer shall establish command pursuant to Department General Order 300.07: Incident Command System.

173

174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220

The Incident Commander shall attempt to identify, locate and secure a witness as soon as possible; this will help in identifying the problem and locating the victim(s).

The Incident Commander, or designee, should access maps, pictometry, and all other available information, and have a witness sketch a map, as needed. For Confined Space incidents, consider any building/site plans that may be available.

Conduct on scene assessment, to include:

- Type of space
- Reason for initial entry
- Original entry permit
- Contents and hazards of the space, Safety Data Sheets (SDS), if available
- Blueprints, a map, or a diagram of the space
- Number and location of access points
- Number and location of victims
- Nature of injury, illness, or entrapment of victims
- Length of time victims have been in the space
- Safety precautions in place (lockout, tag-out, isolation)
- Are communications with the victims possible?

The Incident Commander shall assess the risk to Department personnel and communicate the scene size-up and hot zone to response personnel.

- If the Incident Commander determines that the incident is beyond the capabilities of the Department personnel currently on the scene, he/she shall immediately request Howard Communications to dispatch the Special Operations team to the scene. Upon arrival, the Special Operations team will assist with the rescue operations as directed by the Incident Commander.
- If the Incident Commander determines that the incident will be a rescue, then operations must be initiated as soon as possible with the proper equipment and qualified Confined Space rescue trained personnel.
- If the Incident Commander determines that the incident will be a body recovery, then operations are to proceed in a manner that presents minimal risk to Department members.

Establish control zones in the hot/warm/cold format and keep unauthorized personnel away from the hazard area. Prohibit entry of untrained personnel (and citizens) into the hot zone. All observers, citizens, media representatives, and unprotected responders are to be kept far enough away from the incident as to not interfere with the ever expanding operation or responding units.

Witnesses should be identified and segregated until each can be interviewed. The responsible party should be kept at the Incident Command post for the duration of the incident. All information gathered should be written down to ease the exchange of information and to reduce the possibility of inaccurate or incomplete information being passed on. At a minimum, the following information should be obtained:

- Type of Confined Space
- Reason for initial entry
- Contents and hazards of the space
- Number and location of victims, if known
- Nature of injury, illness, or entrapment of victims

- 221 • Length of time the victims have been in the space
- 222 • Safety precautions in place (lockout, tag-out, isolation)
- 223 • Are communications with the victim(s) possible?

224

225 After evaluating the information received during the scene assessment and developing an effective
226 incident action plan, review the resources on location and en route to determine if any additional
227 resources are needed. Consider the following options:

- 228 • Additional medical units
- 229 • Activation of additional Special Operations companies or members
- 230 • A mutual aid Confined Space Rescue Team for a Rapid Intervention Crew
- 231 • A second hazardous materials unit
- 232 • A canteen for extended operations
- 233 • Medical Ambulance Bus (MAB) for shelter during weather extremes
- 234 • Police for scene security
- 235 • Air Unit 17 for logistical support
- 236 • Decon 13 for victim/rescuer decontamination or shelter during weather extremes

237

238 Ensure all non-trapped personnel and would-be rescuers are out of the space.

239

240 **SCENE SAFETY:**

241 The Incident Commander shall assign an Incident Safety Officer (ISO) for the duration of the incident. The
242 Incident Safety Officer responsibilities shall be pursuant to Department General Order 330.04: Technical
243 Rescue Incidents: Guidelines for Scene Safety at Technical Rescue Incidents.

- 244 • The ISO shall be responsible for identifying hazards and mitigating them if at all possible.
245 Information regarding hazards that cannot be mitigated shall be communicated to the Incident
246 Commander and to all personnel operating at the scene.
- 247 • All personnel working in the hot zone, or supporting logistical functions in the warm zone, shall be
248 properly dressed with appropriate PPE.

249

250 A Technical Safety Officer (TSO) shall be assigned to assist the Incident Safety Officer whenever technical
251 resources are being utilized (i.e., the rescue operations are beyond Awareness Level techniques), this
252 shall be pursuant to Department General Order 330.04: Technical Rescue Incidents.

- 253 • The TSO or ISO will closely monitor personnel working within the hot zone for signs of fatigue,
254 dehydration or other environmental exposures.
- 255 • The IC shall establish a rehab area to provide the rescuers with medical assessment, nutrition and
256 hydration during the extended rescue operation.

257

258 **GUIDELINES - AWARENESS LEVEL TRAINED PERSONNEL:**

259 Recognize and identify hazards specific to space in question. Hazards can include, but are not limited to,
260 the following:

- 261 • Hazardous atmospheres
- 262 • Hazardous chemicals
- 263 • Temperature extremes

264

265 When possible, initiate a rapid, **non-entry** extrication of non-injured or minimally injured victim(s). Non-
266 entry extrication may be accomplished by use of:

- 267 • Pike pole

- 268 • Attic ladder
- 269 • Rope

270

271 **GUIDELINES – OPERATIONS LEVEL TRAINED PERSONNEL:**

272 Perform functions at the Awareness Level, and;

- 273 • Perform ventilation of the Confined Space.
- 274 • Conduct atmospheric monitoring with at least a “four-gas” meter. Readings will be taken to
275 determine the following (in this order):
 - 276 ○ Oxygen enriched or deficient
 - 277 ○ Flammability/LEL (Lower Explosive Limit)
 - 278 ○ Toxic gases (Carbon Monoxide, Hydrogen Sulfide)
 - 279 ○ Consider radiation sources
 - 280 ○ Consider corrosives

281

282 **GUIDELINES - TECHNICIAN LEVEL TRAINED PERSONNEL:**

283 Performs functions of the Awareness and Operations Levels, and are trained, qualified and equipped to
284 function at the Technician Level. Only Technician and Specialist Level trained Department members shall
285 be allowed to attempt a rescue in a Confined Space of a victim that is not visible from an ingress/egress
286 point of the Confined Space.

287

288 Once all of the appropriate/applicable tasks listed on the Department’s Confined Space Permit have been
289 completed and the members of the operation have been briefed, a rescue may be commenced.

290

291 A retrieval system shall be used on the personnel entering the Confined Space unless the retrieval
292 equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant.

293

294 **GUIDELINES - POST RESCUE OPERATIONS:**

295 Upon exiting the Confined Space, the rescuers and the victim(s) shall be evaluated for the need to be
296 decontaminated by the TSO.

297

298 As soon as the victim is brought to safety and decontaminated, an assessment shall be completed by
299 Advanced Life Support personnel.

300

301 Personnel involved in the rescue operations shall proceed to the rehab area for medical assessment,
302 nutrition, hydration and/or environmental temperature control.

303

304 **CONFINED SPACE RESCUE TRAINING AND DOCUMENTATION:**

305 Special Operations team personnel shall be expected to perform at the Technician Level and shall be
306 trained and certified accordingly.

307

308 Annual performance evaluations (re-certifications) for Confined Space Rescue Technicians shall be
309 conducted on all Special Operations personnel and equipment, pursuant to the guidelines of NFPA 1670:
310 Standard on Operations and Training for Technical Rescue Incidents.

311

312 All career and contingent services personnel are required to complete annual recertification training in
313 Confined Space rescue, pursuant to OSHA 1910.146.

314

315 Master documentation for all initial training, certifications and annual re-certification shall be maintained
316 by the Bureau of Education and Training.
317
318 Documentation regarding training and certification for each member shall be available for inspection by
319 that member and his/her authorized representatives.

320 REFERENCES

- 321 • Department General Order 300.02: Accountability
- 322 • Department General Order 300.04: Mayday
- 323 • Department General Order 300.07: Incident Command System
- 324 • Department General Order 300.11: Rapid Intervention Crew (RIC)
- 325 • Department General Order 330.04: Technical Rescue Incidents
- 326 • National Fire Protection Agency (NFPA) 1670: Standard on Operations for Technical Rescue Incidents
- 327 • National Fire Protection Agency (NFPA) 472: Standard for Professional Competence of Responders to
328 Hazardous Materials Incidents
- 329 • Howard County Policy and Procedure 200.11: Confined Space Policy
- 330 • Occupational Health and Safety Administration 1910.146
- 331 • Applicable local, state and federal laws

332 SUMMARY OF DOCUMENT CHANGES

333 Updated to include NIMS terminology and reference list. No operational changes made. SMH/GEW 1832

334 FORMS/ATTACHMENTS

336 APPROVED

337
338


339 Deputy Chief John S. Butler
340 Operations Command
341
342