GRAIN BIN RESCUE TECHNICIAN LEVEL

COURSE DOCUMENTATION

VERSION 2024.7

The information contained in this document is current as of December 2024. Sponsoring agencies will be informed of any changes to this information well in advance of a class.

If there are any questions related to the information contained herein, please contact RescueTechs for clarifications.

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Course Documentation

Grain Bin Rescue Technician Level

Length of Course

16 hours

Course Description

This is a 16-hour technical-level rescue training in performing safe extrications in/on agricultural grain bins. This program is intended to give students the information and skills needed to respond to and effectively perform grain bin entrapment extrication at the operations/technician level. It will review the dangers associated with the farm environment, working in grain, and rescue incidents. Heavy emphasis is placed on safety, incident management, safe and proper rigging, and aerial operations. The program includes multiple full rescue evolutions in actual grain bins.

(Note: the Grain Bin Rescue Awareness program is NOT required for this class as those materials are covered in this tech-level program.)

Course Goal

This program is intended to give students the information and skills needed to respond to and effectively perform grain bin entrapment extrication at the operations/technician level. It will review the dangers associated with the farm environment, working in grain, and rescue incidents. It includes proper rigging, aerial operations, and actual practical evolutions in real grain bins.

Course Objectives

1. Understand how and why people enter bins and become entrapped/engulfed.
2. Explain how bins are constructed and their structural integrity.
3. Experience walking in grain inside a grain bin.
4. Identify challenges to emergency responders on proper management of a grain bin incident.

5. Recite the proper steps to follow for a successful grain bin rescue.
6. Identify challenges to emergency responders on proper management of a grain bin incident.
7. Review confined space permitting, lock-out/tag-out procedures, and air monitoring practices.
8. Build and use coffer dams or specialty grain rescue devices.
9. Build and operate rope rigging systems for safe extrication, including lead climbing, and constructing belay systems.
10. Review proper use of patient packaging systems for grain bin rescue scenarios.
11. Properly rig a given aerial device for high anchor point and change of direction operations.
12. Successfully complete scenario-based practical evolutions in grain bin rescues.

Minimum Age

The minimum age for this program is **18 years old** on/before the first day of class.

In addition, this course is physically intensive, and students should be in good physical condition and capable of fully participating in the training.

Recommended Student Training Prerequisites[1]

Students participating in this program should have minimum training on the following.

1. Confined space awareness[2]
2. Lock-out / tag out
3. Rope rescue at the awareness level – operations-level or greater preferred[3]

Weather Considerations

This program is heavily dependent on weather conditions and can NOT be conducted in rain, snow, or high wind conditions for safety concerns. RESCUETECHS will maintain close

[1] Due to the diversity of training programs available depending on geographic locations/variations, course sponsors are encouraged to review the references noted. Should a course sponsor wish to have additional requirements for students, that is the final decision of the organization.

[2] Refer to NFPA 1006 (2021) chapter 7. (National Fire Protection Association, 2021)

[3] Refer to NFPA 1006 (2021) chapter 5. (National Fire Protection Association, 2021)

communication with the sponsoring agency and should the training need to be postponed due to weather it will move to a designated date. Course sponsors should publish this alternate date(s) for student awareness.

Attendance

Because of the highly technical and labor-intensive nature of this program, students should plan to be in attendance for all 16 hours. We recommend that organizations consider mutual aid coverage for the class days so that all students can remain on-site and focused for the training.

Appendix 1 – Sponsoring Agency Personnel and Equipment Requirements

Training Site Requirements

- Day 1
  - Classroom with tables and chairs, and projector screen.
  - Farm facility with grain bins..
  - Approximately 200-300 bushels of corn or soybeans in a gravity wagon or grain dump truck. (The quantity can vary depending on size of the wagon/truck – a minimum of 4-5 foot of depth of grain is needed.)
- Day 2
  - Farm facility with grain bins for actual in-bin rescue scenarios.
  - At least one grain bin will be entered from the top

Rope, Rigging, and Rescue Equipment Requirements

Appendix 2 provides a list of the minimum rope equipment in a checklist format that will be required to safely conduct the practical skills portion of the class. Other equipment that is immediately available to the agency during normal responses can be utilized as well in accordance with the agency's SOG/SOP. All rope-related should meet NFPA standards in effect at time of purchase. *It would be beneficial if the agency can provide an inventory of current rope rescue equipment in advance of the class for the instructors' knowledge.*

PPE Requirements

In addition to rescue harnesses, each student shall have the following personal protective equipment:

- Technical rescue turnout gear – or – long pants and long sleeve shirt. *(Note: structural firefighting turnout gear is NOT appropriate for these types of operations and should be avoided.)*
- Safety toe foot protection – tall boots would be better for working in grain
- Gloves
- Helmet
- Safety glasses
- Dusk masks or other appropriate form of respiratory protection.
- Flashlight

Air Monitoring

Agency air monitoring equipment – multi-gas meter, etc.

Aerial Apparatus

A minimum of one (1) fire department aerial device, however two are preferred (one ladder and one platform device) for both practical session days. Aerials should be owned by the host department or be normal mutual aid apparatus. The following documentation will be required no less than 30 days in advance of the first day of class.

1. Aerials should have a minimum of 750 lb. tip load.
2. Copies of the annual third-party aerial testing/certification for any device being used in the class dated within one (1) year of the class date.
3. Manufacturer's information/data on aerial capacity and tip loading for any aerial device being used in the class.

Communications Equipment

There should be adequate portable radios to support command, aerial, and entry team operations. Agencies should consider having some additional batteries and/or the ability to recharge batteries at the training.

Understanding that there are sometimes disparate systems, as well as working inside a metal structure for the training, agencies may wish to determine the best equipment and communications methods prior to the training. We recommend a non-repeated channel for communications. It is recommended that all frequencies be separate from any primary dispatch channels, etc. Agencies should also alert their emergency dispatchers of the training ahead of time so that radio transmissions are not construed to be an actual incident.

Lock-Out / Tag-Out Equipment

The agency should have available lock-out / tag-out hardware and locks for electrical equipment. Please note that the instructors will perform a lock-out prior to any evolutions, however students will still need to demonstrate the agency's capability to safely and effectively complete this.

UAV Usage

We encourage agencies to invite UAV operators to participate in the hands-on training. They can demonstrate capabilities, as well as give ground crews better visibility on the operations at the top of the bin.

1. Ensure UAV operators are operating in accordance with FAA regulations
    a. Governmental agencies - FAA Certificate of Authorization (public aircraft operations)
    b. Non-governmental organizations - FAA Part 107 (civil aircraft operations)
2. FAA exception for recreational flyers only applies to flights for fun or personal enjoyment and not those supporting public safety interests
3. Ensure UAV operators have appropriate insurance for any operations
4. Ensure operators have appropriate waivers or authorizations needed for the operations or airspace they are operating in
5. Airspace authorizations or waivers

Appendix 2 – Ropes, Rigging, and Rescue Equipment Recommendations

ITEM / EQUIPMENT	QUANTITY	HAVE?	AGENCY PROVIDING?
Grain bin rescue device and any components (rescue auger, etc.)	1		
Class III harnesses	6		
Patient extrication device (SKED, LSP, Drag N Lift, or Spec Pack)	1		
11mm (7/16") Life Safety Rope or 13mm (1/2") Life Safety Rope, at least 2.5 times the height of the grain bin	4		
Double Safety Lanyard	1 2 preferred		
ASAP Rope Grab with Absorber (At least make every effort to get them // If the agency does not have these, prussiks can be used instead.)	2 4 preferred		
Appropriate lowering device(s) (examples: MPD, Clutch, Maestro, Rack)	1		
Pairs of prussiks or commercial rope grab devices	4		
Single Pulleys (appropriate to rope diameter) (swivel preferred)	6		
Double Pulleys (appropriate to rope diameter) (swivel preferred)	2		
Webbing or anchor straps	6		
20 feet of one-half (1/2) inch rope	2		
Carabineers	20		

Appendix 3 – References

National Fire Protection Association. (2022). *NFPA 2500 - Standard for Operations and Training for Technical Search and Rescue Incidents and Life Safety Rope and Equipment for Emergency Services*. Quincy, Massachusetts.

National Fire Protection Association. (2021). *NFPA 1006 - Standard for Technical Rescue Personnel Professional Qualifications*. Quincy, Massachusetts.

National Fire Protection Association. (2022). *NFPA 350 - Guide for Safe Confined Space Entry and Work*. Quincy, Massachusetts.

Occupational Safety and Health Administration. (1993, January 14). *Occupational safety and health standards: Permit-required confined spaces (Standard No. 1910.146)*. Retrieved from https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.146

Occupational Safety and Health Administration. (2008, February 11). *Occupational safety and health standards: The control of hazardous energy (lockout/tagout). Standard No. 1910.147)*. Retrieved from https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.147

Occupational Safety and Health Administration. (2011, December 27). *1910.272 Grain handling facilities*. Retrieved December 6, 2023, from https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.272