

**OCCUPATIONAL SAFETY
AND HEALTH STANDARDS BOARD**

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**Snow Avalanche Blasting and Remote Avalanche Control Systems (RACS)
Title 8 Article 121 Sections 5349, 5349.1, 5350, 5353, 5355.1 and 5357**

Advisory Committee Meeting Minutes

September 16, 2025

9:00 A.M. - 4:00 P.M.

South Lake Tahoe City Hall

1901 Lisa Maloff Way

South Lake Tahoe, CA 96105

Chair

Kevin James Goddard, Senior Safety Engineer

Attorney

Michelle Iorio, Attorney

Analyst

Tishara Davis, Regulatory Analyst

Standard's Board Staff

Millie Barajas, Executive Officer

Amalia Neidhardt, Principal Safety Engineer

Ruth Ibarra, Regulations Manager

Ginger McElveen, Strategic Partner & Relations Manager

Participants

| Name | Organization |
|------------------|---|
| Amy Armstrong | Avalanche Artillery Users of North America Committee (AAUNAC) |
| Robert Bickor | California Department of Transportation |
| Eric Berg | Cal/OSHA |
| Kenneth Bokeland | David Hamre & Associates (DHA) |
| Rob Carrion | Operating Engineers Local 3 |
| Mike Ferrari | Mt. Rose |
| Dan Flynn | Mammoth Mountain Ski Resort |
| Jeff Goldstone | National Ski Area Association (NSAA) Explosives Committee |
| Robert Hart | Mammoth Mountain Ski Resort |
| Adam Ikemire | Kirkwood Mountain Ski Resort |

| Name | Organization |
|-----------------|--|
| Chuck McGiven | Mammoth Mountain Ski Resort |
| Eric Murakami | Snowbird Resort |
| Reid Nolan | Avalanche Forecaster |
| Mark O'Green | Union Pacific Railroad |
| John Rice | Ski California |
| Andy Richard | California Department of Transportation (Caltrans) |
| Brian Slusser | Palisades Tahoe |
| Simon Trautman | US Forrest Service |
| Janelle Walker | US Forrest Service |
| Darrin Williams | Operating Engineers Local 3 |
| Yancy Yap | Cal/OSHA |

Summary of Rulemaking Topic

The Board GRANTED Petition 575, requiring that an advisory committee be convened to discuss snow avalanche blasting and the advisability of allowing remote control deployment of avalanche charges. The purpose of this meeting is to discuss proposed revisions to sections 5349 (Scope), 5349.1 (Definitions), 5350 (Training), 5355.1 (Arming Room), and 5357 (Snow Avalanche Control Blasting).

Economic & Fiscal Impact

The Board will conduct an assessment regarding the potential economic and fiscal impact of the proposed regulations.

Announcement

Presentations delivered to the committee prior to discussion about the proposed changes to the current regulatory text.

- [Regulations Process](#)
- [Safety Fuse Remote Avalanche Control Systems Presentation](#)

Discussion

The Committee Chair choose to start the meeting discussion with Section 5357(f)(4)(J). The committee then moved Section 5349 and the remaining sections, concluding with Section 5357(e)(8). The committee addressed section 5357(f)(4)(J) first because it had generated the most discussion before the meeting, and the Chair wanted to ensure the committee had enough time to consider and discuss the section as a group.

The sections with proposed changes in this document are listed in numerical order, not in the order they were discussed.

Section 5349.Scope

1. Review section 5349.
 - a. Regulatory Text

The provisions found in Article 121, Snow Avalanche Blasting, shall only pertain to snow avalanche ~~control~~ hazard reduction operations, and shall take precedence when in conflict with other applicable safety orders.

~~(a) Definitions.~~

~~Deploy. The act of throwing, placing, tethering or propelling a charge into position for detonation.~~

~~Position of Safety. A location where an employee is isolated or protected from hazards of blasting or the ensuing avalanche.~~

b. Proposed Amendments

None

c. Comments

None

Outcome: The term control” was amended in section 5349. The term will be amended consistently throughout the proposed text.

Action Item: None

2. Review section 5349.1

a. Regulatory Text

(a) Definitions.

Avalanche Blasting Crewmembers. Essential Personnel specifically authorized to handle and use explosives with the intent of triggering a snow avalanche.

Deploy. The act of throwing, placing, dropping, tethering or propelling a charge into position for detonation with the intent of triggering a snow avalanche.

Essential Personnel. Those individuals directly involved with the arming, the deployment of charges, transportation of related equipment and materials, and site clearing to facilitate transportation. Non-essential personnel are all other individuals.

Explosive Charge (also referred to as a “charge”). A measured quantity of explosive material designed to produce a controlled release of energy for the purpose of initiating a snow avalanche or mitigating snow avalanche hazards.

Position of Safety. A location where an employee is isolated or protected from hazards of blasting or the ensuing avalanche.

Remote Avalanche Control Systems (RACS). Devices that are remotely initiated by essential personnel from a position of safety with the intent of triggering a

snow reducing avalanche hazards. RACS typically use a combination of gasses or deploy one or more preinstalled charges to generate a blast ~~sudden increase in air pressure at a predesignated location.~~

b. Proposed Amendments

Jeff Goldstone, NSAA Explosives Committee: Revise the term “Avalanche Basting Crewmembers” to read as, Avalanche Blasting Crewmembers. Essential Personnel specifically authorized to handle and use explosives with the intent of triggering a snow reducing avalanche hazards.

Amy Armstrong, AAUNAC Committee: Revise the term “Deploy” to read as: Deploy. The act of throwing, placing, dropping, tethering or propelling a charge into position for detonation with the intent of triggering a snow reducing avalanche hazards.

John Rice, Ski California: Consider revising the term “Essential Personnel” to read as: Essential Personnel. Those individuals directly involved with the arming, the deployment of charges, transportation of personnel, related equipment and materials, and site clearing to facilitate transportation, avalanche hazard reduction. Non-essential personnel are all other individuals.

Yancy Yap, Cal/OSHA: Replace “controlled release of energy” with “blast” from the term “Explosive Charge.”

Amy Armstrong, AAUNAC Committee: Strike “initiating a snow avalanche or mitigating snow” and replace the phrase with “reducing” within the definition of “Explosive Charge.”

John Rice, Ski California: Strike “sudden increase in air pressure” from the term RACS. An increase or decrease may be present.

Amy Armstrong, AAUNAC Committee: Revise the term RACS by Striking “triggering of a snow” and replacing the phrase with “reducing”. Add “hazards” after “avalanche.”

Michelle Iorio, OSHSB Attorney: Consider adding a definition for the term “Blast.”

Simon Trautman, US Forrest Service: Consider using the Oxford definition for the term “Blast.”

c. Comments

John Rice, Ski California: The phrase “triggering a snow avalanche” should be revised. Mitigating an avalanche is the purpose.

Jeff Goldstone, NSAA Explosives Committee: The deployment of a gas-based system does not always result in an avalanche.

Outcome: Section 5349.1 will be amended.

Action Item: Standards Board staff will consider the proposed amendments and comments.

Section 5350. Training

3. Review section 5350(e)

a. Regulatory Text

(e) Essential personnel, as defined in ~~the Note in Section 5355~~49.1(a), other than avalanche blasting crewmembers, shall be adequately trained and competent in their blasting related duties and in the following:

b. Proposed Amendments

Michelle Iorio, OSHSB Attorney: Consider adding the term “beyond” to subsection (e), to prevent inadvertently excluding avalanche blasting crewmembers.

Ruth Ibarra, OSHSB Regulations Manager: Consider adding the term including or in addition to subsection (e).

Mark O’Green, Union Pacific Railroad: Consider adding “supportive roles” following the term “their” in subsection (e).

Kevin Goddard, OSHSB Chair: Strike “as defined in the Note in Section 535549.1(a), other than avalanche blasting” from subsection (e).

c. Comments

None

Outcome: The language “as defined in the Note in Section 535549.1(a), other than avalanche blasting” was removed from subsection (e).

Action Item: None

Section 5355.1. Arming Room.

4. Review section 5355.1(a)(3)

a. Regulatory Text

(a) Location of Arming Room.

(3) Only authorized and essential personnel to the operation shall be allowed within the arming room and within the equivalent distance to occupied structures required by the Table of Distances for the amount of explosives present.

~~NOTE: Essential personnel are those individuals directly involved with the arming, the deployment of charges, transportation and site clearing to facilitate transportation. Non-essential personnel are all other individuals.~~

b. Proposed Amendments

None

c. Comments

None

Outcome: No proposed amendments or comments.

Action Item: None

Section 5353. Detonating Systems.

5. Review section 5353(d)(8)

a. Regulatory Text

(d) Safety Fuses

(8) Employees exposed to a blast from armed explosives shall use a safety fuse with an ignition spit, and when burning, that is visible from 25 feet at fuse initiation conditions. After ignition and burning, the fuse shall be of dissimilar physical characteristics.

b. Proposed Amendments

c. Comments

Action Items: This new section was proposed by **Cal/OSHA** during the meeting. **Kevin Goddard, OSHSB Committee Chair**, added this to the discussion draft for consideration by the committee. Because there was not enough time to fully discuss this section during the meeting, Kevin requested that committee members review the proposed changes and submit any comments or suggested revisions in writing after the meeting.

Outcome: Standards board staff will consider all written comments provided by the committee members.

Section 5357. Snow Avalanche Control Blasting

6. Review section 5357(a)(1)

- a. Regulatory Text
 - (a) General Requirements.

(1) The employer shall develop and implement effective, written procedures for avalanche ~~control~~ hazard reduction blasting to ensure the safety of avalanche blasting crewmembers during all phases of avalanche ~~control~~ hazard reduction blasting.

(A) The procedures shall be reviewed and updated as often as necessary to ensure that the procedures reflect current, safe operating procedures.

- b. Proposed Amendments

Kenneth Bokeland: Strike “control” from subsection (1) and replace the term with “hazard reduction.”

Amalia Neidhardt, OSHSB Principal Safety Engineer: Strike “ensure that the procedures.” (Agreement from Cal/OSHA)

Ruth Ibarra, OSHSB Regulations Manager: Consider adding “industry standards” following the term “current.”

Amalia Neidhardt, OSHSB: Consider adding “industry practices” following the term “current.” (Agreement from AAUNAC)

Simon Trautman, US Forrest Service: Consider revising subsection (A) to, “The procedures shall be reviewed and updated as often as necessary to maintain current industry practices.”

- c. Comments

Kenneth Bokeland, DHA: To establish consistency throughout the proposed text, remove the term “control” and replace the term with “hazard reduction.”

Dan Flynn, Mammoth Mountain Ski Resort: The industry no longer uses the term “control”. “Control” is impractical. The industry uses the phrase “hazard reduction,” which accurately describes what is possible.

Yancy Yap, Cal/OSHA: The term “effective” prevents a standard from being performance-based. The term “effective” should remain in subsection (1).

Daniel Villanueva, OSHSB Senior Safety Engineer: The term “effective” is defined by the employer’s criteria.

Outcome: The proposed text will be amended.

Action Item: Standards Board staff will consider the proposed amendments and comments.

7. Review section 5357(a)(1)(C) – (E) & Exception
a. Regulatory Text

(C) The employer shall provide for the effective participation of avalanche control blasting crewmembers in the development of safe avalanche control blasting procedures.

(D) The employer shall ensure that all avalanche control blasting crewmembers are competent in the avalanche control blasting procedures.

(E) The employer shall provide effective training on the avalanche control hazard reduction blasting procedures to avalanche blasting crew members at least annually.

1. The training shall be conducted prior to the first blasting operation of each avalanche control season.

2. The employer shall provide an opportunity for interactive questions and answers on avalanche blasting procedures with a licensed avalanche blaster knowledgeable and experienced with the procedures.

~~EXCEPTION to subsection (a)(1)(E): If no blasting occurs during the entire avalanche control season, then training on the procedures is not required optional for that season.~~

b. Proposed Amendments

Ruth Ibarra, OSHSB Regulations Manager: Strike “effective” or define the term within subsection(C).

Yancy Yap, Cal/OSHA: “Effective” is a term that enforcement often uses as a performance-based standard.

Mark O’Green, Union Pacific Railroad: Consider adding “supportive roles” following the term “their” in subsection (e).

Kevin Goddard, OSHSB Chair: Strike “as defined in the Note in Section 535549.1(a), other than avalanche blasting” from subsection (e).

Cha Yang, OSHSB Senior Safety Engineer: Revise text to read as, “The employer shall provide for the effective interactive participation of avalanche control hazard reduction allow blasting crewmembers to effectively participate”

in the development of safe avalanche ~~control blasting~~ hazard reduction control blasting procedures.”

Unidentified Advisory Committee Member: Replace “effective” with “interactive” within subsection (c). (Agreement from Cal/OSHA)

Unidentified Advisory Committee Member: Consider adding the term “optional” to the Exception.

Michelle Iorio, OSHSB Attorney: Define “season” based on a typical month range. (Agreement from NSAA Explosives Committee)

Ruth Ibarra, OSHSB Regulations Manager: Add “unless” to subsection 1.

c. Comments

Ruth Ibarra, OSHSB Regulations Manager: The Office of Administrative Law, requires clarity when the term “effective” is used in regulations. Consider defining the term “effective.”

Kenneth Bokeland, DHA: The phrase “avalanche control blasting crewmembers in the development” within subsection (C) is misleading. The employer develops the procedures. The procedures are provided to the employees.

Amalia Neidhardt, OSHSB: Subsection (C) is intended to emphasize the importance of allowing employees to provide input during procedure development.

Chuck McGiven, Mammoth Mountain Ski Resort: Per section 5238, a certain level of qualification is required to write procedures. Employees can provide input during the development of procedures but are not qualified to write operations. (Agreement from Operating Engineers Local 3)

Michelle Iorio, OSHSB Attorney: Subsection (C) limits the development of procedures to “essential personnel” per the definition of “Avalanche Blasting Crewmembers.”

Andy Richard, Caltrans: Section 5357(a)(1)(E) limits training. Training should be year-round.

Jeff Goldstone, NSAA Explosives Committee: Section 5357(a)(1)(E) is specifically for Ski Resorts that are not a year-round industry.

Dan Flynn, Mammoth Mountain Ski Resort: Employees are seasonal. The “Exception” following subsection (2) is not necessary.

Michelle Iorio, OSHSB Attorney: The drafted “Exception” is an explanation of subsection (E)1. It doesn’t qualify as an exception so it can be removed without changing the requirements in (E).

Simon Trautman, US Forrest Service: I think we can just use “snow avalanche season” since that typically ranges from October to June. However, you may not want to restrain this to specific months since weather is unpredictable.

Michelle Iorio, OSHSB Attorney: I think we can use the word “typically” because it gives us a lot of room to interpret how that can be applied.

Amalia Neidhardt, OSHSB Principal Safety Engineer: Language should be incorporated that requires training for employees who perform handling and loading operations before the snow season.

Outcome: Section 5357(a)(1)(C) – (E) & Exception will be amended.

Action Item: Standards Board staff will consider the proposed amendments and comments.

8. Review section 5357(a)(2) – (5)

a. Regulatory Text

~~(1)(2)~~ All avalanche blasting shall be conducted under the attended supervision of the blaster in charge who is a licensed avalanche blaster, certified by the Division Cal/OSHA to perform such blasting activities.

~~(2)(3)~~ When avalanche blasting is deemed necessary, slopes and trails in the potential avalanche path (~~runout zone~~) and ski lifts shall be closed to the public and non-essential personnel and not be opened until the work is completed.

~~(3)(4)~~ To insure ensure a dry powder train is exposed to the igniter, at least 1 inch of fuse shall be cut from the fuse prior to attaching the igniter. A cutter with sharp blades shall be used to prevent smearing of tar over the powder train.

~~(4)(5)~~ Charges shall be placed, thrown, dropped, tethered or propelled to the desired location from a safe position of safety by one of the following methods:

b. Proposed Amendments

Kenneth Bokeland, DHA: Consider adding “dropped, and tethered” following “thrown” in the subsection (5).

c. Comments

None

Outcome: Section 5357(a)(2) – (5) was amended.

Action Item: None

9. Review section 5357(b)(4)(C) – (D), 5357(b)(5) – (9) & Exception

a. Regulatory Text

(C) Ensure there is are no personnel in any locations that could be affected by snow avalanche mitigation hazard reduction activities deployment of the handcharge, including but not limited to the blast area, and the avalanche path or runout zone and adjacent areas where flying debris, shockwaves, or vibrations could pose a hazard, such as buildings with glass windows or other fragile structures; and

~~(C)(D) Check the blast area for personnel; and~~

~~(E)(D) Orally Verbally alert all affected crewmembers each time a charge will be deployed.~~

(5) When the blast area and ~~runout zone~~ avalanche path are clear of personnel, the ~~blaster igniter shall be attached to the igniter onto the safety fuse, and immediately activated it and the charge deployed~~ the charge within 20 seconds ~~of attaching the igniter onto the fuse.~~

b. Proposed Amendments

Ruth Ibarra, OSHS Regulations Manager: For consistency, strike “mitigation” and replace the term with “hazard reduction.”

John Rice, Ski California: Strike “any” from subsection (C).

Ruth Ibarra, OSHS Regulations Manager: Consider “area” instead of “locations”.

Simon Trautman, US Forrest Service: Strike “hazard reduction activities” and replace with “deployment of the handcharge” within subsection (C).

c. Comments

Ruth Ibarra, OSHS Regulations Manager: Ensure consistency with the language used in other sections.

Yancy Yap, Cal/OSHA: Striking “any” creates ambiguity.

Unidentified Advisory Committee Member: Subsection (C) is specific to handcharge operations. Striking “any” is sufficient.

Michelle Iorio, OSHSB Attorney: Striking “any” does not remove ambiguity because the term “locations” is still present. Specific terminology would need to be added within subsection (C) to describe the “locations”.

Simon Trautman, US Forest Service: Subsection (C) addresses operations for one activity, specifically the deployment of a handcharge.

Outcome: Section 5357(b)(4)(C)-(D) & (5) will be amended.

Action Item: Standards Board staff will consider the proposed amendments and comments.

10. Review section 5357(f)(1) & Exception

a. Regulatory Text

(f) Remote avalanche control system (RACS) requirements.

(1) The operation loading or deployment of a RACS shall be under the direct supervision of an authorized, licensed avalanche blaster.

EXCEPTION to (f)(1): Maintenance activities that do not expose employees to explosive hazards. – This may already be covered below.

b. Proposed Amendments

Amy Armstrong, AAUNA Committee: Strike “operation” and replace with “loading or deployment”.

c. Comments

Amalia Neidhardt, OSHSB Principal Safety Engineer: Does the term “operation” sufficiently include all RACS?

Unidentified Advisory Committee Member: The term “operation” includes loading and deployment. The regulation does not clearly integrate gas-based systems.

Andy Richard, Caltrans: If gas-based systems are included in subsection (f)(1) a limitation would be placed on Caltrans gas program for maintenance activities. Subsection (f)(1) requires a licensed avalanche blaster to perform operations.

Dan Flynn, Mammoth Mountain Ski Resort: Consider adding a subsection for gas-based systems.

Amalia Neidhardt, OSHSB Principal Safety Engineer: Consider an Exception for gas-based systems. (Agreement from Cal/OSHA)

Yancy Yap, Cal/OSHA: Gas-based systems are defined as explosive materials. Based on the existing definition, the gas-based systems are included.

Unidentified Advisory Committee Member: This section seems duplicative of 5357(a) that already requires blasting activities to be done under the supervision of a licensed blaster.

Outcome: Section 5357(f)(1) & Exception will be amended.

Action Item: Standards Board staff will consider the proposed amendments and comments.

Review Section 5357(f)(4)(A) – (E)

a. Regulatory Text

(A) ~~During~~ The loading and firing of explosive rounds shall only be done by essential personnel or avalanche blasting crewmembers who have been trained in accordance with the manufacturer's instructions on the specific system in use. Such actions shall only be performed with the authorization of the blaster-in charge, the firing crew shall consist of the blaster in charge, one trained operator, and/or one blaster in training. All other personnel shall be removed to a minimum of 100 feet from the RACS before firing can commence.

(B) All equipment and components shall be in good working condition, and shall be assembled, maintained, repaired and operated in accordance with the manufacturer's instructions.

(C) The components of RACS shall be replaced, assembled and used in accordance with the manufacturer's instructions.

~~(D)~~(C) The explosives and related components shall be inspected before transport to the RACS site and again immediately prior to being loaded or installed into the RACS. These inspections must teshall ensure proper working condition, and ~~shall be that they are~~ free from damage, obstructions, dirt and debris. Defective RACS explosive and related components shall not be used and shall be properly disposed of or returned to the manufacturer.

~~(E) Defective RACS components shall not be used and shall be properly disposed of or returned to the manufacturer.~~

~~(F) The RACS safety devices or components shall not be removed, unless recommended by the manufacturer and is approved by Cal/OSHA.~~

~~(G)~~(D) Operators shall attempt to determine and record whether or not each explosive detonates initiation is successful.

~~(H)~~(E) The approximate location of all known or suspected misfires shall be recorded.

b. Proposed Amendments

Amalia Neidhardt, OSHSB Principal Safety Engineer: Change “must” to “shall.”

c. Comments

Outcome: Research recommended changes.

Action Item: Standards Board staff will consider the proposed amendments and comments.

11. Review section 5357(f)(4)(F) – (G)

a. Regulatory Text

~~(I)(F) Firing of explosive~~ Initiation of RACS shall only be conducted when personnel are not in the target any area where they could be injured by avalanche mitigation activities, including but not limited to the blast area, and the avalanche path and runout zone.

~~(J)(G) The RACS and its components shall be stored in a nonfunctional condition when not in use or shall be locked securely to prevent unauthorized use~~ locked and secured without putting personnel at risk of injury according to the manufacturer’s instructions and the requirements of the appropriate Federal, State, or local regulatory authorities.

b. Proposed Amendments

Michelle Iorio, OSHSB Attorney: For clarity, develop a definition for “avalanche path”.

Simon Trautman, US Forrest Service: To reflect the separation between “areas and paths,” add “and the following blast area” within subsection (f)(4)(F).

Chuck McGiven, Mammoth Mountain Ski Resort: Consider incorporating the existing definition from section 5237 for “blast area” into section 5349.1.

Mark O’Green, Union Pacific: Consider using [Avalanche.org » Avalanche path](https://www.avalanche.org/avalanche-path/) to define the term “avalanche path”.

c. Comments

Jeff Goldstone, NSAA Explosives Committee: “Runout zone” is included within the “avalanche path”. The “blast area” is separate.

Unidentified Advisory Committee Member 02:03:41: Consider developing a new term to capture all areas, such as “danger zone”.

Ruth Ibarra, OSHS Regulations Manager: Consider keeping the “areas and paths” separate by specific definitions for clarity. Developing a new definition for the “areas and paths” may cause ambiguity.

Outcome: Section 5357(f)(4)(F)-(G) will be amended.

Action Item: The Standards Board staff will consider the proposed amendments and comments.

12. Review Section 5357(f)(4)(J)

a. Regulatory Text

~~(M)~~(J) RACS utilizing explosives mated to their initiation system and handled by an employee must use safety fuses that have an “ignition spit” that is visible from 25 feet away with ignition properties that are identifiable by all persons who are not within a position of safety at initiation conditions. After ignition, the fuse must look dissimilar than before ignition of the safety fuse.

b. Proposed Amendments

Yancy Yap, Cal/ OSHA: Consider revising section 5357(J) to read as “RACS utilizing armed explosives mated to their initiation system and handled by an any employee must shall use a safety fuse with an ignition spit when burning that is visible from 25 feet at fuse initiation conditions. After ignition and burning, the fuse must shall be of ~~look~~ dissimilar physical characteristic than before ignition of the safety fuse.

Amy Armstrong, AAUNAC Committee: Strike “any employee”. Consider adding “Licensed Blaster.” Every employee that is handling an explosive is trained on how to recognize when a safety fuse is burning.

Kenneth Bokeland, DHA: Consider adding “while arming.” Seems that we’re going back and forth between handcharging and RACS. Title 8 [Section 5357(a)(6)] already requires that avalanche blasting shall not be conducted during conditions when the baster cannot determine whether the fuse is lit.

Amy Armstrong, AAUNAC Committee: Consider adding “Fuse shall have ignition properties identifiable within 25 feet.”

Andy Richard, Caltrans: Consider amending the beginning sentence of subsection (J) to read as, “Loading and arming of the RACS handled by an employee.” Strike “mated to their initiation system and”.

Daniel Fynn, Mammoth Mountain Ski Resort: Consider amending subsection (J) to read as, “Loading and arming shall occur in well-lit conditions free from precipitation and fog.”

Simon Trautman, US Forrest Service: Consider defining “ignition properties” as heat, sound, discoloration, visual deprivation, and snout.

Adam Ikemire, Kirkwood Mountain Ski Resort: Consider revising “25 feet” to “3 feet” to safeguard the blaster’s personal space.

Amy Armstrong, AAUNAC Committee: Consider adding language requiring a quality control check or cross-checking for licensed blasters per 5298(a)(9).

Reid Nolan, Avalanche Forecaster: Consider utilizing “immediate proximity” instead of a measurement of distance.

c. Comments

Unidentified Advisory Committee Member: Please explain “at initiation conditions”.

Kevin Goddard, OSHSB Committee Chair: “At initiation conditions” means the explosive could be initiated through the fuse, leading to the explosion.

Mike Ferrari, Mt. Rose: The language “all persons who are not within a position of safety” is misleading. All individuals are within a position of safety. Remote Avalanche Control Systems (RACS) are systems that remotely trigger avalanches. (Agreement from NSAA Explosives Committee)

Kevin Goddard, OSHSB Committee Chair: Section 5357(f)(4)(J) is specifically for RACS that require personnel to attach an initiation system to the explosive manually.

Yancy Yap, Cal/ OSHA: “Initiation conditions” means the condition at the Mountain top when the igniter is initiated. The language intends to reiterate that the fuse should be visible when initiated, regardless of weather conditions.

Chuck McGiven, Mammoth Mountain Ski Resort: Section 5357(f)(4)(J) conflicts with section 5357(f). The proposed language in section 5357(f) requires that RACS initiations be conducted remotely.

Simon Trautman, US Forrest Service: Consider defining ‘initiation conditions’ for clarity.

Jeff Goldstone, NSAA Explosives Committee: The terminology “ignition spit” does not apply to RACS. The igniter stays on the fuse. Therefore, “ignition spit” will never be seen.

Rob Carrion, Operating Engineers Local 3: Please explain the terminology “persons who are not within a position of safety”.

Kevin Goddard, OSHSB Committee Chair: The “Position of Safety” is defined as a location where an employee is isolated or protected from hazards of blasting or the ensuing avalanche.

Yancy Yap, Cal/OSHA: The safety concern is the visibility of the burning of the fuse, not the type of igniters that are being used. If the technology is not currently available, then we would allow time for such a fuse to be developed before they would be required to be used

Kevin Goddard, OSHSB Committee Chair: notes that the committee had an open discussion about the viability of having a regulation for a fuse technology that doesn’t exist yet. There was no consensus on how to best move forward with adding a requirement to have a fuse that emits an indicator that is visible from 25’ when it is lit.

Darrin Williams, Operating Engineers Local 3: The videos shown in the Cal/OSHA presentation and the proposed language, as drafted, reflect two separate categories: accidents involving hand-charged safety fuses versus accidents involving RACS deployment. RACS are remotely deployed. Therefore, the issue of visibility is irrelevant. The language drafted suggests that hand charge safety fuses are being merged with RACS. Hand charges and RACS are two separate systems.

Kevin Goddard, OSHSB Committee Chair: The proposed language intends to mitigate potential hazards when connecting the explosives to the RACS.

Amy Armstrong, AAUNAC Committee: Consider striking the “25 feet” requirement. Licensed blasters must adhere to specified requirements. Those specified requirements should be incorporated into the proposed regulations.

Simon Trautman, US Forrest Service: 25 feet is very subjective. “25 feet” is within the blast zone and does not address the issue. The issue to safeguard against is ensuring that the employee can recognize and mitigate the hazard. (Agreement from DHA)

Yancy Yap, Cal/OSHA: Hand charge devices use PSI (pounds per square inch) as a measure of the extreme pressure generated by the blast wave during detonation. At 9 feet that explosive is 100% lethal to humans. The 25-foot distance is survivable and is a distance that an employee could recognize that a fuse is lit and escape to safety.

Chuck MeGiven, Mammoth Mountain Ski Resort: The explosive component requirements were already considered in the 2007 rulemaking. Existing industry mitigation procedures allow for visibility of a fuse when lit. The 25-foot requirement is not an effective mitigation. The phrase “must use safety fuses” limits the industry to that initiation system. There are other initiation systems available.

Adam Ikemire, Kirkwood Mountain Ski Resort: Safety fuses already have characteristics that are recognizable when they are lit. I don’t think we should be looking for new technology and we should be using what we have.

Amalia Neidhardt, OSHSB: We must keep the language specific. OAL will not approve the requirement if we make it vague.

Amy Armstrong, Avalanche Artillery Users of North America Committee (AAUNAC): We can put the specific requirements that are the fuse properties that licensed blasters are required to be able to identify. The 1973 accident that Cal/OSHA cited at Mammoth, I believe that an experimental fuse was used. Additionally, with regards to the incident data, Wyssen makes their data available to the public. Over the last 10 years, according to the data they provided, there have not been any accidents while loading or deploying explosives. The safety record of RACS should be taken into account.

Kevin Goddard, OSHSB Committee Chair: agreed that accurate data is important with any consideration. In addition, our role as a committee is to develop this language to eliminate or reduce the severity to the greatest possible extent of occupational hazards associated with the work that is being regulated.

Outcome: Section 5357(f)(4)(J) will be amended.

Action Item: Standards Board staff will consider the proposed amendments and comments.

Discussion on Alternatives

Kevin Goddard asked the committee to consider alternatives to the proposed changes. Chair also showed the committee the Hierarchy of Controls diagram and briefly explained how the hierarchy can be used to help determine the effectiveness of the controls used to protect employees from hazards. Amalia Neidhardt expanded on the discussion to point out that the consideration of alternatives such as gas-based systems

to explosives must be explored and explained in detail as to why one technology or process is used instead of another in terms of occupational safety.

Discussion on Economic and Fiscal Impacts

Kevin Goddard explained to the committee how Board staff need to consider the economic and fiscal impacts caused by the proposed changes. These changes can include, but are not limited to, personnel costs, process changes and worksite costs. Kevin elaborated that it is necessary to show not just the current and future cost to the employers, but also the impact of the proposed changes to the industry that is being regulated.

Closing Remarks

Kevin Goddard, OSHSB Chair: Thank you for your participation in this committee. If you have any additional comments about what was discussed during this meeting, please submit them to kgoddard@dir.ca.gov by Wednesday, October 1 (extended to Friday, November 15 due to requests from several committee members). The comments should be on the proposed regulatory changes, suggested alternatives and information on potential economic and fiscal impacts – including but not limited to training needs, equipment purchases, and ongoing maintenance costs.

Thank you for your participation.