

**OCCUPATIONAL SAFETY
AND HEALTH STANDARDS BOARD**

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**PROPOSED PETITION DECISION OF THE
OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD
(PETITION FILE NO. 575)**

INTRODUCTION

The Occupational Safety and Health Standards Board (Board) received a petition on April 17, 2019, from Nathan Heit and Charles Megivern, Ski Patrol Managers, on behalf of Mammoth Mountain Ski Area, LLC, (Petitioners). The Petitioners request the Board amend Title 8, General Industry Safety Orders, Section 5357(a), regarding snow avalanche blasting, to allow remote control deployment of avalanche charges (explosives), also known as Remote Control Systems (RACS).

Labor Code Section 142.2 permits interested persons to propose new or revised regulations concerning occupational safety and health and requires the Board to consider such proposals, and render a decision no later than six months following receipt. Further, as required by Labor Code Section 147, any proposed occupational safety or health standard received by the Board from a source other than the Division of Occupational Safety and Health (Division) must be referred to the Division for evaluation, and the Division has 60 days after receipt to submit an evaluation regarding the proposal.

SUMMARY

The Petitioners request consideration of the following changes to Section 5357 "Snow Avalanche Control Blasting" (additions are underlined, deletions in ~~strikethrough~~):

(a) General Requirements.

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

(E) Deployed from such remote control devices accepted by the Division as providing equivalent safety ~~to the remote control devices allowed under subsection (e).~~

The Petitioners assert the following:

- Explosive use for avalanche mitigation is constantly progressing due to improvements in the science of avalanche phenomena, initiation, and forecasting.

- Explosives deployed a meter above the surface have been shown to be more effective for avalanche mitigation than explosives on the snow surface.
- RACS have been developed to achieve a blast at about one meter above the snow surface. An Aerial Blasting Ropeway and other explosive tram devices allow users to drop or tether charges to achieve such blasts.
- RACS are inherently safer because they reduce worker exposure to explosive blasts and adverse weather conditions.
- Due to the large capital investment requirements of RACS, users need a clear regulatory path forward to adopt.

DIVISION'S EVALUATION

The Division's evaluation report dated July 19, 2019, states, when used properly, RACS can provide equal or superior safety for deploying and detonating explosives to other methods of avalanche mitigation currently permitted by Title 8 regulations. Proper use of RACS removes the worker from the zone of danger of explosions and avalanches.

Per Division:

The Petitioner's proposed language in Section 5357(a)(4)(E) is "Deployed from such remote control devices accepted by the Division as providing equivalent safety." The Petitioner fails to state what the safety should be equivalent to. Also, the proposed language is excessively vague as it provides no direction whatsoever to employers on what the Division would find acceptable. The language is so imprecise that it would likely be considered unenforceable by the Occupational Safety and Health Appeals Board.

The regulatory language should address the specific hazards involved with RACS such as: handling of heavy loads; transporting, handling, and loading explosives into RACS; handling of misfires and unexploded charges; handling of flammable gases; using helicopters, and accessing remote stationary RACS.

The Division has reviewed the Petitioner's request to amend Section 5357(e). This review included information provided by the Petitioner, research of the various types of RACS and accident data of employees deploying explosive avalanche blasting charges. Additionally, professional documentation regarding avalanche blasting was reviewed and experts in the field from the United States Department of Agriculture, Forest Service and National Ski Areas Association were consulted.

The use of RACS is inherently safer than hand-deploying explosives as the worker is positioned away from the proximity of an explosive blast and the path of the resultant avalanche. However, the Division recommends rejecting the regulatory language from the Petitioner because the language is vague. The Division recommends the petition be granted to the extent that an advisory committee be convened to consider appropriate and specific regulations to ensure employee safety for the various types of RACS.

STAFF'S EVALUATION

The August 1, 2019, Board staff evaluation states RACS come in a variety of forms and are currently used in areas throughout the world where avalanche hazards are present. Currently Gazex, a technology which utilizes flammable gas to create an explosion, appears to be the most commonly used form of RACS in the western United States, including in California.

Per Staff:

A Gazex system can be installed above an avalanche prone area on a mountainside and remotely activated several times throughout an avalanche season without the need to restock the gas. Instead of explosives, Gazex ignites a mixture of oxygen and propane, stored in cylinders in the cement bunker at the base of the exhaust piping, to create a shockwave to displace avalanche-prone snow. Gazex is currently used by the State Departments of Transportation in Wyoming, Colorado, and California.

A second type of RACS is the Catex system, which relies on the cables of a ski lift conveyor to transport explosives to avalanche prone areas. The conveyor can be dedicated to the transport of explosives, covering several miles of terrain and delivering several charges to be detonated simultaneously.

A third type is an avalanche tower, which is a cross between the Gazex and Catex systems. The tower is in a fixed position similar to the Gazex system, but it lowers an explosive charge to a specified distance above the surface of the snow for detonation similar to the Catex system.

Each of the RACS has the potential benefit of being remotely activated without the need to expose employees to the hazards of winter weather or explosive charges. Restocking can be done under favorable conditions. Disadvantages of the technologies can include the security of the stored charges, difficulty in placing the avalanche towers over avalanche prone areas, and the potential for cables to slip off of the pulley system due to ice buildup.

Because of the potential increase in employee safety, the use of RACS technology to mitigate avalanche hazards merits further consideration. Therefore, staff believes an advisory committee should be convened to discuss the necessary amendments to Section 5357 and other sections as needed to ensure that RACS can be used safely in California. The committee should discuss potential hazards and concerns of the various types of RACS and develop methodologies to control them.

DISCUSSION

Consistent with the analysis and recommendations of both Division and Board staff the Board sees merit in the petition and justification for its limited grant as specified below.

CONCLUSION AND ORDER

The Occupational Safety and Health Standards Board has considered the petition of Nathan Heit and Charles Megivern, Ski Patrol Managers, on behalf of Mammoth Mountain Ski Area, LLC, to make recommended changes to Section 5357(a), regarding snow avalanche blasting, to allow remote control deployment of avalanche charges. The Board has also considered the recommendations of the Division and Board staff. For reasons stated in the preceding discussion, the Petition is hereby GRANTED to the extent that a representative advisory committee be convened by Board staff to consider the advisability of an (at least as protective) update to the Section 5357, Snow Avalanche Control Blasting standard.