DEPARTMENT OF LABOR

Occupational Safety and Health Administration

[Docket No. OSHA-2012-0015]

Kiewit Power Constructors Co. et al. (Avalotis Corp., Bowen Engineering Corporation, Commonwealth Dynamics, Inc., Gibraltar Chimney International, LLC, Hamon Custodis, Inc., Hoffmann, Inc., International Chimney Corporation, Karrena International Chimney, Matrix SME, Inc., NAES Power Contractors, Pullman Power, LLC, R and P Industrial Chimney Co., Inc., T. E. Ibberson Company, TIC-The Industrial Company); Grant of a Permanent Variance

AGENCY: Occupational Safety and Health Administration (OSHA), Labor.

ACTION: Notice of grant of a permanent variance.

SUMMARY: This notice announces the grant of a permanent variance to Avalotis Corp., Bowen Engineering Corporation, Commonwealth Dynamics, Inc., Gibraltar Chimney International, LLC, Hamon Custodis, Inc., Hoffmann, Inc., International Chimney Corporation, Karrena International Chimney, Kiewit Power Constructors Co., Matrix SME, Inc., NAES Power Contractors, Pullman Power, LLC, R and P Industrial Chimney Co., Inc., T. E. Ibberson Company, TIC-The Industrial Company ("the employers"). From 1973 to the present, the Occupational Safety and Health Administration (OSHA or the Agency) granted permanent variances to a number of chimney-construction companies from the provisions of the OSHA standards that regulate boatswain's chairs and hoist towers, specifically paragraph (o)(3) of 29 CFR 1926.452 and paragraphs (c)(1) through (c)(4), (c)(8), (c)(13), (c)(14)(i), and (c)(16) of 29 CFR 1926.552. These variances use temporary personnel hoist systems to transport

workers to and from worksites in a personnel cage while constructing chimneys of various configurations using jump-form construction techniques and procedures. The Agency received applications from 15 employers for a variance addressing chimney and chimney-related construction that, like the previous variances, propose to use temporary personnel hoist systems to transport workers to and from worksites in a personnel cage. These variance applications, however, included conditions that address construction of chimneys and chimney-related structures using temporary hoist systems and procedures in association with two different methods of construction (i.e., jump-form and slip-form construction), regardless of the structures' configurations (i.e., tapered or straight-barreled of any diameter). OSHA consolidated these variance applications into a single application and published the application and request for comments in the Federal Register on March 21, 2013 (78 FR 17432).

After considering the record as a whole, OSHA finds that these alternative conditions protect workers at least as well as the requirements specified by 29 CFR 1926.452(o)(3) and 29 CFR 1926.552(c)(1) through (c)(4), (c)(8), (c)(13), (c)(14)(i), and (c)(16). This permanent variance applies in Federal OSHA enforcement jurisdictions and in those states and territories with OSHA-approved State-Plans covering private-sector employers that have identical standards and agree to the terms of the variance.

DATES: The permanent variance is effective on [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER].

FOR FURTHER INFORMATION CONTACT:

General information and press inquiries. For general information and press inquiries about this notice, contact Frank Meilinger, Director, OSHA Office of Communications,

U.S. Department of Labor, 200 Constitution Avenue, NW, Room N-3647, Washington, DC 20210; telephone: (202) 693-1999.

Technical information. For technical information about this notice, contact Stefan Weisz, Office of Technical Programs and Coordination Activities, OSHA, U.S. Department of Labor, 200 Constitution Avenue, NW, Room N-3655, Washington, DC 20210; telephone: (202) 693-2110; fax: (202) 693-1644.

Copies of this Federal Register notice. Electronic copies of this Federal Register notice are available at http://www.regulations.gov. This Federal Register notice, as well as news releases and other relevant information, also are available at OSHA's webpage at http://www.osha.gov.

SUPPLEMENTARY INFORMATION:

I. Background

Fifteen companies (or applicants) submitted applications for a permanent variance under Section 6(d) of the Occupational Safety and Health Act of 1970 (29 U.S.C. 655) and 29 CFR 1905.11 ("Variances and other relief under section 6(d)") (see Document ID Nos. OSHA-2012-0015-0002 to -0019[1]). The applicants construct, renovate, repair, maintain, inspect, and demolish tall chimneys and similar structures made of concrete, brick, and steel. This work, which occurs throughout the United States, requires the applicants to transport employees and construction tools and materials to and from elevated worksites located inside and outside these structures. The following list provides specific information about each applicant, including the company name and location:

[1]In Docket No. OSHA-2012-0015 for this variance application.

Avalotis Corp.
400 Jones Street
Verona, PA 15147

Bowen Engineering Corporation (merged with Mid-Atlantic Boiler & Chimney, Inc., (formerly Alberici Mid-Atlantic, LLC))
8802 N. Meridian St.
Indianapolis, IN 46260

Commonwealth Dynamics, Inc.
95 Court Street
Portsmouth, NH 03801
Gibraltar Chimney International, LLC
92 Cooper Ave.
Tonawanda, NY 14150

Hamon Custodis, Inc. (formerly Custodis Construction Co., Inc., then Custodis Cuttrell, Inc.)
58 East Main Street
Somerville, NJ 08876

Hoffmann, Inc.
6001 49th Street South
Muscatine, IA 52761

International Chimney Corporation
55 South Long Street
Williamsville, NY 14221

Karrena International Chimney
57 South Long Street
Williamsville, NY 14221

Kiewit Power Constructors Co.
9401 Renner Blvd.
Lenexa, KS 66219

Matrix SME, Inc. (formerly Matrix Service Industrial Contractors, Inc.)
1510 Chester Pike, Suite 500
Eddystone, PA 19022

NAES Power Contractors (formerly American Boiler and Chimney Company)
167 Anderson Rd.
Cranberry Township, PA 16066

Pullman Power, LLC (formerly M. W. Kellogg Co., then Pullman Power Products Corporation)
6501 E. Commerce Avenue, Suite 200
Kansas City, MO 64120

R and P Industrial Chimney Co., Inc.
244 Industrial Parkway
Nicholasville, KY 40356

T. E. Ibberson Company
828 5th St. South
Hopkins, MN 55343

TIC-The Industrial Company
9780 Mt. Pyramid Ct., Suite 100
Englewood, CO 80112

The applicants seek a permanent variance from paragraphs (o)(3) of 29 CFR 1926.452, which regulates the tackle used to rig a boatswain's chair, as well as (c)(1) through (c)(4), (c)(8), (c)(13), (c)(14)(i), and (c)(16) of 29 CFR 1926.552 that regulate hoist towers. These paragraphs specify the following requirements:

- (o)(3) – Requirements for the tackle used to rig a boatswain's chair;
- (c)(1) – Construction requirements for hoist towers outside a structure;
- (c)(2) – Construction requirements for hoist towers inside a structure;
- (c)(3) – Anchoring a hoist tower to a structure;
- (c)(4) – Hoistway doors or gates;
- (c)(8) – Electrically interlocking entrance doors or gates to the hoistway and cars;
- (c)(13) – Emergency stop switch located in the car;
- (c)(14)(i) – Using a minimum of two wire ropes for drum hoisting; and
- (c)(16) – Material and component requirements for construction of personnel hoists.

The applicants contend that the permanent variance would provide their employees with a place of employment that is at least as safe and healthful as they would receive under the existing provisions.

The places of employment affected by this variance application are the present and future projects where the applicants construct chimneys and chimney-related structures using jump-form and slip-form construction[2] techniques and procedures, regardless of structural configuration when such construction involves the use of temporary personnel hoist systems. These projects would be in states under federal authority, as well as State-Plan states that have safety and health plans approved by OSHA under Section 18 of the Occupational Safety and Health (OSH) Act (29 U.S.C. 667) and 29 CFR part 1952 ("Approved State Plans for Enforcement of State Standards"), and that have plans covering private-sector employers and standards identical to the standards that are the subject of this variance, and that agree to the terms of the variance.

The permanent variance permits the employers to operate temporary hoist systems to raise and lower workers to and from elevated worksites on chimneys, chimney linings, stacks, silos, and chimney-related structures such as towers and similar structures constructed using jump-form and slip-form construction techniques and procedures regardless of structural configuration of the structure (such as tapered or straight barreled of any diameter). This variance also provides consistent conditions across the employers

[2] Throughout this notice, OSHA uses the terms “jump-form construction” and “slip-form construction” instead of “jump-form formwork construction” and “slip-form formwork construction,” respectively.

named in this application. OSHA published the employers' variance applications and request for comments in the Federal Register on March 21, 2013 (78 FR 17432).

II. Multi-State Variance

The applicants state that they perform chimney and other related construction work in a number of states and territories that operate OSHA-approved safety and health programs under Section 18 of the Occupational Safety and Health Act of 1970 (29 U.S.C. 651 et seq.). State Plans and territories have primary enforcement responsibility over the work performed in those states and territories. Under the provisions of 29 CFR 1952.9 ("Variance affecting multi-state employers") and 29 CFR 1905.14(b)(3) ("Actions on applications"), a permanent variance granted by the Agency becomes effective in State-Plans and territories as an authoritative interpretation of the applicants' compliance obligation when: (1) the relevant standards are the same as the Federal OSHA standards from which the applicants are seeking the permanent variance; and (2) the State-Plan or territory does not object to the terms of the variance application.

OSHA received one comment on the variance application from the state of Michigan (see Document ID No. OSHA-2012-0015-0022). OSHA continues to assume that, absent additional comments received to the contrary, the state's position regarding grant of this permanent variance is the same as its position regarding grant of prior variances involving chimney construction.

As noted above and in section IV of this notice ("Comments on Proposed Variance Application"), OSHA received just one comment on the variance application published in the Federal Register (78 FR 17432) from any state State-Plan or territory. However, several State Plans and territories commented on earlier variance applications published in the Federal Register involving the same standards and submitted by other employers

engaged in chimney construction and repair; OSHA is relying on these previous comments to determine the position of these State Plans and territories on the variance applications submitted by the present employers. The remaining paragraphs in this section provide a summary of the positions taken by the State Plans and territories on the proposed alternative conditions.

Twenty-seven states and territories have OSHA-approved safety and health programs.[3] In this regard, 17 State Plans and 1 territory have standards identical to the Federal OSHA standards: Alaska, Arizona, Hawaii, Indiana, Iowa, Kentucky, Maryland, Minnesota, Nevada, New Mexico, North Carolina, Oregon, Puerto Rico, South Carolina, Tennessee, Vermont, Virginia, and Wyoming. However, Hawaii and Iowa previously declined to accept the terms of variances for chimney-related construction work granted previously by Federal OSHA. Kentucky stated that its statutory law requires affected employers to apply to the state for a state variance. South Carolina noted that, for the South Carolina Commissioner of Labor to accept a Federal OSHA grant of a variance, employers must file the grant at the Commissioner's office in Columbia, South Carolina. Employers must comply with any special variance procedures required by these states prior to initiating chimney-related construction work addressing the conditions specified by this variance. The permanent Federal OSHA variance will be effective in the following thirteen State-Plan States and one Territory: Alaska, Arizona, Indiana,

[3]Four State-Plan states (Connecticut, Illinois, New Jersey, and New York) and one territory (Virgin Islands) limit their occupational safety and health authority to public-sector employers only. State-Plan states and territories that exercise their occupational safety and health authority over private-sector employers are: Alaska, Arizona, California, Hawaii, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Nevada, New Mexico, North Carolina, Oregon, Puerto Rico, South Carolina, Tennessee, Utah, Vermont, Virginia, Washington, and Wyoming.

Maryland, Minnesota, Nevada, New Mexico, North Carolina, Oregon, Puerto Rico, Tennessee, Virginia, Vermont, and Wyoming.

Four states (California, Michigan, Utah, and Washington) have different requirements for chimney-related construction work than Federal OSHA standards. In its comments (Document ID No. OSHA-2012-0015-0022), Michigan noted that its standards are not identical to the OSHA standards, and those employers electing to use a variance in that state must comply with several provisions in the Michigan standards not addressed in the OSHA standards. Additionally, Michigan stated that employers who operate under the OSHA variance in Michigan also must obtain a Michigan Occupational Safety and Health Administration variance (see Michigan Rules 1065(a)(1), 1065(a)(2), and 1072(a)(15)).

In comments on earlier variance applications, Utah also imposed specific additional requirements in the past when Federal OSHA granted similar variances for chimney-related construction work.[4] California and Washington declined to accept the terms of variances for chimney-related construction work granted by Federal OSHA in the past.[5] Employers, therefore, must apply separately to these states for a variance from construction work on structures covered by this variance.

The remaining State Plans and territories with OSHA-approved state plans (Connecticut, Illinois, New Jersey, New York, and the Virgin Islands) cover only public-

[4]See 68 FR 52961 (Oak Park Chimney Corp. and American Boiler & Chimney Co.)

[5]See 70 FR 72659 (International Chimney Corporation, Karrena International, LLC, and Matrix Service Industrial Contractors, Inc.), 71 FR 10557 (Commonwealth Dynamics, Inc., Mid-Atlantic Boiler & Chimney, Inc., and R and P Industrial Chimney Co., Inc.), and 75 FR 22424 (Avalotis Corp.).

sector workers and have no authority over the private-sector workers addressed in this variance (i.e., that authority continues to reside with Federal OSHA).

III. Supplementary Information

A. Previous Chimney-Construction Variances

From 1973 to the present, the Agency granted permanent variances to a number of chimney-construction companies from the provisions of the OSHA standards that regulate boatswains' chairs, personnel platforms, and hoist towers, specifically, paragraph (o)(3) of 29 CFR 1926.452 and paragraphs (c)(1) through (c)(4), (c)(8), (c)(13), (c)(14)(i), and (c)(16) of 29 CFR 1926.552.[6] The National Stack and Chimney Safety and Health Advisory Committee reports[7] that four of its member companies (i.e., Pullman Power, Hamon Custodis, International Chimney Corp, and Commonwealth Constructors) using temporary personnel hoist systems in accordance with the conditions of the present permanent variances for chimney-related construction work had no recordable injuries or fatalities (as reported on the OSHA 300 Forms[8]) over the past seven years.

OSHA generally based the alternative conditions in the variances granted by this notice on the alternative conditions included in previous variances. However, several of the previous variances (for example, 38 FR 8545 granted April 3, 1973, and 71 FR 10557 granted March 1, 2006) included conditions that did not limit the use of the variance to

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[6]See 38 FR 8545 (April 3, 1973), 44 FR 51352 (August 31, 1979), 50 FR 20145 (May 14, 1985), 50 FR 40627 (October 4, 1985), 52 FR 22552 (June 12, 1987), 68 FR 52961 (September 8, 2003), 70 FR 72659 (December 6, 2005), 71 FR 10557 (March 1, 2006), 72 FR 6002 (February 8, 2007), 74 FR 34789 (July 17, 2009), 74 FR 41742 (August 18, 2009), and 75 FR 22424 (April 28, 2010)).

[7]Private communication from Mr. John Huchko, Secretary of the National Stack and Chimney Safety and Health Advisory Committee, January 2, 2013.

[8]See 29 CFR part 1904, Recording and Reporting Occupational Injuries and Illnesses.

the construction of tapered chimneys, and did not specify any methods of construction. Conditions included in recently granted chimney-construction variances limited the scope of the variance to the construction of tapered chimneys using jump-form construction techniques and procedures. For example, this limitation applied to the Avalotis Corp. variance (75 FR 22424; April 28, 2010) used for comparison purposes in this variance.

The alternative conditions specified in the permanent variance granted by this notice apply to chimney-related construction, including work on chimneys, chimney linings, stacks, silos, towers, and similar structures, built using jump-form and slip-form construction methods of construction, regardless of the structural configuration, and that involve the use of temporary personnel hoist systems.

B. Kiewit Variance Application

On February 8, 2007, OSHA published a variance application submitted by Kiewit Power Constructors Co. (Kiewit; see 72 FR 6002). This publication included an interim order that permitted Kiewit to use a rope-guided hoist system to transport employees to elevated worksites when it complies with the conditions specified in the variance application. One of the conditions specified in the publication limited the application and interim order to tapered chimneys, which was the basis for previous variances granted by OSHA to other chimney-construction companies (see subsection A (Background) of this section for a discussion of previously granted chimney variances). Kiewit notified OSHA on February 23, 2007, that it required a permanent variance to perform work on small-diameter, straight-barreled chimneys built using conventional jump-form construction techniques and procedures and straight-barreled chimneys of any diameter built using slip-form construction techniques and procedures, as well as tapered chimneys

constructed using jump-form construction techniques and procedures. Kiewit submitted a revised variance application addressing the conditions included in previously granted chimney-construction variances to OSHA on March 1, 2007 (superseded by Kiewit's variance application of November 16, 2012; see Exhibit No. OSHA-2012-0015-0011).

According to its March 1, 2007, variance application, Kiewit was seeking a variance from the provisions of OSHA standards that regulate boatswain's chairs and hoist towers for the construction of small-diameter, straight-barreled chimneys constructed using jump-form construction techniques and procedures, and chimneys of any diameter constructed using slip-form construction techniques and procedures. Regarding small-diameter, straight-barreled chimneys constructed using jump-form construction techniques and procedures, Kiewit contended that the extreme height and limited space inside these chimneys make it infeasible to attach a hoist tower to the interior walls of the chimneys during construction. In some cases, it also is infeasible to use a personnel cage in such small-diameter, straight-barreled chimneys. Under these conditions, Kiewit proposed to adopt alternative measures of complying with the relevant boatswain's-chair and personnel-platform requirements.

With respect to straight-barreled chimneys constructed using slip-form construction techniques and procedures, Kiewit asserted that the unique techniques and procedures involved in slip-form construction make it difficult and unsafe to attach a hoist tower to both the interior and exterior walls of a chimney during construction. Slip-form construction is an alternative to using jump-form construction techniques and procedures to shape concrete structures, including chimney walls. When using slip-form techniques and procedures to construct chimney walls, Kiewit pours concrete into forms attached to

a platform that moves slowly up either climbing rods imbedded in the previously poured concrete wall or a mast secured to the interior floor of the structure. Kiewit's employees operate the platform, pour the fresh concrete, inspect the formed concrete, and perform other tasks both inside and outside the chimney from a work deck on the platform, as well as from scaffolds hung from the platform. As a result of this progressive construction process, the concrete wall immediately below the platform for a distance of 20 to 30 feet is insufficiently cured to safely attach a hoist tower to the wall. Consequently, during slip-form construction, it is unsafe to attach a hoist tower either inside or outside the chimney wall for the purpose of transporting employees to elevated worksites, at least for the last 20 to 30 feet of elevation.

Kiewit proposed to use a rope-guided hoist system to raise and lower personnel-transport devices[9] when constructing chimneys using jump-form construction techniques and procedures. This system would consist of a hoist engine, located and controlled outside the chimney, to power the rope-guided hoist system. The system also would consist of a wire rope that: spools off the hoist drum into the interior of the chimney; passes to a footblock that redirects the rope from the horizontal to the vertical plane; goes from the footblock through the overhead sheaves above the elevated platform at the cathead; and finally drops to the bottom landing of the chimney where it connects to the personnel or material transport.[10] The cathead, which is a superstructure at the top of a derrick, supports the overhead sheaves. The overhead sheaves (and the vertical span of

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[9]Throughout this document, "rope" refers only to wire rope.

[10]While Kiewit proposed to use temporary personnel hoist systems solely to transport employees with the tools and materials necessary to do their work (i.e., Kiewit would not use these systems to transport only materials or tools in the absence of employees), it would attach a hopper or concrete bucket to the empty cage to raise or lower material to the worksite.

the hoist system) move upward with the derrick as chimney construction progresses. Two guide ropes, suspended from the cathead, eliminate swaying and rotation of the load (including a cage). If the hoist rope breaks, safety clamps activate and grip the guide ropes to prevent the load from falling. Kiewit would use a headache ball, located on the hoist rope directly above the load, to counterbalance the rope's weight between the cathead sheaves and the footblock.

Kiewit proposed to implement additional conditions to improve employee safety, including:

- Attaching the wire rope to the personnel cage using a keyed-screwpin shackle or positive-locking link;
- Adding limit switches to the hoist system to prevent overtravel by the personnel-transport or material-transport devices;
- Providing the safety factors and other precautions required for personnel hoists as specified by the pertinent provisions of 29 CFR 1926.552(c), including canopies and shields to protect employees located in a personnel cage from material that may fall during hoisting and other overhead activities;
- Providing falling-object protection for personnel platforms as specified by 29 CFR 1926.451(h)(1);
- Conducting tests and inspections of the hoist system as required by 29 CFR 1926.20(b)(2) and 1926.552(c)(15);
- Establishing an accident-prevention program that conforms to 29 CFR 1926.20(b)(3);

- Ensuring that employees who use a personnel platform or boatswain's chair wear full-body harnesses and lanyards, and that they attach the lanyards to independent lifelines during the entire period of vertical transit; and
- Securing the lifelines (used with a personnel platform or boatswain's chair) to the rigging at the top of the chimney and to a weight at the bottom of the chimney to provide maximum stability to the lifelines.

Paragraph (c) of 29 CFR 1926.552 specifies the requirements for enclosed hoist systems used to transport personnel from one elevation to another. This paragraph ensures that employers transport employees safely to and from elevated work platforms by mechanical means during the construction, alteration, repair, maintenance, or demolition of structures such as chimneys. However, this paragraph does not provide specific safety requirements for hoisting personnel to and from elevated work platforms and scaffolds used in straight-barreled chimneys constructed using jump-form or slip-form construction techniques and procedures, which require frequent relocation of, and adjustment to, work platforms and scaffolds. Kiewit contended in its variance application that the great height and limited space of small-diameter, straight-barreled chimneys built using jump-form construction techniques and procedures make it infeasible to attach a hoist tower to the interior walls of these chimneys during construction. With respect to chimneys constructed using slip-form techniques and procedures, Kiewit asserted that, because of the progressive process involved in constructing these chimneys, the concrete wall immediately below the work platform for a distance of 20 to 30 feet is insufficiently cured to safely attach a hoist tower. Consequently, Kiewit cannot attach a hoist tower

securely to either the inside or outside of the chimney wall for the purpose of transporting employees to the work platform, at least for the last 20 to 30 feet of elevation.

Paragraph (c)(1) of 29 CFR 1926.552 requires employers to enclose hoist towers on the side or sides used for entrance to, and exit from, the chimney; these enclosures must extend the full height of the hoist tower. Paragraph (c)(2) specifies that employers must enclose all four sides of a hoist tower. This enclosure also must extend the full height of the tower. Again, Kiewit argued that these paragraphs are inapplicable because constructing hoist towers inside small-diameter, straight-barreled chimneys is infeasible, while attaching hoist towers to either the inside or outside walls of chimneys constructed using slip-form techniques and procedures is impossible, at least for the last 20 or 30 feet of elevation.

As an alternative to complying with the hoist-tower requirements of 29 CFR 1926.552(c)(1) and (c)(2), Kiewit proposed to use the rope-guided hoist system described previously in this preamble to transport its employees to and from elevated work platforms and scaffolds. Use of this hoist system would eliminate the need for Kiewit to comply with other provisions of 29 CFR 1926.552(c) that specify requirements for hoist towers. Therefore, Kiewit requested a permanent variance from these other provisions, as follows:

- (c)(3) – Anchoring the hoist tower to a structure;
- (c)(4) – Hoistway doors or gates;
- (c)(8) – Electrically interlocking entrance doors or gates that prevent hoist movement when the doors or gates are open;
- (c)(13) – Emergency stop switch located in the car;

- (c)(14)(i) – Using a minimum of two wire ropes for drum-type hoisting; and
- (c)(16) – Construction specifications for personnel hoists, including materials, assembly, structural integrity, and safety devices.

C. The Current Variance Application

The conditions in the current variance differ from the conditions included in the most recent permanent variance granted by OSHA for chimney construction, which was to Avalotis Corp. (75 FR 22424). The following table provides a brief summary of the differences between the conditions in the Avalotis variance and the conditions described in the current variance.

Conditions in the Avalotis Variance	Conditions in the Current Variance Application	Differences in Conditions
1. Scope of the Permanent Variance	1. Scope	Broadens the scope to include work on chimneys and chimney-related structures built using jump-form and slip-form construction techniques and procedures, regardless of structural configuration; does not limit the scope to tapered chimneys, built using jump-form construction techniques and procedures, which was the limitation imposed by the Avalotis variance.
2. Replacing a Personnel Cage With a Personnel Platform or a Boatswain's Chair	2. Application	New condition; addresses the application of the variance, and specifies a number of best practices and other requirements employers must meet for the variance to apply. Also provides the option of replacing a personnel cage with a personnel platform or a boatswain's chair for the

Conditions in the Avalotis Variance	Conditions in the Current Variance Application	Differences in Conditions
		construction of tapered chimneys only.
3. Definitions	3. Definitions	New condition; defines 29 key terms, usually technical terms, used in the variance to standardize and clarify the meaning of these terms.
4. Qualified Competent Person	4. Qualified Person and Competent Person	Corrects the inadvertent use of the combined term "qualified competent person" used in the Avalotis variance and distinguishes between the terms "qualified person" and "competent person."
5. Hoist Machine	5. Hoist Machine	Updates the requirements for the design and use of hoist machines based on guidance provided by ANSI A10.22-2007.
6. Methods of Operation	6. Methods of Operation	Expands and clarifies the training requirements for both the operators of the hoist machine and the employees who ride in the cage. The condition adopts several provisions of ANSI A10.22-2007.
7. Hoist Rope	7. Hoist Rope	Revises the safety factor used for the hoist rope and updates the requirements for rope lay based on guidance provided by ANSI A10.22-2007.
8. Footblock	8. Footblock	Revises the safety factor for rated workloads and updates the requirements for the design and use of footblocks based on guidance provided by ANSI A10.22-2007.
9. Cathead and Sheave	9. Cathead and Sheaves	Revises the requirements for the design and use of catheads and sheaves based

Conditions in the Avalotis Variance	Conditions in the Current Variance Application	Differences in Conditions
		on guidance provided by ANSI A10.22-2007.
10. Guide Ropes	10. Guide Ropes	Revises the requirements for the design and use of guide ropes based on guidance provided by ANSI A10.22-2007.
11. Personnel Cage	11. Personnel Cage	Revises the requirements for the design and use of personnel cages based on guidance provided by ANSI A10.22-2007.
12. Safety Clamps	12. Safety Clamps	Minor revisions and clarification of terms.
13. Overhead Protection	13. Overhead Protection	Contains a new requirement, in performance-based language, providing overhead protection for workers accessing the bottom landing.
14. Emergency-Escape Device	14. Emergency-Escape Device	Minor revisions and clarification of terms.
15. Personnel Platforms	15. Personnel Platforms and Boatswain's Chairs	Contains new provisions for the use of a personnel platform or a boatswain's chair by requiring compliance with the applicable portions of 29 CFR 1926.1431 and 1926.452(o)(3).
16. Protecting Workers From Fall and Shearing Hazards	16. Protecting Workers from Fall and Shearing Hazards	Minor revisions.
17. Exclusion Zone	17. Exclusion Zone	Specifies new requirements for establishing an exclusion zone.
18. Inspections, Tests, and Accident Prevention	18. Inspections, Tests, and Accident Prevention	Expands and describe the inspection, test, and accident-prevention requirements.
19. Welding	19. Welding	Adds definition for "qualified" welder.
20. OSHA Notification	20. OSHA Notification	Revises the requirements

Conditions in the Avalotis Variance	Conditions in the Current Variance Application	Differences in Conditions
		for, and description of, employers' duty to notify OSHA of events and conditions associated with their hoisting operations.

The remainder of this section provides additional detail about the conditions in this permanent variance and distinguishes, as appropriate, between these conditions and the conditions in the Avalotis variance.[11]

1. Condition 1: Scope

Several important revisions occur in the first condition covering the scope of the variance. Condition 1(a) of the variance broadens the scope of the former variance to include work on chimneys and chimney-related structures constructed using jump-form and slip-form construction techniques and procedures regardless of a structure's configuration when the work involves using temporary personnel hoist systems. The permanent variance, therefore, does not limit the scope to structural configurations (such as small or large diameter, and tapered or straight-barreled, chimneys), which was the limitation imposed on the former variance, nor does it limit the scope to chimneys. OSHA believes that experience with the alternative conditions as specified in previous variances demonstrates that these conditions are safe. Therefore, employers can apply the conditions specified in the variance safely to structures that have a configuration similar to that of chimneys (i.e., "chimney-related structures"), including silos, towers, and other circular structures, because the hazards associated with these structures (e.g.,

[11]The discussion below will refer to the Avalotis variance and its conditions using the terms "former" and "formerly."

falls, impacts, falling objects) are the same as the hazards associated with chimneys. It is not the name of the structure, nor its diameter and structural configuration (i.e., straight-barreled or tapered), that determines whether it is within the scope of the variance; rather, it is the use of jump-form and slip-form construction techniques and procedures and the use of temporary personnel hoist systems.

Further, Condition 1(a) clarifies that the permanent variance applies to "construction," which includes construction, renovation, repair, maintenance, inspection, and demolition of chimney-related structures. The variance does not apply to work that falls under OSHA's general industry standards at 29 CFR part 1910. The variance applies only to work that falls under OSHA's construction standards at 29 CFR part 1926. Various letters of interpretation and directives establish the factors that determine whether maintenance work falls under general industry or construction standards. Generally, work that replaces a structure or component with an identical structure or component is under the general industry standards, while construction standards cover work that improves a structure or component. Additionally, scale and complexity of the work are factors. Work involving repair, removal, or replacement of large structures (e.g., when replacing a steel beam in a building), or work involving complex steps, tools, or equipment (e.g., when replacing a section of limestone cladding on a building), is construction work. See OSHA's November 18, 2003, letter of interpretation to Raymond V. Knobbs (available at http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=24789) for more information about how to determine if general industry or construction standards cover specific work. Some simple maintenance work on chimney-

related structures may fall under general industry standards and, thus, be outside the scope of this variance.

Subparagraphs (1)(a)(i) and (1)(a)(ii) of Condition 1 expand on former Conditions 1(b)(i) and 1(b)(ii) by clarifying what material employers can hoist. These subparagraphs make clear that the "temporary hoist systems" may not transport construction materials concurrently with personnel. Condition 2(c) under "Application" further clarifies this hoisting requirement.

The permanent variance modifies former Condition 1(c), which addressed personnel platforms and boatswain's chairs, by introducing new Condition 2(g). The variance application did not include requirements for personnel platforms and boatswain's chairs because employers have alternate equipment (reflecting advances in technology) available to accomplish tasks that previously required personnel platforms or boatswain's chairs raised and lowered by a hoist system. However, Condition 2(g) provides the option of replacing a personnel cage with a personnel platform or a boatswain's chair when the employer can demonstrate that available space makes it infeasible to use a personnel cage for transporting employees. OSHA would still enforce the provisions in §§1926.452(o) and .1431(s), and other applicable standards, when employers use personnel platforms and boatswain's chairs on chimneys that have space available to accommodate the use of a personnel cage.

Condition 2(d) leaves intact the remainder of former Condition 1(c). Except for the requirements specified for hoist towers by 29 CFR 1926.552(c)(1) through (c)(4), (c)(8), (c)(13), (c)(14)(i), and (c)(16), the current and former conditions require employers to comply fully with the applicable provisions of 29 CFR parts 1910 and 1926.

Additionally, OSHA modified the Scope section further in response to comments provided by the National Stack and Chimney Safety and Health Advisory Committee (NSCSHAC). (See Section IV of this notice ("Comments on Proposed Variance Application") for a discussion of the modifications included in the variance.)

2. Condition 2: Application

Condition 2 addresses the application of the permanent variance, and specifies a number of best practices and other requirements employers must meet for the variance to apply. For example, Condition 2(a) states a general applicability requirement:

> The employer must use a hoist system equipped with a dedicated personnel-transport device (i.e., a personnel cage) as specified by this variance to raise or lower its workers and/or other construction-related tools, equipment, and supplies between the bottom landing of a chimney-related structure and an elevated work location while performing construction inside and outside the structure.

Condition 2(b) ensures the proper design and operation of the hoist system, while Condition 2(c) regulates the transportation of materials and proper use of material-transport devices so as to ensure employee safety.

As noted above in the discussion of Condition 1, Condition 2(d) leaves intact the remainder of former Condition 1(c), which states that the variance conditions cover only specific requirements for hoist towers, and that employers must comply with all other applicable requirements of 29 CFR parts 1910 and 1926. If an employer is not complying with a condition specified by the variance, the Agency will implement the citation policy described in OSHA's Field Operations Manual (Directive Number: CPL 02-00-150), Chapter 3, Inspection Procedures (Section I: Variances). The citation policy states:

1. No Citation Issued. An employer granted a variance will not be subject to citation if the observed condition is in compliance with an existing variance issued to that employer.
2. Citations. In the event that an employer is not in compliance with the requirement(s) of the issued variance, a violation of the applicable standard shall be cited with a reference in the citation to the variance provision that has not been met.

Regarding the second provision of this policy (i.e., "Citations"), if OSHA finds that an employer is not complying with a variance condition, and the variance condition is not based directly on one of the hoist-tower standards from which OSHA granted the variance (e.g., the condition is based on a consensus standard or best-work practice not specified by an OSHA standard), OSHA will cite the non-compliance as a violation only of the variance provision. Under no circumstances will OSHA cite non-compliance with a variance condition as a violation of both an applicable standard and the variance condition.

Condition 2(e), not found in the former variance, allows the employer flexibility in the event compliance with a variance condition is infeasible.[12] In such a case, the employer may use an alternative means of compliance that provides equivalent or improved protection to workers. The employer must demonstrate that compliance with the variance conditions is infeasible and that the alternative means of compliance is as equivalent to the protection afforded by the variance condition.

Condition 2(f), the final provision under "Application," ensures that workers can understand the required communications. This condition requires that employers communicate with workers in a language the workers understand; communications

[12]See OSHA's Field Operations Manuel (FOM) Chapter VIII.E, available at http://www.osha.gov/OshDoc/Directive_pdf/CPL_02-00-150.pdf.

includes any training and signs required by the variance. OSHA considers this condition, not found in the former variance, important to employee safety and health in that it is critical that employees understand the hazards associated with personnel hoisting operations, and the means the employer is using to protect them from these hazards.

The permanent variance modified Condition 2 of the former variance, entitled "2. Replacing a Personnel Cage with a Personnel Platform or a Boatswain's Chair." Accordingly, Condition 2(g) permits employers to use personnel platforms and boatswain's chairs when using jump-form and slip-form construction techniques and procedures (regardless of the structure's configuration) to construct chimneys and chimney-related structures, but only under specific, limited conditions. Employers may use personnel platforms and boatswain's chairs only when they demonstrate that it is infeasible to use personnel cages because of space limitations. Under these circumstances, employers must use personnel platforms unless space limitations necessitate use of boatswain's chairs. When replacing a personnel cage with a personnel platform or boatswain's chair, employers must follow the requirements of 29 CFR 1926.1431(b) through .1431(s), and 1926.452 (o)(3), respectively.

Additionally, OSHA modified the Application section further in response to comments provided by NSCSHAC. (See Section IV of this notice ("Comments on Proposed Variance Application") for a discussion of the modifications included in the variance.)

3. Condition 3: Definitions

Condition 3 defines 29 key terms, usually technical terms, used in the permanent variance to standardize and clarify the meaning of these terms. This condition was not

part of the former variance, but OSHA believes that defining these terms will enhance employer and employee understanding of, and subsequent compliance with, the variance conditions, thereby ensuring that employees receive the requisite level of protection afforded to them by the variance.

4. Condition 4: Qualified Person and Competent Person

Condition 4 addresses the requirements of a qualified person and a competent person. In the former variance, OSHA inadvertently combined these terms into "qualified competent person." The terms "qualified person" and "competent person" have separate definitions in OSHA's construction standards, and this condition uses these terms consistent with their meaning in the construction standards. Although an employee or contract worker can be both a qualified person and competent person, they usually are not. Indeed, §1926.32(f) defines "competent person" as "one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them." In contrast, §1926.32(m) defines "qualified person" as "one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project." The provisions of Condition 4 distinguish the two terms. Unlike former Condition 3(a)(i), this condition allows for the use of more than one competent and/or qualified person to perform the various tasks. This condition would enable employers to distribute the workload evenly among available personnel and not rely on having available a single individual with expertise in the various tasks.

Condition 4(a)(ii) emphasizes that, operationally, a competent person (not a "qualified competent person" as in former Condition 3(a)(ii)) must be present. Condition 4(b) requires that a qualified person (not a "qualified competent person" as in former Condition 3(b)) must design and maintain the cathead. Finally, Condition 4(c) specifies that the employer must train the competent and qualified persons in the applicable variance provisions. This condition, which is not in the former variance, will ensure that competent persons and qualified persons assigned responsibilities under the variance have the knowledge necessary to perform their tasks effectively under the conditions specified by the variance.

5. Condition 5: Hoist Machine

Condition 5 (formerly Condition 4) addresses the requirements of a hoist machine. Condition 5(a)(i) removes the distinction of "a portable personnel hoist" and, instead, designates the hoist machine as a hoist system. Moreover, Condition 5(a)(ii) adds language to ensure the proper use and maintenance of the hoist machine.

Conditions 5(b) through 5(e), which address raising or lowering a transport, power source, constant-pressure control switch, and line-speed indicator remain as before, with the exception of the former Condition 4(d)(ii) (Constant-pressure control switch), which is substantively addressed in Condition 5(s), Overhead Protection. Note: Employers should consider adopting as a best practice ANSI's A10.22-2007 (at 4.2(2)), which specifies that employers are not to use chains, as well as belts, as drive components between the power source and the winding drum.

Condition 5(f), Overspeed, is a new condition adapted from ANSI A10.22. It will alert the hoist operator in the event the personnel cage travels at excess speed, thereby

preventing speed-related accidents and associated worker injury. The text of Condition 5(g), Braking systems, remains the same as the text of former Condition 4(f). Note that ANSI A10.22-2007 (at Section 4.6) provides additional guidelines for braking systems that employers should consider following.

Condition 5(h), Slack-rope protection (formerly Condition 4(g), Slack-rope switch), differs somewhat from the former condition by requiring hoist design features that will prevent a slack-rope condition. The condition will limit stress on the rope caused by snaps, thereby preventing premature rope failure.

Condition 5(i), Frame, formerly Condition 4(h), varies slightly from the former condition by ensuring that the frame of the hoist machine meets design specifications, thereby improving hoist machine safety. Condition 5(j), Stability, formerly Condition 4(i), also is a slight redraft of the former condition. The condition requires employers to secure hoist machines in accordance with design specifications, which will ensure the stability of the hoist machine during operation.

Condition 5(k), Location, formerly Condition 4(j), is a slight variation of the former condition in that it adds the term "winding" for clarification. The footnote in the condition defining the term "fleet angle" duplicates a footnote in the former condition.

Condition 5(l), Drum and flange diameter, formerly Condition 4(k), remains the same as the former condition, while Condition 5(m), Spooling of the rope, formerly Condition 4(l), differs somewhat from the former condition by allowing employers to store the rope on the drum closer than two inches from the flange when the hoist machine is not in use. The two-inch gap is necessary when the hoist is in operation to prevent the rope from leaving the drum, causing hoisting accidents. However, employers may store the rope

closer than two inches from the flange when transporting or storing the drum, which OSHA believes does not endanger employees.

Condition 5(n) is a new condition that requires employers to secure the rope firmly to the drum. This condition prevents inadvertent unwinding of the rope in the event an operator lowers the hoist load beyond its lowest point of travel by requiring employers to secure the hoist end of the rope mechanically to the hoist drum.

Condition 5(o), Electrical system, formerly Condition 4(m), retains the text of the former condition, which reduces the risk of electric shock. Condition 5(p), Grounding, is a new condition adopted from ANSI A10.22. The condition also will reduce the risk of electric shock.

Condition 5(q), Limit switches, formerly Condition 4(n), revised the former condition by differentiating personnel hoisting from material hoisting.

A new condition, Condition 5(r), ensures proper guarding of the hoist machine. A note added to the condition clarifies that when employers limit access to the hoist drum to only authorized personnel (usually the hoist operator), OSHA will consider the drum as guarded under this condition. This new condition will prevent inadvertent operation of the hoist machine, which could endanger employees involved in the hoisting operations.

As indicated above under the discussion of Conditions 5(b) through 5(e), Condition 5(s), Overhead protection, is an adaptation of former Condition 4(d)(ii). The condition will protect the hoist operator and the hoist machine from falling or moving objects.

6. Condition 6: Methods of Operation

Condition 6 (formerly Condition 5), addresses methods of operation. This condition expands and clarifies the training requirements for both the operators of the hoist

machine and the employees who ride in the cage. The condition adopts several provisions of ANSI A10.22-2007.

Condition 6(a)(i) requires employers to ensure that hoist operators and their supervisors receive effective training in the safe operation of hoist machines, and document the training. Conditions 6(a)(ii) and 6(a)(iii) require that only trained and authorized workers operate the hoist; address the timing of the documented training for each worker who uses the cage for transportation; and specify the frequency of all required training. Conditions 6(a)(i), (ii), and (iii), based on former Conditions 5(a)(i) and 5(a)(ii), will ensure the safe use of the hoist machine and cage.

Condition 6(b) is a new condition that requires employers to use a job-hazard analyses (JHA) to provide enhanced jobsite safety by identifying safety hazards at the worksite not covered explicitly by the current conditions. OSHA publication 3071, entitled "Job Hazard Analysis" defines JHA as follows:

> A job hazard analysis is a technique that focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and the work environment. Ideally, after uncontrolled hazards are identified, steps will be taken to eliminate or reduce them to an acceptable risk-level.

Condition 6(b) requires that employers conduct one or more JHAs for the operation of the temporary personnel hoist system. The condition also requires employers to review these analyses with the workers exposed to any identified hazards.

Condition 6(c), Speed limitations, formerly Condition 5(b), differs from the former condition in that it revises hoist speed requirements. To prevent overtravel accidents, Condition 6(c)(i) adds a requirement to slow the hoist speed at extremes of hoist travel, as well as an overspeed allowance from ANSI A10.22-2007. A note in this condition

contains the requirement from former Condition 5(b)(iii) that specifies limits on hoist speed when hoisting material only, again to prevent accidents related to overtravel. Condition 6(c)(ii) retains the speed limitation in former Condition 5(b)(ii) of 100 feet per minute for personnel platforms and boatswain's chairs when used to transport workers. The slower speed for these devices (compared to personnel cages) is necessary because of the impact and shearing hazards present when workers are using these devices (see discussion below for Condition 16).

Condition 6(d), Communication, redrafted former Condition 5(c) to clarify the requirement for communication equipment by replacing the term "voice-mediated intercommunication system" with the term "electronic voice-communication system (such as two-way radio)" to allow employers flexibility in selecting this type of equipment. In addition, as with the former condition, the current condition requires that employers maintain at all times communication between the hoist operator and the workers located in a moving personnel cage. OSHA notes that a "failure of communication" requiring employers to stop hoisting as specified by Condition 6(d)(ii) includes lack of clarity in communication, as well as equipment failure. Accordingly, the condition requires clear and unambiguous communication at all times, thereby ensuring continuous employee protection in the event of procedural or equipment failures.

7. Condition 7: Hoist Rope

Condition 7 (formerly 6), addresses the hoist rope. Although Conditions 7(a) and (c) remain the same as former Conditions 6(a) and (c), revisions to the remaining conditions focus on making the requirements consistent with other OSHA standards (e.g., 1926.552(c)(14)(iii)), and adopting updated safety requirements specified by ANSI

A10.22-2007. For example, Condition 7(b), Safety factor, increases the safety factor of the rope from 8 to 8.9 times the total suspended load as opposed to a "safe workload" as specified by former Condition 6(b). To clarify the load calculation, the current conditions added the parenthetical phrase, "(including the weight of the suspended rope)." New condition 7(d), adopted from the ANSI standard, addresses rope lay; this new condition will prevent rope rotation and kinking, thereby reducing stress on the rope and ensuring smooth hoisting operations. Except for minor editorial revisions, the text of Condition 7(e), Inspection, removal, and replacement of hoist ropes, remains the same as the text of former Condition 6(d); this provision will prevent the employer from using hoist ropes that could fail during hoisting operations.

Revisions made to former Condition 6(e) by Condition 7(f), Attachments, provide alternative requirements similar to the requirements in ANSI A10.22-2007. OSHA believes these alternatives will provide safer means of positively connecting and securing the hoist rope to the personnel cage than provided by the former condition, thus preventing accidents involving connection failure.

The text of provisions (i) through (iv) of Condition 7(g), Wire-rope fastenings, remains much the same as former Condition 6(f), with only minor editorial revisions. However, Condition 7(g) includes three new provisions, 7(g)(v) through 7(g)(vii), that specify how and when to tighten and retighten clip fastenings. These new provisions should compensate for decreases in rope diameter caused by repeated application of the load and, thus, serve to maintain proper torque on the rope and improve rope integrity. Additionally, the permanent variance added two new requirements: Condition 7(h), Rotation-resistant ropes and swivels, and Condition 7(i), Rope protection. These added

conditions should increase worker safety by preventing rope damage and improving rope integrity. The conditions also are consistent with provisions in ANSI A10.22-2007, which requires barricading the hoisting rope between the hoisting machine and the footblock, thereby preventing the rope from making abrasive contact with the ground and providing falling-object protection when appropriate.

Since employers are free to exceed the requirements of the conditions (with respect to worker protection), employers may use extra-extra-improved plow steel as the rope grade. Note also that ANSI A10.22-2007 (at Section 6) provides additional guidelines for hoist rope that employers should consider following.

8. Condition 8: Footblock

Condition 8 (formerly Condition 7) addresses the footblock on hoist machines. Condition 8(a)(i) revised the safety factor found in the former condition from 4 to 5 times the applied workload[13] to be consistent with the safety factor of the cathead (see Condition 9). Provisions (a)(iii) and (iv) of Condition 8 vary from provisions of former Condition 7(a)(iii) and 7(a)(iv) to be more performance oriented and more consistent with alternatives presented in ANSI A10.22-2007. These revisions will ensure that the moving wire rope effectively and safely accommodates turning from the horizontal to vertical axes as required by the direction of rope travel. While Conditions 8(b) and 8(c) remain the same as former Conditions 7(b) and 7(c), the variance has a new condition, 8(d), that allows a properly mounted sheave as a footblock substitute, consistent with the ANSI standard and Condition 9, Cathead and Sheave. Allowing a sheave substitute also

[13]The applied workload is equivalent to the total suspended load.

will serve to ensure that the moving wire rope effectively and safely accommodates turning from horizontal to vertical axes as required by the direction of rope travel.

9. Condition 9: Cathead and Sheaves

Condition 9 (formerly Condition 8) addresses catheads and sheaves. Condition 9(a) revises former Condition 8(a) to allow use of aluminum for the cathead because of its light weight, provided the employer complies with the cathead design drawings. Condition 9(b) remains the same as former Condition 8(b). OSHA believes that following the design drawings, along with the requirements specified by Condition 9(e) (see below), will assure the safety of the cathead. Provisions (c) and (d) of Condition 10 remain as in former Condition 9. However, Condition 9 also contains three new paragraphs, (e) through (g), based on the ANSI A10.22-2007 standard. Condition 9(e), Design basis, requires that the design of steel catheads conform to the American Institute of Steel Construction (AISC), and that aluminum catheads follow the Aluminum Association's design manual. Both types of catheads must have a safety factor of 5 for the maximum intended working load (equivalent to the total intended suspended load) for personnel and material hoisting. This provision will ensure the structural integrity and safety of the cathead up to workloads 5 times the maximum intended working load of the cathead.

Provision (f)(i) of Condition 9, Clearance, requires adequate clearance between the bottom of cathead and the cable attachment at the top of the hoist cage to eliminate the risk of contact between the cathead and the cage if operation of the upper limit switch stops the cage. The second provision of this paragraph (subparagraph (f)(ii)) specifies that the cage must travel without obstruction along the full length of the guide ropes.

Both of these provisions will improve safety by reducing stress on the guide ropes that would occur should the cage come into contact with the cathead or other obstruction. Finally, Condition 9(g), Sheave substitute, allows a properly mounted construction block as a substitute for a sheave, which serves to ensure that the moving wire rope effectively and safely accommodates turning from the horizontal to vertical axes as required by the direction of rope travel; this condition also refers to Condition 8(d), which addresses sheave substitutes.

10. Condition 10: Guide Ropes

Condition 10 (formerly Condition 9) addresses guide ropes. This condition contains several revisions made for clarification and precision. For example, Condition 10(a) added the term "securely" before the phrase "two guide ropes to the cathead" and the phrase "or to overhead supports designed for the purpose of accepting the guide ropes" at the end of this provision. The term "securely" ensures that guide ropes remain affixed to the cathead or overhead support during hoisting operations, while the added phrase addressing overhead supports acknowledges that hoist machines often use overhead supports other than catheads to secure guide ropes. Also, Condition 10(a)(ii) references 29 CFR 1926.552(c)(17)(iv) to ensure that steel wire rope is free of damage or defects at all times. In addition, Condition 10(b) added the phrase "During the hoisting of personnel" to clarify when the requirement applies to hoisting operations, while Condition 10(c) replaced the verb "to rig" with the verb "to install" to clarify the meaning of the term. Note that ANSI A10.22-2007 (at Section 9.2) provides additional guidelines for alignment tension that employers should consider following.

11. Condition 11: Personnel Cage

Condition 11 (formerly Condition 10) addresses personnel cages. There are several revisions to the former condition. Condition 11(a) removes the requirement that the cage be made of steel, relying on the performance-based language "capable of supporting a load that is eight (8) times its rated load capacity." This revision will provide employers with flexibility with regard to the materials used to construct personnel cages, while ensuring worker safety. The provision also raises the safety factor from 4 to 8 to improve worker protection; this revision is consistent with ANSI A10.22-2007.

Former Conditions 10(a)(v) and 12(a) were inconsistent regarding the thickness of the roof of the personnel cage: former Condition 10(a)(v) required that the roof be constructed of one-eighth (1/8) inch aluminum or equivalent material, while former Condition 12(a) specified that the roof be constructed of three-sixteenth (3/16) inch steel plate or equivalent material. Condition 11(a)(v) requires that the roof of the personnel cage be constructed of three-sixteenths (3/16) inch steel plate or equivalent material, the most protective of the required thicknesses. This provision also requires that the roof slope to the outside of the personnel cage to ensure that falling objects do not remain on the cage and add to the weight of the load.

The revision to Condition 11(a)(vi) clarifies that employers cannot use rails or hard protrusions when their presence creates an impact hazard. This clarification should increase worker safety by reducing impact hazards should workers lose their balance because of cage movement.

Condition 11(b) revised the former term "overhead weight" to the commonly used term "overhaul weight" for clarification. To improve worker safety, Condition 11(e) added a design requirement that the rated load capacity of the cage be at least 250 pounds

for each occupant, or the actual weight if an occupant exceeds 250 pounds. With this added design requirement increasing the safety of the personnel cages, the second provision of this condition revised the former phrase "Hoist no more than four (4) occupants at any one time" to "Hoist at any one time no more than the number of occupants for which the cage is designed" to allow flexibility in the number of employees who can occupy a cage simultaneously during use.

Condition 11(f) clarifies the worker-notification requirement of former Condition 10(f). Accordingly, the condition added a new requirement in provision 11(f)(ii) to notify workers of the number of occupants the cage can accommodate, while provision 11(f)(iii) revised the former phrase "The reduced rated load for the specific job" to "Any reduction in rated load capacity (in pounds) if applicable (due to change in conditions of the specific job)." These revisions will serve as an additional check to prevent overloading the personnel cage.

Condition 11(g), Static drop tests, updated the reference to the ANSI A10.22 standard to the latest, 2007, edition. Also, to be consistent with this new edition, Condition 11(g)(ii) limited the former test criteria (i.e., the initial test criterion included in former Condition 10(g)(ii) of 125% of the maximum rated load of the personnel cage, and subsequent drop tests at no less than 100% of its maximum rated load) to the updated test criteria; these updated criteria require employers to use the rated load of the personnel cage during testing to avoid causing unnecessary damage to the cage.

Condition 11(h) is a new provision that prevents the cage from catching on the platform at the top landing or on intermediate platforms. OSHA believes this condition

will decrease stress on the hoist rope and prevent impact injuries among employees who use the cage.

12. Condition 12: Safety Clamps

Condition 12 (formerly Condition 11) addresses safety clamps, with only a few revisions to the former condition. For clarity, Condition 12(a)(ii) revised the term "when in use" to "when the cage is in motion." Condition 12(c) added the phrase "The employer must ensure" to former Condition 11(c) to place the burden of proving compliance on the employer. In addition, Condition 12(c)(i) updates the ANSI reference in former Condition 11(c)(i) to ANSI standard A10.22-2007.

13. Condition 13: Overhead Protection

The requirements of paragraphs (a) and (b) of former Condition 12, Overhead Protection, specified the requirements for constructing sloped roofs for personnel cages. Condition 11, Personnel Cage, now covers these requirements under subparagraph 11(a)(v). Therefore, Condition 13 contains a new requirement, in performance-based language, providing overhead protection for workers accessing the bottom landing. OSHA believes this provision will increase the safety of employees working around the bottom landing during hoist operations.

14. Condition 14: Emergency Escape Devices

Condition 14 (formerly Condition 13) continues to address emergency escape devices with minor revisions. Condition 14(a) in this variance adds the phrase "For workers using a personnel cage" as a preface to the provision to clarify the requirement. In addition, the training provision, Condition 14(c), references Condition 6(a)(iii), which addresses the timing of training (e.g., before initial use, and periodically thereafter).

15. Condition 15: Personnel Platforms and Boatswain's Chairs

Condition 15 replaces and updates former Condition 14 (Personnel Platforms) by addressing the hazards and required safeguarding methods associated with the use of personnel platforms and boatswain's chairs. Accordingly, when meeting the criteria specified in Condition 2(g), employers may use personnel platforms and boatswain's chairs only when they demonstrate that it is infeasible to use personnel cages because of space limitations in a chimney or a chimney-related structure. In these situations, employers must use personnel platforms unless space limitations require the use of boatswain's chairs. When replacing a personnel cage with a personnel platform or boatswain's chair, employers must follow the applicable requirements of 29 CFR 1926.1431(b) through .1431(s) and 1926.452 (o)(3), respectively.

16. Condition 16: Protecting Workers from Fall and Shearing Hazards

Condition 2(g) of this variance provides the option of replacing a personnel cage with a personnel platform or a boatswain's chair when using jump-form or slip-form construction techniques and procedures to construct chimneys and chimney-related structures, but only when the employer demonstrates that it is infeasible because of space limitations to use a personnel cage to transport workers to and from elevated worksites. Condition 16 of this variance also continues to address shearing hazards (as did former Condition 15, Protecting Workers from Fall and Shearing Hazards) because these hazards are present when workers use personnel platforms and boatswain's chairs under the limitations specified by Condition 2(g). This condition also redrafted the fall-hazard provisions of former Condition 15 to address fall hazards associated with both the hoist areas and the cage, with references to relevant requirements of 29 CFR part 1926. OSHA

believes these revisions cover fall hazards more thoroughly than the former condition, thereby increasing worker protection from these hazards.

17. Condition 17: Exclusion Zone

Condition 17 (formerly Condition 16), which covers exclusion zones, made substantial revisions to the former condition. Accordingly, the condition specifies requirements for establishing an exclusion zone; these requirements were not part of the former condition. OSHA believes that these requirements will improve worker safety by ensuring that unauthorized persons do not enter the zone, thereby reducing their risk of injury from being struck by the hoisting equipment, falling objects, and the personnel cage.

Condition 17(d) is a new provision that clarifies when workers can enter the exclusion zone during operations involving a material-transport device. This provision will reduce worker exposure to the hazards associated with these operations, including impact and crushing hazards from the hoisting equipment and material-transport device.

18. Condition 18: Inspections, Tests, and Accident Prevention

Paragraphs (a) and (b) of Condition 18 expand the inspection, test, and accident-prevention requirements of former Condition 17 by specifying that employers: (1) conduct frequent and regular (at least weekly) inspections of the hoist system and the area around the hoist system; (2) inspect the hoist system prior to reuse following periods of idleness lasting more than one week; and (3) remove hoisting equipment from service when a competent person determines that the equipment is unsafe. These revisions will ensure that hoist systems are safe for worker use. Paragraph (c) adds a requirement that employers document tests, inspections, and corrective actions. This requirement will

provide employers with information needed to schedule tests and inspections, and to determine the actions taken to correct defects in hoisting equipment prior to returning it to service.

19. Condition 19: Welding

Condition 19 (formerly Condition 18) revised paragraph (a) of the former condition by defining the term "qualified" to mean a welder who meets the requirements of the American Welding Society, specifically, the qualification requirements of American Welding Society (AWS) D1.1 Structural Welding Code – Steel, or AWS D1.2 Structural Welding Code – Aluminum, as applicable. Specifying the qualifications for welders will improve worker safety by providing assurance that personnel who weld components of hoist systems possess the skills necessary to perform this work, and will do so competently and in a manner that maintains the operational integrity and safety of the systems.

20. Condition 20: OSHA Notification

Condition 20 (Condition 19 in the former variance) addresses the duty of employers to notify OSHA of events and conditions associated with their hoisting operations. Paragraphs (a) and (b) of the condition made substantial revisions to paragraph (a) of the former condition, including: (1) specifying the legal test (due diligence) that OSHA must apply to these notification requirements; (2) identifying the Office of Technical Programs and Coordination Activities (OTPCA) at national OSHA headquarters (not the nearest OSHA area office) or the appropriate State-Plan office as the offices to receive notification and the required information (i.e., the location of the operation and the date the operation will begin); (3) providing contact information (i.e., telephone and facsimile

numbers, and email address) for OTPCA; and (4) requiring employers to notify OTPCA or the appropriate State-Plan office at least 15 days prior to beginning any emergency operation or short-notice project that uses the conditions specified by the variance of the location and date of the operation or project or, if such an operation will occur in less than 15 days, then as soon as possible after the employer knows when the operation will begin.

Former paragraph (b) addressed notification requirements when the employer ceases to do business or transfers the activities covered by the variance to a successor company. Paragraphs (c) and (d) of Condition 20 in this variance expand on the former requirements by: (1) reiterating the legal test (due diligence) that OSHA will apply to these notification requirements; (2) specifying that employers notify OTPCA of any changes in the location and address of the main office for managing the activities covered by the variance; and (3) stipulating that OSHA must approve the transfer of the variance to a successor company.

OSHA believes that the revisions made to former Condition 19 by Condition 20 in this variance will expedite receipt of information by OSHA and State-Plan states regarding the initiation and location of hoisting operations covered by the variance, and will clarify that the notification requirements apply as well to emergency operations and short-term projects. Accordingly, these revisions will improve worker safety by ensuring that OSHA and State-Plan states have complete and accurate information about the chimney-construction activities covered by the variance so that these agencies can carefully monitor employer compliance with the conditions specified by the variance. While Condition 20 now clearly notifies employers of the legal test they must meet in

complying with the requirements of this condition, OSHA notes that it will not issue a citation if an employer's violation of Condition 20 does not immediately affect worker safety or health; in these circumstances, OSHA may, however, issue a notice of de minimis violation.

Requiring employers to notify OTPCA of any changes in the location and address of their main offices will allow OSHA to communicate effectively with employers regarding the status of the variance. Stipulating that an employer must have OSHA's approval to transfer a variance to a successor company provides assurance that the successor company has the resources, and agrees, to comply with the conditions of the variance. OSHA believes this requirement is necessary to ensure the safety of workers involved in performing the operations covered by the variance.

IV. Comments on the Proposed Variance Application

Two public commenters submitted comments on the proposed variance application. Additionally, OSHA received comments on the proposed variance application from the state of Michigan. See Section II ("Multi-State Variance") of this notice for a discussion of Michigan's comment.

The first public commenter was Mr. Barry A. Cole of Cole-Preferred Safety Consulting, Inc., who supported granting the permanent variance (Document ID No. OSHA-2012-0015-0003). Mr. Cole also provided comments unrelated to the published variance applications; these comments addressed OSHA's variance and enforcement process, which is beyond the scope of the variance application.

The National Stack and Chimney Safety and Health Advisory Committee (NSCSHAC) submitted the second public comment (Document ID No. OSHA-2012-0015-0021). This comment: (1) compared the proposed variance conditions to the

conditions in the prior chimney variances; and (2) addressed the scope of the variance application. NSCSHAC also requested a hearing under 29 CFR 1905.15 if OSHA either rejected its comments or made substantive revisions to them; OSHA adopted all of NSCSHAC's comments without revision, so a hearing is unnecessary.

The remainder of this section describes the specific comments submitted by NSCSHAC, and OSHA's response to them.

Comment 1: NSCSHAC stated that the second paragraph in the Background section of the variance application contained an incorrect statement regarding the alternative conditions described in previous chimney variances, notably that the conditions applied only to tapered chimneys constructed using jump-form construction techniques and procedures. NSCSHAC requested that OSHA revise or remove the subject sentences from the Background section, and also revise or remove all other comparable sentences in the variance application.

OSHA's response: The Agency made the requested revisions.

Comment 2: NSCSHAC requested that OSHA modify the scope condition (proposed Condition 1) of the variance application such that it covers all chimney-related construction, regardless of the construction method and configuration, when such construction involves the use of temporary personnel hoisting systems. NSCSHAC provided the following rationale for its comment:

1) The language used in the Notice is not the actual language included in the Permanent Variance Applications submitted in November 2012 (see Variance Application Attachment A; Exhibit No. OSHA-2012-0015-0018).
2) [NSCSHAC] has demonstrated through it meetings with OSHA that the chimney hoist variance is applicable for the two different construction methods of jump-form formwork (described as "formwork techniques" in the Notice) and slip-form formwork

construction, regardless of the structural configuration, i.e. tapered or straight barreled.

3) Chimneys constructed by the slip-form method can also be of tapered configurations and need to be included in the variance. Slip-form formwork for tapered chimneys has the same conditions for use of the chimney hoist system as for slip-form formwork for straight barreled chimneys.
4) Chimneys constructed by the jump-form method can be tapered and straight barrel chimneys, and of small and large diameters. The reasons for obtaining a variance for large barreled chimneys are similar to the reasons for a variance for small barreled chimneys, and include the following:

I. Per the original variance dated 4/3/73, a hoist (tower) would interfere with the design and construction of the proper scaffolding. The inside of the chimney for the jump-form formwork construction includes support sling cables for the work platform and formwork support structure at multiple locations around the perimeter of the top sections of concrete, for both large and small diameter chimneys. These cables are positioned 360 degrees around the circumference at this location, making it almost impossible to get any access on the inside of the chimney adjacent to the wall. There are also trailing scaffolds that extend down as much as 17 ft. on the outside for finishing work and adjusting the equipment. All access/egress for the jump-form formwork for small and large barrel, and tapered chimneys has always been obtained at a distance away from the walls using the chimney hoist system integrated into these types of formworks.
II. The majority of work during the construction of the jump-form formwork for small and large straight-barrel, and tapered chimneys is at the perimeter wall location, with hazards of falling concrete, tools, and equipment. This is the reason for the designated exclusion zones and overhead protection, and for locating the personnel cage away from the chimney wall.
III. Small barreled chimneys may have only one liner flue, and large barreled chimneys may have multiple liner flues. Therefore, the available room inside a large barreled chimney may be no larger than for a small barreled chimney regardless of the construction methods due to the multiple flues.
IV. When performing liner construction, access is also required to the inside of the chimney liner, which limits the usefulness of attaching a hoist tower to the interior or exterior of the chimney walls. In addition, when a hoist system is used inside of a liner the ability to erect and brace a hoist tower is infeasible due to interference with, and the usually unsuitable support provided by, the liner while being constructed.
V. The unique concrete techniques and procedures involved in jump-form formwork, similar to slip-form construction, make it also difficult and

unsafe to attach a hoist tower to both the interior or exterior walls of a chimney during construction. The fresh concrete is poured into forms that are 7.5 ft. to 10.0 ft. tall on a daily basis. As a result of this progressive construction process, the concrete wall immediately below the platform for a distance of 15 ft. to 30 ft. is insufficiently cured to safely attach a hoist tower to the wall.

VI. The frequent extensions of a hoist tower to keep up with the moving work platforms involves many difficulties in erection, bracing, and guying as was discussed in the original variance in 4/3/73. Also discussed were the extra precautions to obtain substantial bracing if a hoist tower is constructed, since both the chimney and the hoist tower would be exposed to high winds. Therefore, personnel would be exposed to greater safety hazards due to weather elements, erection procedures, and working underneath the work platform and installing a hoist tower to the exterior wall, than they would be by using the personnel cage with the hoist variance. These difficulties and increased hazards involved in use of a hoist tower are applicable to both jump form and slip form methods and for both tapered and straight barreled chimneys.

Therefore, according to NSCSHAC, the scope condition (Condition 1) of the variance should include tapered chimneys constructed by slip-form construction techniques and procedures and large-barreled chimneys constructed by jump-form construction techniques and procedures; in sum, the variance should apply to all chimneys regardless of construction method or structural configuration.

OSHA's response: The Agency corrected the scope condition in the variance (Condition 1) to include both jump-form and slip-form construction methods and procedures, regardless of configuration (i.e., straight-barreled or tapered).

Comment 3: NSCSHAC stated that OSHA should delete or revise paragraph (b) of the scope condition (proposed Condition 1) in the variance application to apply only to structures other than chimneys, and provided the following rationale for this comment:

1) This paragraph is not in the actual Permanent Variance Applications submitted in November, 2012.
2) [NSCSHAC] has demonstrated though its meetings with OSHA and again with the explanations above, that this variance is applicable to small and large straight-barreled chimneys for both jump-form and slip

form formwork and there should be no further reason to demonstrate that it is infeasible to erect a hoist tower inside or outside of the structure for these construction methods.

3) The condition that "only after demonstrating that it is infeasible to erect a hoist tower either inside or outside the structure" is subjective and the application of it is unclear. Is the grantee to obtain approval from OSHA prior to use? How long will it take for OSHA to approve the use on a particular project and will this occur during the project bidding stage? Can the work be stopped by OSHA until the grantee demonstrates it is infeasible? These and other questions create undue schedule and cost concerns for the project participants.

OSHA's response: The Agency inadvertently included paragraph (b) in proposed Condition 1, and removed the paragraph from the permanent variance as requested by NSCSHAC.

Comment 4: NSCSHAC noted that the last paragraph in the Supplementary Information Section (and similar paragraphs throughout the variance) unnecessarily limited the scope of the variance application. NSCSHAC recommended that OSHA revise this language (and similar language elsewhere in the variance application) to include both jump-form and slip-form construction techniques and procedures, and straight-barreled or tapered configurations. NSCSHAC provided the following rationale for this comment: "NSCSHAC has explained above that the variance's scope should be broad enough to include jump-form and slip-form formwork construction, as well as accommodate different structural configurations of large or small-diameter tapered and straight barreled chimneys."

OSHA's response: The Agency made the requested revisions.

Comment 5: NSCSHAC pointed out that the first and second introductory sentences of paragraph (g) of proposed Condition 2 (Application) are inconsistent regarding the variance application's coverage. The first sentence refers to covering construction of tapered chimneys, and small-diameter, straight-barreled chimneys and chimney-related

structures, while the wording of the next (second) sentence states that the variance application would cover only the construction of tapered chimneys. Accordingly, NSCSHAC requested that OSHA revise paragraph (g) to read: "Replacing the personnel cage with a personnel platform or a boatswain's chair."

OSHA's response: The Agency inadvertently limited the second introductory sentence of paragraph (g) to tapered chimneys. However, because the conditions specified by the permanent variance cover both jump-form and slip-form construction techniques and procedures regardless of the configuration of the chimney or chimney-related structure (i.e., tapered or straight-barreled chimneys and chimney-related structures of any diameter) (see OSHA's response to NSCSHAC comment 2 above), the Agency removed both introductory sentences from the permanent variance.

Note: In addition to the revisions made in response to NSCSHAC's comments, OSHA made a number of minor stylistic, technical, or editorial corrections to the variance conditions to correct previous errors or to improve clarity.

V. Decision

As noted previously in this preamble, from 1973 to the present the Agency granted a number of permanent variances from the tackle requirements provided for boatswain's chairs by 29 CFR 1926.452(o)(3) and the requirements for hoist towers specified by paragraphs (c)(1) through (c)(4), (c)(8), (c)(13), (c)(14)(i), and (c)(16) of 29 CFR 1926.552. In view of the Agency's history with the variances granted for chimney construction, OSHA determined that the alternative conditions specified by the application will protect employees at least as effectively as the requirements of paragraph (o)(3) of 29 CFR 1926.452 and paragraphs (c)(1) through (c)(4), (c)(8), (c)(13), (c)(14)(i), and (c)(16) of 29 CFR 1926.552.

Under section 6(d) of the Occupational safety and Health Act of 1970 (29 U.S.C. 655), and based on the record discussed above, the Agency finds that when the employers comply with the conditions of the following order, the working conditions of the employers' workers will be at least as safe and healthful as if the employers complied with the working conditions by paragraph (o)(3) of 29 CFR 1926.452, and paragraphs (c)(1) through (c)(4), (c)(8), (c)(13), (c)(14)(i), and (c)(16) of 29 CFR 1926.552. This decision is applicable in all states under Federal OSHA enforcement authority, and in the State-Plan states and territories when: (1) the relevant standards are the same as the Federal OSHA standards from which the applicants are seeking the permanent variance; and (2) the State-Plan state or territory does not object to the terms of the variance application (see Section II, Multi-State Variance, of this notice for a description of the applicability of this decision in State-Plan states and territories).

VI. Order

OSHA issues this order authorizing Kiewit Power Constructors Co. et al. ("the employers") to comply with the following conditions instead of complying with paragraph (o)(3) of 29 CFR 1926.452, and paragraphs (c)(1) through (c)(4), (c)(8), (c)(13), (c)(14)(i), and (c)(16) of 29 CFR 1926.552. This order applies in Federal OSHA enforcement jurisdictions, and in those states with OSHA-approved State plans that have identical standards and have agreed to the terms of the variance.

1. Scope

This permanent variance applies to chimney-related construction, including work on chimneys, chimney linings, stacks, and chimney-related structures such as silos, towers, and similar structures (hereafter referred to collectively as "chimney-related structure" or "structure,") built using jump-form and slip-form construction techniques and

procedures, regardless of the structural configuration (such as tapered or straight barreled of any diameter) when such construction involves the use of temporary personnel hoist systems (hereafter referred to as "hoist system") for the transportation of:

(a) Personnel to and from the bottom landing of a chimney or chimney-related structure to working elevations inside or outside of the chimney or structure using a personnel cage during construction work subject to 29 CFR part 1926, including construction, renovation, repair, maintenance, inspection, and demolition; or

(b) Materials, but not concurrently with hoisting of personnel, through attachment of a hopper, material basket, concrete bucket, or other appropriate rigging to the hoist system to raise and lower all other materials inside or outside a chimney or chimney-related structure. See also Condition 2(c)(ii) below.

2. Application

(a) The employer must use a hoist system equipped with a dedicated personnel-transport device (i.e., a personnel cage) as specified by this variance to raise or lower its workers and/or other construction-related tools, equipment, and supplies between the bottom landing of a chimney or chimney-related structure and an elevated work location while performing construction inside and outside the chimney or structure.

(b) Prior to initial use of the hoist system, the employer must have all drawings containing designs and construction details showing the integration of the hoist system with the construction technique and procedures in use (such as a slip-form construction)

sealed by a professional engineer registered in the United States. A professional engineer registered in the United States also must approve any modifications to these drawings.[14]

(c) When using a hoist system, the employer must:

(i) Use the personnel cages raised and lowered by the hoist system solely to transport workers with the tools and small supplies necessary to do their work (e.g., fasteners, paint, caulk);

(ii) Attach a dedicated material-transport device directly to the hoist rope solely to raise and lower all other materials and tools; and

(iii) Attach the material-transport device directly to the hoisting hook and never to the personnel cage.

(d) Except for the requirements specified by 29 CFR 1926.552(c)(1) through (c)(4), (c)(8), (c)(13), (c)(14)(i), and (c)(16), the employer must comply fully with all other applicable provisions of 29 CFR parts 1910 and 1926.

(e) When an employer demonstrates that it is infeasible to comply with these conditions, the employer may use other devices or methods to comply, but only when the employer clearly demonstrates that these devices and methods provide its workers with protection that is at least equivalent to the protection afforded to them by the conditions of this variance.

(f) The employer must convey any communication, written or verbal, required by this variance in a language that each worker can understand.

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[14]Any reference to "design" or "designed" in these conditions means that a professional engineer registered in the United States must approve the design.

(g) Replacing a personnel cage with a personnel platform or a boatswain's chair. The following provisions apply:

(i) Personnel platform. Before using a personnel platform, an employer must:

(A) Demonstrate that available space makes it infeasible to use a personnel cage for transporting employees;

(B) Limit use of a personnel platform to elevations above the last work location that the personnel cage can reach; and

(C) Use a personnel platform in accordance with requirements specified by 29 CFR 1926.1431(s), unless the employer can demonstrate that the structural arrangement of the chimney precludes such use.

(ii) Boatswain's chair. Before using a boatswain's chair, an employer must:

(A) Demonstrate that available space makes it infeasible to use a personnel platform for transporting employees;

(B) Limit use of a boatswain's chair to elevations above the last work location that the personnel platform can reach; and

(C) Use a boatswain's chair in accordance with block-and-tackle requirements specified by 29 CFR 1926.452(o)(3), unless the employer can demonstrate that the structural arrangement of the chimney precludes such use.

3. Definitions

The following definitions apply to this permanent variance; these definitions do not necessarily apply in other contexts.

(a) Authorized person – a person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or locations at the jobsite.[15]

(b) Barricade – barrier used to confine or mark off limits to access.

(c) Base-mounted drum hoist – a drum hoist fastened to, and supported by, a designed steel frame with mounting attachments for securing to a foundation.*

(d) Broken rope principle – the principle by which, if the main support rope fails, the lack of tension will cause the safety clamps attached to the personnel cage to grip the guide ropes and stop it within 18 inches (457.2mm) (maximum) of travel from the activation point.*

(e) Cage – an enclosed load-carrying unit or car, including its platform, frame, enclosure, and gate, in which personnel are transported.*

(f) Cathead – the structure directly supporting the overhead sheaves.*

(g) Competent person – one who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.[16]

(h) Deadman control – a constant pressure, hand-operated or foot-operated control designed so that, when released, it automatically returns to a neutral or deactivated position and stops movement of the hoist drum.* (Referred to in this order as "deadman control switch.")

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[15]See 29 CFR 1926.32(d).

*ANSI/ASSE kindly permitted OSHA to use the definition of this term from Section 3 of its A10.22-2007 standard, *Safety Requirements for Rope-Guided and Non-guided Workers' Hoists.* In some cases, OSHA made slight editorial revisions to the text of the definition for clarity.

[16]See 29 CFR 1926.32(f).

(i) Design factor – the ratio of the failure load to the maximum designed working load. (Also referred to as "Safety Factor" or "Factor of Safety.")* (Referred to in this order as "safety factor.")

(j) Exclusion zone – a clearly designated zone around the bottom landing of the hoist system designed to restrict the zone to authorized persons only.

(k) Footblock – a wire-rope block mounted at or near the bottom of a structure for the purpose of changing the direction of the hoisting rope from approximately horizontal to approximately vertical.*

(l) Hoist (verb) – to raise, lower, or otherwise move a load in the air.

(m) Hoist (noun) – same as "hoist machine."

(n) Hoist area – the area (including, but not limited to, the area directly beneath the load) in which it is reasonably foreseeable that partially or completely suspended materials could fall in the event of an accident.

(o) Hoist-way – a clearly designated walkway or path used to provide safe access to and from personnel cages.

(p) Hoist machine – a mechanical device for lifting and lowering loads by winding a line onto or off a drum.

(q) Hoist system – a collection of mechanical devices and support equipment assembled and used in combination for lifting and lowering loads, including personnel cages.

(r) Job hazard analysis – an evaluation of the tasks or operations involving the use of hoist systems performed to identify potential hazards and to determine the necessary controls.

(s) Lifeline – an independently suspended line used for attaching the employee's safety harness lanyard, usually by means of a rope grab, as part of the fall-arrest system.*

(t) Line run – a condition whereby the free end of the hoistline (wire rope) may be overhauled by the deadweight of the downline portion of the hoistline on the footblock side of the cathead.*

(u) Non-guided workman's hoist (worker's hoist) – a hoist involving the transportation of a person in a boatswain's chair, or equivalent, not attached to fixed guide ropes.* (NOTE: While the conditions of this variance do not use this term directly, ANSI A10.22-2007, referenced under Condition 11, uses the term.)

(v) Qualified person – one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.[17]

(w) Rope – wire rope, unless otherwise specified.*

(x) Rotation-resistant rope – a wire rope consisting of an inner layer of strand laid in one direction covered by a layer of strand laid in the opposite direction. This has the effect of counteracting torque by reducing the tendency of the finished rope to rotate.*

(y) Safety clamp – a fall-arresting device (or rope-grab) designed to grip the lifeline and prevent the person being transported in a boatswain's chair, or equivalent, from falling.*

(z) Static drop test – a test performed by suspending the personnel cage in a fixed position with a quick-release device or equivalent method separating the cage from the

[17]See 29 CFR 1926.32(m).

hoistline. The quick-release device is tripped allowing the cage to freefall until the safety clamps (cage) activate and stop the cage.*

(aa) Total suspended load – the combined weight of any and all objects and persons in transport, including the weight of the suspended rope.

(bb) Weatherproof – constructed or protected so that exposure to the weather will not interfere with successful operations.*

4. Qualified Person and Competent Person

(a) The employer must:

(i) Provide one or more competent person(s) and/or qualified person(s), as specified in paragraphs (f) and (m) of 29 CFR 1926.32, who is/are responsible for ensuring that the installation, maintenance, and inspection of the hoist system comply with the conditions specified herein, and with the applicable requirements of 29 CFR part 1926 ("Safety and Health Regulations for Construction"); and

(ii) Ensure that a competent person(s) is/are present at ground-level to assist in an emergency whenever the hoist system is raising or lowering workers.

(b) The employer must use a qualified person to design, and a competent person to maintain, the cathead described under Condition 9 ("Cathead and Sheave") below.

(c) The employer must train each competent person and each qualified person regarding the conditions of this variance and the requirements of 29 CFR part 1926 that are applicable to their respective roles.

5. Hoist Machine

(a) Type of hoist. The employer must:

(i) Designate the hoist machine as a hoist system; and

(ii) Use and maintain the hoist machine in accordance with the manufacturer's instructions. When the manufacturer's instructions are not available, the employer must ensure that a qualified person develops written instructions, and that these instructions are available on-site.

(b) Raising or lowering a transport. The employer must ensure that:

(i) The hoist machine includes a base-mounted drum hoist designed to control line-speed;

(ii) When lowering an empty or occupied transport, the drive components are engaged continuously (i.e., "powered down" or not "freewheeling");

(iii) The drive system is interconnected, on a continuous basis, through a torque converter, mechanical coupling, or an equivalent coupling (e.g., electronic controller, fluid clutches, and hydraulic drives);

(iv) The braking mechanism is applied automatically when the transmission is in the neutral position and a forward-reverse coupling or shifting transmission is being used; and

(v) No belts are used between the power source and the winding drum.

(c) Power source. The employer must power the hoist machine by an air, electric, hydraulic, or internal-combustion drive mechanism.

(d) Constant-pressure control switch. The employer must equip the hoist machine with a hand-operated or a foot-operated constant-pressure control switch (i.e., a "deadman control switch") that deactivates the engine and stops the hoist rotation immediately upon release by the hoist operator.

(e) Line-speed indicator. The employer must:

(i) Equip the hoist machine with a line-speed indicator maintained in working order; and

(ii) Ensure that the line-speed indicator is in clear view of the hoist operator during hoisting operations.

(f) Overspeed. The employer must equip the hoist machine with an audible or visual overspeed-indicator alarm that will activate before the line-speed exceeds 275 feet per minute (includes 10% overspeed allowance) when transporting personnel.

(g) Braking systems. The employer must equip the hoist machine with at least two (2) independent braking systems (i.e., one automatic and one manual) applied on the winding side of the clutch or couplings, with each braking system capable of stopping and holding 150 percent of the maximum rated line load.

(h) Slack-rope protection. The employer must equip the hoist machine with a slack-rope device to prevent rotation of the winding drum under slack-rope conditions, or a slack-rope circuit that stops or limits the hoist speed to a creep speed when there is no tension on the load line.

(i) Frame. The employer must ensure that the frame of the hoist machine is a self-supporting, rigid, steel structure, and that holding brackets for anchor lines and legs for anchor bolts are integral components of the frame in accordance with the applicable design drawings.

(j) Stability. The employer must secure hoist machines in position to prevent movement, shifting, or dislodgement in accordance with the applicable design drawings.

(k) Location. The employer must:

(i) Locate the hoist machine far enough from the footblock to obtain the correct fleet angle for proper winding or spooling of the cable on the drum; and

(ii) Ensure that the fleet angle remains between one-half degree ($1/2^0$) and one and one-half degrees ($1\text{-}1/2^0$) for smooth drums, and between one-half degree ($1/2^0$) and two degrees (2^0) for grooved drums, with the lead sheave centered on the drum.[18]

(l) Drum and flange diameter. The employer must:

(i) Provide a winding drum for the hoist that is at least 30 times the nominal diameter of the rope used for hoisting; and

(ii) Ensure that the winding drum has a flange diameter that is at least one and one-half (1-1/2) times the winding-drum diameter.

(m) Spooling of the rope. The employer must never spool the rope closer than two (2) inches (5.1 cm) from the outer edge of the winding-drum flange when the hoist is in operation.

(n) Minimum rope turns on drum. The employer must ensure that the drum has three turns of rope when the hoist load is at the lowest point of travel, and that the hoist end of the rope is mechanically secured to the hoist drum in accordance with the manufacturer's instructions.

(o) Electrical system. The employer must ensure that all electrical equipment is weatherproof.

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[18]This provision adopts the definition of, and specifications for, fleet angle from Cranes and Derricks, H. I. Shapiro, et al. (eds.); New York: McGraw-Hill; 3rd ed., 1999, page 592. Accordingly, the fleet angle is "[t]he angle the rope leading onto a [winding] drum makes with the line perpendicular to the drum rotating axis when the lead rope is making a wrap against the flange."

(p) Grounding. The employer must ensure that the hoisting machine is grounded at all times in accordance with the requirements of 29 CFR 1926.404(f).

(q) Limit switches.

(i) When the employer uses a hoist system with a personnel cage, the employer must equip the hoist system with limit switches and related equipment that automatically prevent overtravel of the transport device at the top of the supporting structure and at the bottom of the hoist-way or lowest landing level.

(ii) When the employer uses a hoist system with a material-transport device, the employer must equip the hoist system with limit switches and related equipment that automatically prevents overtravel of material-transport devices at the top of the support structure.

(r) Guarding. The employer must guard effectively all exposed moving parts such as gears, projecting screws, setscrews, chains, cables, belts, chain sprockets, and reciprocating or rotating parts, that might constitute a hazard under normal operating conditions. (NOTE: OSHA considers a hoist drum that has access limited to authorized persons as guarded.)

(s) Overhead Protection. The employer must provide a shelter or enclosure to protect the hoist operator, hoist machine, and associated controls from falling or moving objects.

6. Methods of Operation

(a) Worker qualifications and training. The employer must:

(i) Ensure that each personnel hoist operator and each of their supervisors have effective and documented training in the safe operation of hoist machines covered by this variance.

(ii) Ensure that only a trained and authorized person operates the hoist machine.

(iii) Provide effective and documented instruction, before initial use, to each worker who uses a personnel cage for transportation regarding the safe use of the personnel cage and its emergency systems. The employer must repeat the instruction periodically and as necessary (e.g., after making changes to the personnel cage that affect its operation).

(b) Use of job hazard analyses (JHAs). The employer must:

(i) Complete one or more JHAs for the operation of the hoist system; and

(ii) Review, periodically and as necessary (e.g., after making changes to the hoist machine that affect its operation), the contents of the JHA with affected personnel.

(c) Speed limitations. The employer must not operate the hoist at a speed in excess of:

(i) 250 feet per minute[19] or the design speed of the hoist system, whichever is lower, when using a personnel cage to transport workers, and slow the hoist appropriately at the extremes of hoist travel. (NOTE: The employer may use a line-speed that is consistent with the design limitations of the hoist system when hoisting material (i.e., using a dedicated material-transport device) on the hoist system); or

(ii) 100 feet per minute when a personnel platform or boatswain's chair is being used to transport workers.

(d) Communication. The employer must:

(i) Use an electronic voice-communication system (such as two-way radio) at all times for communication between the hoist operator and the workers located in a moving personnel cage, personnel platform, or boatswain's chair;

[19]When including 10% overspeed, the maximum hoist speed must not exceed 275 feet per minute.

(ii) Stop hoisting if there is (a) a failure of communication, or (b) activation of a stop signal from the workers in the personnel cage, personnel platform, or boatswain's chair; resume hoisting only when a supervisor determines that it is safe to do so.

7. Hoist Rope

(a) Grade. The employer must use a wire rope for the hoist system (i.e., "hoist rope") that consists of extra-improved plow steel, an equivalent grade of non-rotating rope, or a regular lay rope with a suitable swivel mechanism.

(b) Safety factor. For personnel hoisting, the employer must maintain a safety factor of at least eight and nine-tenth (8.9) times the total suspended load throughout the entire length of hoist rope (including the weight of the suspended rope).

(c) Size. The employer must use a hoist rope that is at least one-half (1/2) inch in diameter.

(d) Rope lay. Except when using rotation-resistant rope, the employer must use preformed regular-lay rope. The direction of exterior lay (right or left) must match the drum termination and winding characteristics.

(e) Inspection, removal, and replacement. The employer must:

(i) Thoroughly inspect the hoist rope before the start of each job, and on completing a new set-up;

(ii) Maintain the proper diameter-to-diameter ratios between the hoist rope and the footblock and the sheave by inspecting the wire rope regularly (see Conditions 8(c) and 9(d), below); and

(iii) Remove and replace the wire rope with new wire rope when any condition specified by 29 CFR 1926.552(a)(3) occurs.

(f) Attachments. The employer must attach the rope to a personnel cage, personnel platform, or boatswain's chair using a positive connection such as:

(i) A screw-pin shackle with the pin secured from rotation or loosening by mousing to the shackle body;

(ii) A bolt-type shackle, nut, and cotter pin; or

(iii) A positive-locking link.

(g) Wire-rope fastenings. When the employer uses clip fastenings (e.g., U-bolt wire-rope clips) with wire ropes, the employer must:

(i) Use Table H-20 of 29 CFR 1926.251 to determine the number and spacing of the clips;

(ii) Use at least three (3) drop-forged clips at each fastening;

(iii) Install the clips with the "U" of the clips on the dead end of the rope and the live end resting in the clip saddle;

(iv) Space the clips so that the distance between them is a minimum of six (6) times the diameter of the rope.

(v) Tighten the clips evenly in accordance with the manufacturer's specification;

(vi) Following initial application of the load to the rope, retighten the clip nuts to the specified torque to compensate for any decrease in rope diameter caused by the load; and

(vii) Retighten the rope clip nuts periodically to compensate for any further decrease in rope diameter during usage.

(h) Rotation-resistant ropes and swivels. The employer must not use a swivel anywhere in the system when using rotation-resistant ropes unless approved by the wire-rope manufacturer.

(i) Rope protection. The employer must:

(i) Barricade the hoisting rope between the hoisting machine and the footblock;

(ii) Protect the hoisting rope from abrasive contact with the ground; and

(iii) When the hoisting rope is subject to falling material or debris, protect it from such hazards.

8. Footblock

(a) Type of footblock. Except as provided in paragraph (d) of this condition, the employer must use a footblock:

(i) Consisting of construction-type rope blocks of solid single-piece bail with a safety factor of at least five (5), or an equivalent block with roller bearings;

(ii) Designed for the applied loading, size, and type of wire rope used for hoisting;

(iii) Designed for returning the rope to the sheave groove after a slack-rope condition, or equipped with a guard that contains the wire rope within the sheave groove;

(iv) Attached to the base according to the design drawings, with the anchorage being capable of sustaining at least eight (8) times the resultant force of the horizontal and vertical loads transmitted by the hoisting rope; and

(v) Designed and installed so that it turns the moving wire rope to and from the horizontal or vertical direction as required by the direction of rope travel.

(b) Directional change. The employer must ensure that the angle of change in the hoist rope from the horizontal to the vertical direction at the footblock is approximately 90° (degrees).

(c) Diameter. The employer must ensure that the line diameter of the footblock sheave is at least 24 times the diameter of the hoist rope.

(d) Sheave substitute. The employer may substitute a properly mounted sheave, as specified in Condition 9 below ("Cathead and Sheaves"), for the footblock described in this condition.

9. Cathead and Sheaves

(a) Sheave support. The employer must use a cathead (i.e., "overhead support") constructed of steel or aluminum that consists of a wide-flange beam, or two (2) channel sections securely bolted back-to-back, according to the design drawings, to prevent spreading.

(b) Installation. The employer must ensure that:

(i) All sheaves revolve on shafts that rotate on bearings; and

(ii) The bearings are mounted securely to maintain the proper bearing position at all times.

(c) Rope guides. The employer must provide each sheave with appropriate rope guides to prevent the hoist rope from leaving the sheave grooves when the rope vibrates or swings abnormally.

(d) Diameter. The employer must use a sheave with a line diameter that is at least 24 times the diameter of the hoist rope.

(e) Design basis. The employer must ensure that:

(i) The design of the cathead assembly conforms to the American Institute of Steel Construction (AISC) Manual of Steel Construction or the Aluminum Association's Aluminum Design Manual, whichever manual is appropriate to the material used; and

(ii) The cathead has a safety factor of at least five (5) for personnel and material hoisting.

(f) Clearance. The employer must provide:

(i) Adequate clearance so that there will be no contact between the bottom of cathead and the cable attachment at the top of the hoist cage; and

(ii) A path free of obstruction (clear travel) along the full length of the guide ropes.

(g) Sheave substitute. The employer may substitute construction blocks, of the type described in Condition 8(a)(i) above, for the top sheaves. (NOTE: See also Condition 8(d) above.)

10. Guide Ropes

(a) Number and construction. The employer must:

(i) Securely affix two (2) guide ropes to the cathead or to overhead supports designed for the purpose of accepting the guide ropes; and

(ii) Ensure that the guide ropes:

(A) Consist of steel wire rope not less than one-half (1/2) inch (1.3 cm) in diameter; and

(B) Be free of damage or defect at all times per 29 CFR 1926.552(c)(17)(iv).

(b) Guide rope fastening and alignment tension. During the hoisting of personnel, the employer must ensure that one end of each guide rope is fastened securely to the overhead support, and that appropriate tension is applied at the foundation end of the rope.

(c) Height. The employer must install the guide ropes along the entire height of hoist travel.

11. Personnel Cage

(a) Construction. The employer must ensure that the frame of the personnel cage is capable of supporting a load that is eight (8) times its rated load capacity. The employer also must ensure that the personnel cage has:

(i) A top and sides that are permanently enclosed (except for the entrance and exit);

(ii) A floor securely fastened in place;

(iii) Walls that consist of 14-gauge, one-half (1/2) inch expanded metal mesh, or an equivalent material;

(iv) Walls that cover the full height of the personnel cage between the floor and the overhead covering;

(v) A sloped roof constructed of at least three-sixteenth (3/16) inch steel plate, or material of equivalent strength and impact resistance, that slopes to the outside of the personnel cage;

(vi) Safe handholds (e.g., rope grips—but **not** rails or hard protrusions when their presence creates an impact hazard) that accommodate each occupant; and

(vii) Attachment points for workers to secure their personal fall-arrest protection systems.

(b) Overhaul weight. The employer must ensure that the personnel cage has an overhaul weight (e.g., a headache ball) to compensate for the weight of the hoist rope between the cathead and footblock. In addition, the employer must:

(i) Ensure that the overhaul weight is capable of preventing line run; and

(ii) Use a means to restrain the movement of the overhaul weight so that the weight does not interfere with safe personnel hoisting.

(c) Gate. The employer must ensure that the personnel cage has a gate that:

(i) Guards the full height of the entrance opening; and

(ii) Has a functioning mechanical latch that prevents accidental opening.

(d) Operating procedures. The employer must post the procedures for operating the personnel cage conspicuously at the bottom landing.

(e) Capacity. The employer must:

(i) Ensure that the rated load capacity of the cage is at least 250 pounds for each occupant hoisted, or actual weight if the person exceeds 250 pounds; and

(ii) Hoist at any one time no more than the number of occupants for which the cage is designed.

(f) Worker notification. The employer must post a sign on each personnel cage notifying workers of the following conditions:

(i) The standard rated load (in pounds), as determined by the initial static drop-test specified by Condition 11(g) ("Static drop-tests");

(ii) The designated number of occupants for which the cage is designed; and

(iii) Any reduction in rated load capacity (in pounds) if applicable (e.g., due to a change in conditions of the specific job).

(g) Static drop-tests. The employer must:

(i) Conduct static drop tests of each personnel cage that comply with the static drop-test procedures provided in Section 13 ("Inspections and Tests") of American National Standards Institute (ANSI) standard A10.22-2007 ("Safety Requirements for Rope-Guided and Non-Guided Workers' Hoists");

(ii) Perform the initial and subsequent static drop-tests at the rated load of the personnel cage; and

(iii) Use a personnel cage for raising or lowering workers only when no damage occurred to the components of the cage as a result of the static drop-tests.

(h) Platform guides. The employer must provide:

(i) Adequate guards, beveled or cone-shaped attachments, or equivalent devices at the underside of the working platform or on the cage to prevent catching when the cage passes through the platform at the top landing; and

(ii) Sufficient clearance or adequate guarding to prevent catching or snagging when the cage passes through intermediate landings.

12. Safety Clamps

(a) Fit to the guide ropes. The employer must:

(i) Fit appropriately designed and constructed safety clamps to the guide ropes; and

(ii) Ensure that the safety clamps do not damage the guide ropes when the cage is in motion.

(b) Attach to the personnel cage. The employer must attach safety clamps to each personnel cage for gripping the guide ropes.

(c) Operation. The employer must ensure that the safety clamps attached to the personnel cage:

(i) Operate on the "broken rope principle";

(ii) Be capable of stopping and holding a personnel cage that is carrying 100 percent of its maximum rated load and traveling at its maximum allowable speed if the hoist rope breaks at the footblock; and

(iii) Use a pre-determined and pre-set clamping force (i.e., the "spring compression force") for each hoist system.

(d) Maintenance. The employer must keep the safety-clamp assemblies clean and functional at all times.

13. Overhead Protection

The employer must provide overhead protection for workers to access the bottom landing of the hoist system.

14. Emergency-Escape Device

(a) Location. For workers using a personnel cage, the employer must provide an emergency-escape device, adequate to allow each worker being hoisted to escape, in at least one of the following locations:

(i) In the personnel cage, provided that the device is long enough to reach the bottom landing from the highest possible escape point; or

(ii) At the bottom landing, provided that a means is available in the personnel cage for an occupant to raise the device to the highest possible escape point.

(b) Operating instructions. The employer must ensure that written instructions for operating the emergency-escape device are attached to the device.

(c) Training. The employer must provide effective and documented training, as specified by Condition 6(a)(iii) above, to each worker who uses a personnel cage for transportation on how to operate the emergency-escape device so as to effect a safe descent in case of an emergency.

15. Personnel Platforms and Boatswain's Chairs

The employer must:

(a) Comply with the applicable requirements specified by paragraphs (b) through (r) of 29 CFR 1926.1431, Hoisting personnel, when electing to replace the personnel cage with a personnel platform in accordance with Condition 2(g)(i);

(b) Comply with the applicable requirements specified by 29 CFR 1926.1431(s) and 1926.452(o)(3) when electing to replace the personnel platform with a boatswain's chair in accordance with Condition 2(g)(ii).

16. Protecting Workers from Fall and Shearing Hazards

The employer must:

(a) Ensure that the hoist areas meet the requirements of 29 CFR 1926.501(b)(3) for hoist areas;

(b) Protect each worker in a hoist-way area from falling six (6) feet or more to lower levels by using guardrail systems that meet the requirements of 29 CFR 1926.502(b) or personal fall-arrest systems that meet the requirements of 29 CFR 1926.502(d);

(c) Ensure that workers using personnel cages secure their fall-arrest systems to attachment points located inside the cage if the door of the personnel cage needs to be opened for emergency escape; and

(d) Provide safe access to and from personnel cages.

(e) Shearing hazards. The employer must:

(i) Provide workers who use personnel platforms or boatswain's chairs with instruction on the shearing hazards posed by the hoist system (e.g., work platforms, scaffolds), and the need to keep their limbs or other body parts clear of these hazards during hoisting operations;

(ii) Provide the instruction on shearing and struck-by hazards:

(A) Before a worker uses a personnel platform or boatswain's chair at the worksite; and

(B) Periodically, and as necessary, thereafter, including whenever a worker demonstrates a lack of knowledge about the hazards or how to avoid the hazards, a modification occurs to an existing shearing or struck-by hazard, or a new shearing or struck-by hazard develops at the worksite; and

(iii) Attach a readily visible warning to each personnel platform and boatswain's chair notifying workers in a language they understand of potential shearing hazards they may encounter during hoisting operations, and that uses the following (or equivalent) wording:

(A) For personnel platforms: "Warning--To avoid serious injury, keep your hands, arms, feet, legs, and other parts of your body inside this platform while it is in motion"; and

(B) For boatswain's chairs: "Warning--To avoid serious injury, do not extend your hands, arms, feet, legs, or other parts your body from the side or to the front of this chair while it is in motion."

17. Exclusion Zone

The employer must:

(a) Establish a clearly designated exclusion zone around the bottom landing of the hoist system designed to restrict the zone to authorized persons only;

(b) The periphery of the exclusion zone must be:

(i) Designed to keep unauthorized persons out of the zone;

(ii) Well defined by visible boundary demarcation;

(iii) Established with entry and exit points; and

(iv) Posted with readily visible warning signs limiting access.

(c) During personnel hoisting, prohibit any worker from entering the exclusion zone except authorized persons involved in accessing a personnel cage, and then only when the device is at the bottom landing and not in operation (i.e., when the drive components of the hoist machine are disengaged and the braking mechanism is properly applied); and

(d) When hoisting material with the personnel hoist system, prohibit any worker from entering the exclusion zone except to access a material-transport device, and then only when the device is near the bottom landing for the purpose of loading, attaching, landing, or tagging the load.

18. Inspections, Tests, and Accident Prevention

(a) The employer must initiate and maintain a program of frequent and regular inspections of the hoist system and associated work areas as required by 29 CFR 1926.20(b)(2) by:

(i) Ensuring that a competent person conducts daily visual checks and weekly inspections of the hoist system, and an inspection before reuse of the system following periods of idleness exceeding one week;

(ii) Ensuring that the competent person conducts tests and inspections of the hoist system in accordance with 29 CFR 1926.552(c)(15); and

(iii) Ensuring that a competent person conducts weekly inspections of the work areas associated with the use of the hoist system.

(b) If the competent person determines that the equipment constitutes a safety hazard, the employer must remove the equipment from service and not return the equipment to

service until the employer corrects the hazardous condition and has the correction approved by a qualified person.

(c) The employer must maintain at the jobsite, for the duration of the job, records of all tests and inspections of the hoist system, as well as associated corrective actions and repairs.

19. Welding

(a) The employer must ensure that only welders qualified in accordance with the requirements of the American Welding Society weld components of the hoist system. Accordingly, these welders must meet the qualification requirements of American Welding Society (AWS) D1.1 Structural Welding Code – Steel, or AWS D1.2 Structural Welding Code – Aluminum, as applicable.

(b) The employer must ensure that these welders:

(i) Are familiar with the weld grades, types, and materials specified in the design of the system; and

(ii) Perform the welding tasks in accordance with 29 CFR part 1926, subpart J ("Welding and Cutting").

20. OSHA Notification

(a) To assist OSHA in administering the conditions of this variance, the employer must exercise due diligence in notifying the Office of Technical Programs and Coordination Activities (OTPCA) at OSHA's national headquarters, or the appropriate State-Plan Office, of:

(i) Any chimney-related construction operation using the conditions specified herein, including the location of the operation and the date the operation will commence, at least 15 calendar days prior to commencing the operation;

(ii) Any emergency operation or short-notice project using the conditions specified herein, and when 15 days are not available before start of work, as soon as possible after the employer knows when the operation will commence. This information must include the location and date of the operation;

(b) The employer can notify OTPCA at OSHA's national headquarters of pending chimney-related construction operations by:

(i) Telephone at 202 639-2110;

(ii) Facsimile at 202 693-1644; or

(iii) Email at VarianceProgram@dol.gov

(c) To assist OSHA in administering the conditions of this variance, the employer must exercise due diligence by informing OTPCA at OSHA's national headquarters as soon as possible after it has knowledge that it will:

(i) Cease to do business;

(ii) Change the location and address of the main office for managing the activities covered by this variance; or

(iii) Transfer the activities covered by this variance to a successor company.

(d) OSHA must approve the transfer of this variance to a successor company.

VII. Authority and Signature

David Michaels, PhD, MPH, Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, 200 Constitution Ave., NW, Washington, D.C., authorized the preparation of this notice. OSHA is issuing this notice under the authority

specified by 29 U.S.C. 655, Secretary of Labor's Order No. 1-2012 (76 FR 3912; Jan. 25, 2012), and 29 CFR part 1905.

Signed at Washington, DC, on September 24, 2013.

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David Michaels,
Assistant Secretary of Labor for Occupational Safety and Health.

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