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ADVISORY COMMITTEE #4 MINUTES
Proposal to Consolidate Safety Orders for Cranes in Construction (CSO Article 15) into
General Industry Safety Orders Group 13 (Cranes and Other Hoisting Equipment).
October 7-8, 2015
Sacramento, CA

Wednesday, October 7, 2015 (First Day).

1. Opening remarks.

The meeting was called to order by Chair, Conrad Tolson, Senior Engineer, Occupational Safety and Health Standards Board (OSHSB), at 9:30 am. The Chair was assisted by Leslie Matsuoka, Program Analyst, OSHSB. The meeting opened with self-introductions by those in attendance, including members and interested parties.

2. Background of the proposed rulemaking.

The Chairman reviewed the Standards Board policy regarding the use of advisory committee meetings; i.e. they are informal and advisory in nature. The Board will use consensus recommendations to develop a reasonable and effective proposal; however, it may be necessary later in the rulemaking process to amend, modify or reject these recommendations, due to the review process. Furthermore, California must be at least as effective as federal standards.

Chair briefly reviewed the background of the proposal. Prior to July 7, 2011, all Title 8 crane standards were horizontal and resided in the General Industry Safety Orders (GISO); however, a federal negotiated rulemaking (CDAC) in 2010, promulgated standards in 29 CFR 1926 specific for cranes and derricks in construction. The Board originally proposed to combine provisions of the CDAC into the GISO using an expedited (Horcher) rulemaking process; however, general industry stakeholders were concerned that the proposed inclusion of the new federal construction standards into the GISO could “over-reach” and apply to general industry. This was not permitted by the Horcher rulemaking process; thus the CDAC was placed in Article 15 of the Construction Safety Orders (CSO). Since that time, the Board has received input from stakeholders (both management and labor) that it would make sense to consolidate all the crane safety orders into the GISO to provide “one stop shopping.” The logic being that a crane, particularly a mobile crane, can work on construction and general industry-type projects sometimes in the same day. Thus the goal is to reach a consensus proposal to combine CSO into GISO.

This is the fourth advisory committee (AC4) working on the task of bringing the CSO crane safety orders into the GISO. Subjects proposed for review by AC4 included the following:

- Tower cranes
- Equipment with a rated hoisting/lifting capacity of 2,000 pounds or less.
- Hoisting personnel (personnel platforms)
- Fall protection
- Inspections and Maintenance (supplemental requirements)

- Derricks
- Floating cranes/derricks and land cranes/derricks on barges.
- Overhead & gantry cranes.

Some members had other commitments for the second day, so chair proposed to re-order the review to begin with personnel platforms and then go to equipment with a rated hoisting/lifting capacity of 2,000 pounds or less, followed by tower cranes.

3. Written comments.

No written comments were received prior to the meeting.

4. Section-by-section review.

The committee next turned to a section-by-section review of the proposal.

Section 5004, Hoisting Personnel.

The Chair stated that this is an existing section; however we needed to plug-in some additional requirements to be consistent with the feds. He asked the committee to let him know if they see anything that they feel is an over-reach of construction into general industry.

Subsection (d)(3). No comments.

Subsection (d)(4). Modifications proposed for this section were as follows:

> "The crane shall be uniformly level within one percent of level grade, and located on firm footing. Cranes equipped with outriggers or stabilizers shall have them all fully deployed and locked following manufacturer's specifications, insofar as applicable, when hoisting employees.

Closson stated that not all cranes are limited to one percent of level grade (that is an ASME B30.5 requirement) a number of American cranes are limited to ½%. He recommended modifying to "uniformly level in accordance with manufacturer's specifications." Also, the term "and locked" is not a common term; there is typically not a locking device. Sometimes it's a holding valve for hydraulic outriggers, or an actuation switch. The term may therefore be confusing to the user and he recommended deleting that term. Porter added that, while he agreed with the proposed modifications, he would like to see the 1% retained in the event a manufacturer does not address the use of the crane for a platform or manlift. Thus (d)(4) was modified to read:

> "The crane shall be uniformly level in accordance with the manufacturer's specifications not to exceed ~~within~~ one percent of level grade, and located on firm footing. Cranes equipped with outriggers or stabilizers shall have them all fully deployed ~~and locked~~ following manufacturer's specifications, insofar as applicable, when hoisting employees."

Closson noted that there are some cranes operating on barges that can be under CA jurisdiction and in these cases the manufacturer may permit greater slopes, but in those cases the manufacturer de-rates the load chart.

Subsection (d)(5), Capacity.

Subsection (d)(5)(A). No comments.

Subsection (d)(5)(B). Closson commented that there are a lot of boom-attached platforms that are not made by the manufacturer, and these can present structural problems. For example, if the platform is wide and all the workers or load goes to one end of the platform, they can produce a twisting moment. He opined that a boom-attached platform should not be used unless it has been approved by the

manufacturer for such use. He added that boom-attached platforms are often used in electrical work, and they are also used for bridge inspections. There was an opinion that non-OEM platforms could be considered as an equipment modification covered by another section; however, Closson and another felt that not all attachments are considered to be modifications. There was a proposal to modify (d)(5)(B) to read:

> "Use of boom-attached personnel platforms, when approved by the crane manufacturer or certified agent. The total weight of the loaded personnel platform shall not exceed 50 percent of the rated capacity for the radius and configuration of the equipment, except during proof testing."

Subsection (d)(5)(C). Nullmeyer questioned the parenthetical "including the hook, load line, rigging and any other equipment that imposes a load." Typically gantry cranes do not include the load line and load block as part of the load. Closson agreed and added that concept is also used in portal and tower cranes. He opined that the parenthetical is not needed. It only applies to mobile cranes, but not to other types of cranes; furthermore, those weights would not even be commonly available for an overhead crane. He recommended that the parenthetical be deleted. The consensus seemed to be that the parenthetical "states the obvious" and thus is unnecessary.

Subsection (d)(8), Proper operation required. No comments.

Subsection (e), Instruments and Components.

Subsection (e)(1). There was discussion that this applies to cranes with variable angle booms or jibs, thus it doesn't apply to overhead cranes. Closson recommended replacing the parentheses with commas. Bland recommended modifying "articulating cranes" to "articulating boom cranes" for clarity. Chair agreed that we use the term "articulating boom crane" in the definitions.

Subsection (e)(3). No comment.

Subsection (e)(4). Closson commented on the note; it should specify the load line in use. This is because cranes can have multiple load lines, and the intent is to prohibit free fall of the load line in use.

Subsection (e)(5). For consistency "articulating cranes" will be clarified to read: "articulating boom cranes."

Subsection (e)(6). Closson opined that (e)(6) could be combined into (e)(1); however, Souza felt they should be kept separate.

Subsection (g)(6), Platform specifications.

Closson commented on the overhead protection. He opined there were conflicting federal requirements for overhead protection not to obscure view of the platform occupants, but to limit openings to not greater than ½" "unless full protection is necessary." Bland added that the requirement that the protection not obscure the view of the operator or the occupants could depend on the angle of view and thus was also problematic. Others asked what "full protection" included (from what kind of hazards?). Discussion by Closson, Bland and others indicated that the federal verbiage was vague and enforcement could be problematic. The conclusion was to stay with existing state verbiage and strike the federal verbiage.

Subsection (i), Rigging.

There were no comments on subsections (i)(1) and (i)(2), other than punctuation on (i)(2)(A).

Subsection (i)(3). Nypl asked about the strength requirement for rotation resistant rope being specified as twice that of other types of wire rope. He opined that the 10x factor for rotation resistant slings applied to the hardware as well; however, Bland clarified that it only applies to the sling.
Closson noted that the 10x requirement comes from ASME B30.23 and it was agreed to by wire rope manufacturers because rotation resistant rope wears from the inside-out and thus strand failure is not readily apparent. The 10x for rotation resistant was determined to provide safety equivalent to 5x for other types of wire rope. Chair noted that the verbiage under discussion is existing, and no changes are proposed. Closson added that although the verbiage is consistent with federal standards, it does not currently address the use of synthetic slings. The B30 standard does not allow the use of synthetic slings because of ultraviolet degradation, and lack of durability to abrasion. He recommended adding a prohibition to the use of synthetic slings for personnel platforms to be consistent with the B30.23 consensus standard.
Nypl opined that we should clarify requirements for slings vs. wire rope and rigging. There was some discussion about clarifying that (i)(3) applies to wire rope <u>slings</u> rather than to wire rope.
There was also discussion about striking the sentence: "Where rotation resistant rope is used, the slings shall be capable of supporting without failure at least ten times the maximum intended load." Harkey commented that B30.9 prohibits the use of rotation resistant rope for slings [B30.9-2014, sec. 9-2.2.1(c)].
Thus Bland stated that including this sentence would imply that rotation-resistant rope slings could be used to support a personnel platform if they could support 10x the maximum intended load. Closson noted that GISO Group 13 has not incorporated B30.9 as a referenced standard. He added that, in the course of doing accident investigations, "never say never;" i.e., although rotation-resistant slings are not factory made, it is possible for someone to field-fabricate slings from rotation-resistant rope if that's what they can find. Thus he was undecided on how we should proceed, although he noted that the Division has apparently not had a problem with the 10x requirement. Thus at this point, Chair's opinion was that we should leave the sentence as currently published. Bland however recommended clarifying the sentence to read "where rotation resistant rope <u>slings are</u> used…"
There was a question whether it might be clearer to also amend the 2nd sentence to read: "…capable of supporting, without failure, at least five times the <u>maximum allowable working load</u>…" Bland responded that the intent was to assure a factor of safety for the suspended load; not for the rope rating, thus "maximum intended load" is correct.
Returning to the issue raised earlier about synthetic slings, Closson restated that the concerns are abrasion and effects of UV. He proposed the following verbiage based on B30.23: "slings made of synthetic or natural fibers shall not be used."
After further discussion about rotation-resistant wire rope slings and B30.9, and synthetic slings, a decision was made to replace the last sentence with: "Rotation resistant wire rope slings and slings made of synthetic or natural fibers shall not be used."
Subsection (i)(6). "The system used to connect the personnel platform to the equipment shall allow the platform to remain within 10 degrees of level, regardless of boom angle."
Closson inquired whether this only applies to a platform suspended from a crane by a wire rope with slings or if it also includes boom or jib-attached platforms. It was felt that by virtue of its location [subsection (i)] that it is only intended for wire rope and sling suspended platforms. That being the case,

then Closson wanted to add "jibs" to the section. Furthermore, the 10 degree allowance does not limit the platform to 10 degrees (it could go higher). Thus it was recommended to modify this subsection as follows:
"The system used to connect the personnel platform to the equipment shall maintain ~~allow~~ the platform to ~~remain~~ within 10 degrees of level, regardless of boom/jib angle."
[Ed note: after reviewing the recording, "limit" will replace "maintain" as it better captures the intent of the committee discussion.]
There were no other comments on these modifications.

Subsection (j) Trial Lift, Inspection, and Proof Testing.
Subsection (j)(1). A lot of this is existing verbiage; however some amendments were proposed based on the federal verbiage.

Documentation:
Yarbrough opined that the trial lift should be documented. Current verbiage requires the trial lift immediately prior to placing personnel in the lift and each time a lift is made from a new location. He noted that on some of their jobs, lifts can be made from the same location, day after day, or shift after shift, on a repetitive basis, but not all contractors interpret this to require a trial lift each time, including repetitive lifts.
Chair opined that since documentation is not in the existing verbiage or in the federal verbiage, this is an expansion beyond the scope of this rulemaking.
Yarbrough requested that we add a requirement for documentation of the trial lift, inspection and proof testing. Closson opined that B30.23 required documentation be retained for the duration of the lift operation
[Ed note: B30.23 has not been adopted into Group 13; however, B30.23-2011, section 23-2.1.1(c) only appears to require record retention for inspections (not operational tests), thus there does not appear to be a clear requirement in B30.23 for documenting trial lifts].
Bland pointed out that while it may be prudent to document, there are a number of things that would be prudent to document, but for which documentation is not required. This could be construed to be required by the IIPP. If we set a precedent for requiring documentation here, but not elsewhere it could raise questions about the IIPP and documentation requirements.
Closson added that requiring documentation will not make this operation safer; it will just be used to point the blame after the fact.
Yarbrough indicated that Caltrans is currently dealing with the matter of controlling employer with the Division, and minus a requirement in Title 8, he feels there is no way they can require this documentation from the employer. It was suggested they put a requirement in their contract for this documentation, but he said as a state agency they use Title 8.
Bland opined that documentation is a contract issue. Johnson, Silbernagel and others agreed.
Yarbrough wanted to go on the record that they view trial lift documentation as critical for employee safety and they feel strongly that this should be included in Title 8. (Caltrans is dealing with an accident that occurred in Yolo County where this was a factor). Nypl agreed that by requiring documentation, it increases the chances that they employer will perform the trial lift.

However, other than Caltrans and Nypl, no other committee members spoke in support and there was no consensus in the committee to require documentation.

50% limit of hoist rated capacity:
Closson said this is technically incorrect. He requested that we change this to: "…50% limit as established in Section 5004(d)(5)(A)." There was agreement, thus the sentence will read:

> "The operator shall determine that all systems, controls and safety devices are activated and functioning properly; that no interferences exist; that all configurations necessary to reach those work locations will allow the operator to remain under the 50 percent limit as established in Section 5004(d)(5)(A), and that the load radius to be used during the lift has been accurately determined."

Subsection (j)(3) and (j)(5). Reviewed without comment.
Subsection (j)(4). The proposal was to add "The qualified person shall also confirm that the test weight has been removed upon completion of the trial lift. There was a question about the test weight. Discussion among members clarified that it doesn't have to be a special test weight; it can be equipment and other items placed on the platform to test both the structure of the platform and the capacity of the crane. There was a suggestion to change "removed upon completion of the trial lift" to "removed prior to lifting personnel." There was consensus for this change.

The committee recessed for lunch, upon return the committee turned to section 5004(k).

Subsection 5004(k), Work Practices.
Subsection (k)(1)(B). Closson recommended clarifying that the working height is "above the platform floor."
Subsection (k)(4)(A) , Attendance - Platforms without controls. The question was raised by Closson and Bland about the meaning of "on site." Bland opined that the intent of the text was that the crane operator shall remain in view of the platform at all times. Closson asked: "How can one be at the controls and not on site?"
Yarbrough said that some platforms can be radio controlled and that can be a concern if the radio is powerful enough to control a platform from off site.
Silbernagel brought up the case of a crane lowering a platform under a bridge; the operator wouldn't be in view of the platform in that case.
[Ed note: because of the scope of 5004 (noted later), this situation does not apply]
Bland recommended we use "platform" rather than "equipment" as it is more specific.
The committee proceeded to develop verbiage.
Nullmeyer wanted to clarify that these requirements would apply when the platform is occupied and elevated .
Bland noted/clarified that section 5004 only applies to personnel platforms suspended on load lines (not to boom attached platforms) [Sec, 5004(a), Scope]. However, others noted that new subsection (d)(5)(B) is for boom-attached personnel platforms. Chair suggested changing the scope to include boom-attached platforms; however Bland opined that could introduce other problems and he

recommended instead that we move (d)(5)(B) to a new section 5004.1 for boom-attached platforms to avoid confusion.

Subsection (k)(4)(B) , Attendance - Platforms with controls.

Someone asked if the committee was OK with a "qualified person," who may have received only minimal instructions, being able to operate the crane from the platform.

Bland asked whether there are any suspended platforms that are equipped with platform controls. He surmised that this section might belong in 5004.1 for boom-mounted platforms.

Yarbrough commented that some of the new self-erecting tower cranes could have suspended platforms with radio controls so that the crane can be controlled from the platform, so this subsection could apply in that situation. Bland countered that this situation is not for a platform equipped with controls, but a crane equipped with controls. There was a difference of opinion whether this would be a platform equipped with controls.

Chair offered that reviewing the other parts of (4)(B) might help understanding. (4)(B)2 was particularly vague with multiple references to "equipment" such that it was unclear what "equipment" was. However, it could be construed to mean that a crane operator had to be at the crane controls and in view of the platform.

Harkey asked for clarification what the controls on the platform were controlling. It was noted that boom-mounted platforms can have controls connected to the boom and control the boom. Several agreed this is very common.

In response to Bland's inquiry whether any suspended platforms have controls that can control the boom, someone responded that some can; however the control of the boom is limited to very small movements.

There was concern that this puts the crane operator in the platform, and if the crane capacity is less than 15,000# or less than 25' boom, a certified operator is not required. The question was asked whether the committee is OK with allowing someone who is not a certified to operate the crane. It was noted; however, that persons only need to be "qualified" to operate a multipurpose machine. Furthermore, it was noted that (4)(B)1 requires that "the occupant using the controls in the platform shall be a qualified person with respect to their use, including the safe limitations of the equipment and hazards associated with its operation."

[Ed note: due to numerous AC work-in-progress changes made to (k)(4), only the final version is provided with these minutes. If the reader would like to see (k)(4) before changes, please refer to the pre-AC version]

Porter commented that linemen can manipulate a 45 ton Manitex crane 360° from a pin-on basket with remote controls (however, they are not moving the crane; only the boom). Bland noted that the Manitex-type situation is not a suspended platform.

[Ed note: pin-on platforms are covered by ANSI/SIA A92 standards and are outside the scope of B30 standards and this rulemaking. Such aerial devices are addressed in GISO Article 24].

Discussion continued on the issue of platforms with controls and it was apparent that this is a difficult subject to regulate.

Closson stated that all these concerns we have been wrestling with are addressed by ASME B30.23, and that a CDAC subcommittee had attempted to condense it into a few paragraphs in the federal standard. He opined that what the feds attempted to do in a few paragraphs diminishes the safety prescribed by

B30.23, which covers all these subjects in about 13 pages. In his opinion, B30.23 addresses all the subjects covered in section 5004.
Chair commented that there is reluctance on the part of stakeholders for us to incorporate by reference.

Bland added that the law is to be freely available to everyone, and incorporation by reference requires stakeholders to buy a document to find out what they must comply with. Closson opined that we are already doing this with section 4884.
Chair stated that the discussion thus far was indicating that the federal verbiage is not going to work. He asked the crane unit what they are currently doing about platforms with controls. Yow said that everything starting from (4)(B) is currently prohibited.
Silbernagel added that even B30.23 states that using B30 equipment to hoist personnel is to be used only where there are no less hazardous alternatives. He said that too often personnel platforms are used because they are convenient.
Chair suggested that based on the discussion to this point, it appears we do not want to offer (4)(B) as an option, and we might want to go back to what we currently have at 5004(k)(4). An unidentified speaker commented that if we are to consider adopting B30.23 into the standard that we need to give the public an opportunity to review and comment on the proposal.
Nullmeyer opined that the existing text for 5004(k)(4) was adequate. Bland and others agreed that existing (k)(4) was better than the proposed adoption of federal verbiage.
The committee then reviewed the existing verbiage to see if any modifications were necessary. Souza recommended retaining certain requirements of (k)(4)(A); i.e., the "operator shall remain at the controls, … and in view of the platform or in communication with the platform personnel,…"
After further review the section read:

> Attendance. The crane or derrick operator shall remain at the controls, on site, and in view of the platform or in communication with the platform personnel or signal person at all times ~~when~~ while the ~~crane engine is running and the~~ platform is occupied and elevated.

Subsection (k)(5), Environmental Conditions.
There was discussion about whether the "qualified person" could over-ride the crane operator.
Closson opined that Subsection (5)(A) will also require an anemometer on the platform since wind speeds can vary depending on the location of the platform; for example if it is in between two tall buildings. Steinberg noted that they are currently working a job that requires them to stop operation if there is lightning within 20 miles. He opined that the people on the lift may be in a better place to assess the conditions and hazards than the crane operator.
Bland opined that our existing verbiage, by being less specific than the federal verbiage, may be more encompassing; however, Baer (retired OSHA) took the opposite viewpoint.
Closson questioned the use of the term "qualified person;" he opined this would require a weatherman on-site.
After considerable discussion, the majority of the committee was in favor of leaving the federal verbiage as proposed.

After a short break, the committee returned to deliberations.

While on break a commenter had recommended changing "qualified person" to "competent person" in (k)(5). The committee was in agreement with this change, as a competent person, by definition, has authority to shut-down the operation if hazardous conditions exist.

Subsection (k)(7), Fall Protection.

Silbernagel commented that there are differences between states on where they want the tie-off. He agrees with those who say the employees should be tied-off to the platform structure. If they are tied off to another hook and something happens to the platform, the employee could be pulled through a tangle of ropes, etc. above the platform.

Closson opined that the requirement to tie-off outside the platform comes from Canada and it exposes the employee to a lot of overhead hazards should the platform fall from the crane. Furthermore, to tie-off to a headache ball, people put a shackle above the ball, and the shackle can rub against the wire rope. He asked if anyone had ever heard of a platform falling off a crane (no one had). The only time he was aware of that the platform had fallen from the crane was before latching hooks were required. If multiple employees tie-off to the load block or ball, their lanyards can get tangled as they move about the platform.

The Division agreed that tying-off to the block or headache ball is not a good practice. The committee was in agreement to remove "lower load block or overhaul ball" from the text.

Steinberg recommended leaving the load hook as a tie-off option; i.e., so it would read: "appropriately attached to the load hook supporting the platform or a structural member…"

Closson observed that if the point of attachment must comply with CSO Article 24 (5000# anchorage) and if there were 4 workers tied-off to the hook, it would have to support 20,000# (10 tons). Thus a 10 ton hook would be needed as a tie-off for 4 persons. Another commenter observed that a lot of hooks are rated less than 10 tons, thus the provision to tie-off to the hook is problematic. McCrary estimated that it has been a number of years since anyone has tied-off to a hook. Souza agreed that contemporary practice is to tie-off to the platform structure. Thus the committee consensus was for (k)(7)(A) to read:

> "Except over water, employees occupying the personnel platform shall be provided and use a personal fall arrest ~~body belt/harness~~ system with lanyard appropriately attached ~~to the~~ ~~lower load block or overhaul ball, or~~ to a structural member within the personnel platform capable of supporting a fall impact for employees using the anchorage…"

Subsection (k)(9). Reviewed without comment.

Subsection (k)(10), Use of personnel platform.

Exception 1. Yow thought this might conflict with the Mining and Tunneling Safety Orders (MTSO); however, Yarbrough, opined there would not be a problem as the MTSO take precedence over the other safety orders. Thus the consensus was to leave Exception 1 as-is.

Exception 3. Closson questioned what a "marine hoisted personnel transfer device" is. He acknowledged that CA has jurisdiction over some offshore drilling rigs, but does the "marine hoisted" mean the crane is on the platform or land or where? The problem is with the term "marine hoisted." No one could understand the intent and meaning of the term. The committee was of the opinion that "personnel transfer device" is adequate. Since the term is also used in subsection (r), we will delete the term there as well.

Subsection (l), Traveling.

Subsection (l)(2)(D)& (E). Bland recommended changing "equipment" to "cranes" for clarity.
Subsection *(l)(2)(E)*. Closson noted that (l)(1) and (l)(2)(E) overlap and are inconsistent. He opined that (l)(1) is more protective. (2)(E) Introduces runways and existing surfaces that meet the definition of runway. He did not feel that (2)(E) enhances safety. Bland agreed that (l)(1) and (2)(E) cannot coexist because of the inconsistencies.

***Subsection (n), Hoisting personnel near power lines*.** Reviewed without comment.

Subsection (o), Hoisting personnel in drill shafts. Reviewed without comment.

Subsection (p), Hoisting personnel for pile driving operations.
Subsection (p)(2). The 1st paragraph was for lattice boom cranes and the 2nd was for telescopic boom cranes. They were nearly identical in wording *[Ed note: only difference was "or" v. "and"]*. Steinberg opined that both cranes are functionally the same and recommended combining the requirements. The committee was in agreement.
Subsection (p)(3). Harkey asked what makes pile driving operations unique: why are bosons' chairs permitted and why isn't anti-two-blocking required? It was explained that there are many lines and limited clearances in the leads which makes these features impossible to use.
This subsection also allows fall protection to be tied-off to the lower load block or headache ball. Chair asked whether, if in light of previous discussions, the committee had any problems with this. Closson opined that fall protection is required for a boson's chair and this is the only practical way. There was no other comment.

Subsection (r). Hoisting personnel for marine transfer. Subsection was reviewed. "Marine hoisted personnel transfer device" will be changed to "personnel transfer device" for consistency with (k)(10). No other changes were made.

Subsection (s). Hoisting personnel for storage-tank (steel or concrete), shaft and chimney operations. Reviewed without comment.

Section 4883. Equipment with a rated hoisting/ lifting capacity of 2,000 pounds or less (Cranes and Derricks in Construction).
The first question Chair had for the group was about the title. This requirement comes from Part 1926, so he wanted to confirm that he should include the limiter "cranes and derricks in construction" in the title. It was decided to review the section and then decide about the limiter.
Subsection (a), Sections that apply. Briefly reviewed; no comments at this time.

Subsection (b), Assembly/Disassembly. Bland requested that wherever "equipment" is used, that it be changed to "cranes" because these requirements are being relocated from the CSO to GISO and the GISO definition for "equipment" is "a general term which includes material, fittings, devices, appliances, fixtures, apparatus, and the like, used as part of, or in connection with, an electrical installation."

Bland's concern was that this definition could create problems for the application of safety orders to cranes.
[Ed note: This definition appears to come from the Electrical Safety Orders, but I couldn't find it in the GISO. However, the term "equipment" is broad, and the committee did have problems understanding what it was referring to in reviewing the federal standards for cranes. Therefore, a definition for "equipment," specific for Group 13 has been added to section 4885.]
Subsection (b)(1)(A)2. Closson questioned the verbiage "Approved modifications that meet the requirements of §4884.1." If the modifications meet the requirements of 4884.1, aren't they approved? It was agreed to strike "approved."
The rest of subsection (b) was reviewed without comment.

Subsection (c), Operation – procedures. Reviewed without comment.

Subsection (d), Safety devices and operational aids.
Subsection (d)(2). Regarding the July 12, 2012 effective date for anti-two-blocking, Closson stated that equipment less than 2000# would mainly be chain hoists, and they have always stalled-out in a two-blocking condition. He opined that the 2012 effective date would remove a lot of equipment that already has anti-two-blocking from the requirement.
The feds use the term "equipment," and there was discussion on whether this section is addressed to hoists or cranes, or both.
Closson questioned the requirement for no damage to occur in a two-block situation, because damage can occur if the unit stalls (but the feds allow stalling). Nullmeyer added that there often is a clutch or limit switch to prevent two-blocking, and these prevent damage. Closson and Nullmeyer agreed that the intent of this section appears to be to focus on boom-type cranes. There was more discussion about whether damage will or will not occur in the event of two-blocking in this capacity range. Since there was no apparent consensus for change, it was decided to leave the verbiage the same as the federal verbiage.
Closson and others felt that the parenthetical "for example…" is too limited to be of much use and could be misleading, so they favored striking it.
After more discussion, the committee edited the subsection to read:

> The employer shall ensure that ~~equipment~~ boom-type cranes covered by this section ~~manufactured more than one year after July 7, 2012~~ shall have either an anti-two-block device that meets the requirements of §4924(d), or is designed so that, in the event of a two-block situation, no damage or load failure will occur ~~(for example, by using a power unit that stalls in response to a two-block situation)~~.

Subsections (e) and (f), Operator qualifications and Inspections.
Both subsections were reviewed. Only one concern regarding operator certification. The questioner wanted to be sure that third party certification would not be required. Chair clarified that 5006 does not require third party; only equipment subject to section 5006.1 (which does not apply here). There were no other comments. For consistency with (d), "equipment" will be replaced with "boom-type equipment."

Subsection (g), Hoisting personnel. Reviewed without comment.

Subsection (h), Design.
There was a question about qualifications of the "qualified registered engineer:" what areas of expertise qualify? Should they be registered in California (many cranes are manufactured in Germany and registration is very different over there).
Bland added that the way this is worded, it puts the onus on the employer for assuring proper design of the crane, and they have no way of knowing whether these requirements have been met.
Owner-built equipment was also discussed.
Bland proposed modifications to clarify the concerns. Other members contributed suggestions.
There were proposals to use "job-built," "custom built," or "non-OEM" lifting equipment, with the committee settling on "non-OEM".
Because some lifting equipment is designed and built overseas, the recommendation was to use "approved by" rather than "designed by."
There were discussions about engineer qualifications. It was noted that the sec. 4885 definition for "Registered Professional Engineer" should help provide clarity. Committee members felt that the term "qualified" should be retained.
Consensus was reached on the following verbiage.

> Design. The employer shall ensure that all non-original equipment manufacturer (OEM) lifting equipment shall be approved ~~the equipment is designed~~ by a qualified registered engineer.

Sections 4915-4916, Overhead and Gantry Cranes.
Chair had originally planned to incorporate federal sec. 1926.1438, Overhead & gantry cranes, into GISO sections 4915-4916 as supplemental requirements for cranes and derricks in construction. However, he asked the committee whether it would be appropriate to include them, as the federal requirements for cranes in construction were less than what is currently required in Title 8 for overhead and gantry cranes in general industry.
Closson opined that some overhead and gantry cranes are used in construction, and due to differing and unique conditions found in construction, he felt that these requirements should be retained; however, he felt they should be retained in their present location, (CSO sec. 1619.4).
Chair sought the committee's input on this proposal, and asked them to contact him after reviewing if they have any issues or concerns.

The committee recessed for the day at 4:15 pm.

Thursday, October 8, 2015 (Second Day).
Opening remarks.
The meeting was called to order by Chairman, Conrad Tolson, Senior Engineer, OSHSB, at 8:35 am. Chair was assisted by Leslie Matsuoka, Program Analyst, OSHSB. The Chair reminded those in attendance to please sign-in for the second day; he also requested business cards if available. The meeting opened with self-introductions by those in attendance, including members and interested parties.

4. Section-by-section review – Second Day.

Article 96, Tower Cranes.
Section 4965, General.
Subsection (h). Chair explained that the text of subsection (h) would be relocated to 4968(k) because the subject matter of this subsection is more appropriately located under "safety devices."

New Subsection (k), Signs. This new subsection is proposed for equivalency with federal standards. In response to a question why a certified agent is needed to approve the size of the sign, another speaker opined that this was referring to advertising-type signs placed on the crane which could affect its aerodynamics. There were no other comments on these two sections.
[Ed note: The content of new subsection (k) will be relocated to subsection (h) which is being vacated.]

Section 4965.1. Inspections.
Chair opened the review of this section by commenting that the feds often use the term "qualified person" where we sometimes use "certified agent," so he asked the Division to advise him if they felt "qualified person" was inappropriate.
Subsection (a). Chair noted that section 5036, referred to in this subsection, had been reviewed in July. There were no comments.

Subsection (b), Pre-erection Inspection. Closson opined that subsection (b)(3) permits contingent approval, which he believes is contrary to Division policy of not certifying a crane with contingent conditions.
Souza opined that all this pertains to pre-erection activities, and after the crane is erected, it will be certified, so he felt (b)(3) should remain as proposed. He also felt that the use of "qualified person" is appropriate here.
Closson maintained that conditional approval is inconsistent with previous Division policy, and allows questionable components to be assembled. Once "in the air," if the crane certifier determines they are not up to standard, he can refuse to issue a certificate for the crane. Thus it is preferable to reject questionable parts before they are assembled/erected.
Bland opined that the intent here is if there are parts that are wearing but aren't worn out of specification yet, they should be monitored.
Thus, after considerable discussion the consensus was to leave (b)(3) as proposed.

Subsection (c), Post-erection inspection.
Subsection (c)(2). Closson questioned the 2nd sentence (where manufacturer's instructions are unavailable) where alternate testing methods could be considered. Souza opined that he didn't think you could find a crane that doesn't have the manufacturer's instructions. The manual is required to be maintained in the cab and the manufacturer's instructions are part of the manual. He proposed striking the last sentence and "where available" from the 1st sentence. The committee was in agreement.
Subsection (c)(1) Note: Silbernagel questioned the note. He said that whenever a tower crane is disassembled and reassembled it is required to be recertified. Closson said there had been an extensive

discussion with the Division about mobile tower cranes and the Division had been emphatic that they had to be certified each time they set up at a new location. The committee was in consensus to strike the Note from (c)(1).

Subsections (d), Periodic inspection, and (e), Annual inspection, were reviewed without comments.

Section 4966. Erection, Climbing, Dismantling and Operation.
Subsection (a)(1). Existing verbiage was proposed to be amended with "and other provisions of these Safety Orders as applicable." Reviewed without comment.
[Ed note: references to Sections 5010 thru 5010.3 were added for clarity, post-AC]

Subsection (d). The proposal was to strike most of the existing text and replace with:

> Tower crane foundations and structural supports (including both the portions of the structure used for support and the means of attachment) shall be designed by ~~the manufacturer or~~ a certified agent to prevent structural damage of such support.

Chair noted that the feds used the term "RPE" rather than "certified agent" and asked for committee input. Closson noted that the definition for "certified agent" is:

> "The manufacturer, or a person who is currently registered as a professional civil, mechanical, or structural engineer by the State of California and is knowledgeable in the structure and use of the equipment."

Thus we could strike "manufacturer from the text and just use "certified agent."

Subsection (e). Reviewed without comment.

Subsection (i), Dangerous areas (self-erecting tower cranes).
Souza asked why we are limiting these requirements just to self-erecting tower cranes. He opined that they apply to erection for all tower cranes.
However, Closson stated that it was not possible to assemble a fixed tower crane without violating these requirements. Employees must be inside the tower to bolt-up the assembly as it is raised. The verbiage would require all employees to vacate the areas around the operation during erecting and dismantling. Thus he did not think the present verbiage works for fixed tower cranes. Harkey agreed.
Jacobs opined that the last sentence allows "necessary personnel" in the area during these operations.
Souza opined that the intent of this section is to keep non-essential crane erection personnel out of danger.
Work started on revising the verbiage. Aside from Closson, no one else opposed striking the parenthetical "self-erecting tower cranes" from the title. Closson also noted that the verbiage limits personnel in the area to only those necessary and those permitted by the manufacturer's instructions. He doubted that the manufacturer's instructions would list who needed to be there.
Bland agreed that these limitations are unworkable. He surmised that the intent is that non-essential personnel should not be in the area. Thus he proposed that we rewrite the section to clarify the intent, rather than try to patch up the fed verbiage. He also opined that the meaning of necessary or essential personnel is subject to interpretation.

Closson observed that the federal requirement is for self-erecting tower cranes, and committee discussion has been looking at this in terms of fixed tower cranes. The federal verbiage was not intended for fixed tower cranes; if we are going to address fixed tower cranes, then we need to strike all the federal verbiage and start with a clean sheet of paper.
Bland developed a framework, and a number of committee members participated in developing a consensus proposal.
In view of Closson's comment on self-erecting tower cranes, Chair asked whether this verbiage would work for both self-erecting and fixed tower cranes. The committee appeared to believe it would.
Souza recommended limiting to only essential employees; however, Bland opined that might be too narrow. He recommended using "directly involved."
After more collaboration among committee members the following consensus proposal was developed:

> "Only employees directly involved in the erection, climbing, and dismantling operations of tower cranes are allowed to work in the area under the tower, jib, or rotating portion of the crane during these operations."

Subsection (j), Addressing specific hazards.
Subsection (j)(1), Foundations. Silbernagel said that the "A/D" director is, at times, the person that Morrow Equipment has at the jobsite to supervise assembly/disassembly. He said he has brought this concern up with Washington State and Oregon, and now with California. He said that they (Morrow, a crane lessor) are not there when the foundation and the structural supports are going in, and thus they are not in a position to determine that tower crane foundations and structural supports are installed in accordance with the design. Currently Morrow has the contractor provide them with a letter attesting that the foundation and supports have been installed in accordance with the design. He requested to have the proposal revised to reflect this reality.
Closson opined that replacing "A/D Director" with "qualified person" would solve the problem. Harkey (Ironworkers) was concerned that this could put the onus on them for assuring proper construction of the foundation. Silbernagel suggested using "contractor" or "controlling entity," and require that they provide documentation. Bland recommended clarification that the controlling entity shall provide documentation to the A/D Director. Silbernagel also requested that documentation be provided prior to erection/installation.
After some more work by committee members, the consensus for (j)(1) read:

> "Foundations and structural supports. Prior to erection/installation of tie-ins, the controlling entity shall provide documentation to the A/D director that tower crane foundations and structural supports are installed in accordance with the design."

Subsection (j)(2). Backward stability. The committee members found the proposed wording to be confusing, so they set about to clarify this.
Souza stated that rotation does not affect backward stability; that is determined by counterweighting. Ballasting of the undercarriage on self-erecting or traveling cranes also factors into stability. He noted that (j)(1) applies to static-mounted tower cranes and (j)(2) applies to traveling cranes with ballasted undercarriages.
Smith recommended modifying (j) as follows: "the A/D director shall ~~address~~ <u>confirm</u> the following."
She also recommended modifying the title of (j)(2) as follows: "~~Loss of~~ Backward stability."

The term "static undercarriage" was discussed. There was no agreement on the meaning of the term. Closson stated that the key is crane stability and he recommended eliminating the term because it is not commonly understood.
Souza recommended modifying the text to require that ballasting shall be to the manufacturer's specifications because the manufacturer bases their recommendation on crane height and jib configuration.
Silbernagel noted that ballast refers primarily to self-erecting tower cranes whereas counterweights pertain primarily to fixed tower cranes.
The committee proceeded to modify the subsection. Someone questioned whether this subsection is covered by subsection (m); however subsection (j) addresses what the A/D Director is supposed to confirm, therefore it was felt there was no conflict with (m).
The consensus verbiage for (j)(2) was:

> "Backward stability. All cranes shall be ballasted or counterweighted in accordance with the manufacturer's recommendation to ensure stability."

Subsection (j)(3), Wind speed. Closson commented that the requirement is poorly worded because wind speed can't be controlled. Bland agreed and recommended wording to the effect that operations shall not be conducted when wind speed exceeds the manufacturer's recommended limit. Bland, and others also recommended using the term "speed tolerance." The committee settled on the following:

> "Wind speed. Operations shall not be conducted when wind speed exceeds the speed tolerance recommended by the manufacturer or, where the manufacturer does not specify this information, the speed tolerance shall be determined by a qualified person."

Subsection (k), Plumb tolerance. Bland opined that the federal verbiage is unclear what the qualified person is verifying: the manufacturer's plumb tolerance or the actual installation. He added that we need to clarify that the qualified person will verify the installation is within the manufacturer's tolerance. A number of participants offered suggestions how to clarify the requirement.
With regard to the situation where the manufacturer does not specify plumb tolerance, Closson stated that the B30 standard has been changed and no longer includes the 1:500 tolerance. Furthermore, the "at least" should be changed to "no more than." "At least" would mean it could be out of plumb by more than 1:500. He didn't feel that the last sentence was necessary as he doesn't know of any tower crane manufacturer that does not specify plumb tolerance. Others wanted to keep the last sentence. Bland suggested changing it to "within 1:500."
Thus the committee consensus for (k) was:

> "Plumb tolerance. Towers shall be erected plumb in accordance with the manufacturer's specifications and verified by a qualified person. Where the manufacturer does not specify plumb tolerance, the crane tower shall be plumb to a tolerance within 1:500 (approximately 1 inch in 40 feet)."

[Ed note, post-AC review: "within" will be changed to "not to exceed" for more clarity]

Subsection (l). Multiple tower crane jobsites. Closson found the phrase "on jobsites" to be too limiting. It's a geographical issue and it is possible to have tower cranes on jobsites in close proximity where interference between cranes could occur. The key is where cranes can come in contact with one another regardless of whether or not they are on the same jobsite.

Bland said he didn't disagree that this could occur, he wondered how the requirement would be enforced; there could be two different jobsites, two different contractors; how would this work in that situation?
Souza said the Division would oversee the process through permitting and monitoring operations.
Souza agreed that "jobsite" is too limiting.
Silbernagel was concerned that "no crane" could mean that the tower crane cannot come in contact with a large mobile crane that may come on the jobsite. He opined that the intent was to prevent tower cranes from coming in contact with other tower cranes.
Bland felt that the intent of the standard was to prevent contact between structural members of cranes; not with load blocks (the second sentence permits one tower crane to pass over another).
Chair also asked the committee if we are only talking about tower crane-to-tower crane contact, or about contact with any crane that might come on the jobsite? Silbernagel observed that if a mobile crane comes on the jobsite, where tower cranes are located, and there is a potential for interference, they will use radio communication to coordinate movements.
The committee was having difficulty finding a consensus, so they recessed for a short break. During the break Board staff fashioned verbiage based on the discussions that had taken place.

After returning from the break, Chair reviewed what they understood the intent of the committee to be. It read as follows:

> "Multiple tower crane jobsites. Where more than one fixed jib (hammerhead) tower crane is installed, the cranes shall be located such that the structural members of the cranes cannot come in contact with one another. Cranes are permitted to pass over one another."

The committee agreed with this proposal.

Subsection (m), Counterweight/ballast. Subsection was reviewed without comment.

Section 4968. Safety Devices.
Subsections (a) – (c). Other than adding a note that Section 5017 (Safety devices) does not apply to tower cranes, no other changes were proposed. Reviewed without comment.

Subsection (d), Load weighing and similar devices.
Subsection (d)(2), Load moment limiting device. Closson noted that these have been required by the B30 standards since at least 1975, and we require them by virtue of incorporating B30.3-1975 [Sec. 4884(b)].
[Ed note: since there is no effective date listed for this requirement, there is no harm in leaving this requirement here for clarity. Furthermore, sec. 4965(d) requires a load limiting device but does not indicate which one or ones.]
Subsection (d)(3), Load indicating device. Closson noted that these have been required by B30.3 since 11/15/2005. He didn't know where the July 7, 2012 date had come from. *[Ed note: It was carried over from CSO sec. 1619.1(e)(5)(N). CA didn't adopt B30.3-2004, so we will retain the 7/7/2012 CSO date for this RM).*

Subsection (d) header sentence: Closson objected to requiring "at least one" of the following load weighing devices. He opined that California requires all of them. He added that the feds are starting from requiring none of them, whereas CA already requires them, so to change to "at least one" would be a reduction in safety. In general, he took issue with listing devices that he opined are already required by B30.3.
Another speaker noted that (a)(2) already requires a load indicating device, so he opined that proposed section (d)(3) is not needed.
At this point subsection (d) would have read:

> Load weighing and similar devices. The tower crane shall have an automatic stop that operates at a percentage of the rated load, not to exceed 105 percent of the rated load.

Souza recommended adding at the end of the sentence: "at constant load and in load moment." Closson said he understood what the intent was, but he was not sure this would be clear to the regulated public. He opined that it would be better to add at the end of the sentence: "and load moment." Souza agreed.
[Ed note: After reviewing the committee discussion and comparing with the federal SXS, further clarification regarding moment was made.]

Subsection (f), Limit devices, Subsection (f)(2), Trolley travel slow-down. There was discussion by Closson, Silbernagel and others to clarify the requirement. One person commented that the slow-down does not prevent contact with end-stops; it just reduces the speed before the trolley reaches the end-stops, and limit switches prevent contact with the end-stops. After further discussion, the consensus for (f)(2) was:

> "~~Limit the trolley traveling both in and out.~~ Trolley travel slow down and stop limit switches or devices shall be provided to prevent trolley contact with end stops."

Subsections (h), Boom stops on luffing boom type tower cranes. Closson recommended that this should be clarified that the stops are to prevent the boom from exceeding the maximum luffing boom angle. Chair noted that this is already covered in the section 4885 definition for "boomstop." Thus no change was needed here.

Subsection (i). Jib stops on luffing boom type tower cranes. Reviewed without comment.

Subsection (j). Trolley end stops. Closson opined that these are already required by section 4884 (which incorporates B30.3) and this subsection was therefore unnecessary.
[Ed note: Trolley end stops are required by B30.3-2012, which will be adopted effective with the consolidation; however they are not required by B30.3-1996 which is the edition currently adopted, therefore this section needs to be retained]
Subsection (j.1). Souza opined that since this subsection referred to travel bogies, subjection (j) also was intended for travel bogies, and thus changes were proposed for subsection (j) based on this assumption.
[Ed note: a later check of the SXS revealed that what was proposed as (j.1) actually was intended for travel rails, subsection (k), so (j.1) has been relocated to (k.1) and other clarifying changes have been made to subsection (k) based on the SXS]

New subsection (k.1) *[Relocated to subsection (k)(2)]* ***Travel rail clamps on travel bogies***. Closson commented that these are used primarily to prevent rail-mounted cranes from being displaced by the wind, but they are also used for seismic restraint. He opined that these are currently optional, and that by including them here, they will be mandatory. *[Ed note: A check of the federal verbiage {1926.1435(d)(2)(iv)} shows they are listed as a safety device. They have been required since the adoption of CSO 1619.1(d)(2)(D) on 7/7/2011]*
Subsection (k). Cranes mounted on rail tracks. Reviewed without comment.

Subsection (l). Integrally mounted check valves on all load supporting hydraulic cylinders. Closson expressed a concern that this section is problematic since it is unclear what the "load" is, therefore any load supporting hydraulic cylinder could be subject to this requirement. The committee discussed. Chair noted that "load" is defined in sec. 4884. The definition provided the necessary specificity and the committee was satisfied with leaving the requirement as-is.

Subsection (m) Hydraulic system pressure limiting device. Although this is required by section 4884 (B30.3 standards), it was decided to leave it in for clarity.

Subsection (n), Hoist, swing, trolley and rail travel brakes. Reviewed without comment.

Subsection (o), Emergency stop switch at the operator's station. Reviewed without comment.

Subsection (p), Anti two-blocking device. Chair and others noted that the fed text just defines what an anti-two-blocking device is and this just repeats what is in section 4884, therefore, all that is needed here is just to list that an anti-two-blocking device is a required safety device.
Subsection (q), Boom angle or hook radius indicator. Reviewed without comment.

Section 4968.1, Safety Devices - Proper operation required. Reviewed without comment.

The committee recessed for lunch. Upon returning they resumed at Section 4968.2.

Section 4968.2, Operational Aids.
This section starts off with the statement that Section 5018 does not apply to tower cranes. He noted that section 5017 covers safety devices for mobile cranes and section 5018 covers operational aids for mobile cranes. He reminded the committee that the July AC had wanted to eliminate section 5018; however, when he went back and reviewed those changes and compared with federal standards he found those requirements to be cross-referenced in numerous other sections, thus he had made a number of post-AC changes and retained section 5018. He recommended that committee members go back and look at the changes that had been made post-AC. He added that he had tried to harmonize safety device and operational aid requirements for tower cranes with those for mobile cranes. Operational aid is defined in section 4885 as follows:

"An accessory that provides information to facilitate operation of a crane or that takes control of particular functions without action of the operator when a limiting condition is sensed. These include, but are not limited to, the devices listed in §5018."

Subsections (a) through (d). Initially reviewed without comment.

Subsection (e). Chair noted that a list of operational aids is contained in this subsection. Subsection (e) provides that operational aids listed in this section that are not working properly shall be repaired no later than 7 calendar days after the deficiency occurs subject to the provisions of subsection (d). He pointed out that the state proposal only lists one category of operational aids with a 7-day out-of-service time allowance, whereas the feds have two categories with 7 and 30-day out-of-service time allowances.

Returning to Subsections (c) and (d), Closson noted apparent inconsistencies in these subsections and in subsection (e). He noted the following:

- Subsection (c) states that operations shall not begin unless the operational aids are in proper working order; however, where an operational aid is not in proper working order, equally protective alternative measures specified by the crane/derrick manufacturer, if any, may be followed.
- Subsection (d) states, in relevant part, that if a listed operational aid stops working properly during operations, the operator shall safely stop operations until the device is repaired, alternative measures specified by the manufacturer, if any, are implemented, or the device is again working properly.

However subsection (e) says you don't have to follow the manufacturer's specifications; and lists other temporary alternative measures not specified by the manufacturer.
[Ed note: subsection (d) has been combined into subsection (c) to eliminate inconsistencies]

Subsection (e)(1), Boom hoist limiting device. Jacobs said there should never be a work-around for the boom hoist limiting device. If it stops working, the crane should be shut down (i.e., it is a safety device). Souza agreed that the federal alternative measure is impossible with a luffing boom tower crane. It would be impossible for a spotter to see the marking. He agreed that a boom hoist limiting device should be listed as a safety device with no work-around.
There appeared to be consensus to move the boom hoist limiting device into section 4968 (safety devices).

Operational Aids v. Safety Devices.
Closson questioned the validity of differentiating operational aids from safety devices. He said he has spent the last 10 years dealing with this issue at the ASME B30 level. If crane operation is permitted to continue with some devices not in proper working order, then safety is degraded. He added that just because OSHA allows work-arounds doesn't mean that CA should follow.
Chair noted that some of these devices have never been listed before. Closson countered that they have always been part of the machine and he opined they are required for proper operation. He gave as an example hoist drum locks (which the feds list as an operational aid). He said that previously the

crane would have to be shut down if the device or component wasn't working, now the feds give a work-around. He opined that CA does not need to follow the feds and degrade our safety requirements. He added that these are part of the crane; they have always been there. He added that if a device or component is in B30, it is a safety device. He is opposed to California adopting the concept of "operational aids" which allow work-arounds and, in his opinion, thereby degrade safety. He was of the opinion that every device listed under subsection (e) is a safety device and work-arounds should not be allowed. He also opined that by virtue of CA incorporating B30.3 standards all these devices are required by the B30.3 standard and thus they are safety devices.
[Ed note: prior to the adoption of this consolidation, the most recent B30.3 incorporated in California is the 1996 edition]
Souza agreed with Closson. He opined that almost all the devices currently proposed to be "operational aids" are "safety devices." Silbernagel also agreed.
Chair inquired whether any of the devices under subsection (e) <u>were not</u> safety devices.
There appeared to be consensus that all under (e) are safety devices EXCEPT the following:

- (e)(2) Hoist drum lower limiting device.
- (e)(9) Wind speed indicator

Closson opined that we didn't need to list any safety devices because they are all listed in B30.3. Yow agreed with Closson.
Jacobs agreed with Closson, but added that mobile cranes are not the same as tower cranes, and there may be some work-arounds that are permissible on mobile cranes that would not be permissible for tower cranes. Bland agreed with Jacobs.
The consensus was that all items under (e) except (e)(2) and (e)(9) are safety devices and will either be relocated to sec. 4968 or will be considered included by B30.3 as incorporated by reference in sec. 4884.
[Ed note: Safety devices in sec. 4968.2 that were identified by the committee have been relocated to 4968 and new subsection sec. 4968(t) has been added to capture any other safety devices that may be listed in B30.3]

Section 5018, Operational Aids.
In view of the numerous changes made to section 4968.2 (operational aids for cranes), and since section 5018 (operational aids for mobile cranes) had been substantially modified after the July AC, the Chair turned back to section 5018 to review the post-AC modifications with the committee.
Committee consensus was that (d)(1) Boom hoist limiting device and (d)(2) Luffing jib limiting device are both safety devices (without temporary work-arounds) and they should be relocated to section 5017 (safety devices for mobile cranes). The committee was of the opinion that subsections (d)(3) and (d)(4) were operational aids.
[1008/31:30]

Subsection 5018(a). Nullmeyer had a concern that the phrase, "on all equipment" was vague and could result in them being applied to overhead and gantry cranes. There was discussion about modifying to "all equipment in construction," but it was felt that could still affect some gantry cranes in construction. After more discussion, Bland proposed to change "all equipment" to "all mobile cranes and derricks…"

Subsection 5018(d)(4)(A), Outrigger/stabilizer position. Closson commented that the phrase "sensor/monitor" has been replaced in B30.5 *[Ed note: 2004 edition, sec. 5-1.9.3]* with "device or system" and requested the phrase be updated to reflect current technology. He added that since this is the term used in B30.5, it will be readily recognizable by manufacturers.

Section 5031.1, Additional Inspection Requirements for Cranes in Construction Service.
Chair noted that when the committee apparently ran out of time when they reviewed section 5031 and didn't get to 5031.1 through 5031.5, so we needed to go back and pick them up now.
After reading through the proposal, Bland opined that all these items are required by section 5021 and by section 4885, Plate V. The only difference is that 5021 applies to cranes over 3 tons.
Closson agreed that everything is already covered by these sections, and he added that certified agent must use the manufacturer's manual for the annual and quadrennial inspections, and all these things are covered in the manual, which is specific to the crane being inspected.
Thompson also agreed.
Bland added that the fed requirements limit the list of items to be inspected (as compared to B30 standards which we incorporate), and he opined it is therefore less effective.
Chair summarized the discussion indicated that this section was not required because it is already covered by Plate V and the manufacturer's manual.
[Ed note: Upon further review, the problem with deleting this section is that the feds apply these requirements to cranes having a rated capacity over one ton. Section 5021 applies to cranes over three tons rated capacity, therefore we have a gap in coverage from one to three tons if we don't make changes. If we extend the coverage of 5021 to cranes over one ton, we are bringing in quadrennial testing for cranes 1-3 ton rated capacity which is more than what the feds require. The following changes are proposed to rectify the problem: [1] modify sec. 4880 with new subsection (a)(2), and [2] add new exception to sec. 5022(a)]

Section 5031.2. Inspection – Post-Assembly.
Subsection (a). Bland stated that because it is possible for a crane to set-up on more than one jobsite in a day, the proposed requirement for inspection by a certificating agency is cumbersome and not practical (the feds just require inspection by a qualified person). It was decided to use "qualified" as the feds do.
Thompson asked whether this section is duplicating a requirement elsewhere in the standards. *[Ed note: no duplication found]*
There was discussion about the note "Disassembly and reassembly of equipment does not require recertification…" A question was asked whether this would permit replacing one boom with a longer boom without recertification. Several committee members discussed among themselves and came to the conclusion that the wording as proposed is acceptable; i.e. that a change in boom length would require recertification.
Finally the committee also decided to replace "equipment" with "crane" and "manufacturer equipment criteria" with "manufacturer's criteria."

Subsection (b). Where manufacturer equipment criteria are unavailable. Closson reminded that California requires cranes to be designed, constructed and installed in accordance with ASME B30 standards which contain an extensive list of items to be checked. Furthermore, he opined that manufacturer's information can be obtained, even for crane manufacturer's no longer in business. Thus we do not want to permit this option. There was no opposition to removing subsection (b).

Section 5031.3. Inspection – Severe Service.
Closson opined that our periodic inspection which is quarterly and is required not to exceed 750 hours of operation, exceeds the fed requirements and therefore this section is unnecessary. Bland and others agreed.

Section 5031.4. Inspection – Equipment Idle for 3 Months or More.
The same logic as for 5031.3 would apply here. This is covered by periodic inspections (sec. 5031), thus it will be removed.

Section 5031.5. Inspection – Modified equipment.
Bland questioned whether this might already be covered elsewhere, perhaps under repairs . He asked the Division, and Souza opined that this is intended for situations where an existing crane is updated and improved. Bland noted, however, that the verbiage contains "which affects the safe operation" whereas updating would enhance safety, which is not quite the same. The committee had a discussion on what the intent of the proposal was.
Closson noted that the B30 committee had similar issues on what constitutes a modification and what is a significant modification. Newer editions of the B30 standard avoid the issue because no one was able to define with any clarity what a modification is; for example, is replacing a factory spec rope with a different rope of the same strength a modification?
Thompson proposed deleting the phrase "which affect the safe operation."
Bland questioned the need for the parenthetical examples "such as…" and inquired what an "in use operating mechanism" is (it isn't defined). He also recommended replacing "equipment" in the section title with "cranes and derricks."
There was more discussion about modifications v. repairs. The committee did not want a normal part replacement, such as brake pads or a load hook, to require recertification. (The "such as's" included a confusing mix of important items like "structural components" v. items like "braking systems" and load hooks, which are usually maintenance items)
Silbernagel said that Washington State had faced this same issue and concluded that if any modifications are made to the hoisting components or hoisting structure, then recertification would be required. Thus he felt that would eliminate some of the "such as's" like brake pads. He reiterated that the main hoisting structure is where they intended to require recertification; and not for maintenance items.
There was discussion of clarifying intent and distinguishing between work not requiring certification and work that does require recertification. Committee members opined that sec. 5034(g) already covers work requiring recertification. Closson proposed changing the title of 5031.5 to cover modifications beyond manufacturer's specs. The committee also reviewed sec. 5034.

Closson observed that the term "modified" is problematic because it is so broad.
Thompson proposed adding "modifications" to the title for 5034, opining that the section may satisfy the federal requirements and then 5031.5 could be deleted.
However, Closson questioned the wisdom of deleting 5031.5 and adding "modifications" to 5034. He opined that action would then combine items requiring certification with those not requiring certification. He suggested changing the title of 5031.5 to: "Cranes and Derricks Not Complying with the Manufacturer's Specifications" and changing the header sentence to read:
"Cranes and derricks not in compliance with the manufacturer's specifications shall be inspected prior to use by a certified agent to:

(1) Assure that the modifications or additions have been done in accordance with the approval obtained pursuant to Section 4884.1 (Equipment modifications).
(2) Verify correct function of the equipment."

Souza opined that the phrase "not complying with manufacturer's specifications" would open the door to machines not complying with our standards. He suggested using the phrase "modified beyond the manufacturer's specifications."
Chair inquired what was wrong with the original title: "Inspection – Modified equipment." However, others felt the term was too broad. There was a proposal to use: "Cranes and Derricks Modified Beyond the Manufacturer's Specifications" because this retained the manufacturer's specs as the base standard and only allows modifications which are an improvement.
There was further discussion about "beyond" and various alternative terms were discussed. Bland had concerns about using "beyond" and suggested alternatives: "exceeding" or "surpassing." The committee was neutral about this change.
Chair also inquired about using "qualified person" (as per fed verbiage) or "certified agent." Committee consensus was to use "certified agent." Bland opined that because we are having difficulty defining the scope, he wanted a manufacturer or registered engineer to make the final determination.
[Ed note: Title: "Beyond" changed to "exceed" to clarify intent.]

Section 5011. Fall Protection – Additional/Specific Requirements for Cranes.
Subsection (b), Boom walkways. Smith questioned (b)(2)(B)(4) which limits guardrail height to 45". She noted that California allows 42-45" for standard guardrails. After some discussion, Bland suggested replacing "guardrails" with "edge protection" or something similar.
Closson opined that this requirement was intended for lattice-boom cranes, but it might be problematic on other mobile cranes.
There was a suggestion to modify the subsection title to clarify that it applies to lattice booms.
Closson noted that (b)(2)(B) starts out saying that guardrails, railings and other permanent fall protection attachments along walkways are not required, but then gives guidance if they are provided. He questioned why the rest of (b)(2)(B) is there if it is just optional guidance.
Silbernagel, however, noted that the text clarifies that any railing provided must not interfere with pendent ropes or bars.
Another commenter added that if something isn't required, the reader stops reading.

Closson opined that the verbiage is addressed to manufacturers and that employers don't have any control over these items. He added that all manufacturers are providing these items for fall protection, but there is nothing in the B30 standards to require them.
The general opinion of the committee seemed to be that subsection (b) is not needed.
[Ed note: after listening to the recording, it appears that some of the features should be retained because they are not covered in the B30 standards, and the fed text prohibits certain configurations. While the manufacturer may provide fall protection, it is still the employer's responsibility to insure they are installed in a compliant manner.]

Subsection (c), Steps, handholds, ladders, grabrails, guardrails and railings.
With regard to (c)(3)(A), Closson stated that purchasing the ISO standards can be very costly because they cross-reference to other ISO standards, thus multiple volumes are often required to understand and apply them.
Bland added that (c)(3) and (c)(4) both deal with standards applicable to manufacturers and not to employers, thus he recommended their deletion.
Smith stated that they have a problem with employees tying off to fixtures not providing adequate anchorage.
Chair suggested retaining (c)(3)(A) except for the last sentence "These devices shall meet the following criteria…"
There was also discussion about (c)(1) "Sections 3209 and 3210 (guardrails) do not apply to equipment covered by General Industry Safety Orders, Group 13." Smith expressed a concern that Group 13 fall protection standards would then supersede the GISO standards. Bland clarified that Group 13 fall protection would apply where more specific; i.e., "the more specific governs the general."
With respect to (c)(3)(A), Closson stated that no crane manufactured after 2012 would comply with SAE J185 because that standard has been superseded.; however, the earlier edition has been incorporated by the B30 standards that we incorporate, so we have it covered.
Bland added that (c)(2) already covers the requirement for employers to maintain originally-equipped steps, handholds, ladders and guardrails/railings/grabrails in good condition, thus, in his opinion, negating the need for (c)(3) and (c)(4).
[Ed note: Subsections (c)(3) and (c)(4) have been revised to address concerns raised during committee deliberations and they have been renumbered. (c)(5) was copied from (c)(3)(B) to provide equivalency with fed standards]

Subsection (d). Personal fall arrest and fall restraint systems. Reviewed without comment.

Subsection (e). For non-assembly/disassembly work.
Closson opined that fall protection is not necessarily a good thing. We tell the employees not to wear loose clothing that could be entangled; however, personal fall protection lanyard can and has been entrapped in moving equipment and people have been killed by wearing it on an operating crane. Furthermore, a 6' or 7.5' distance is not enough for fall arrest to engage and stop the fall.
Chair noted that (e)(2) has an exception for work near the draw works and the crane is running.
Closson felt that wearing personal fall protection with a lanyard on running cranes is hazardous.

However, with respect to tower cranes, Silbernagel opined there were safe ways of tying off, even near the draw works and he objected to the exception that doesn't require personal fall protection near the draw works of a running tower crane. He said his employees have been using this as an excuse for not tying-off when working several hundred feet in the air.
It became apparent that fall protection near the draw works is different for tower cranes v. other cranes. Silbernagel opined that wearing personal fall protection near the draw works of a tower crane can be done safely; however this is apparently not the case for other cranes. To address this problem, Bland proposed excepting tower cranes from (e)(2). There was more discussion among committee members about wearing personal fall protection near the draw works on different crane types.
In response to the proposed exception for (e)(2), Silbernagel opined that (e)(2) should be removed instead. He saw it as a loophole that would enable his employees to work at height without personal fall protection, and he didn't want them working at heights on tower cranes without any form of fall protection.
After further consideration, Bland opined that (e)(2) should be retained with an exception for tower cranes. Thus an exception to (e)(2) for tower cranes was added.
[Ed note, upon post-AC review: Silbernagel's intent was for employees at height to wear personal fall protection (PFP) at all times on tower cranes. He opined that PFP can safely be worn and used near the draw-works on tower cranes (but not on other crane types). Requirements for tower cranes will be covered by renumbered subsection (h) below.]

Side discussion on marine terminal exception:
Farris (ILWU) opined that these fall protection requirements as less protective than what the ILWU and PMA have for their employees. They require FP if within 3' of an unguarded edge with a fall height 8' or greater.
Bland proposed adding an exception for marine terminals that would trump the requirements of this section.
At this point it appeared the committee was favoring deleting (e)(2), so the marine terminal exception was placed under (e)(1).
[Ed note: however, subsection (e)(2) was subsequently retained, so the exception has been relocated to the end of subsection (e)]

Subsection (f). For assembly/disassembly work.
It was noted that the requirements here are almost the same as for subsection (e); the differences being that this is for assembly/disassembly whereas (e) was for non-assembly/disassembly, and the trigger height here is 15' v. 7.5' for (e). Silbernagel did not raise the issue of PFP near the draw-works. No other comments, so approved as-is.

Subsection (g). Anchorage criteria.
Committee members noted that this duplicates subsection (d), thus it is unnecessary.

Subsection (h). Tower cranes.
Silbernagel opined that we had already covered this in subsection (e) and (f).

[Ed note: However, due to the differences between tower cranes and other cranes, retaining this section (without the exclusion for PFP near the draw-works) will provide greater clarity. It will be renumbered as subsection (g)].

5. Economic Impact.

Chair asked the committee for input on the impact of these proposals on large and small business and on the pro's and con's for the proposal.

Silbernagel opined that the impact on businesses will not be significant. Most of what we have done is to just clarify what is already required. Others agreed, and no disagreement was observed.

The committee was also in agreement that, by consolidating the regulations, compliance and enforcement will be simplified and improved.

Chair noted that he had heard comments during the course of the multiple advisory committees that consolidating the CSO crane standards into GISO was problematic and potentially could impact stakeholders or industry segments not intended. He added that we had worked to avoid "over-reach" and unintended consequences.

Closson opined that part of the problem will be to educate the regulated community. The feds are trying to catch up by copying words out of texts and standard that California standards already incorporate. Someone who is not familiar with our standards may think the new requirements are overwhelming; however, the requirements have always been there, it's just that now we must deal with it "straight on" rather than from within the standards we have already incorporated by reference. Thus he thinks any problems will be an issue of perception. He also opined that some may object to CA not incorporated the federal "work-arounds" which diminish safety, but we have never allowed work-arounds.

Bland added that the federal 1-ton trigger may bring in more training requirements however, Chair noted that we tried to limit those requirements to cranes and derricks in construction, and furthermore, California has already had those requirements for cranes over 3 tons. [Ed note: By virtue of ASME B30.5 standards (already incorporated by reference) Group 13 already applies to mobile cranes over 1 ton because B30.5 applies to cranes with a maximum rated capacity over one ton.]

6. Conclusion.

Due to time limitations, this concluded the section-by-section review. The Chair then outlined the next steps to be taken.

As this has been an on-going rulemaking, the minutes, work-in-progress proposal (Form 9) and Side-by-Sides have been distributed to attendees after each meeting. The work-in-progress Form 9 presented for this advisory committee reflects all changes that have been made to-date, except for the results of the past two days of review and comment. The minutes and work-in-progress Form 9 from these proceedings will be sent to attendees within the next two months. Immediately thereafter the Chair will begin preparing the Stage 1 documents based on the work-in-progress documents cleaned-up in preparation for being noticed for public comment. The documents must go through a number of reviews before they will be ready for public notice. The goal is to have the documents ready for in-house review by the end of the year 2015. Chair estimated that with all the review that is required the public notice may not be ready until well in to the 2nd quarter of 2016.

Once the package has been reviewed and noticed, committee members and the public will have a 45-day period to submit written comments and/or appear and comment at the Public Hearing at the conclusion of the comment period. Chair referred the committee to the Rulemaking Process Flowchart which was available as a hand-out.
There was a question whether there will be any more advisory committees. Chair responded that we had gone through most of the sections, particularly those most likely to be controversial. The plan is to prepare the notice and hopefully be able to deal with any comments that may come up on the other sections via summary and response to comments at the end of the 45-day public comment period (part of the rulemaking process).

The Chair thanked the committee members for their attendance and participation and adjourned the meeting at 3:35 p.m.