DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND FAR EAST
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PW7
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NAVFAC FAR EAST INSTRUCTION 11260.1J

Subj: WEIGHT HANDLING PROGRAM MANAGEMENT MANUAL

Ref: (a) NAVFAC P-307
(b) NAVFAC P-604
(c) NAVFAC P-1205
(d) NAVSUP P-538
(e) SECNAVINST 11260.2B
(f) OPNAV M-5100.23
(g) NAVCRANECENINST 11200.33C
(h) NAVCRANECENINST 11450.1C
(i) NAVCRANECENINST 11450.2A
(j) COMNAVFORJAPANINST/COMNAVREGJAPANINST 11262.1A
(k) NAVSUPFLCYINST 4200.9J
(l) NAVSHIPREPFACINST 11450.1M
(m) ASME B30
(n) UFGS 01-35-26
(o) EM 385-1-1
(p) Safety Ordinance for Cranes, Ordinance of the Ministry of Labor No. 34 of 30 Sep 1972
(q) Labor Standards Bureau Notification No. 480, Article 5
(r) WHE OEM Manuals and Specifications
(s) NAVFACINST 5200.38B

Encl: (1) WHP Duties and Responsibilities
(2) Accident Prevention and Investigation
(3) WHE Operations Safety
(4) Monitor (Observation) Program

1. Purpose. Establish responsibilities, requirements and procedures for the management of shore-based Weight Handling Equipment (WHE) and Lifting and Handling (L&H) Operations at activities and commands under the cognizance of Naval Facilities Engineering Systems Command (NAVFAC) Far East, to ensure essential safety, efficiency, quality and reliability standards, and optimum equipment service life requirements are met. NAVFAC will be referred to as NAVFAC Far East throughout this instruction.

2. Applicability. These requirements apply to NAVFAC Far East activities, field offices, and units that manage, execute, or oversee U.S. Navy (USN) and U.S. Marine Corps (USMC) supported weight handling functions and operations, in accordance with references (a) through (s) and enclosures (1) through (4), and applicable Host Nation Laws, Standards and Regulations.

WHE refers to covered equipment listed in reference (a) which includes all categories and types of Cranes, Rigging Gear and Miscellaneous Rigging Equipment. Crane categories and types are described in detail in reference (a) which provides certification requirements for WHE used in L&H Operations. Requirements for U.S. Naval Ship Repair Facility and Japan Regional Maintenance Center (SRF-JRMC) shipboard WHE are covered in reference (l) and applicable Naval Sea Systems Command (NAVSEA) technical publications. Requirements for Naval Munitions Command ordnance handling WHE are covered in NAVSEA OP-5 manual. Requirements for aviation weight handling and ground support equipment, or airborne weapons support equipment, are covered by NAVAIR 00-80T-119 or other applicable Naval Air Systems Command criteria. Navy Material Handling Equipment (MHE) is governed by NAVSUP publication 538; Navy-owned Non-Tactical Vehicles & Equipment is governed by NAVFAC P-300. USMC MHE and construction equipment is considered garrison mobile equipment and shall be treated in accordance with appropriate USMC orders.

3. Cancellation. NAVFACFEINST 11260.1H. This instruction has been completely revised and shall be reviewed in its entirety. Standard forms and procedures identified in reference (a) can be locally generated or reproduced, and are available upon request to Navy Crane Center (NCC) or via download from NCC website. Standard regional forms and procedures will be made available upon request to NAVFAC Far East Regional WHE Transportation Specialist, PW7.4.

4. Procedures. The commanding officer is responsible for ensuring safety within NAVFAC Far East area of responsibility (AOR). AOR includes: Commander, Fleet Activities Chinhae, Okinawa, Sasebo and Yokosuka; Naval Air Facility Atsugi and Misawa; Naval Support Facility Diego Garcia; and Singapore Area Coordinator, Port of Singapore Authority Sembawang Terminal. Each respective area, and/or Public Works Department, Facilities Engineering and Acquisition Division, Resident Officer in Charge of Construction, shall ensure that all employees and contractors associated with the Weight Handling Program and applicable contracts, fully understand and comply with the requirements in references (a) through (s) and enclosures (1) through (4) of this instruction. General information, policy and guidance provided for: Program Management; Maintenance, Inspection, Test and Certification; Crane Alterations and Engineering; Lockout/Tagout (LOTO), Equipment Tagging and Hazardous Energy Control; Equipment History Files; Operator Licensing Qualification, Training and Testing Program; Operations (Critical Crane/Rigging Lifts, Complex/Critical Lifts, Critical Non-Crane Rigging Operations); Operator Checks; Rigging Gear and Miscellaneous Equipment; Monitor (Observation) Program Metrics and Trend Analysis; Equipment Acquisition and Procurement; Crane Replacement and Modernization Strategy Planning and; Identification, Investigation and Reporting of Weight Handling Accidents, Near Miss Events and Other Unplanned Occurrences, shall be conducted in accordance with reference (a) and this instruction, where applicable.

5. Clarification. Where specific situations are not addressed in this instruction, PW7.4 has the technical authority to provide clarification and/or guidance which are consistent with the intent of this instruction and the requirements of NAVFAC P-307. Such clarification/guidance shall be in memorandum format with distribution to the Public Works Directorate (PW), Transportation Director (PW7), and the Public Works Officer, as a minimum.

6. Translation. This instruction may be translated for Host Nation/Foreign Territory personnel.

7. Scope. This instruction applies to NAVFAC Far East USN military, U.S. Civil Service, Host Nation, and Base Operation Service/Support Contractor employees and personnel involved in the operation, maintenance, inspection, testing, and certification of Navy WHE. This includes Japanese Master Labor Contract, Singapore, Republic of Korea, and Other Government Contract personnel.

8. Records Management. Records created as a result of this instruction, regardless of media and format, must be managed in accordance to Secretary of the Navy Manual 5210.1 of 23 September 2019.

9. Review and Effective Date. Per OPNAVINST 5215.17A, NAVFAC Far East will review this instruction annually around the anniversary of its issuance date to ensure applicability, currency, and consistency with Federal, Department of Defense, Secretary of the Navy, and Navy policy and statutory authority using OPNAV 5215/40 Review of Instruction. This instruction will be in effect for 10 years, unless revised or cancelled in the interim, and will be reissued by the 10-year anniversary date if it is still required, unless it meets one of the exceptions in OPNAVINST 5215.17A, paragraph 9. Otherwise, if the instruction is no longer required, it will be processed for cancellation as soon as the need for cancellation is known following the guidance in OPNAV Manual 5215.1 of May 2016.

L. M. FLOOD

Releasability and distribution:
This instruction is cleared for public release and is available electronically via the NAVFAC Far East SharePoint, https://flankspeed.sharepoint-mil.us/sites/NAVFAC-FE

WHP DUTIES AND RESPONSIBILITIES

1. Organization and Program Management. The NAVFAC Far East Commanding Officer (CO) and Installation CO (ICOs) are responsible for ensuring safety of personnel and equipment throughout the Area of Responsibility (AOR). Weight Handling Program (WHP) Managers, Certifying Officials and/or Transportation Managers are responsible for the WHP.

a. The Non-Tactical Vehicles & Equipment (NTVE) Transportation Director is referred to as PW7. PW7 is the senior manager responsible for all aspects of the NAVFAC Far East NTVE and WHP Management and Support. Transportation Managers report to PW7 for technical guidance. All official evaluation response letters or correspondence to Navy Crane Center (NCC) WHP Evaluations shall be processed through the appropriate Public Works Department (PWD) management via PW7.4 and then to PW7. PW7 will review prior to sending correspondence to the NAVFAC Far East CO for concurrence and signature.

b. The Regional Weight Handling Equipment (WHE) Transportation Specialists are referred to as PW7.4, and report directly to PW7. PW7.4 provides WHP reach-back support to PWDs and Resident Officer in Charge of Construction (ROICCs). PW7.4 shall:

(1) Function as the region's primary contact point for both internal and external customers, on all matters pertaining to local and regional WHPs.

(2) Work closely with site directors, managers, supervisors, and officers to establish personnel resource requirements necessary to support the WHP at each location and establish the proper WHE inventory to meet the region's current and future workload requirements.

(3) Review budget planning with Transportation Managers.

(4) Establish and promulgate Monitor (Observation) Program and WHP accident prevention, investigation, and trend analysis programs that focus on safety, quality, performance and strategic planning.

(5) Provide oversight and technical guidance for NAVFAC Far East Regional WHP. When necessary, contact NCC and/or NAVFAC Pacific for reach-back/engineering support.

(6) Provide standardized forms and procedures for all regional WHP related crane, rigging, operations, training, licensing, and Maintenance, Inspection, Test and Certification (MITC) requirements.

(7) Review all regional and site specific official correspondence and/or procedures requiring engineering support and/or NCC concurrence. Examples include Crane Alteration Requests (CAR), Request for Clarification, Deviation, or Revision (RCDR), WHE Deficiency Report and Ancillary Equipment Procedures (AEP), per applicable sections in reference (a).

(8) Review all regional and site specific NAVFAC Far East WHP Standard Operating Procedures (SOPs), NCC program evaluation responses and WHP investigation reports for accuracy, thoroughness and compliance with reference (a), this instruction and enclosure (2).

(9) Monitor and track responses/resolutions to internal and external program evaluations to assure that corrective actions are implemented. Ensure that PWD and ROICC locations collect and maintain Objective Quality Evidence (OQE) that supports conclusions that evaluation or interim review findings have been satisfied.

(10) When requested, review crane inspection, repair and testing documentation for completeness and compliance, and advise the Certifying Official(s) on the acceptability of crane condition for certification where appropriate.

(11) Consult with and advise the various Public Works Officer (PWO)s and Public Works Department (PWD) management on such aspects as priorities, customer needs, contractors and personnel.

(12) Conduct remote and/or onsite horizontal reviews of the regional PWD WHPs. Reviews are intended to provide management an overall assessment of the WHP. The level and frequency of horizontal reviews is commensurate with the health and maturity of the individual and/or regional WHPs.

c. PWD Transportation Managers and Deputy Managers shall report all WHE related issues directly to PW7, and are responsible for the daily activities of their WHP under the cognizance of NAVFAC Far East. These positions shall also be responsible to:

(1) Serve as Certifying Officials/Alternate Certifying Officials and WHP Managers unless specified otherwise by a Service Level Agreement (SLA), Inter-service Support Agreement (ISSA), Memorandum of Agreement (MOA) or Memorandum of Understanding (MOU) or Base Operating Support Contract (BOSC).

(2) Conduct a complete and thorough crane and rigging accident, and near miss, unplanned occurrence investigations per references (a) and (s) and forward all off-station reports to NCC (after PW7.4 review), per this instruction.

(3) Ensure a training, development and qualification program is in place and maintained per reference (a) for WHE personnel, to include practical hands-on proficiency training and demonstration of adequate knowledge, skills and abilities of core competencies.

(4) Maintain assigned personnel training, development and qualification program, to include developing core competencies for job position and assignments, per reference (a) and this instruction.

(5) Ensure the rigging equipment inventory and number of personnel meets the activities current and future workload requirements.

(6) Coordinate with U.S. Naval Hospital (or approved alternate medical facilities) for required crane operator physical examinations per reference (a).

(7) Develop and maintain a monitoring (observation) program to assess, evaluate and improve internal processes, procedures and work performance (best practice), to include external customer program compliance, and where applicable contractor crane/rigging operations.

(8) Collaborate with customers and stakeholders when developing and maintaining a crane replacement and modernization plan (as a minimum, for CAT 1/2 cranes and critical CAT 3 cranes) that evaluates the crane inventory in relationship to the activity's projected workload and mission requirements.

(9) Routinely access NCC website to research and review applicable Crane Safety Advisories (CSA) and Equipment Deficiency Memoranda (EDM). Address, respond and file all CSA, EDM and Original Equipment Manufacturing (OEM) technical bulletins for applicable equipment.

(10) Review (with PW7.4 assistance) all official correspondence and/or procedures requiring engineering support and/or NCC concurrence. Examples include CAR, RCDR, AEP, and WHE Reportable Deficiencies per applicable sections in reference (a).

(11) Be familiarized with reference (c) as applicable for policy, guidance and references regarding PWD structure and operations, as well as how obtain reach-back support and resources from the NAVFAC Far East organization.

(12) Be familiarized with technical references and location of applicable Business Process Management System (BPMS) processes on the NAVFAC Far East SharePoint site. BPMS provides an overview and systematic method for the management of business processes, common practices, and quality improvements that produce/support products and services. The intent is to provide consistency throughout NAVFAC Far East AOR and provide easy access to key information within a workflow (process) context and links to applicable, appropriate and up-to-date policies, guidance, forms, and information. Local command processes may vary where law and regulation requires.

(13) Obtain, download, review and disseminate applicable regional and Navy-wide information and technical guidance to all assigned WHP personnel. Access NAVFAC Far East Flank Speed (FS) page NAVFAC-FE PW7 WHE Team - Home (sharepoint-mil.us), NCC (FS) page NAVFAC Navy Crane Center - Home (sharepoint-mil.us), or NCC website link https://www.navfac.navy.mil/ncc, for latest WHE safety and training information, bulletins, newsletters, safety messages and/or related correspondence and publications.

(14) When necessary, PWD managers are responsible for written and/or verbal translation and dissemination of technical information and are encouraged to share 'best work practices' with region counterparts.

(15) Track responses/resolutions to internal/external evaluations, assessments or program reviews to assure corrective actions are implemented. Collect and maintain OQE that supports conclusions that evaluation findings have been satisfied.

d. For activities that obtain MITC services from other activities, they shall designate in writing the activity and services provided in lieu of the specific personnel, and documented via SLA, ISSA, MOA/MOU between NAVFAC Far East and the local Command/Activity, and/or other authorized service providers (i.e. U.S. Navy Supplier, BOSC, etc.).

e. WHP Manager is responsible for the oversight and coordination of the WHP. For the purpose of this instruction, the position/title is a general term used for WHP oversight and is not inventory specific (i.e. does not require managing 100 or more cranes as defined in reference (a)). This position is designated by the NAVFAC Far East CO via this instruction and/or by ICO via local instruction. This designation is by position/title in lieu of name (i.e. designation letter) and remains in effect until cancelled or revised. The WHP Manager may also be a certifying official; however, these additional duties cannot dilute the responsibility of the WHP Manager.

f. Certifying Official, including alternates, shall be trained and qualified per reference (a) and are designated by the NAVFAC Far East CO via this instruction and/or by ICO via local instruction. The designation is by position/title in lieu of name (i.e. designation letter) and remains in effect until cancelled or revised. Designated personnel shall be competent and closely familiar with all aspects of WHP management. This position shall:

(1) Designate inspection and test personnel involved in the MITC process per reference (a).

(2) Ensure MITC team is properly trained and qualified to perform assigned tasks per reference (a).

(3) Ensure training, licensing, qualification records and files are maintained for all WHE personnel.

(4) Ensure site specific WHP accident prevention, investigation, and trend analysis program is in place that focus on safety, quality, performance and strategic planning.

(5) For sites with no WHE engineering support: Approve the deficiency resolution evaluated by MITC team per reference (a).

(6) Review and sign certification packages.

g. WHE Test Directors and Condition Inspection personnel shall be trained and qualified per reference (a) and are responsible for the following:

(1) Coordinate and schedule inspections, tests and post-maintenance/repair in process inspections. Synchronize the inspections and tests schedule with crane maintenance workload.

(2) Ensure noted deficiencies are properly recorded and documented. Request assistance on items requiring technical input or concurrence (OEM/PW7).

(3) Evaluate maintenance work, inspections and tests to ensure conformance with references (a) and (r).

(4) Ensure results of inspections, maintenance, outages/trouble calls, troubleshooting reports, scheduled/unscheduled repairs, alterations and/or modifications are properly recorded, documented and maintained in individual Equipment History Files (EHFs).

(5) Prepare test procedures per references (a) and (r). Establish separate test procedures for testing unique functions or components (i.e. secondary limits, mechanical load brakes, wireless remote operations, motorized hooks, integrated lift fixtures, etc.).

(6) Ensure testing operations are performed safely and the results are documented.

(7) Prepare certification packages for review by Certifying Official.

(8) To qualify as a Test Director or Condition (General) Inspector, personnel must complete mandatory NCC courses and satisfy personnel competencies of reference (a), Section 7 and Appendix N. Additional training (e.g., hands-on) to enhance specific skills is encouraged.

h. The MITC team (comprised of Structural, Mechanical and Electrical expertise) are responsible for Preventive Maintenance (PM) schedules and improving maintenance efficiency/quality/reliability to reduce the need for rework. MITC team is responsible for the following:

(1) Complete mandatory NCC courses and satisfy personnel competencies of reference (a), Section 7 and Appendix N. Additional training (e.g., hands-on) to enhance specific skills is encouraged.

(2)Follow DoN Fall Protection Guide Manual and reference (f), Section 13, as well as, Control of Hazardous Energy Lockout/Tagout (LOTO) references (b) and (f) Section 24.

(3) Ensure all crane work is directed by written instructions and procedures. For sites with no engineering support, personnel shall consult OEM and evaluate the deficiency. The certifying official shall approve the deficiency resolution per reference (a).

(4) Ensure PM and lubrications are in accordance with written procedures and OEM specifications. Deviation from specifications shall only be done per reference (a) and OEM approval.

(5) Develop Maintenance Inspection Specifications Record (MISR) forms per reference (a). For unique items not covered and additional items required by the crane OEM, additional inspection attributes shall be included unless deemed impractical by the MITC team and approved by the Certifying Official.

(6) Identify and report failures or deficiencies to allow for proper evaluation.

(7) Ensure material procurement, disassembly/re-assembly procedures, trouble calls, outages, and other work is performed per technical work documents (i.e. Shop Repair Order (SRO)) and documented in the EHF.

(8) All outstanding deficiencies or repair items shall be corrected or addressed prior to completion of interim and/or annual service. Work deferral, where authorized, shall be documented and completed per reference (a).

(9) Build applicable periodicity tables for CAT 1 cranes ('A', 'B', 'C' MISR) and CAT 2/3 cranes ('A' MISR) per reference (a) and OEM recommendations. Tables shall include items that affect or impact service duration (i.e. non-destructive testing, semi-annual lubrication, brake disassembly, torque checks, oil sample analysis, etc).

(10) With Certifying Official assistance, prepare and submit official correspondence and/or procedures that require technical input or concurrence from OEM/PW7/NCC.

(11) Develop crane outage response and troubleshooting procedures for deficient or out of service cranes. Assist inspection personnel with unscheduled outages, accident investigations and/or trouble calls when needed.

(12) For inspection and certification of crane trackage, consult Facilities Management & Sustainment Division (PW5) and review NAVFACINST 11230.1F.

i. Crane Licensing Official is responsible for licensing of all NAVFAC Far East operators, maintaining licenses/qualifications periodicity charts, personnel files and training records per per reference (a), and ensuring license renewals are accomplished in a timely fashion.

j. Crane/Rigging Operations Managers and Supervisors are responsible for oversight of crane and rigging operations, basic crane safety procedures/concepts and operations risk management per enclosure (3) and the following:

(1) Ensure rigging gear inventory and rigging usage deficiencies are recorded, tracked, analyzed for trends and results reported. Ensure expired and/or unauthorized rigging equipment is properly segregated to prevent inadvertent use.

(2) Provide procedures (including sketches and lift plans) for critical lifts and critical non-crane rigging operations per reference (a). Provide advice on general rigging practices where requested.

(3) Ensure crane and rigging team personnel complete mandatory NCC courses and satisfy personnel competencies of reference (a), Section 7 and Appendix N. Additional training (e.g., hands-on) to enhance specific skills is encouraged.

(a) To provide effective oversight of safe operations, it is encouraged that supervisors also complete the CAT 3 Crane Safety course, perform continuous training and maintain their own operator skills proficiency.

(b) Maintain a familiarization program for new crane operators. Provide formal/supplemental training and written/performance testing per Appendices J, K, L and N.

(4) Ensure personnel are properly trained and qualified to perform assigned functions to include blended team personnel (i.e. Ships Force, contractors, other commands, etc.).

(5) Determine, based on level of risk and complexity, the crane team size needed to ensure lifts are accomplished safely.

(6) Provide crane operators, riggers, tagline handlers, signalers and other ground support personnel to support MITC and production lifts, as needed.

(7) Ensure Operator Daily Checklists (ODCL) and Monthly Checklists (OMCL) for applicable cranes are properly performed and documented per reference (a), and forwarded to the PWD MITC team for filing and deficiency correction.

(8) Review, sign and forward ODCL/OMCL to the MITC team. Immediately remove cranes/rigging equipment from service and notify MITC team when malfunctions occur on Load Bearing (LB), Load Controlling (LC) or Operational Safety Devices (OSD).

(9) Ensure pre-job briefings and job/activity hazard analysis are conducted prior to start of WHE operations/maintenance (or at each shift change). Briefing and lift plans shall be multilingual, where applicable, and provided in advance to ensure all personnel are properly prepared. Job safety analysis and interactive briefing shall be conducted to identify key roles and responsibilities for personnel, to identify/mitigate risks. A "Take2" briefing should also be conducted between long breaks, or if there is a change in work scope, team members and/or lift location.

(10) Develop and continuously improve shop/trade processes and best work practices.

(11) Maintain a current list of all qualified crane operators and their expiration/renewal requirements. CAT 3 non-cab crane operator qualifications shall be renewed every three years. For CAT 1 and Cab Operated CAT 2/3 crane operators, coordinate with PWD designated WHE licensing official to issue and renew existing operator licenses per reference (a).

(12) Designate a qualified rigger to serve as rigging equipment coordinator/custodian to control the use and issuance of rigging gear and miscellaneous rigging equipment. Ensure this position completes the Rigging Gear Inspector and Rigging Practices training of reference (a), Section 7 and Appendix N. For personnel testing Section 14 gear, CAT 3 Crane Operator and Load Test Director training is also required.

(13) Ensure the performance and documentation of rigging gear inventory and operation monitoring (observation(s)) are per reference (a) and enclosure (4).

(14) Ensure Naval Air Systems Command (NAVAIR)/Naval Sea Systems Command (NAVSEA) WHE assigned to naval shore activities and utilized only in ashore operations (or aboard ships when the ship is pier-side) is certified, tested, inspected and operated per reference (a). For general purpose lifting and rigging, shore based rigging gear and portable hoists meeting the requirements of reference (a) may be used aboard ship when the ship is pier-side (this does not apply to ordnance or radiological lifting/handling). Reference (a) covers portable floor cranes, portable manual/powered hoists, and portable adjustable gantry/A-frame cranes. Material Handling Equipment (MHE) is covered by reference (d).

k. Rigging Equipment Coordinators/Custodians are responsible for the upkeep of rigging equipment maintained in the individual departments and the following:

(1) Maintain rigging equipment inventory and inspection/test result database.

(2) Maintain rigging equipment in a centralized and satellite locations, as needed.

(3) Inform supervisors of any changes in rigging gear requirements and if needed forward to PW7.4 for consultation. Provide advice on general rigging practices where requested.

(4) Segregate defective, damaged, expired and untested rigging equipment from the active inventory. In addition, taglines, tie-down gear, frapping and lashing material used for controlling loads shall be segregated from the active inventory. Method of segregating, marking, and/or labeling gear will be at the discretion of site Rigging Equipment Coordinator/Custodian.

(5) Familiarize with NAVAIR, NAVSEA, Strategic Systems Program, Air Force, or Army and/or other government agency rigging equipment to be used on naval facility or activity cranes. Ensure rigging equipment is in an approved test and inspection program.

l. Crane Operators shall comply with the following:

(1) Ensure crane operators complete mandatory NCC courses, satisfy personnel competencies and meet physical qualifications of reference (a), Section 7 and Appendix N. Attend and pass the mandatory NCC refresher training courses for applicable cranes. Additional training (e.g., hands-on) to enhance specific skills is encouraged.

(2) For CAT 3 non-cab operated cranes, operator candidates shall perform familiarization training under supervision prior to qualification. Operator shall demonstrate to their supervisor, adequate knowledge, skills and ability for safe operation.

(3) By self-examination, determine whether he/she is physically, mentally, and emotionally fit to operate the crane.

(4) Only operate cranes for which they are assigned, trained and qualified/licensed.

(5) Complete pre-use/post-use checks of assigned crane and rigging equipment.

(6) Be familiar will all functions and features of the crane prior to operation. Know the limitations and capabilities of their assigned crane.

2. Contractor Crane/Rigging Operations: All contractor WHE operations at Navy activities external to construction contracts (i.e., facilities maintenance and repair service contracts, ship support services, BOSC, etc.) shall follow the requirements of reference (a). Whereas, all construction contracts administered by ROICC and Planning Design & Construction shall follow reference (o). In addition, host ICO or Officer in Charge may impose more stringent standards and requirements. Covered equipment includes rented, leased, sub-contracted, contractor owned cranes and other equipment that may be used in a crane like application to lift suspended loads (ex. multipurpose machines, MHE [forklifts] and construction equipment). Rigging equipment may be used with these machines or by itself in weight handling operations.

a. Contracting Officers/Authorities (KO):

(1) KOs (PWD/ROICC) shall ensure the Contracting Officer's Representatives (COR) (i.e. Technical Point of Contact, Engineering Technicians), Supervisory Performance Assessment Representatives (PAR)/PAR, Contractor Crane Oversight personnel, etc., complete mandatory NCC course of reference (a), Section 7. Additional training (e.g., hands-on) to enhance specific skills is encouraged. To be effective, employees performing WHE oversight should be knowledgeable and familiar with general crane/rigging concepts and best practices.

(a) Contractor crane oversight training for Government representatives can be obtained from the Navy eLearning (NeL) or Joint Knowledge Online Contractor Crane Awareness (search Course Catalog tab, i.e. Prefix NCC). Government representatives (i.e. foreign nationals) that do not have access to secure networks and/or webpages shall request

classroom training from qualified and authorized NCC course instructor/trainer/facilitator. Web Based Training Material and Student Guides can be downloaded from the NCC Flankspeed SharePoint site. <https://flankspeed.sharepoint-mil.us/sites/NAVFAC-NCC>

(b) Navy Exchange, Morale Welfare & Recreation and other agencies/activities (e.g. NAVSUP and SRF-JRMC on USN/USMC bases, installations and property (to include projects on non-USN/USMC bases and facilities) may have purchase card/contractual authority to request rented/leased crane and rigging operations support and shall be held to the same standards and requirements in references (a), (j), (k) and (l). Included are Navy fleet activities and detachments that operate shore based WHE along with Navy activities on joint bases and bases of other military services and agencies.

(c) All KOs, CORs, Contract Specialists, Contract Authority and Navy Purchase Card holders ordering products and services that include crane/rigging operations shall successfully complete the NeL Contractor Crane Awareness course.

(1) Ensure all contracts administered through NAVFAC Far East (i.e. PWD issued contracts) include the applicable information specific to references (a), (j), (k) and (o).

(2) Enforce contractor crane requirements. Maintain communication and coordination between the Contractor and themselves and/or the KO's appointed CORs.

(3) Ensure personnel lifts have written authorization of the activity Safety Office.

(4) Ensure contractors supporting operations on USN/USMC property or in support of USN/USMC contracts comply with reference (a).

(5) Ensure WHE rented, leased, or owned/operated by USN/USMC and BOSC comply with reference (a).

(6) Review and verify the reference (a), Appendix P, Certificates of Compliance (P-1) and Contractor Crane and Rigging Operations Checklist (P-2).

(7) Maintain a current POC list of local WHE Subject Matter Experts (e.g. PW7.4, PRY33, PRS33, SRF-JRMC Code 700, BOSC WHE personnel).

(8) When unplanned engagement with a contractor is necessary (e.g. observe unauthorized crane activity/access on station, unreported WHE deficiency identified, etc.), these occurrences shall be documented.

b. COR Responsibilities: Coordinate with the KO prior to a contractor crane entering/working on Navy installations and property. Review and forward the contractor's crane package (i.e. P-1 Certificate, P-2 Checklist, routine and critical lift plans, forms, sketches,

drawings, and date/time on board, etc.) as outlined in references (a), (j) and (k).

(1) P-2 Checklist shall be performed at least once per jobsite (upon initial setup), anytime the crane departs/returns to the base/property, and at least every **30 days.** When critical lifts/rigging are involved, oversight shall be performed at least every **14 days**. Frequency of visits are commensurate with the level of risk to equipment, personnel and property. All deficient crane/rigging equipment shall be removed from the installation/property and corrected at the contractor's expense.

(2) All contractor discrepancies/deficiencies shall be formally documented and reported via COR to the KO for further assessment. Copies of the P-2 Checklist shall be retained for a period of one year.

c. Accidents, near misses or unplanned occurrences involving contractor-owned cranes/rigging (and alternate machines using rigging equipment) shall be investigated and documented by the Contractor, reviewed by KO and reported per references (a), (j), (k) and (s).

3. EHF: Crane maintenance personnel shall establish and maintain an individual EHF for each crane per reference (a). EHFs shall include specifications, contracts, acceptance tests, crane description, lubrication/servicing plans, alterations, maintenance/repair of deficiencies, and the latest test/inspection records. EHFs shall be reviewed by the Certifying Official prior to the crane's certification.

4. WHE Maintenance Program: Each PWD shall develop a local maintenance service instruction and periodicity schedule. These requirements must be developed using the OEM manuals and periodic maintenance requirements per reference (a). The WHE Maintenance Program is responsible for the following:

a. Develop SOP's specific to the individual crane (or group of similar cranes) utilizing the OEM manuals and reference (a).

b. Record work performed on approved technical work documents (i.e. SRO).

c. Consult with PW7.4 and obtain OEM approval for any changes or alterations to factory approved lubrication products, approved vendors and/or authorized manufacturers. Review latest technical bulletins, advisories, EDMs/CSAs and other related correspondence.

d. Ensure all personnel involved in the lubrication of cranes are properly trained and that SOPs are followed, completed and filed in the EHF.

e. Remove cranes from service with LB/LC/OSD defects or deficiencies (see reference (a) for criteria and definitions). WHE shall remain out of service until all major deficiencies have been corrected. Minor deficiencies that do not affect overall safe operation, service and/or

function of the crane and/or hoist, or can be deferred until next scheduled service, shall be addressed and documented appropriately prior to return to service, per reference (a).

f. Control of Hazardous Energy LOTO Program: LOTO will be applied to WHE during inspection or service to safeguard against the accidental release of stored energy which could be fatal or potentially harm personnel in the area, or damage equipment. Certifying Officials and WHP Managers shall develop local LOTO SOPs applicable to equipment inventory and personnel assigned. SOPs shall be reviewed/approved by site Safety Program Manager and PW7.4 prior to implementation and shall be briefed to all affected workers potentially exposed to all forms of hazardous energy prior to work.

(1) SOPs shall be reviewed again whenever an accident/incident occurs involving electrical shock or release of stored energy.

(2) SOPs shall be reviewed periodically to ensure procedures and requirements of this instruction are followed per Occupational Safety and Health Administration and reference (b).

g. Equipment Deficiency and Temporary Out of Service (OOS) Tags: Paper or linen tags (other than approved LOTO tags) marked (i.e. "OUT OF SERVICE") on both sides are authorized for shop identified and/or known crane deficiencies. Tags shall ONLY be used on WHE when it is necessary to prevent unauthorized activation and/or operation of equipment by user shop/code personnel. Equipment Deficiency Tags and OOS tags SHALL NOT be used as substitutes for LOTO locks/devices/labels, nor be the same color as tags used for the control of hazardous energy. Crane(s) and/or powered hoists (including rigging equipment) may also need to be de-energized and locked out at the power source.

(1) Temporary OOS tags are not permanent and shall be removed/replaced with approved LOTO tags, labels and devices as soon as practical, or at the beginning of the next work day, by an authorized employee.

(2) Temporary OOS paper or linen tags shall have date/time/location/equipment ID and brief description of deficiency. Information shall be typed or hand-written on both sides and readable at a minimum distance of five feet.

5. Crane Procurement, Replacement and Modernization Strategy and Planning: PWDs shall develop and maintain a crane procurement, replacement and modernization plan (as a minimum, for CAT 1/2 cranes and CAT 3 critical cranes) that evaluates the crane inventory in relationship to projected workload and mission requirements. The plan shall be reviewed and updated annually. PWDs shall coordinate/consult with PW7/PW7.4 when developing the plan. PWDs shall ensure the plan includes higher level or NAVFAC mandated crane replacement or modernization directives, as applicable. The following shall be taken into consideration:

a. Follow acquisition of new WHE per references (a), (h), (i) and (s).

b. Sustainment, includes the maintenance and repair activities necessary to keep a crane inventory in good working order. It includes regularly scheduled adjustments and inspections, preventive maintenance tasks, and emergency response and service calls for minor repairs. It also includes major repairs or replacement of crane components expected to occur periodically throughout the life cycle of the crane(s).

c. Restoration, includes the restoration (or overhaul) of real property equipment (i.e. facility cranes) to such a condition that it may be used for its designated purpose. Restoration includes repair or replacement work to restore facility cranes damaged by inadequate sustainment, neglect, excessive age, natural disaster, fire, accident, or other causes.

d. Modernization, includes the alteration or replacement of cranes solely to implement new or higher standards, accommodate new functions, or replace cranes or components. Per reference (b), the projected life of cranes is 50 years for portal cranes, 30-50 years for overhead traveling cranes, 20-30 years for underrunning cranes, and 10-20 years for mobile cranes. Service life expectancy also depends on operations tempo, frequency of use, breakdowns, obsolete parts or components, and OEM recommendations/technical advisement.

e. Recapitalization, includes the major renovation or reconstruction activities (including crane replacements) needed to keep existing facilities modern and relevant in an environment of changing standards and missions. Recapitalization extends the service life of cranes, or restores lost service life. It includes restoration and modernization of existing equipment, as well as replacement of existing equipment with new.

f. Transportation Branch shall coordinate with PWD, as needed, to facilitate crane modernization and replacement.

g. Civil Engineering Support Equipment and Non-Tactical Vehicle/Equipment (NTVE) mobile cranes shall be procured through NAVFAC and Expeditionary Warfare Center. NAVSUP mobile cargo cranes (shore based up to 30,000 lbs capacity and any shipboard capacity) are within NAVSUP Weapon Systems Support cognizance.

h. PWD shall utilize NCC Procuring Contract Office for acquisition of applicable cranes, per references (h) and (s). PWDs shall consult NCC for Military Construction projects when cranes are involved. For those cranes requiring NCC procurement assistance, activities should notify NCC three years prior to project initiation.

i. All procurement and acquisition of WHE shall be forwarded to PW7/PW7.4 for review and concurrence prior to initiating requests. PW7/PW7.4 shall be included in all contracts and pre-construction project specification concurrence/review during WHE and associated support equipment procurement and acquisition process.

6. WHP Self-Assessments: WHP self-assessments provide management added confidence that process or product requirements are being met, and to identify areas of concern in need of improvement. These self-assessments are in addition to PW7.4 Horizontal Reviews and NCC evaluations.

a. PWDs shall prepare their self-assessment per reference (a), Section 2 and forward to PW7.4 prior to their NCC evaluation.

b. The self-assessment is a management tool and living document intended to be reviewed/updated regularly as the programs evolves. Updated copies shall be provided to PW7.4 and NCC upon request.

c. Self-assessments shall include the top three concerns and problem areas, suspected causes, and corrective actions planned or already in place. Although the self-assessment may include external problems that affect the WHP (e.g., service provider issues), the primary focus of the self-assessment should be internal problems within the span of control of the activity.

d. The self-assessment should be based on all available data and metrics. Assessments shall consider these functional areas: Program Management; Equipment Condition; Rigging Gear, Miscellaneous Equipment; MITC; Training, Licensing, Qualifications; EHFs, Monitor (Observation) Program; Contractor Crane Oversight; and WHE Operations.

7. WHP Metrics. PWDs shall have basic metrics to assist in evaluating and assessing the overall WHP performance. Although the baseline metrics shall be maintained for all PWDs, these metrics should be supplemented by metrics developed proportionate with the maturity of the WHP to foster continual improvement. Basic metrics shall include:

a. Monitoring Program observations, associated trends and causal analyses.

b. Crane and rigging accidents, near misses and unplanned occurrences.

c. Information learned from PW7.4 Horizontal Reviews and NCC Evaluations.

d. Crane maintenance cost, durations and reliability. PWDs that do not perform MITC on their own cranes may have their WHE service provider maintain these metrics.

e. Changes in activity mission, workload and/or the WHP's inability to adapt.

8. NCC WHP Evaluations. Prior to the on-site review or evaluation of individual WHP, assigned NCC evaluation team will conduct a desk review of the PWD WHP by using deliverables provided from the pre-evaluation data call. Preparation for and execution of NCC evaluations can be found in reference (g).

a. Notification Letter: PWDs will receive a notification letter approximately **60 days** prior to the date of on-site portion of the evaluation. The letter will identify NCC team members and provide planning/logistics information for evaluation preparation.

b. In-Brief: The NCC evaluation team will conduct an in-brief with key management and WHP personnel and ICO (or designated representatives). A formal in-brief package for attendees will be provided by NCC.

c. Overall Evaluation and Out-Brief: Overall grading for evaluations are satisfactory, marginally satisfactory, or unsatisfactory. The evaluation report will identify significant items, followed by other violations, deficiencies, weaknesses, poor practices and vulnerabilities found during the evaluation.

d. Evaluation Report: PWDs will have **30 days** from date of signed NCC letter to provide a response to the evaluation per the instructions provided on the forwarding letter of the signed report. NCC may allow additional time, up to **45 days**, for major activity reports or reports containing numerous programmatic issues. Extension requests may be approved by NCC on a case-by-case basis.

e. Formal Response Letter: Ensure PWO (or Deputy PWO at a minimum) attend the NCC out-brief. Immediately begin the first draft response following NCC out-brief. Do not delay! The timeline begins from the date of the signed NCC letter so take advantage of the "free" time between out-brief and NCC Final Evaluation Report.

(1) Day 1: Upon receipt of NCC Final Evaluation Report, schedule a review of the first draft with PWO and submit to PW7.4.

(2) Day 2-5: PWD/PW7.4 shall jointly complete second draft.

(3) Day 6-10: Obtain final PWO endorsement of second draft and forward to PW7.4 for development of final draft.

(4) Day 11-15: Obtain PWO endorsement of the final draft.

(5) Day 16-20: With PW7.4 assistance, assemble final letter package for CO's review/signature.

(6) Day 21-30: Upon CO's review/signature, PW7.4 shall forward to NCC (per correspondence guidance in the NCC Final Report) and NAVFAC Headquarter.

ACCIDENT PREVENTION AND INVESTIGATION

1. This enclosure provides the responsibilities, requirements and procedures for reporting and investigating crane/rigging accidents, near miss and/or unplanned events; preparing for and conducting investigation meetings; identifying follow-up actions; and preparing required reports. Management shall be informed of all relevant facts associated with significant problems, determine or validate the causes, and then formally assure corrective actions are taken to minimize the probability of recurrence. Furthermore, this process shall provide concise and reliable information on the failure of equipment, procedures, and operations (human error) that can be shared with other activities to prevent similar problems.

a. NAVFACFENOTE 5102 "Commanding Officer's Critical Information Requirements" (CCIR) reporting process:

(1) Weight Handling Equipment (WHE) accidents involving death or critical injury: Public Works Officers (PWOs) and NAVFAC Far East Directors shall **immediately**, without delay and regardless of the hour, report by voice per format in CCIR, enclosure (1). Initial voice reports shall be followed by email with minimal delay.

(2) All other WHE accidents: Voice/Email Report within **eight hours**. PWOs and NAVFAC Far East Directors shall report by the end of the workday or within eight hours of non-work days, via email or phone call per format in CCIR, enclosure (1).

b. NAVFAC P-307 reporting process:

(1) For WHE accidents involving a fatality, inpatient hospitalization, overturned crane, collapsed boom, or any other major damage to the crane, load, or adjacent property, notify the Navy Crane Center (NCC) by **e-mail** as soon as practical but not later than **eight hours** following the accident.

(2) For all other WHE accidents, notify NCC as soon as practical per reference (a) and this enclosure.

2. WHE accidents take a heavy and tragic toll each year in lives, serious injury, and/or property damage. The vast majority of accidents are the result of personnel (human) error and are therefore avoidable. WHE operation safety is the result of effective teamwork among the team. In most accidents, a team member either performs an unsafe action or fails to perform a required safe action. Where team personnel are at fault, it is typically due to inattention, poor judgment, overconfidence, or haste to get the job done.

3. OPNAVINST 3500.39D describes the Operational Risk Management (ORM) process with the purpose of establishing ORM as an integral part of naval operations, training, and planning in order to optimize operational capability and readiness. The ORM process is a decision making tool to be used by people at all levels to anticipate hazards, minimize risk to acceptable levels, and reduce the potential for accidents. One of the objectives of ORM training is to develop

sufficient proficiency in applying the process such that ORM becomes an automatic or intuitive part of decision making methodology. The ORM process is applicable to all WHE operations. Public Works Departments (PWDs) are encouraged to utilize the methodology of ORM in the planning and preparation of all WHE lifts and Maintenance, Inspection, Test and Certification activities.

a. The most common idea of what ORM is revolves around a simple five-step process that is most frequently used in planning. These five steps are: Identify hazards; Assess the hazards; Make risk decisions; Implement controls; Supervise and watch for change. Another level of ORM is Time Critical Risk Management which involves a quick, committed-to-memory process and a set of skills that allow our people to manage risk when in the execution of a plan or event. This might be thought of in simple terms such as: "What can go wrong or is changing"; "How can I keep it from effecting the mission without hurting me"; "Act to correct the situation"; "Telling the right people" if you are unable to take the right action.

b. Additional training and information is available online through NAVFAC Far East portal under Enterprise Safety Application Management System, and under searchable courses via web-based Navy e-Learning.

4. Accident Investigation, Reporting and Corrective Actions. This is applicable to all WHE operations at activities that are the property of the U.S. Navy (USN)/U.S. Marine Corps (USMC) and are either certified or intended to be certified for use. It also applies to USN/USMC and non- USN/USMC contractor cranes that are operated in support of activity production efforts if they are operated by Base Operating Support Contract (BOSC) personnel or USN/USMC licensed operators. Crane accidents are those that occur during operation of all crane categories listed in reference (a). Rigging accidents are those that occur when rigging gear or below the hook equipment is used independently (without a crane) in weight handling operation, i.e., without cranes, or when covered gear is used with multi-purpose machines, Material Handling Equipment (e.g., forklifts), and with construction equipment.

a. Significant Accident. A significant accident is an accident that typically has a greater potential to result in serious injury or substantial property damage. The following accident types are considered significant accidents: injuries (regardless of severity), overloads, dropped loads, two-blocks, crane derailments, or contact with overhead electrical power lines. Other types of accidents that result in OPNAV Class A, B, C, or D reporting thresholds for material property damage are also considered significant accidents.

b. All accident, near miss and unplanned occurrence investigation and reporting will be done per references (a), (e) and (s). The full definition and examples of crane and rigging accidents can be found in reference (a). The Certifying Officials and/or Weight Handling Program (WHP) Managers and contracting officials and/or authorities are responsible for ensuring accident, near miss and unplanned occurrence reports are completed and submitted as required.

(1) In the event of an accident involving a contractor crane, the contractor and the contracting officer/authority will report the accident per references (a), (e), (j), (k) and (s). USN/USMC and/or BOSC personnel shall route reports through the designated Certifying Official, Supervisory Performance Assessment Representatives (PAR)/PAR and PW7.4 prior to submittal to NCC.

(2) All contractor accident reports shall require review and concurrence from Contracting Officer (PWD, ROICC and PDC for construction contracts) or other contracting authority (e.g. FLC/DLA/NEX/MWR), and forwarded to PW7.4 for review and concurrence, and assignment of accident report serial number prior to being forwarded to NCC (see references (a) and (s) for additional guidance and information). A block or additional space shall be provided on the report form to allow for concurrence commentary from Certifying Official, Contracting Officer/Authority, Safety Office (09SF) and PW7.4, as applicable and as required.

(3) If a crane is used as an anchor point for rigging operations (aka "sky hook" as defined in enclosure (4)), it is considered a rigging accident, unless the accident results in an overload or damage to the crane, in which case it shall be reported as a crane accident.

c. Upon having an accident or having seen evidence of damage (suspected accident), the crane team, riggers, equipment users, etc., shall **STOP** all operations and **NOTIFY** immediate supervisor(s). If there is impending danger to the equipment or personnel, place the crane and/or load in a safe (**SECURE**) position prior to notifying supervision. Ensure the accident **SCENE IS SECURE** and undisturbed (**PRESERVED**) so as to facilitate a thorough investigation. Immediately **CALL 911, 119 or LOCAL EMERGENCY RESPONSE PROVIDER,** if necessary, to care for any injured personnel. The supervisor shall review the situation and take any further emergency action including stopping production work or other operations that could aggravate the situation. The supervisor shall notify management personnel as well as the local Certifying Official, WHP Manager and site Safety Program Manager.

(1) For Lower Threshold Crane Accidents (LTCA) see reference (a) paragraph 12.4.1. The evolution (e.g., completion of shore power cable installation, removal of brows, stores loads, assembly of components) may be allowed to continue, with supervisor authorization and correction of the immediate cause. Actions taken when an LTCA occurs should allow for personnel to return to work without significant delay following permission of the supervisor and identification and correction of the immediate cause. Upon completion of the job or evolution, the activity shall make proper notification to activity management and the activity safety office.

(2) If there is a question as to whether the situation meets the criteria of an accident, report it anyway and let the Certifying Official, Accident Investigation Team, Accident Prevention Team or other designated accident investigation and prevention personnel determine if an accident has occurred.

(3) Following an accident, the operator's license (CAT 3 qualification) shall be suspended when the accident investigation identifies that the operator did not perform correctly.

For LTCA, license suspension, revocation and renewal (or requalification) will be at the discretion of supervisor. The requirements for remediation and renewal shall consist of those elements described in reference (a) considered necessary by management after investigation and consideration of the circumstances relating to the accident or other occurrence warranting the suspension. Documentation of suspension, justification, and renewal actions, including test results if applicable, shall be included in the operator's license/qualification file.

(4) For initial notification and investigation purposes, the WHE team involved will be relieved and/or replaced when an accident or unplanned event occurs. However, it is at the discretion of the Certifying Official and/or WHP Manager for immediate suspension of operator's license, suspension of crane team qualifications, and if retraining and requalification will be required.

(5) For return to work, the Certifying Official, WHP Manager and Operations Supervisor shall use appropriate interim bridging actions during the accident investigation to balance the benefits of work stoppage versus the impact to production work.

d. For suspected accidents, the Certifying Official and/or WHP Manager shall assemble a team and promptly perform a comprehensive investigation per references (a) and (s).

(1) Certifying Official is responsible for making the final determination whether an event meets the definition of an accident.

(2) Immediately take photographs (where permitted) and obtain first-hand information from witnesses at the job site concerning the situation and, as directed by the Certifying Official, assure adequate immediate corrective action(s) have been taken prior to resuming work. Ensure all personnel submit voluntary written statements of their account of the event immediately upon completion of safely securing from the unplanned event. Written statements are to be collected and forwarded immediately or as soon as practical to the assigned team lead to begin the investigation.

(3) PWDs are highly encouraged to use all problem identification, investigation tools, methods and techniques to determine cause of accident, the appropriate corrective actions and solutions to prevent recurrence.

(4) Use of the Human Factors Analysis Classification System and Cause/Process Mapping method (i.e. "5 whys" and the "Swiss Cheese" model) and causal analysis tools to illustrate how analyses of major accidents and catastrophic systems failures can reveal multiple, smaller failures leading up to the actual hazard, that can help the team better understand the "what", "how" and "why" the accident or incident occurred, and help identify and/or rule out causes and contributing factors to establish meaningful and effective corrective actions. Reference (s) provide guidance for conducting an accident fact-finding investigation and the follow-on root cause analysis and corrective actions meeting.

(5) For accidents occurring during blended crane team operations, the activities involved (PWD, Naval Munitions Command, SRF-JRMC, etc.) shall perform a collaborative fact-finding investigation and team learning session to determine root cause and corrective actions.

e. For initial notification for crane and rigging accidents, notify PW7.4 and NCC as soon as practical and within the timeframe specified in reference (a). Initial notification is not intended to provide detailed facts or cause of the incident, only a brief description of events that occurred.

f. Initial notification shall include the following:

(1) Name and UIC of the activity responsible for the accident

(2) Contact information (name/phone and email)

(3) Date, time, and location of the accident

(4) A brief description of the accident

(5) Accident type and crane type (Navy identification number if known)

(6) Description of any injuries or damage associated with the accident

g. Prepare a Crane and Rigging Accident Report (per references (a), (f) and (s)) and forward a copy to the NCC and NAVFAC Headquarter (HQ) via PW7.4 within **30 days** of the accident.

(1) The PWD responsible for the weight handling operation (i.e. Rigger-In-Charge) at the time of the accident shall initiate and submit the accident report to the WHP Manager and Certifying Official, as applicable.

(2) If the crane or rigging gear involved is owned by another activity, obtain concurrence from them prior to submitting to NCC.

(3) A detailed description and summary of events, investigation results and corrective actions and any relevant photographs (if possible) shall be attached to the report.

(4) The tenant command and/or activity responsible for the accident shall provide copies to the Certifying Official for review/signature.

h. In case of any accident involving a fatality, overturned crane, collapsed boom, in-patient hospitalization, and/or any other major damage to the crane, load or adjacent property, Contracting Official(s), contractor(s) and/or tenant command/activities involved, WHP Manager and Certifying Official will notify command (via Commanding Officer's Critical Information Requirements process) within **6 hours**, and provide initial notification to NCC and NAVFAC HQ (via PW7.4) no later than **24 hours**.

i. Contracting Officials/Authorities, WHP Managers, Certifying Officials and Safety Program Managers will track corrective actions identified in the accident report ensuring all actions to prevent recurrence are completed.

j. Near Misses and Other Unplanned Occurrences with lessons to be learned shall be investigated and reported per references (a) and (s). Notify PW7.4 as soon as practical and e-mail NCC and NAVFAC HQ (via PW7.4) within **30 days** of event occurrence.

WHE OPERATIONS SAFETY

1. General Operations Safety and Precautions: This enclosure provides direction and guidelines for USN/USMC owned, operated and/or maintained categories of Weight Handling Equipment (WHE) covered in reference (a), to include alternate machines (e.g. Material Handling Equipment (MHE), multipurpose machines, and construction equipment) that use rigging equipment to lift suspended loads in a crane-like manner.

a. The term "crane team" includes all personnel engaged in WHE operations. Crane team shall ensure planning, preparation and execution of WHE operations are conducted using Operational Risk Management (ORM) principles and with the safety of personnel and equipment as their highest priority.

b. Crane team size may vary to suit the scope and complexity of the job as determined by the crane/rigger supervisor and Rigger-In-Charge (RIC). Additional information regarding roles and responsibilities can be found in reference (a) and enclosure (1).

(1) The RIC shall establish the communication method and assign the crane signaler(s). RIC shall be uniquely identified (e.g. reflective vest, arm band, stripe on hard-hat, etc.). RIC shall designate additional tagline handlers, as needed, to assist with load control.

(2) Prior to the lift, the RIC shall conduct a pre-job brief to discuss the details of the lift, to include (as a minimum) the item weight, the lift plan, crane team roles/responsibilities, travel path, obstructions, accident protocol, and emergency response plan.

(3) For Category (CAT) 2/3 Non-Cab Operated crane operations, the minimum crane team will consist of a crane operator and a RIC. If the scope and complexity of the work is limited and the operation can be safely conducted by one person, the operator may also function as the RIC. The crane/rigger supervisor will determine if additional personnel such as additional riggers and/or signaler, tagline handlers are needed and will assign them accordingly.

c. Crane team shall NOT suspend or move loads/material over personnel. This includes personnel walking/working in the "fall zone". See additional guidance within this enclosure.

d. Crane team shall NOT perform multiple load lifts. Lifts of multiple objects that are one under the other, with each object rigged from the previous object (i.e. "Christmas Tree" lifts).

e. Crane team shall NOT perform side loading/pulling operations. Reference (a) prohibits using cranes and hoists to pull or drag a load sideways. Original Equipment Manufacturer (OEM)s do not rate their equipment for side loading/pulling.

f. Crane team shall NOT use lashing material (i.e. wire rope/synthetic rope/webbing, or other material without permanent end fittings) to substitute for standard rigging components (slings, shackles, etc.). See additional guidance within reference (a).

g. Sling protection shall be used where there is a possibility of the sling being cut or otherwise damaged by abrasion or bearing. Sling protection material shall be of sufficient thickness and strength to prevent sling damage. The sling shall be completely blocked from contacting the load edge with a hard material, not soft materials such as canvas, fire hoses, or leather gloves. Follow OEM guidance for proper sling protection.

h. Crane team shall report accidents per references (a) and (s), see enclosure (2) for additional guidance and information.

2. RIC: The RIC shall have "overall control" of crane operations, however, ALL crane team members (operators, riggers, signalers, tagline handlers, safety observers, etc.) have critical roles/responsibilities to ensure personnel/equipment safety. The RIC shall be focused and in control of all operations from start to finish. The crane team is responsible for following the RIC's directions to safely execute the lift. In some cases, other activities may provide RIC support for blended team evolutions (e.g. SRF, Ship's Force, Naval Munitions Command, etc.). It is imperative that all team members understand their individual roles and responsibilities to avoid a significant WHE accident.

3. Crane Operators: In addition to the reference (a) and enclosure (1) responsibilities, the following also apply:

a. Crane operator shall remain alert and be situationally aware at all times. During operations, personnel directing the operation (i.e. RIC) may not see the entire travel path, envelope hazards, obstructions, people, vehicles, and sense the behavior/feel of the machine. Never allow unauthorized personnel in the crane envelope or on/around the machinery/load.

b. Crane operator shall remain at the controls while a load is suspended, except as follows:

(1) During breaks when only rigging gear is attached to the hook.

(2) During breaks when load is not suspended (i.e. rigging gear is slack).

(3) Crane designs that are used in industrial processes that require a suspended load (e.g. dip tanks, paint booths, plating equipment, and similar processes).

c. Crane operators shall only operate cranes with a current certification, unless the crane is undergoing maintenance (or load testing) in support of repair or certification.

d. Crane operators shall NOT operate cranes that are tagged with equipment deficiency CAUTION/DANGER tags, LOTO tag(s), lock(s), and/or devices(s). Crane operator shall read/comply with the instructions on equipment deficiency CAUTION/DANGER tags and record these tags on the Operator's Daily Check List (ODCL)/Operator's Monthly Check List (OMCL) form's remarks section.

e. Crane operators shall NOT operate a crane with a known unsafe condition or in an unsafe manner. Operators have the authority to stop/refuse to operate if they believe it is unsafe.

f. Crane operators shall read/interpret load capacity charts, range diagrams and general notes, to include deductions/restrictions to lift capacities. Operators shall NOT rely solely on the Load Moment Indicator (LMI) and Automatic Crane System (ACS) for all lifts (including barge mounted mobile crane operations at anchorage).

4. Crane Pre-Use Checks: A complete check of the crane shall be performed by the operator prior to the first use of the crane and/or before each shift (whether the crane is used in production, maintenance, testing, or being relocated), as applicable. The crane team shall assist the operator with performance of pre-use checks. For applicable cranes, the operator shall use an ODCL or OMCL to perform and document pre-use checks per reference (a), Section 9. Deficiencies shall be reported to operations supervisor via Maintenance, Inspection, Test and Certification (MITC) personnel for appropriate tagging and resolution.

a. Cranes idle for greater than six months, MITC shall perform a condition inspection and operational test prior to returning the crane to service; however, recertification is not required. A Crane Condition Inspection Record shall be used to record inspection results (this does not apply to jib cranes, pillar cranes, pillar jib cranes, monorails, davits, portable gantry/A-frames, or fixed overhead hoists).

b. ODCLs/OMCLs shall be retained in the Equipment History File (EHF), as a minimum, the current and previous month(s) per reference (a), Section 5.

c. Additional site specific processing and filing requirements for tenant commands can be developed by Public Works Departments (PWDs) (e.g. securing the crane for deployed units via equipment tags and LOTO process, until tenant command/activity returns to conduct documented pre-use checks).

5. Limit Switches: Crane operators shall NOT rely on limit switches (i.e. anti-two block, end-stops, proximity switches, etc.) to limit or stop crane operation(s). Operator shall maintain a safe distance from the limit switch device during operations and when storing the crane. When approaching crane limits, operators shall reduce speed in order to prevent accidental contact with the crane components due to potential defect or failure of the limit switch.

a. Limit switch checks shall be performed at slow speed. Pre-use checks shall include all of the crane's limit switches (i.e. upper/lower limit switches, proximity switches, etc.).

b. Except for cranes used in construction (e.g. clam-shell, pile-driving, dredging, etc.), verifying the operation of the upper/lower boom limit switches is required only during the initial check of the crane each shift.

c. For CAT 2/3 Non-Cab Operated cranes, do not store the hook block in the upper limit unless allowed by the OEM or engineering instruction. Provide sufficient clearance below the upper sheave assembly (or trolley/hoist frame) so that the subsequent operator performing a pre-use check will be able to stop crane motion before a two-block event occurs (e.g. operator error or controller defect).

6. Bypassing Limits/Controls: PWDs shall develop procedures for controlling the bypassing of safety devices. Crane/Rigging Operations Supervisors shall control the use of all safety device bypass keys. Operators shall understand that safety devices (e.g. interlocks and limit switches) shall not be bypassed without permission, used as operational controls or used as a substitute for the operator's full attention. Operators shall approach limit switches at slow speed.

a. MITC personnel shall be notified prior to any bypass operation. Bypass keys shall be removed when not in use, controlled by the supervisor and maintained with the EHF or other suitable key control methods.

b. When operating in remote locations (where the operator retains the bypass key) or when bypassed by other means (e.g. temporary switches, troubleshooting jumper wires, etc.) the operator shall receive operator supervisor permission before bypassing/defeating safety devices.

c. Safety device bypass requirements shall be posted in the operator's cab (or attached near the controller for cranes without an operator's cab).

d. PWDs may establish more restrictive safety device bypass measures or crane specific procedures. Such procedures shall be in writing and approved by MITC and Certifying Official.

7. Shutdown Procedures: All cranes shall be properly shutdown/secured and placed in a safe location when not in use. At a minimum, all cranes shall be shutdown/secured per references (a) and (r).

a. Cranes shall be shutdown/secured at the end of the shift or whenever the crane is idle without an operator for an extended period of time (e.g. shift/team turnovers, lunch breaks, etc.). Specific procedures for shutdown/securing may vary by crane type and OEM.

b. Remove all rigging equipment from the crane/hoist hook(s).

c. Raise and stow all hooks/hook-blocks near the upper hoist limit switch.

d. Where applicable, mobile cranes shall use a "weak link" connection between hook(s) and carriage, or crane hook(s) shall be stowed using OEM or other engineered approved cradle/bracket.

(1) The weak link breaking strength shall be less than the rated load of the hook block's wire rope as reeved.

(2) Do not over tighten/tension the hoist line when securing the hook block using a cradle/bracket or weak link systems. Raise the hook block just enough to take up the slack.

e. For facility cranes, at the end of the shift secure the crane's power source (e.g. electric, pneumatic). For manual chain hoists tie back the hand-chain as applicable.

8. Complex/Critical Lifts: These are lifts with a moderate to high level of risk. For complex lift criteria, definitions and requirements, see reference (a), Section 10 and the following:

a. PWDs shall identify and prepare procedures (including rigging sketches, drawings, or specifications, where required), which may be standard written instructions or specific to the lift.

b. Lifting personnel by crane shall only be accomplished when no safer method is available. Personnel lifts require written procedures approved by the PWD safety office. These requirements do not apply to rescue of personnel in emergency situations using authorized emergency responder rescue equipment (i.e. fire department, other rescue services).

c. When an integral Load Indicating Device (LID) or Portable Load Indicating Device (PLID) is used where binding may occur, appropriate stop points shall be established and the LID/PLID shall be carefully monitored to ensure the stop points are not exceeded. The crane's LMI or ACS cannot be used as a substitute for LID/PLID.

d. Loads or materials shall NOT be suspended or moved over personnel. This includes personnel walking/working in the "fall zone". See additional guidance within this enclosure.

e. "Sky Hook" is a rigging method used when the crane is not being operated where the hook is used primarily as an anchor point or structure for operation of portable hoists/rigging equipment or pre-approved attachment point for fall protection equipment. This method is considered critical rigging and requires an approved technical procedure indicating the crane is secure (i.e. power off, brakes/pawls/pins engaged, spud lock/wind lock engaged, having no functions in motion, etc.) with crane team responsibilities identified prior to start of WHE operations. Requirements, limitations and procedures for using a Self-Retracting Lanyard attached to a crane hook as a part of a fall protection system shall be approved by activity and NAVFAC Far East Safety office.

f. For complex/critical lifts, the crane team shall complete the Figure 1 and Table 2 checklists, and follow crane/rigging briefing guidelines below.

9. Escalation Triggers: Escalation Triggers are intended to remove fear/intimidation at the deck-plate by empowering the workforce to secure/stop high risk operations. Situations that increase pressure on the crane team to accomplish the task, present a higher level of risk to safety of personnel and equipment. These types of lifts (Table-1 examples) shall be avoided; however, if determined to be mission essential or emergent work, lift requests shall be elevated to PWD management for review/approval. If necessary, final approval shall be provided by Public Works Officer (PWO). If the lift request is not approved, PWD shall provide the customer with an alternate solution or recommendation.

a. Identification and Procedures: When PWDs identify high risk evolutions (triggers) they shall prepare procedures (including rigging calculations and sketches where required) for complex/critical lifts. Procedures may be standard written instructions or specific to the lift. If necessary, the PWO shall determine if the situation and associated risk needs to be elevated for further support (Figure-2). PWDs shall create a pocket guide (see Figure-1) for crane team personnel as a reference and decision making tool for identifying/elevating high risk evolutions.

b. Expectations: The review process shall evaluate potential risks by assessing proposed lift plans, available project drawings/specifications, crane team experience, crane size/type, availability of specialized WHE (i.e. non-standard lift fixtures, lifting attachments, etc.). The risk assessment shall consider the consequences if performed incorrectly (i.e. risk of injury/death, property damage, and/or mission impact/delay).

c. Emergent lifts: With the exception of personnel rescue, emergent lifts (e.g. lifts during adverse weather conditions, downed power lines, fallen trees, etc.) must be approved by the PWD Transportation Manager. Due to time sensitivity and constraints associated with the emergent conditions, a formal complex/critical lift plan is not required, however, ORM principles shall be utilized to develop the lift plan. A post-lift debriefing shall be performed to document lessons learned. **Emergent lifts shall NOT be made for the purpose of convenience, circumventing standard complex/critical lift requirements, or expediting schedule requirements.**

Examples of Escalation Triggers	
✓ Constrained or potentially constrained loads or binding conditions (e.g. ship's force Accommodation (ACCOM) Ladders, brows/gangways anchored/pinned to piers, etc.)	✓ First time (or infrequently performed) crane lifts or rigging tasks that require more than normal planning, preparation and/or operational risk management
✓ Shop non-crane rigging operations of any kind (i.e. use of rigging gear attached to unknown/unrated overhead structures, electrical conduit, HVAC systems, etc.)	✓ Lifts out of vertical that have potential for side loading the crane (setting/stowing ACCOM Ladders pier-side; vertical/horizontal positioning of plate steel or storage tanks)
✓ Unplanned/unscheduled WHE operations, short notice, time sensitive lifts	✓ First time critical lifts or critical rigging operations as described in reference (a), Sections 10 & 14
✓ Demolition projects or emergency services	✓ Submerged/partially submerged objects (i.e. waterborne lifts such as rudders, propellers, shaft-work, degaussing towers)
✓ Lifts of personnel (crane/rigging)	✓ Any work performed under a suspended load
✓ Hazardous materials that are NOT using racks/stands designed for lifting/handling	✓ Large and complex geometric shapes, with unknown center of gravity (CG) and center of balance (CB)
✓ Crane setup near energized power lines, on uneven or unstable ground/foundation, soft earth, loose gravel and soil, inclines, drainage or utility trenches	✓ No clear line of site (visibility) during load movement (i.e. shipboard/in-hull access, below pier or in dry-docks, underwater operations)
✓ Tandem or multiple-crane lifts or multiple-hook lifts on the same crane	✓ Bypassing, disabling or defeating safety limits to perform operations (e.g. swing away jib, boom extension installation)

Table 1
Risk Elevation Examples

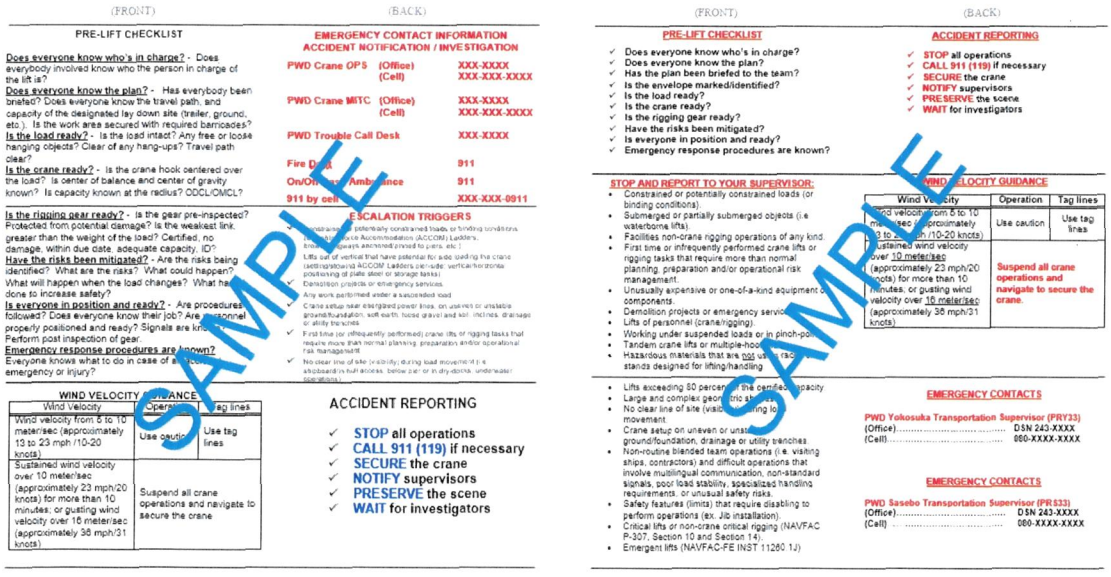

Figure 1
Sample Pre-Job Checklist Pocket Guide

Complex/Critical Lift Checklist

	yes/no/na
Weight of the object to be lifted.	
List of the rigging equipment.	
Lift/crane path (to calculate counter weight and travel clearance).	
Sketch or drawing showing rigging gear configuration, capacities, and orientation with regard to the object to be lifted.	
Crane capacity and hook(s) capacity to be used. If a variable capacity crane is utilized, confirm capacity at the boom radius to be used.	
Crane team personnel required and their roles/responsibilities.	
Type of communication to be employed.	
Portable load indicating device, as required.	
Maximum allowable load, as shown on a load indicator, prior to stopping for further technical resolution (e.g., contacting activity engineer or Original Equipment Manufacturer (OEM)).	
Stop points (e.g., in the event of lifting submerged material to inspect exposed rigging gear or integral attachments, allow drainage).	
Technical manuals excerpts or other OEM materials pertinent to object being lifted, (e.g. HAZMAT instructions, shipboard or facility plant equipment manuals, radiological manuals).	
Job/activity hazard analysis, to include emergency plan (i.e. evacuation/escape routes, rescue/first aid procedures, emergency contact information, etc.).	
Special precautions for unusual shapes.	
Special prerequisites and precautions prior to and during the lift (e.g., half-full tanks, residual water in bilges or structure, pressure equalization prior to taking a strain, submerged objects, weather condition limitations).	
For lifts requiring two or more cranes, determine the maximum capacity for each crane and percentage of weight each crane will lift. Address coordination of lifts and communication.	
Remarks or notes block for special situation where instructions can be added to the complex lift procedure.	

Table 2
Sample Complex/Critical Lift Checklist

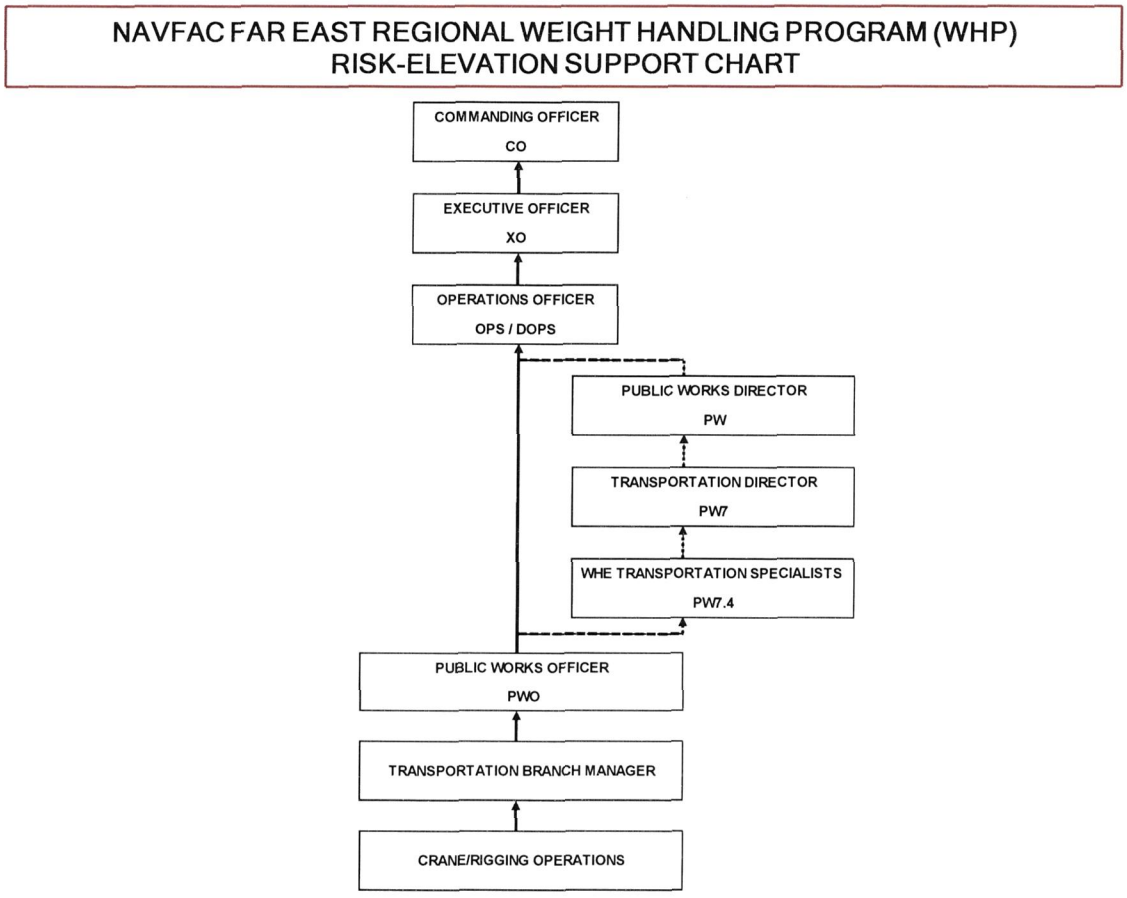

Figure 2
Risk Elevation Support Chart

10. Adverse Weather Conditions: High winds can affect the stability of the load and crane. In cases of storm warnings or watches (e.g. high winds, typhoons, thunderstorms) the crane team shall carefully monitor the local weather conditions for wind and lightning. Based on limitations in Table 3, the crane team shall suspend WHE operations and notify the operations supervisor when adverse operating conditions are observed. Cranes shall be stowed as necessary.

a. High Wind/Gale Force Warning: When a high wind or gale force warning has been issued, crane teams shall closely monitor on site conditions and stop operations when wind velocity reaches shut down speeds. Supervisors shall monitor local weather conditions and plan work accordingly (e.g. barges operations at anchorage) to maintain sufficient reaction time to stow the crane before wind speed creates operational risk. Avoid starting a lift that would prevent stowing the crane quickly. Stop operations, land the load and secure the crane when wind conditions meet the Table 3 criteria.

b. Fluctuating Winds: To ensure shut down limits are not exceeded, obtain further direction from operations supervisor when wind speed is fluctuating near/over 10 m/s.

c. Wind Speed Determination: To measure wind speed, use a handheld or crane anemometer on site, or contact the activity safety office.

*Applicable Cranes	Wind Speed	Operation	Tag lines
Portals, Mobiles, & Commercial Truck Cranes	**5 to 10 m/s** (≈ 13 - 23 mph or 10-20 knots)	Use caution	Use additional tag lines as needed
Mobiles & Commercial Truck Cranes	**Greater than 10 m/s** (≈ 23 mph or 20 knots)	**Shut down crane operations. Take action to stow crane.**	
Portals	**Greater than 10 m/s sustained for more than 10 minutes** (≈ 23 mph or 20 knots)	**Shut down crane operations. Take action to stow crane.**	
Portals	**Gusts over 16 m/s** (≈ 36 mph/31 knots)	**Shut down crane operations. Take action to stow crane.**	
***NOTE:** Always refer to OEM specifications for each make and model crane.			

Table 3
Wind Velocity Limitations

d. Tropical Cyclone Conditions of Readiness (TCCOR): Normal crane operations should be curtailed when TCCOR conditions are set. Only crane operations required to support safety of ship, facility, equipment, or personnel are permitted during TCCOR as long as shut down speed is not yet reached. **Any crane lift after shut down speeds have been reached shall be treated as an emergent lift.**

e. Lightning Warning/Lightning Watch: Increase awareness and maintain observation for lightning activity. Suspend crane operations and seek shelter when lightning is observed. Do not restart operations until 30 minutes after the last lightning is observed and the threat of lighting strike has passed.

11. Alternate Machine Special Requirements: Alternate Machines include MHE, Multi-Purpose Machines, and Construction Equipment (e.g. forklifts, wreckers, pole/line trucks, aerial lifts). Alternate machines and their lifting attachments/fixtures/hoist-equipment (e.g. fork-mounted boom attachment, digger derricks, auger truck booms, bucket truck jibs, etc.) used to lift suspended loads with rigging equipment shall adhere to the following:

a. Alternate machines and their lifting attachments/fixtures/hoist-equipment shall be properly configured and authorized by the equipment OEM. In lieu of OEM approval, a Professional Engineer shall perform a safety analysis and provide written approval.

(1) MHE utilizing attachments covered by and used per NAVSEA SW023-AH-WHM-010 have been pre-approved for use with all MHE. These attachments are exempt from the

OEM authorization requirement above.

(2) For MHE used to support ordnance handling see reference (d), NAVSEA OP-5 and NAVSEA SW023-AH-WHM-010 for approved specialized lifting attachments/fixtures and OEM exemptions.

b. Accidents involving lifts with alternate machines or their lifting attachments/fixtures/ hoist-equipment are considered rigging accidents per reference (a), Section 12, and shall follow enclosure (2) for accident investigation/reporting.

c. A capacity chart shall be posted on the machine within view of the operator.

d. Lifting attachment/fixture records shall be maintained by the Rigging Equipment Coordinators/Custodians.

e. Operators shall be trained, qualified and licensed per reference (d) and NAVFAC P-300. To make suspended load lifts, operators and users of rigging equipment shall be a qualified crane rigger (NCC-RP) or CAT 3 crane operator (NCC-C3CS) per reference (a), Section 7.

f. Complex lifts for alternate machines and critical non-crane rigging operations shall be performed per reference (a), Section 10.

g. "Free rigging" with MHE is strictly prohibited. Free rigging is the direct attachment to (or placement of) rigging equipment/hardware (i.e. slings, shackles, rings, etc.) onto the forklift tines for "below-the-tines" lifts. This method does not use an approved lifting attachment/fixture and could affect the capacity and safe operation of MHE.

h. Lifts of personnel in a suspended platform is strictly prohibited.

12. Boundary & Envelope Control Policy for Crane & Rigging Operations: An effective boundary/barricade keeps unauthorized personnel, vehicles, equipment out of the crane/rigging work area and established operating envelope. The operating envelope includes the crane, the operator, the riggers, the crane walkers, other personnel, the rigging gear between the hook and the load, the load itself, the supporting structures, such as the ground or the rails, and the lift procedure. Failure to control the envelope could result in injury and/or equipment damage (e.g. struck, pinched, crushed by the crane's rotating superstructure, boom or suspended load). All crane team members are responsible to enforce this policy and prevent unauthorized entry.

a. Unauthorized personnel, vehicles, and equipment shall not be allowed inside the boundary or barricade without authorization from the RIC. Personnel, vehicles and equipment authorized to be in the work area/envelope include:

(1) Personnel conducting the operation (e.g. RIC, riggers, operator, signaler, etc.).

(2) Personnel who have been assigned and briefed to assist with the operation.

(3) Lead or assist shop personnel (i.e. PWD utilities/facilities, SRF-JRMC, ship's force, etc.) required to verify work procedure.

(4) Supervisory and/or oversight personnel that are briefed as part of the operation.

(5) MITC personnel responding to crane/rigging trouble-calls, etc.

(6) Vehicles/equipment directly supporting the operation.

b. The RIC and Operator are responsible to discuss the work scope and determine the area and boundary required to control the WHE operating envelope.

c. To prevent unauthorized personnel, vehicles, and equipment from entering an area (envelope), the crane team shall establish the boundaries of the working/operating envelope. Approved boundary controls may include:

(1) Warning lines (i.e. caution tape), safety chains, wire rope.

(2) Physical barriers/barricades and signage (i.e. traffic cones/plastic rail, construction barrels, semi-rigid concrete or plastic barriers, etc.). See Figure 3 and Figure 4.

(3) Personnel assigned to guard/prevent unauthorized access.

(4) Other suitable controls to prevent unauthorized entry.

d. The boundary scope must include sufficient area to maintain operational safety. Consideration must be given to these areas when assessing boundary method and scope:

(1) Crane travel and rotate paths/areas.

(2) Load travel path, landing and staging areas.

(3) Access/egress of brows, passages, doors, hatches and spaces within the envelope.

(4) Weather decks, sponsons, elevators and other areas where ship's structure would not protect personnel from a dropped load.

(5) Dry dock areas where loads are being lifted overhead.

e. A boundary may temporarily block personnel access/egress around brows, platforms or other similar routes. Pay particular attention to personnel attempting to pass through these areas.

f. Immediately stop the operation and notify the RIC if unauthorized entry poses immediate threat to personnel or equipment safety.

g. Mobile crane operations: To avoid accidents and unplanned contact with other stationary or moving objects (i.e. work platforms, parked vehicles, fuel trucks, etc.), crane set-up locations shall have adequate clearances (overhead objects, buildings, adjacent cranes, peripheral areas of dry-docks or quay walls, etc.), shall be free of obstructions, placed on solid foundation (adequate footing, ground loading, use additional cribbing where necessary) and shall be spaced appropriately to allow for free movement of cranes and crane components (boom, counterweight, etc.), and other vehicle or pedestrian traffic in the immediate area.

(1) Additional personnel may be needed to control/direct pedestrian and vehicle traffic near or entering the crane envelope.

(2) Closing piers and dry docks to restrict foot/vehicle traffic may not practical. Crane teams shall evaluate each work site to determine the operational clearances required to maintain personnel and equipment safety.

(3) If the crane operator feels the secured area is inadequate to protect the operating envelope then he/she shall stop operations and notify the RIC. Crane operations shall not resume until the RIC and operator agree that the area is adequately secured.

(4) Limit the number of mobile cranes accessing each pier, berth, or side(s) of dry dock for traffic control and safe operations. Engineering studies and evaluations for older piers, berths or dry docks may also limit the weight, size and capacity of crane(s).

(5) In case of emergency response, the crane team shall immediately remove barricades as necessary to allow free access of the emergency response team.

(6) At minimum, to warn vehicle and pedestrian traffic and prevent unauthorized entry, the affected swing radius and travel path for the planned operation shall be protected by a physical barricades/barriers and appropriate signage. This includes the load landing area and material staging area (see Figure 3 and Figure 4).

Figure 3
Examples of Physical Barricades/Barriers and Signage

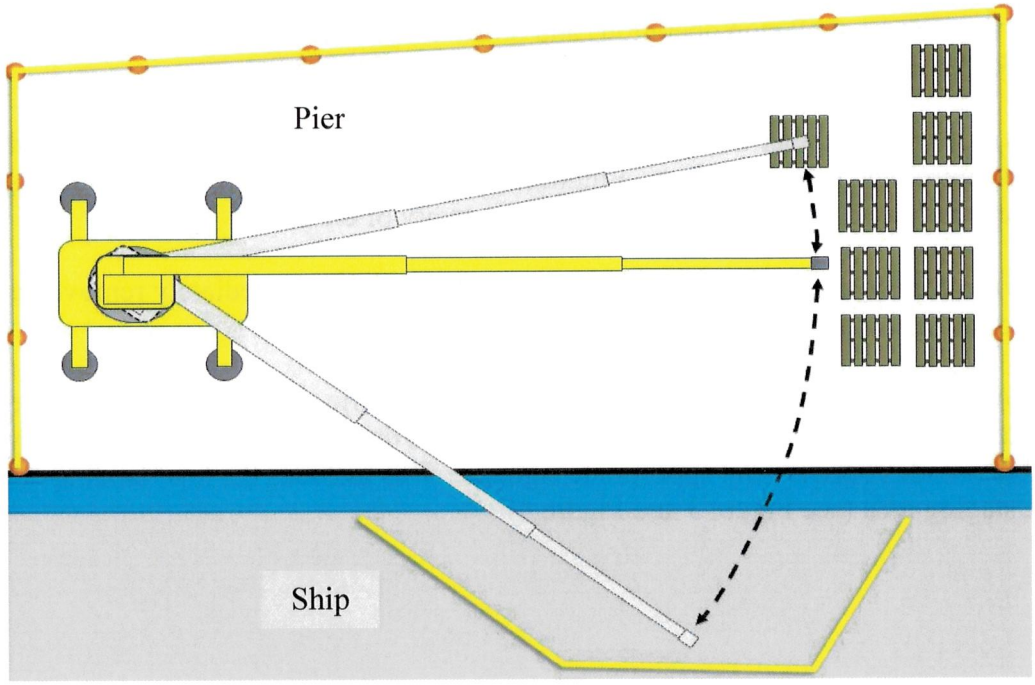

Figure 4
Example of Physical Barricade and Safety Barrier used for Securing Operating Envelope

13. Suspended Loads and Load Control: The lift planner should consider how a freely suspended load is to be controlled to avoid uncontrolled movement and the associated hazards. Taglines and load support (i.e. frapping) shall be used where hazards exist to employees and should always be used where they would serve a useful purpose in controlling a suspended load.

a. Taglines: Sufficient number and lengths taglines shall be used to minimize load swing and rotation, unless their use creates a hazard. For additional guidance see ASME P30.1 (Planning for Load Handling Activities):

(1) Riggers using taglines shall be briefed on their roles and responsibilities during pre-job briefings.

(2) Riggers shall remain aware of the crane positon, taglines and their body positon when handling a tagline. Riggers shall always face the load, keep hands/feet clear, and do not wrap the tagline around the hands, arms, or any other part of the body.

(3) Two opposing taglines may be required to adequately control a suspended load. The taglines should be attached to the forward most point on the load and the aft most point to most affectively control the load.

(4) Taglines should not cause the handler to be placed near pinch points or under the load.

(5) Taglines shall be of a non-conductive type (fiber rope) particularly when operating in the vicinity of overhead power lines and communications towers. Taglines should not have knots or loops except where attached to the load.

(6) To retrieve a tagline without reaching under the load, personnel should use a push stick (or other tool) to retrieve the line or move the load out of the way.

(7) Taglines should be used during load tests, when handling odd and/or unusual geometric shaped loads and to prevent excessive swing/rotation of the load when the load must be prevented from swinging (oscillating) or rotating (e.g. due to windy conditions).

(8) Taglines shall NOT be used to pull a load out of its natural suspended hoist line or to contribute to supporting and/or suspending the load.

(9) Tagline(s) shall be installed on loads when horizontal movements (trolley/travel) is required. When repetitive vertical movements are necessary to complete a scheduled lift and the load is not in danger of uncontrolled rotation/movement, the team may remove or forgo the use of tagline(s) for safe load placement.

b. Load Control: Properly sized/inspected chainfalls, turnbuckles, or similar equipment may be used to aid in load control where clearances are limited or where precise load control is required.

c. Pinch Points: When required to place any part of the body in a potential pinch point, protective measures shall be taken (e.g. installing blocking, providing LOTO) and the load must be rigged by a RIC. When these lifts are identified, the RIC shall stop the operation and the Certifying Official, WHP Manager and Crane Operations Supervisor shall follow the "Escalation Triggers" in this enclosure.

d. Supported Loads: Whenever possible, a load should be rigged above the Center of Gravity (C/G). In certain instances this may not be possible, frapping (body-and-soul or back-lashing) shall be used to prevent a top-heavy load from flipping over, and to hold the rigging gear in a set configuration. Frapping increases the stability and hold the gear in place when rigged at or below the C/G. Frapping is clove-hitched around each leg in the rigging configuration. Lashing material or fiber rope can be used for frapping to secure the load.

e. Fall Zones and Reaching Under Loads: The fall zone is the area in which it is reasonably foreseeable that partially or completely suspended materials could fall in the event of an accident. "Suspended Material" is defined as materials suspended from a crane hook or applicable rigging attachment point for non-crane rigging (e.g. beam clamp, trolley, pad-eyes).

(1) Only personnel essential to the operation are permitted in the fall zone. A person is essential to the operation if the person is conducting one of the following operations and a RIC and supervisor can demonstrate it is infeasible for the person to perform that operation from outside the fall zone:

(a) Physically guiding the load.

(b) Closely monitoring and giving instructions regarding the load's movement.

(c) Engaged in landing, receiving, rigging/unrigging the load or attaching/removing the load to/from a structure or another component.

(d) When these lifts are performed during construction operations, the rigging shall be supervised by a rigger supervisor.

(2) When it is necessary, personnel may reach under suspended loads for a short duration (e.g. to install/remove coverings, make attachments/connections, position supports, installing bracing, etc.) provided the action is approved by the RIC and the only body parts under the load are the arm(s). When work under a suspended load is identified, the RIC shall stop the operation, and the Certifying Official, WHP Manager and Crane Operations Supervisor shall follow the "Escalation Triggers" in this enclosure.

(3) Except for the fall zone under the suspended load, walking under a boom of a loaded crane is not prohibited unless the PWD provides more stringent requirements.

14. Palletized Loads: Customer cooperation is necessary to avoid rework and allow for safe operations. When lifting/handling palletized loads (i.e. cargo, equipment, ship's components, etc.), carefully inspect the pallet/load condition and select the appropriate rigging equipment prior to crane/rigging operations. Unsafe and/or unacceptable palletized loads may prevent the crane team from safely using rigging equipment (i.e. slings, lifting fixtures or pallet bars).

a. Crane team shall inspect pallets for cracks/weaknesses/damage/poor-construction and ability to use rigging equipment. If unacceptable conditions are present, the load should be marked "unsafe" and returned to the customer or the load shall be reconfigured to a safe condition (e.g. place on top of an acceptable pallet, use skid box, pallet lift-fixture, rearrange/restack/tie-down load, etc.). Be advised, pallet wrap material may hide pallet damage or unacceptable other conditions. Examples of unacceptable conditions are:

(1) Load on pallet is poorly stacked, unorganized, unevenly distributed, unstable, unbalanced (high center of gravity) or overloads pallet (material is too heavy for the pallet).

(2) Load is unsecure, missing/inadequate tie-down system (i.e. wrapping, banding, cargo straps, frapping material) or load itself is crushed/overloaded.

(3) Pallet is poorly constructed, cracked, broken, damaged or has missing/loose parts.

b. Pallets are designed for uniform load distribution and not for highly localized or concentrated loads. Stack and load pallets properly by distributing weight evenly and do not exceed maximum capacity of the pallet. If double stacking pallets (i.e. stacking two palletized loads on top of each other), exercise extreme caution. Although this method may increase efficiency, the combined pressure and increased weight of these pallet towers could crush the load or cause the load to become unstable and/or unbalanced.

c. Proper tie-down systems are required to prevent cargo from shifting/falling during a lift. If loose items are on the pallet, the items should be secured with pallet wrap (i.e. stretch wrap) and/or banding material to prevent items from falling from the pallet during rigging operations.

d. Below the hook lifting devices and other rigging equipment designed for cargo transfer (i.e. pallet bars, skids, platforms, structures, etc.) shall be used for lifting and handling palletized loads. Wire rope or synthetic round slings used to lift/support pallets shall have chafing material and edge softeners to protect slings and pallet from damage and to maintain adequate Diameter-to-diameter (D:d) ratio.

15. Approved Communication Methods: Crane team shall know, understand and use only approved methods of communication (i.e. Standard Hand Signals, Japanese Hand Signals, Radio or Sound Powered Phone, Direct Voice Communication, etc.) for controlling WHE operations. Additional methods (if required) shall be approved by operator/rigger supervisors and shall be

included in operator/rigger training programs and pre-job briefings. Cellular or mobile phones are not a permitted method for Radio or Direct Voice Communication.

a. Japanese Hand Signals are an authorized deviation from standard practice as approved by NAVCRANECEN RCDR N64100-12-001, Use of Standard Hand Signals. These hand signals are propagated by the Japanese Crane Association and commonly used throughout Japan.

b. PWD's shall ensure Japanese Hand Signal charts are posted in the crane operator cab in view of operators.

c. PWD's shall ensure Japanese Hand Signals are in crane operator and rigger training.

d. For blended team WHE operations the communication method must be approved by the RIC and included in pre-job briefings.

e. Communication signals shall be discernible, audible and maintained continuously at all times. If communication is lost or not clearly understood, operations must stop immediately. Operators have the authority to stop/refuse to operate if they believe it is unsafe.

f. Only one signal person shall communicate with the crane operator at a time.

(1) In cases where a primary signaler needs to transfer load control to a secondary signaler, the transfer method shall be approved by the RIC and included in the pre-job briefings. The RIC shall ensure the primary and secondary signaler(s) remain alert and closely monitor the operation. Both signalers shall remain in a position to directly notify the operator if they identify any risk for collision or other operational safety risk.

(2) Stop and emergency stop signals can be given at any time by any crane team member.

g. When hand signals are used the signaler must be positioned in clear view of the operator without becoming a hazard to the WHE operation. High visibility gloves (e.g. reflective, day-glow, etc.) help distinguish signal personnel and make signals clearly visible.

h. The signaler shall not direct a load over occupied buildings/structures. Lifts over occupied buildings/structures shall be treated as critical lifts unless verified empty or the personnel are relocated out of the fall zone. When these lifts are identified and cannot be avoided, the RIC shall stop the operation and the Certifying Official, WHP Manager and Crane Operations Supervisor shall follow the "Escalation Triggers" in this enclosure.

16. Guidelines for Crane/Rigging Briefings: Pre-job briefing considerations and questions:

a. Interactive Initial and Intermediate "Take2" Briefs: What can kill me or my team today? What could go wrong and how could it happen? What can be done to prevent it from

happening? What can be done to increase the margin of safety? Escape routes and emergency contacts established in case of an accident or emergency? Risks mitigated before job starts?

b. Work scope: First time job? Escalation Triggers? Is there a plan/procedure? Everyone know the plan? Are processes being followed? Communication method established (e.g. hand signals, voice commands, radios)?

c. Load to be lifted: Weight verified? Load ready and free of loose objects? Lift points and Center of Balance/Center of Gravity (CB/CG) known? Taglines required? Is it a constrained load where binding is possible? Fall zones and pinch points identified? Lift is meets routine or critical/complex lift requirements?

d. Rigging Equipment: Capacity greater than the load weight or tension to be applied? Equipment protected from damage and/or provides adequate D:d ratio (e.g. edge softeners, chafing material)? Calculations required for sling angle stress? Rigging used correctly and attached adequately for load control (e.g. frapping used to prevent load from shifting or dropping)? Equipment not expired and is properly marked? Personnel assigned to perform pre-use/post-use inspections, and inspect for damage before/after use?

e. Load path: Path clear of obstructions? Lighting/visibility acceptable? Changes that may occur as the load moves? Does everyone know the travel path? Lay-down/staging site has adequate capacity, is clear and prepared? Blocking/cribbing materials required and prepared? Traffic control/barricades addressed (e.g. keep non-essential personnel and vehicles out of envelope; keep personnel away from fall zones, under loads and pinch points, etc.)?

f. Crane team assignment: RIC designated? Everyone know their assignment and positions? Team, rigging gear and work area ready to start the lift? Signal person designated?

g. Crane (if/when used): Crane in service and ready? OMCL/ODCL completed? Any caution or danger tags present and understood? Capacity sufficient for weight lifted? Travel path clear?

h. Accident protocols: Everyone know the procedures for accident, near miss, unplanned occurrence and emergency response? Everyone know what actions are required if crane/load/rigging equipment damage is identified during pre/post-use inspection?

i. Post-Lift Debrief: Conduct a post-lift debrief to discuss and document any additional information or lessons learned from the WHE operations. Identify and document tangible deficiencies, poor practices and process improvements for future lifts.

17. Environmental Considerations for Indoor Operations with Mobile Equipment: PWDs shall develop site-specific written procedures to ensure the control of hazardous exhaust from the

indoor operation of mobile WHE utilizing internal combustion engines designed for outdoor operation. PWD and NAVFAC Far East Safety Offices shall concur on these procedures.

a. Engine exhaust gases shall be discharged away from personnel and led to the open air, clear of any ventilation intakes/openings where it might re-enter/re-circulate within the building.

b. All exhaust line joints and connections shall be checked for tightness upon starting the engine, and any leaks shall be corrected immediately.

c. When internal combustion engines on vehicles (e.g. forklifts, mobile cranes) exhaust into the building/facility atmosphere, a PWD or NAVFAC Far East Safety Office competent person should test the carbon monoxide content of the atmosphere as frequently as conditions require to ensure that dangerous concentrations do not develop.

d. Employees shall be removed from work area(s) when the carbon monoxide concentration exceeds allowable parts per million (e.g. 50ppm or 0.005%) of breathable air. If this limit is exceeded, PWDs shall ensure all doors/windows are open and if needed, use blowers sufficient in size/number/arrangement to reduce the levels below the limit before returning to work.

18. Securing/Transiting Cranes

a. For building (facility) cranes, ensure that crane power is turned off (at the operator controls or at electrical panel by qualified electrician) and the hook block is not a hazard or an obstruction. Do not store the hook block in the upper limit unless allowed by the OEM and approved Standard Operating Procedures (SOP). Provide sufficient clearance so that the subsequent operator performing a pre-use check will be able to observe and stop the hoist motion before a two-block event occurs (i.e. hoist does not operate in the correct direction upon initiation/activation).

b. For mobile cranes, set the crane carrier brake, engage all safety features/locking devices that prevent unexpected movement and/or rotation, disengage clutches, and chock wheels (if applicable). Store hydraulic cylinders fully retracted to the maximum extent practical to protect against corrosion.

c. When transiting a truck, rough-terrain, or all-terrain mobile crane to and from job sites, secure the hook(s) and block(s) to the carrier frame to prevent them from swinging or ejection from the carrier deck during travel. Ensure there are adequate clearances. Unless otherwise allowed by the OEM, the boom shall be properly stowed and carried in line with the direction of transit. PWD and Base Operating Support Contract shall develop site/mobile crane specific SOPs for safely transiting cranes to/from motor pool, between job sites, and on and off base (i.e. onsite or off station moving per OEM requirements, traveling at highway speeds, compliance with Host Nation laws/regulations, etc.), as applicable.

(1) A "weak link" connection shall be used to secure the hook block to the crane. The breaking strength of the connecting piece shall be less than the rated load of the hook block's wire rope as reeved. When securing the hook block(s) for road travel, add a backup (stronger) tie-back to prevent free swinging in the event of weak link failure.

(2) For OEM deck mounted hook block stowage systems, PWDs shall develop SOPs for each make/model crane with clear instructions and technical guidance for proper mounting/stowing of hook block(s) in accordance with OEM instructions. Additional guidance can be found in reference (a), Section 10, NCC approved RCDR N62836-17-001 (NCC 17-004) "Main/Auxiliary Hook Block Tie-Back System on Foreign Make/Model Cranes", and in applicable OEM manuals.

MONITOR (OBSERVATION) PROGRAM

1. Monitor (Observation) Program. Public Works Department (PWD) WHP (Weight Handling Program) Managers shall monitor in-process weight handling evolutions (including rigging operations), shop operations and other work as applicable on a regular basis to identify deficiencies and poor practices, work processes that can be improved or performed more safely. The monitor program can also identify/correct minor or low level problems before they result in accidents or equipment damage/breakdowns. All personnel in the WHP should participate. The number of observations shall be proportionate with the amount of work performed. Identified deficiencies, poor practices, and improvement recommendations shall be documented and the results periodically measured/analyzed to identify trends to allow for appropriate corrective actions.

a. A key focus area of the monitor program should be the identification of tangible deficiencies. Tangible operational deficiencies are those that if not corrected could result in a crane or rigging accident, such as poor load control, crane movements without direction, inattentive crane team members, lack of or inadequate sling protection, Rigger-In-Charge (RIC) not in overall control of the evolution, or supervisors engaged in work. Equipment-related tangible deficiencies are those that if not corrected could result in a crane breakdown or reduced reliability, such as not using wire removal forms when required, foreign material contamination, workmanship deficiencies (e.g., not using a torque wrench when required, the wrong tool for the job, or poor mechanic techniques), procedural violations or unclear procedures, required tools or materials not staged, or the wrong types of materials/parts used.

b. Management shall assign and/or perform process observations on all lifting and handling activities, including maintenance, inspection, personnel qualifications, training, load testing, rigging, critical crane lifts, critical non-crane rigging operations, routine crane operations, non-PDC (Planning, Design and Construction) contractor crane oversight, record keeping and adequacy of technical work documents.

c. Process observations and assessments do not replace reporting of significant deficiencies, near misses, unplanned occurrences or accidents. Investigation and reporting of accidents and significant unplanned mishaps or incidents shall be per references (a), (f) and (s).

d. Observations performed by non-Weight Handling Equipment (WHE) personnel is encouraged as they enhance the efforts of accident/mishap awareness and prevention.

e. The Monitor (Observation) Program provides valuable data and metrics that could be used to support WHP Self-Assessments, covered in enclosure (1).

f. Routinely reviewing and assessing work (practices, processes, procedures) can help PWDs grow and create a mature environment for learning and continuous improvement: A PWD reporting near misses and lower threshold crane accidents, while having a monitor program that is self-critical, identifying poor practices, deficiencies, and process improvements [is a PWD] that understands the value of lower-level issue reporting. The inability to be self-

critical creates an immature environment for learning and continuous improvement [and is a PWD that is] not embracing the concept of **GET REAL, GET BETTER!**

2. Responsibilities

a. The Certifying Official and/or WHP Manager have overall responsibility for the program and shall:

(1) Perform periodic self-assessments of the program, and to initiate changes as necessary to ensure program effectiveness.

(2) Maintain a process observation database and provide a system using regional generated form/checklist to obtain process observations.

(3)Periodically review and analyze information collected to identify potential or actual problem areas or trends on a regular basis. Report significant issues and/or trends identified by the process observation program to PW7 and PW7.4.

(4) Facilitate meetings with staff members, customers and/or stakeholders to discuss tangible process observations identifying a problem area and assign actions to resolve the deficient condition or situation if required. Attendees should be representatives from each group with the authority to take action to have deficiencies resolved or corrected.

(5) Provide training for personnel assigned to conduct monitoring/observations.

b. Supervisors and Managers: These personnel can be designated by Certifying Official and/or WHP Manager to perform periodic process observations and may be tasked to conduct process observations of "targeted" events or areas.

(1) PWD Managers should encourage Shop Supervisors/Foremen to periodically observe high risk work areas within their cognizance. Shop Supervisors/Foremen are the most knowledgeable of their respective work areas and can provide valuable tangible observations.

(2) PWD Managers shall ensure deficient work practices or conditions are stopped, and personnel are informed of the deficiency to prevent further problems to equipment and/or safety of personnel.

3. Procedures

a. The basic concept of the Monitor Program includes the following:

(1) A "process observation" oversees in-process work practices, procedures, equipment pre-use checks, inspections, maintenance, or a cursory check of technical work documents. These observations are not intended to review all aspects of ongoing work, nor be used as punitive tools or substitutes for formal reviews/evaluations. The goal is to use process

observations as a tool to ensure safety of personnel/equipment, reinforce good work practices; and to improve processes, equipment condition and technical work documents.

(2) PWD managers and supervisors from other NAVFAC Far East departments/shops may perform process observations. The Monitor Program provides the opportunity for the observer to become more familiar with actual work practices. This involvement provides invaluable experience and opportunities to optimize process improvements and to mentor/train personnel.

b. Process observation planning shall consider the following:

(1) Select a specific job that could benefit most from the observation. Some examples are jobs that are work intensive, time critical, high risk, and/or require a high level of worker skill. Equally important are jobs such as inspection, training, and/or document preparation.

(2) Plan the process observation areas and/or times to avoid duplication of effort by other supervisors/managers.

(3) The frequency for conducting observations shall depend on the workload. For example, work site visits should increase when the workload is high and decrease when it is low. Examples include review of upcoming maintenance work such as advance planning efforts and new technical work documents. PWD managers/supervisors may adjust observation duration and frequency to balance available resources and benefits derived from the program.

c. Conducting and Submitting Observation Reports:

(1) Conduct observations in all areas of the WHP (e.g. crane maintenance, rigging equipment storage areas, Maintenance, Inspection, Test and Certification, training and qualifications, shop/waterfront operations, and applicable diving rigging operations).

(2) Assign personnel who are independent, knowledgeable of assessment/evaluation techniques and preferably not directly responsible for the work being evaluated.

(3) Take immediate corrective actions to stop/correct/notify management of any condition that could cause personnel injury or equipment damage.

(4) Discuss unsatisfactory conditions, problems or comments (identified during process observations) with the applicable supervisor, and document by submitting report to Certifying Official and/or WHP Manager.

(5) Positive Observation: An observation of the work process or condition with results that exceeds the normal quality expectations. By reporting positive observations, other work crews will benefit from this finding.

(6) Tangible (Deficiency): Process observations that are self-critical, dynamic and identify a deficiency (risk identification). These types of deficiencies offer the most potential for crane/rigging near miss or accident, or maintenance problem leading to component/crane failure.

(7) Targeted: Areas or events that are deemed high risk: first-time jobs, blended team evolutions, post-accident bridging action control jobs, weak areas, self-assessment areas or complex lifts that PWD would like to target when going out to perform a process observations.

d. Analysis of Process Observation Information:

(1) Certifying Official and/or WHP Manager shall review and analyze process observation information to identify potential and/or actual problem areas/trends. Consider elevating/sharing selected observations in the periodic Mishap Review Board (MRB).

(2) Tangible deficiencies shall be discussed in meetings held by Certifying Official and/or WHP Manager to review observations and resolve, if required, the condition, problem or trends identified. The deficiencies and any trends noted shall be identified and provided to attendees in regularly scheduled review board meetings.

(3) Share best practice "lessons learned" with NAVFAC Far East counterparts.

(4) Submit results of data collection, review and analysis to PW7.4 via monthly NAVFAC Far East WHE Safety Triangle report.

4. Observation Report Form and Checklist: WHE Monitor (Observation) Forms and Checklists may be developed internally and approved by PW7.4. Standardized forms are located on NAVFAC Far East, PW7, WHE SharePoint site.

a. Monitor (Observation) Forms: The WHE observation form provides editable fields/blocks for the observer to capture relevant information in their own words. In addition, the form has attributes (e.g. location, date/time, equipment type, brief job description, etc.) for the observer to select from.

b. Monitor (Observation) Checklist Sheet:

(1) An optional checklist sheet may be used as a guide for items/target-areas to consider for subject matter experts or by personnel that are unfamiliar with WHE process observations. The list may not be all-inclusive, as attributes may vary from job to job. Specialized checklists/forms may be developed, condensed or modified to contain only those attributes applicable for specific work observations (e.g. Maintenance Inspection Specifications Record, Commanding Officer's Critical Information Requirements, Contractor WHE, etc.).

(2) Checklist items may be used to develop metrics for trends analysis that support WHP Self-Assessments.