



NAVY CRANE CENTER Annual Report

Fiscal Year 2021

Supporting:
The Warfighters
Naval Fleet and Air Readiness
and
The Future NAVY

Leading the Navy's Shore Weight Handling Program to Maintain Fleet Readiness

This annual report highlights the contributions of the Navy Crane Center in Fiscal Year (FY) 2021 and the progress toward achieving a safe, reliable, and efficient global Navy Weight Handling Program that is essential to Fleet Readiness. The continued COVID-19 pandemic presented significant challenges in FY21. Despite these impacts, Navy Crane Center achieved significant success in both crane acquisition and in weight handling safety. This report provides information with respect to the Navy Crane Center organization, mission, field support, and acquisition.

The Navy's weight handling program ashore, established by SECNAV Instruction 11260.2 continued its focus on safety, efficiency, and effectiveness in support of the Fleet in FY21. A major focus of Navy Crane Center is the reduction of significant accidents, and FY21 saw the lowest percentage of significant crane accidents since such records started being kept. In addition, significant rigging accidents declined for the third straight year. Navy Crane Center attributes the improvements in operational safety to be a direct result of improvements in activity use of the monitor program and identification and reporting of near misses and lower threshold crane accidents. Reporting of lower threshold accidents and near misses, coupled with a robust monitor program, are the keys toward improving the weight handling program safety posture.

The Navy Crane Center was involved in providing cranes for the Navy's highest priority programs, including the Columbia class submarine, the Shipyard Infrastructure Optimization Program, and earthquake recovery at Naval Air Weapons Station China Lake. A 140-ton portal crane was procured in record time to meet a critical refueling schedule at Portsmouth Naval Shipyard. Numerous large bridge cranes were supplied to support the Strategic Systems Program's refurbishment of their facilities. Large capacity portal cranes were contracted for Puget Sound and Pearl Harbor naval shipyards. When a crane critical to the Columbia program was seriously damaged, threatening propeller deliveries, the Navy Crane

Center led a recovery team to effect repairs two months ahead of schedule enabling on-time delivery of the propellers.

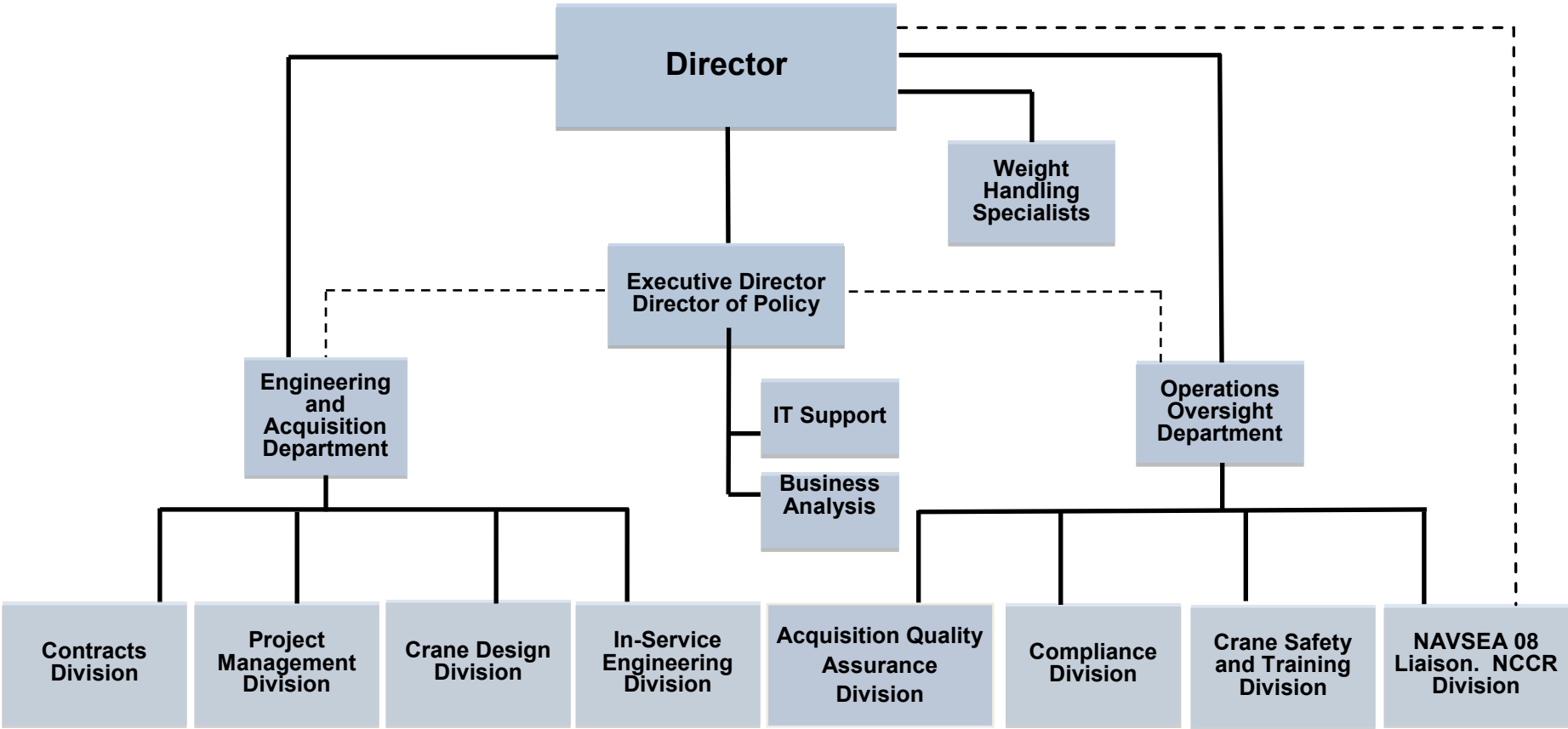
Navy-wide compliance to weight handling program standards and expectations is a continual focus point. Due to the pandemic, the majority of activity weight handling programs were remotely reviewed in FY21 but in the fourth quarter, on-site evaluations resumed. Our focus with the evaluations was one of continuous improvement with respect to an activity's weight handling program performance and readiness. During the pandemic, Navy Crane Center continued our liaison program with activities evaluated less frequently than every two years, to include discussions with activity management.

Navy Crane Center's web-based weight handling training program continued to provide 18 online courses, available for use by military, civilians, and contractors. Course access was improved with updates to the latest graphics packages and migration to other hosting sites. Web-based training utilization has steadily increased over the years, and in FY21, more than 11,000 courses were completed. Navy Crane Center courses were also made available on the Joint Knowledge Online website to facilitate access to personnel without common access cards. In addition to the training courses, Navy Crane Center issued a record number (39) weight handling program briefs to reinforce knowledge and keep personnel up to date on the latest safety issues. The Navy Crane Center established the month of August as the Weight Handling Safety Awareness Month with special emphasis devoted to weight handling safety.

A safe, reliable, and efficient weight handling program is essential for Fleet Readiness. Navy Crane Center strives to provide effective criteria, program management, training support, engineering, oversight, and analysis of data to ensure Navy shore activities are ready and capable of supporting Fleet Readiness in support of the Navy's increasing mission challenges.

Timothy D. Blanton

Navy Crane Center Organization



NAVFAC Atlantic provides Acquisition and Counsel support for crane procurements

-----Administrative Control
- - - NAVSEA Liaison reports directly to the Director for Nuclear related issues

Supporting the Navy's Shore Based Weight Handling Locations

The Navy Crane Center is a highly leveraged organization equipping the Navy with a capable and highly trained team who provides a unique range of services. With locations strategically placed, the Navy Crane Center ensures timely and reliable execution for the services we offer in support of fleet readiness.



Services

Engineering

Ensuring compliance with industry standards and the Navy Crane Center's criteria, engineering oversight is fundamental to the procurement of new cranes and alteration of existing cranes in the Navy's inventory. Engineering will also assist in facility design reviews to ensure compatible crane supporting features are specified.

Program Evaluations

Assessing weight handling program management in addition to an expanded focus on equipment inspections, the Navy Crane Center provides oversight and evaluations of the Navy's weight handling programs, including those at public and private nuclear-capable shipyards and DOE laboratories.

Maritime Crane Certifications

The Navy Crane Center certifies the Navy's maritime cranes to NAVFAC P-307, an OSHA approved alternate standard to the requirements of 29 CFR 1915, 29 CFR 1917, 29 CFR 1918, and 29 CFR 1919.

Program Oversight and Crane Validations for the Naval Nuclear Propulsion Program

The Navy Crane Center has local representatives at each Naval nuclear capable shipyard to validate cranes and to ensure safe and reliable weight handling capability for the Naval Nuclear Propulsion Program.

Crane Procurements

Providing a turnkey acquisition solution for weight handling equipment from preparation of crane equipment estimates, technical specifications, testing, and quality assurance to warranty support. A procurement team consisting of a project manager, lead engineer, contract specialist, and quality assurance representative will provide personal service and ensure complete satisfaction as well as operational safety and technical compliance for a unique customer experience.

Multiple Award Contracts

Saving significant time, the acquisition process utilizes a select group of prequalified contractors familiar with Navy weight handling requirements on standing Multiple Award Contracts.

Safety Analytics

Maintaining an intense focus on reportable data gathered from the Navy's many weight handling programs, the Navy Crane Center analyzes and trends weight handling accident, near miss, and unplanned occurrence data to improve situational awareness, develop lessons learned, and provide feedback to the Navy's weight handling community.

Weight Handling Training

Educating personnel on weight handling equipment operations, maintenance, inspection, testing, certification, and contractor weight handling equipment operations at Navy shore-based activities, NAVFAC P-307 training courses are offered in instructor-led or web-based training formats.

Weight Handling Program Management Policy

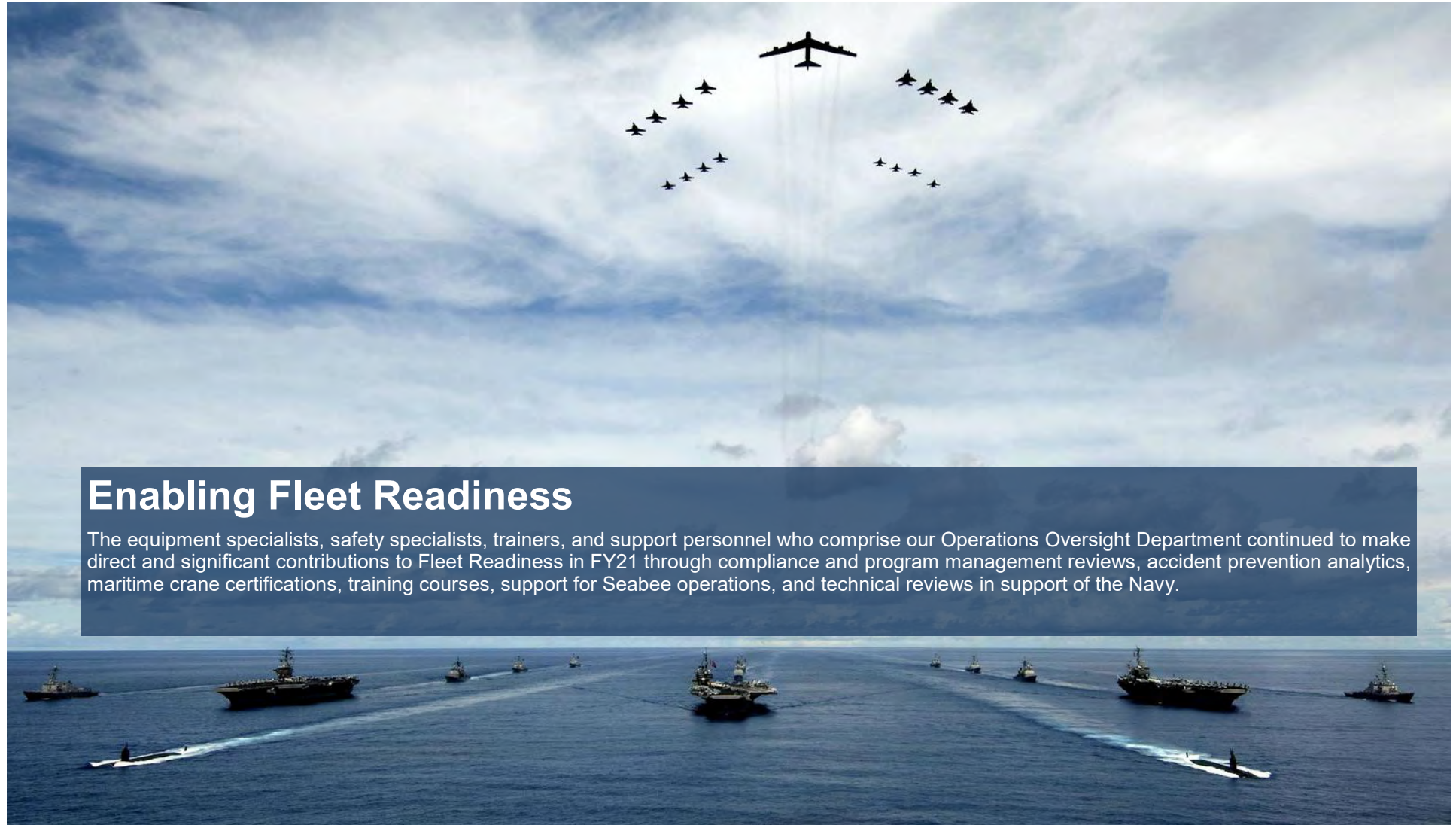
NAVFAC P-307 specifies the requirements for program management, maintenance, inspection, testing, certification, alteration, repair, and operation of weight handling equipment at Navy shore installations and Navy-owned weight handling equipment at non-Navy installations.

Navy Crane Design Criteria

NAVCRANECENINST 11450.2A specifies up-to-date design requirements for new and altered cranes at Navy shore installations and Navy-owned cranes at non-Navy installations.

Special Notifications

When special situations warrant (failure or malfunction of equipment, improper engineering, accidents, etc.), the Navy Crane Center will issue Crane Safety Advisories, Equipment Deficiency Memoranda, Weight Handling Program Briefs, as appropriate.



Enabling Fleet Readiness

The equipment specialists, safety specialists, trainers, and support personnel who comprise our Operations Oversight Department continued to make direct and significant contributions to Fleet Readiness in FY21 through compliance and program management reviews, accident prevention analytics, maritime crane certifications, training courses, support for Seabee operations, and technical reviews in support of the Navy.

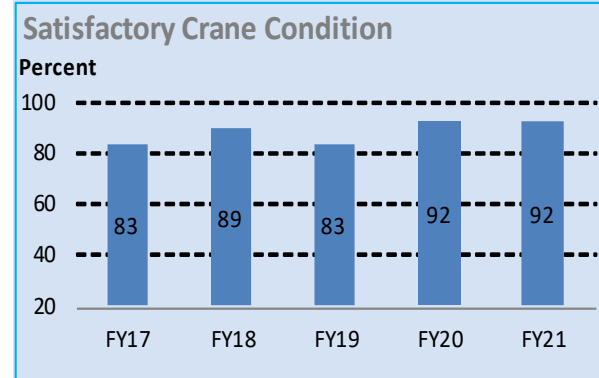
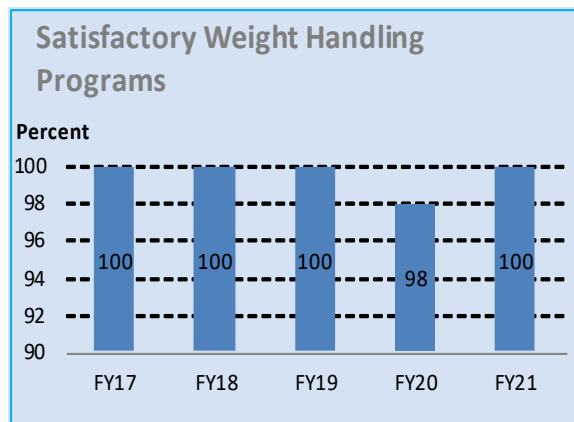
Compliance and Program Management

The majority of Navy weight handling programs that were evaluated in FY21 were reviewed remotely due to the ongoing COVID-19 pandemic. Such reviews were limited to activity provided program management information, effectiveness of corrective actions taken since the previous evaluation, and discussions with activity supervision and management. Due to the limited nature of the reviews, a satisfactory grade was not granted. 148 activities were given remote reviews. As restrictions eased somewhat in the second half of the year, a limited number of onsite evaluations (28) were performed. One program was considered marginally satisfactory. For this limited number of full evaluations, the satisfactory rate was 100 percent. The condition of inspected cranes is another indicator for evaluating the quality of weight-handling programs. In FY21, due to the COVID-19 pandemic, only 12 cranes were inspected and 11 cranes met the Navy Crane Center's high standard of acceptability, for a satisfactory rate of 92 percent for this small sample size.

Most activities are making positive gains in improving their monitor programs, metrics, and replacement/modernization plans, although some improvement is still needed. Proficiency in these three program management areas is key to improving an activity's weight-handling safety and efficiency. Navy Crane Center continued to strongly encourage

activities to deactivate infrequently used cranes to achieve cost savings, and possibly eliminate the need for a weight-handling program.

The Navy Crane Center liaison program was in full swing in FY21 with positive feedback from activities. In the program, Navy Crane Center evaluation team members are assigned as liaisons with specific activities, with the primary focus on activities that are evaluated every four years. The goal of this initiative is to promote increased non-evaluation communication between Navy Crane Center and the weight-handling program community. This program proved a bonus when numerous evaluations, including evaluations of overseas activities, had to be postponed during the COVID-19 crisis.



Common Evaluation Items

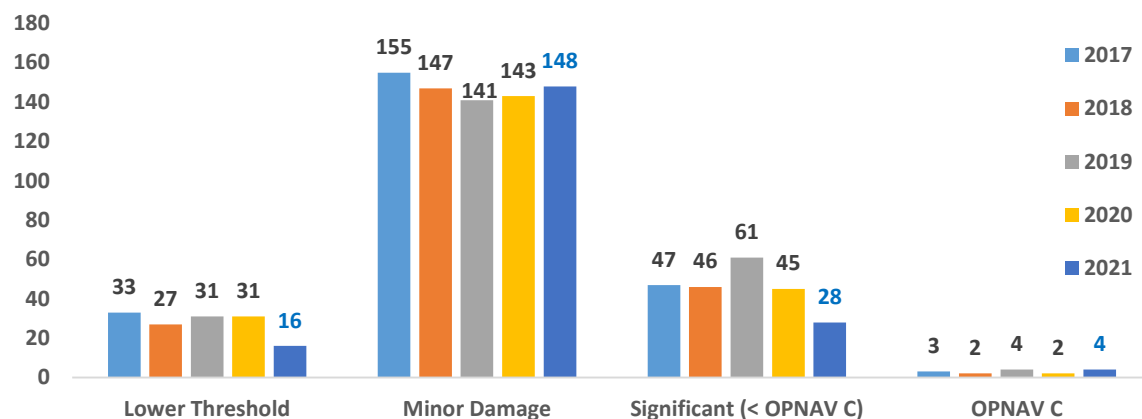
- Lack of monitor program or established program that needs improvement or does not cover all program elements.
- Weakness in (or non-existent) activity self-assessments, self-assessments not acted upon, not internally focused, not developed utilizing documented monitor or metrics data.
- Lack of (or low number of) lower order crane accidents and near-miss reports.
- Rigging gear, containers, brows, test weights, etc., not marked properly or marking not understood by riggers (including illegible marking, mismatched components, SPS vs GPS, pin diameter not marked on alternate yarn roundslings).
- Lack of, ineffective, or insufficient crane replacement/modernization plan.
- Inspection and certification documentation errors.
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- Inspection and certification documentation errors.

Accident Analytics

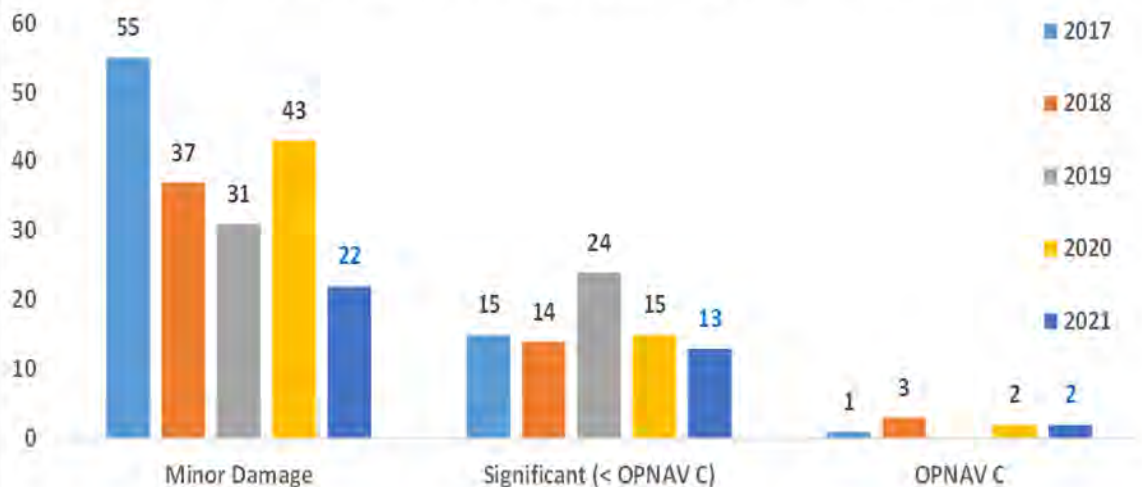
Analyzing the accident data leads to issuance of Weight Handling Program Briefs as well as providing focus areas for weight handling program evaluations. In FY21, there were no OPNAVINST 5102.1D Class A or B mishaps. There were six Class C mishaps, two crane accidents with damage exceeding \$60,000 and two rigging accidents and two crane accidents involving an injured worker. Total crane accidents declined 11 percent, from 221 in FY20 to 196 in FY21. Similarly, significant crane accidents, as defined in NAVFAC P-307, declined 33 percent, from 47 in FY20 to 32 in FY21. The reduction in significant crane accidents resulted in an historic low ratio of significant crane accidents to total crane accidents of 16 percent. The reporting of lower threshold crane accidents (i.e., avoidable contact with no damage) made up approximately 8 percent of the total number of crane accidents, which was slightly lower than FY19 and FY20 totals. Rigging accidents declined 42 percent, from 60 in FY20 to 37 in FY21. Significant rigging accidents declined 12 percent, from 17 in FY20 to 15 in FY21.

Shipyards and NAVFAC facilities engineering commands continued to drive the near miss reporting program. Total near miss reports declined 19 percent, from 491 in FY20 to 400 in FY21; however, this decline has moved in tandem with the overall reporting totals for FY21. Reduction of significant accidents continues to be the goal of Navy Crane Center by emphasizing and focusing on the importance of capturing, reporting, and learning from lower order events. Identification and reporting of these events by activities are essential to maturing their respective weight handling programs and help lower the overall significant accident rate of the Navy.

CRANE ACCIDENT FIVE YEAR COMPARISON



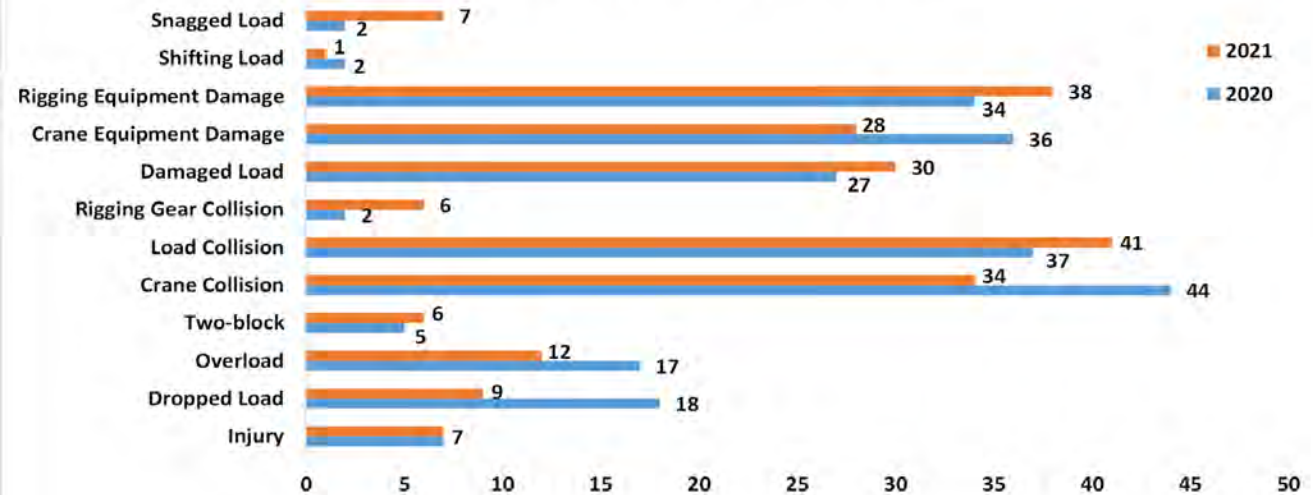
RIGGING ACCIDENT FIVE YEAR COMPARISON



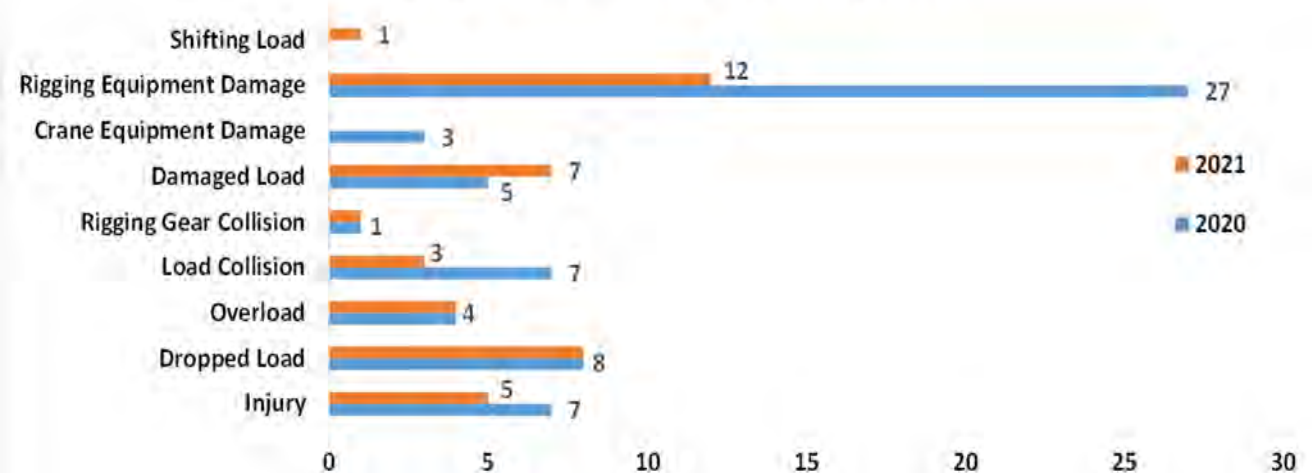
Accident Definitions

- Lower Threshold Crane Accident:** A collision accident that results in no damage.
- Minor Accidents:** Accidents based on the Navy Crane Center definition but not considered significant or meeting OPNAV 5102.1D definitions.
- Significant Accidents:** Injuries, dropped loads, overloads, derailments, power line contact and two-block accidents. Also included are other types of accidents that result in OPNAV Class A, B, C, and D reporting.
- OPNAV 5102.1D Classification C:** The resulting total cost of damages to DoD or non-DoD property is \$60,000 or more, but less than \$500,000; or an event involving one or more DoD personnel that results in one or more days away from work.

Crane Accident Category Comparison

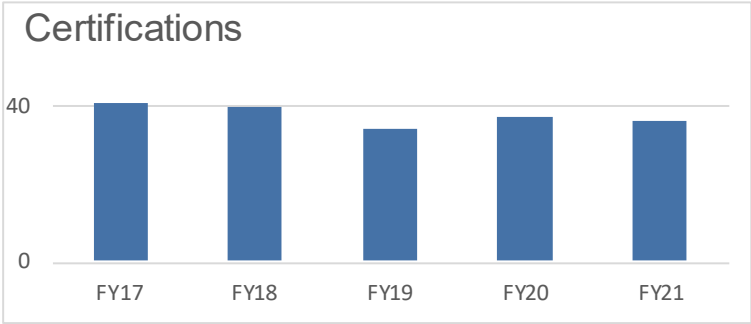


Rigging Accident Category Comparison



Maritime Crane Certifications

Continuing a five year trend, the number of annual maritime crane certifications has remained consistent while interim re-certifications decreased as a result of improved maintenance programs that follow NAVFAC P-307, Weight Handling Program Management.



Exceptional Standards

The Navy Crane Center’s NAVFAC P-307 is an OSHA-approved alternative to the OSHA “maritime” standards for crane certification.

Recognized Capability

OSHA recognizes the Navy Crane Center as the Navy’s third party crane certifier of Navy-owned cranes.

Maritime Cranes

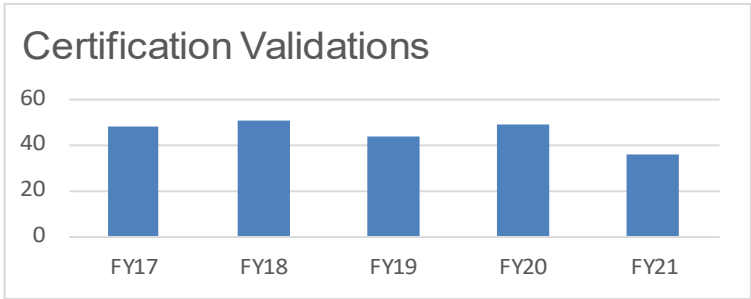
Shore based cranes used for cargo transfer and floating cranes used for ship repair.

Maritime Crane Certification

Navy Crane Center certifies shore based cranes used for maritime service to NAVFAC P-307, which is an OSHA-approved alternate standard.

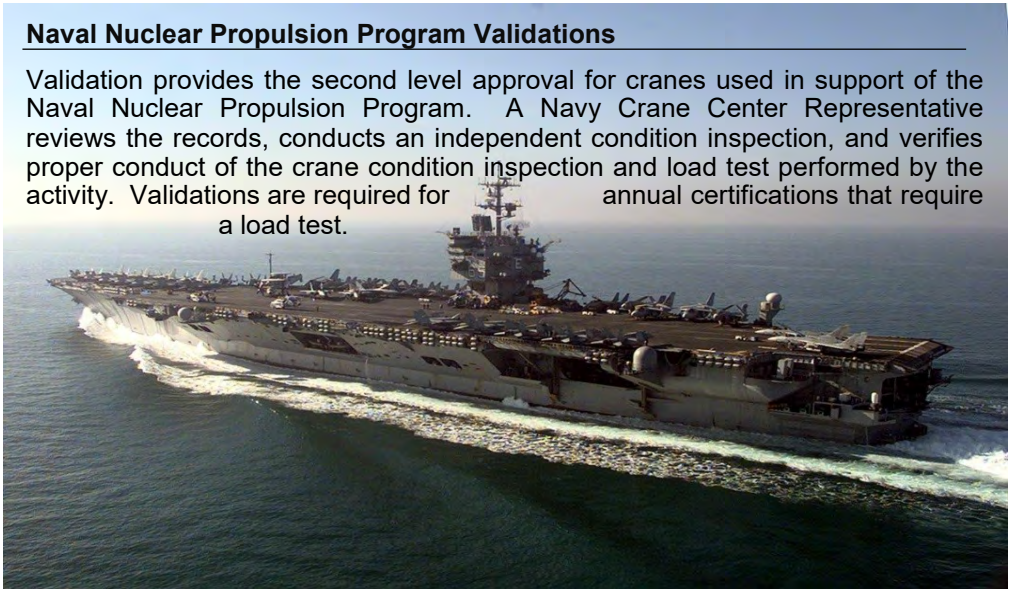
Naval Nuclear Propulsion Program Crane Validations

The number of annual validations varies depending on the number of cranes annually required for support of the Naval Nuclear Propulsion Program.



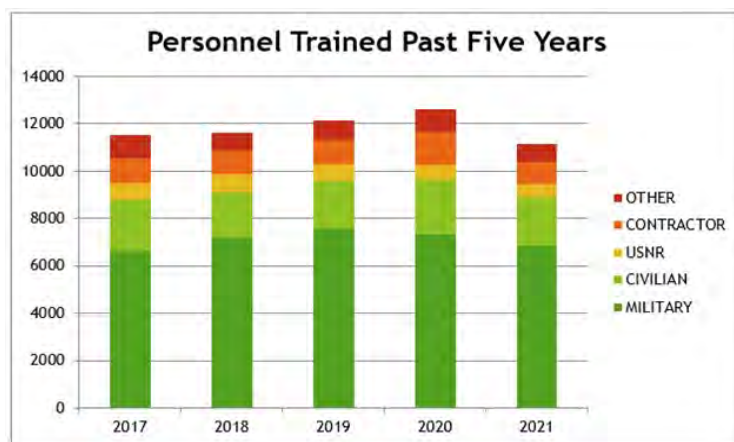
Naval Nuclear Propulsion Program Validations

Validation provides the second level approval for cranes used in support of the Naval Nuclear Propulsion Program. A Navy Crane Center Representative reviews the records, conducts an independent condition inspection, and verifies proper conduct of the crane condition inspection and load test performed by the activity. Validations are required for annual certifications that require a load test.



Training

Navy Crane Center offers training courses covering such topics as safe crane operations and rigging practices, mechanical and electrical maintenance, equipment inspection, testing and certification, and oversight of contractor weight handling operations at Navy shore activities.



Navy Crane Center Issued 39 Weight Handling Program Briefs in FY21

- Lashing and Frapping
- Safe operations of Material and Weight Handling Equipment
- (12) Near Misses and Unplanned Occurrence Lessons Learned
- Preventing Two-Block Accidents
- ABCs of Sling Protection
- Decline in Near Miss Reporting
- Oversight of Contractor Weight Handling Operations
- Contractor Weight Handling Accidents and Near Misses
- Category 3 Non-Cab Operated Crane Safety Course on JKO
- Operations without a Load
- C2CS Joint Knowledge Online Course Hosting Announcement
- Increase in Events During Under Instruction Operations
- Control of Mechanical and Gravitational Energies
- Preventing Overloads
- GCS and RP JKO Course Hosting Announcement
- End of CSA 238 Exceptions to P-307 Requirements
- Pinch Points and Hand Injuries
- Load Test Director Training Course on JKO
- Weight Handling Safety Awareness Month August 2021
- Teamwork and Maintaining a Questioning Attitude
- Execution of Weight Handling Equipment Maintenance & Inspection
- Supervisors' Human Factors and Recent Lessons Learned
- Monitor Program and the Gathering of Tangible Deficiency Data
- Accident Recognition and the Accident Severity Triangle
- Utilizing OEM Instructions in Servicing Specifications
- Crane Operating Envelope Control
- Portable Floor Cranes
- Danger of Working Under the Load

Training for Safe Operations

The goals of Navy Crane Center's training program are:

- Provide fundamental, trade related information for operating, rigging, maintaining, repairing, inspecting, testing, and certifying Navy weight handling equipment at shore activities.
- Acquaint personnel with Navy requirements to safely perform weight handling equipment related tasks.
- Reinforce existing knowledge and provide a base upon which to develop experienced, competent, personnel through further training, assessment, and on-the-job training.

Over the past five years, Navy personnel (military, civilians, reserves, contractors) have completed more than 58,000 courses.

Navy Crane Center Training Courses

- | | |
|---|----------------------------|
| General Crane Safety | Certifying Official |
| General Crane Safety Refresher | Crane Mechanic |
| Category 2 and Cab Operated Category 3 Crane Safety | Mobile Crane Mechanic |
| Category 2 Crane Safety Refresher | Mechanical Crane Inspector |
| Category 3 Non-Cab Operated Crane Safety | Crane Electrician |
| Category 4 Crane Safety | Electrical Crane Inspector |
| Rigging Practices | Contractor Crane Awareness |
| Rigging Gear Inspection | Rigging 101* |
| Load Test Director | NAVFAC P-307 Overview* |
- *These are optional courses available on the Navy Crane Center website.

Crane Procurement



Quality Weight Handling Equipment Supporting Fleet Readiness

The project managers, engineers, and quality assurance personnel, alongside Naval Facilities Engineering Systems Command Atlantic contract specialists, continued to provide quality weight handling equipment, meeting the Navy Crane Center design and industry standards, in support of the Navy.

Project Management

The Navy Crane Center Project Management Division (NCC PM) provided support on requests for cranes, coordinated pre-award services for crane procurements, developed equipment and support cost estimates, obtained funding, developed acquisition agreements, prepared and packaged contract specifications and requirement documents, packaged requests for proposals (RFPs), coordinated responses to contractor questions, conducted pre-proposal site visits with contractors, and supported the contracting officer with issuance of contracts and amendments. NCC PM also held post-award teleconferences, coordinated post award site demonstrations, coordinated design review and contractual submittals, assisted with contract and/or field issues, conducted pre-installation site visits, tracked and resolved warranty issues, and closed out projects.

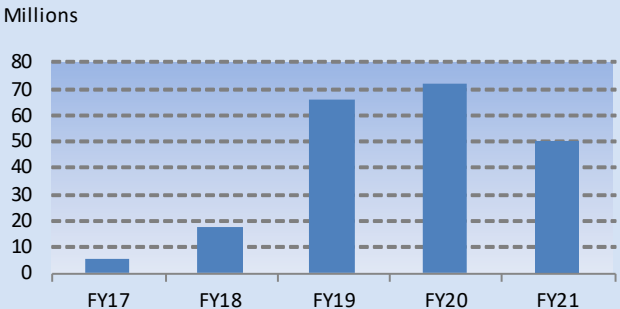
NCC PM provided support on requests for cranes procured by other contracting offices for MILCON projects and replacement of existing weight handling equipment. Procurement support was also provided for supported command procurement of weight handling equipment by waiver to Navy crane acquisition policy when doing so was in the best interest of the Navy. For these projects, NCC PM developed estimates for equipment and coordinated design reviews of facility design documents and RFP packages to ensure necessary crane support features were included. For these projects, NCC PM also coordinated preparation of crane technical specifications and required documents, responded to contractor questions, processed design and contractual submittals, approved crane designs and in some cases support shop testing and field testing of the equipment. NCC PM coordinated these work elements for 90 cranes in 49 projects in FY21.

FY21 Procurement Summary

Awarded 5 contracts or delivery orders for 5 cranes valued at \$50,034,786.

Completed on-site testing acceptance for 11 cranes valued at \$14,188,352.

Contract Award Value



Crane Procurement Team



Crane Design Engineering

Navy Crane Center's Design engineers serves as the technical advisors of the procurement team. They provide essential professional engineering expertise, and ensure technical adequacy of crane designs. Design Engineering supports the procurement of weight handling equipment to meet supported command needs in regards to the cranes specific and unique lifting and handling requirements. The team accomplishes this with adherence to the project timeline, and within a project's budgetary constraints. The initial step in this process is to develop an accurate performance specification. After contract award, design engineering reviews the contractor's crane design to ensure full compliance with the specification and applicable commercial standards. Our engineering team also performs shop test inspections to verify the equipment's condition and performance meets the approved designs.

Delivering safe, reliable, and maintainable weight handling equipment to Navy shore activities and supported commands worldwide is the Navy Crane Center's goal.

Design Engineering Services

- Equipment Selection Guidance
- Facility Design Review for Appropriate Crane Interface
- Crane Specification Development
- Crane Design Review
- Crane Related Certification Reviews
- On-site Inspection of New and Refurbished Cranes
- Technical Advice During Crane Acceptance Testing
- Technical Advice During Equipment Warranty Period

Design Engineering - Listed below are sampling of our high priority active projects:

Bremerton, Bangor	(4) 25-Ton Portal Cranes
NFPC Philadelphia	AE-22/137 20-Ton and 15-Ton Bridge Cranes AE 165/166 (2) 100-Ton Cranes
Norfolk NSY	Craft SLEP Portal Cranes DC-30 DC-31 RAE 4 5-Ton SPS Bridge Crane M-140 5-Ton SPS Bridge Crane
NOTU Cape Canaveral	110-Ton Gantry Crane Refurbishment
Portsmouth NSY	Craft SLEP Portal Crane P31 140-Ton Portal Crane P-38
Portsmouth, Norfolk, and Puget Sound NSYs	NAVSEA 175-Ton SPS Portal Cranes
Puget Sound NSY	Craft SLEP Portal Crane P 80
SWFLANT	(2) 120-Ton Bridge Cranes EHW-2
SWFPAC	120/30-Ton Bridge Cranes Modernization, EHW-1
TRF Kings Bay	SLEP Portal Crane Projects K-1 K-4

Waivers / Assists - Waiver and assist projects afford the supported command the flexibility of using their contracting vehicle, while maintaining the technical expertise of Navy Crane Center's Design Engineering team in the successful procurement of cranes. Listed below are a few of our current waiver/assist projects:

Electric Boat Corp.	170-Ton SPS Bridge Crane
Kesselring	30/5-Ton Bridge Crane (MARF)
NRF Idaho	(2) 300-Ton Bridge Cranes 135-Ton Bridge Crane 40-Ton Bridge Crane 5-Ton Bridge Crane
Pearl City	SOF Undersea Ops Training Facility
SUBASE Bangor	25-Ton Pedestal Crane
PNSY	DD2 (4) 5-Ton SPS Cranes
TRF Kings Bay	(2) 85-Ton OET Overhaul
NFPC Philadelphia	50-Ton OET (2) 30-Ton Monorail Hoists 25-Ton OET
Puget Sound NSY	DD2 25-Ton, (2) 5-Ton SPS OETs 75-Ton OET

In-Service Engineering

The image displays four overlapping forms from the Navy's In-Service Engineering Division, specifically related to crane alteration and weight handling equipment. The forms are as follows:

- WEIGHT HANDLING EQUIPMENT DEFICIENCY REPORT**: A form for reporting deficiencies on weight handling equipment, including fields for activity, equipment, and dates.
- CRANE ALTERATION REQUEST**: A form for requesting crane alterations, including fields for crane alteration title, description, and approvals.
- MANDATORY ALTERATION**: A form for mandatory alterations, including fields for alteration title, description, and approvals.
- REQUEST FOR CLARIFICATION, DEVIATION, OR REVISION**: A form for requesting clarification, deviation, or revision of a crane alteration, including fields for activity, equipment, and approvals.

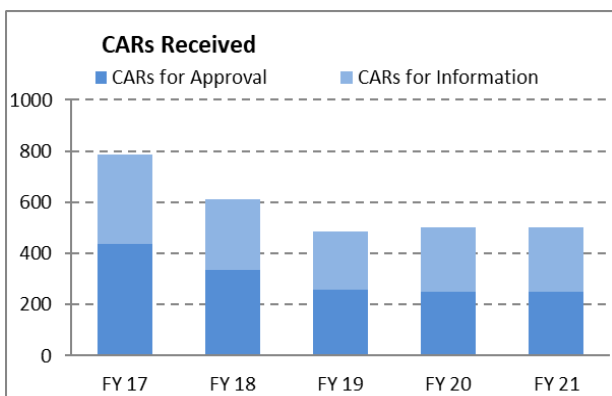
Figure 6-2

Maintaining Safe and Reliable Weight Handling Equipment

The engineers who comprise our In-Service Engineering Division continued to make direct and significant contributions to Fleet Readiness in FY21 through the review of proposed crane alterations, configuration management for the Navy's portal and floating crane inventory, review of ancillary equipment procedures, review of Requests for Clarification, Deviation, and Revision, and issuing Crane Safety Advisories and Equipment Deficiency Memorandums in support of the Navy's weight handling program.

Crane Alteration Requests

Crane alterations are required for any changes to Weight Handling Equipment (WHE). This includes the replacement of parts and components not identical with the original, addition of parts or components not previously part of the equipment, removal of components, and alteration of existing parts and materials. In-Service Engineering approves crane alterations to load bearing parts, load controlling parts, and operational safety devices. A thorough engineering technical review of crane alterations is essential to ensure the safety of the equipment.



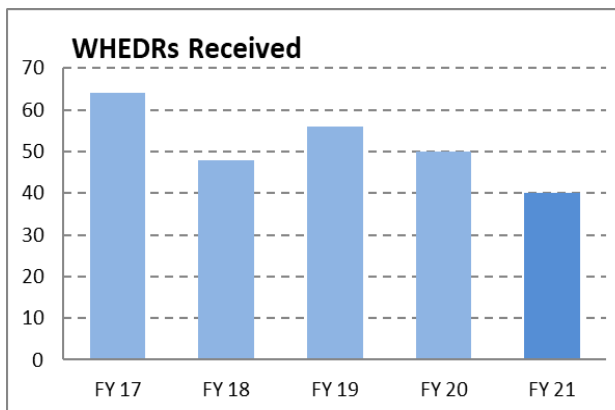
Configuration Management

During FY21, Navy Crane Center issued one mandatory crane alteration for Craft 60-ton portal cranes, three for Samsung 60-ton portal cranes and six for Westmont 100-ton floating cranes. A listing is available on the Navy Crane Center website.

Weight Handling Equipment Deficiency Reports

Navy Crane Center received reports of equipment deficiencies, component failures, crane accidents, and other potentially unsafe conditions and practices through Weight Handling Equipment Deficiency Reports (WHEDRs). When applicable to multiple activities, a Crane Safety Advisory (CSA), Equipment Deficiency Memorandum (EDM), or Weight Handling Program Brief is issued. Generally, a CSA is a directive and often

requires feedback from the activities receiving the advisory. An EDM is provided for information and can include deficiencies to non-load bearing/non-load controlling parts. The CSAs and EDMs issued in FY21 are listed below. Additional information is available on the Navy Crane Center web site.



FY21 Crane Safety Advisories

Exceptions to NAVFAC P-307 Requirements Due to COVID-19 Pandemic

Failure of Johnson DS 3018 caliper Brake Actuator Spring guides

Inability of Crane wireless controller box edge guard to prevent inadvertent operations of crane

Exceptions to NAVFAC P-307 Requirements Due to COVID-19 Pandemic - Cancellation

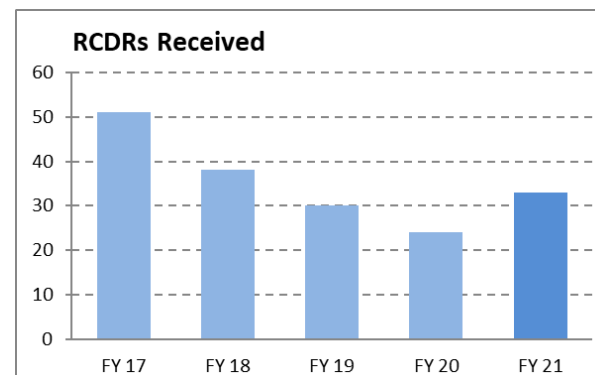
FY21 Equipment Deficiency Memorandum

Broken Duct-O-Bar Collector Shoe Tension Springs

Review of Requests for Clarification, Deviation or Revision

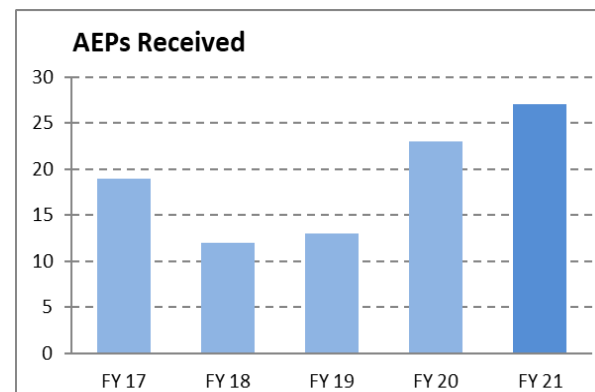
Activities submit Requests for Clarification, Deviation, or Revision (RCDR) to Navy Crane Center for NAVFAC P-307 or for other Navy

Crane Center documents or directives. Navy Crane Center reviews the RCDRs and provides responses to the requests. As indicated in NAVFAC P-307, Paragraph 1.9, RCDRs issued prior to the current publication date shall be considered cancelled. RCDRs posted to Navy Crane Center's website are applicable to all activities.



Ancillary Equipment Procedures

By means of increasing safety as well as a cost and time savings measure, activities may submit procedures for changing the Original Equipment Manufacturer's ancillary equipment configuration or re-reeving the crane via an Ancillary Equipment Procedure (AEP) for Navy Crane Center's approval. These approved procedures negate the need to submit Crane Alteration Requests to Navy Crane Center for adding/removing ancillary equipment from/to the crane as well as not voiding the annual certification.



People Helping People put Ships to Sea
Through Weight Handling Safety
Supporting Fleet Readiness With A Strong Sense of Urgency

