



# Annual Report

Fiscal Year 2015

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**Enable the Warfighter  
Act Judiciously  
Maintain Readiness**

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



**Timothy D. Blanton**  
Navy Crane Center Director

Naval shore activities have many missions, including ship and aircraft repair, submarine refueling, strategic deterrence, supply, facility sustainment, training, munitions handling, research, and the development of new weapons and systems that will ensure our country's maritime dominance. Effective weight handling is essential to the accomplishment of all of these missions. The role of the Navy Crane Center is to provide the cranes, policy, engineering, oversight, training, and assistance to activities that perform weight handling.

Fiscal year 2015 (FY15) was a year of continued maturity for shore activity weight handling programs and for the Navy Crane Center as well. We challenged our engineers, equipment specialists, and support personnel to become more versatile by getting involved in new facets of work, including engaging procurement engineers in in-service engineering issues and utilizing equipment specialists for procurement quality assurance. I am convinced this versatility will have valuable payback for our supported commands.

Effective weight handling begins with the acquisition of quality equipment that meets the demanding needs of our users. In FY15, we awarded 12 contracts or delivery orders for 21 cranes; delivered 40 cranes to shore activities; and oversaw the manufacture of 76 cranes.

We continued to encourage activities to be more self-critical through monitor programs that find issues at an early stage to prevent a serious event from finding the activity. We also continued our series of weight handling training briefs focusing on the Human Factors Analysis and Classification System, a valuable tool in accident prevention.

Finally, we sowed seeds for the future with plans for an engineering office on the west coast to be more responsive to our Pacific Rim activities, and finalized the details for a major revision to NAVFAC P-307. Among the many changes, this revision will institute new weight handling program management functions, establish safer load test procedures, and provide significant cost-avoidance in the area of rigging equipment. We received unprecedented involvement from the weight handling community during its development and we will take the program "on the road" to prepare them for what is coming.

As noted above, the Navy could not accomplish its many missions without weight handling capability. The goal of the Navy Crane Center is to ensure successful mission accomplishment through weight handling safety and effectiveness!

Timothy D. Blanton  
Director

# Locations and Operations

## Engineering Services

Ensuring compliance with industry standards and the Navy Crane Center's design standard is fundamental to the procurement of new cranes and modification to existing crane inventory.

## Evaluation Methodology

Reviewing program management issues, such as staffing and succession planning, resource management, and strategic planning in addition to an expanded focus on equipment by also reviewing in-process maintenance, troubleshooting, and equipment reliability has produced more weight handling programs evaluated as satisfactory in successive years.

## 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.

## OSHA Certification

Providing OSHA required certification for maritime cranes, the Navy Crane Center has representatives at each public shipyard.

## Crane Procurement Management

Starting with project inception and continuing through the end of the warranty period, information for each crane acquisition flows through one project manager providing project cohesion and a straightforward customer experience.

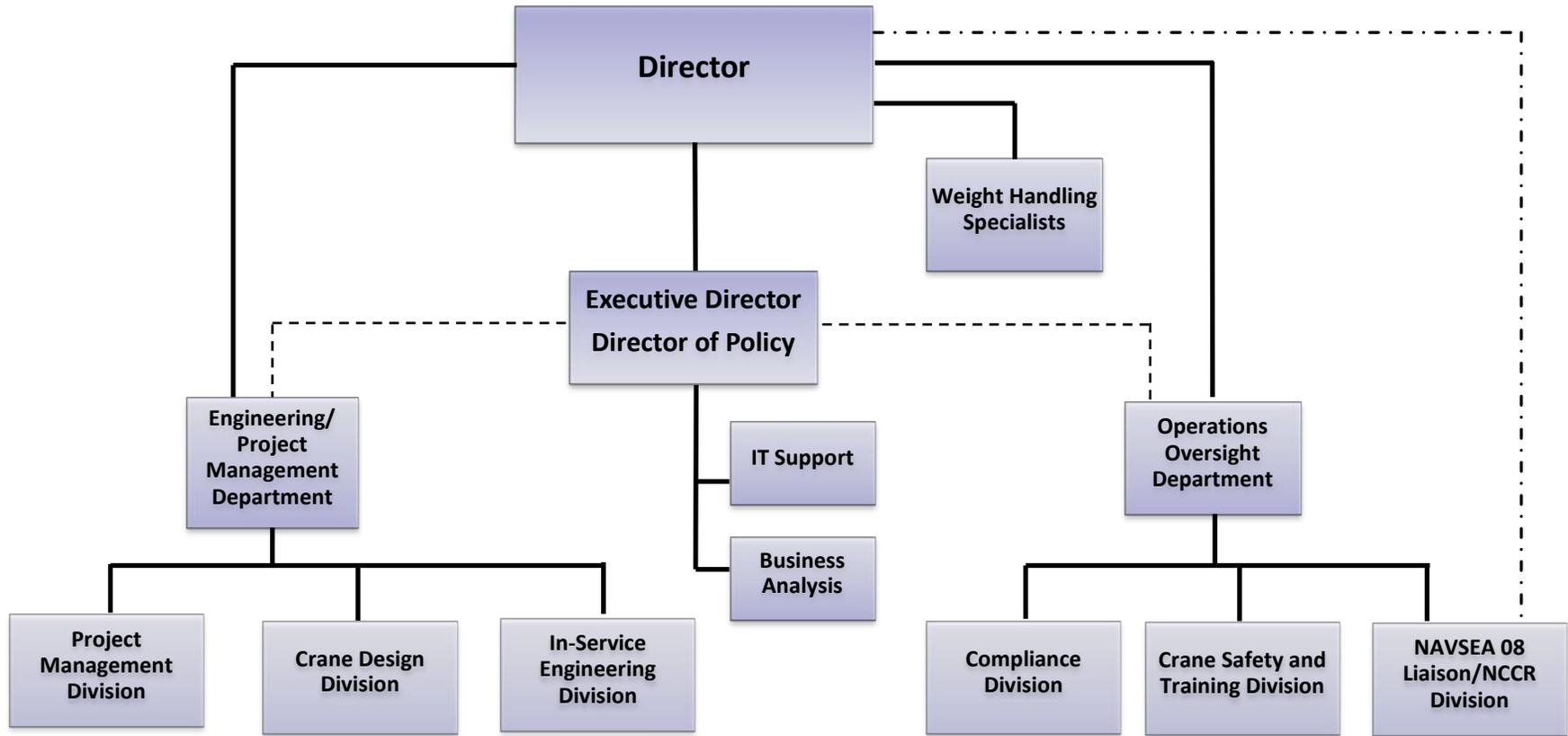
## Safety Analytics

Maintaining an intense focus on SAFETY, Navy Crane Center adheres to a rigorous crane and rigging gear accident definition so that lessons learned from all unplanned reported events prevent more serious accidents from occurring.



Group	Operations	Location
Design Engineering	Specification Development Crane Design Review Equipment Testing Weight Handling Equipment Installation Oversight Weight Handling Equipment Inspections	Portsmouth, VA
Evaluation Teams	Weight Handling Program Evaluations	Portsmouth, VA Bremerton, WA San Diego, CA
In-Service Engineering	Crane Alteration Evaluations Crane Safety Advisories Request for Clarification, Deviation or Revision Reviews Weight Handling Equipment Deficiency Memorandums Configuration Management	Portsmouth, VA Bremerton, WA
Navy Crane Center Representatives	Maritime Crane Certification Special Purpose Service Crane Validation	Newport News, VA Groton, CT Portsmouth, NH Portsmouth, VA Bremerton, WA Pearl Harbor, HI
Project Management	Manage Weight Handling Equipment Project Execution	Portsmouth, VA
Safety	Accident Investigation and Analysis Weight Handling Safety Briefs	Portsmouth, VA
Training	Weight Handling Training Weight Handling Training Briefs	Portsmouth, VA

# Navy Crane Center Organization



NAVFAC Atlantic provides Acquisition and Counsel support for crane procurements

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

# Operations Oversight



## Enabling Fleet Readiness

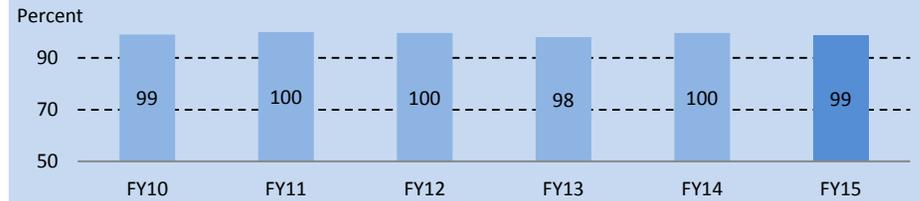
The equipment specialists, safety specialists, trainers, and support personnel who comprise our Operations Oversight Department continued to make direct and significant contributions to Fleet Readiness in FY15 through compliance and program management reviews, accident prevention analytics, maritime crane certifications, training courses, support for Seabee operations, and technical reviews in support of the Navy.

# Compliance and Program Management

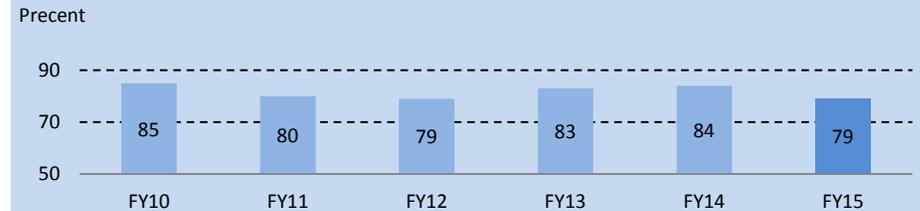
The quality of Navy shore activity weight handling management, as reflected in our evaluation program, again remained high in FY15. One key metric is the percent of activities that are in basic compliance with Navy Crane Center maintenance program requirements. Of the 217 Navy activity programs evaluated in FY15, 97 percent were fully satisfactory, 2 percent were marginally satisfactory, and 1 percent (two programs) were judged unsatisfactory.

The condition of inspected cranes is another indicator for evaluating the quality of weight handling programs. In FY15, the evaluation teams inspected a random sample of 207 cranes. Shore activities have sustained long-term gains with regard to equipment condition with 79 percent of the sampled cranes meeting the Navy Crane Center's high standard of acceptability. In addition, we continued to strongly encourage Navy shore activities to review their crane utilization and remove unneeded cranes from service wherever possible and develop a crane replacement and modernization plan to ensure future weight handling requirements are addressed. By deactivating infrequently used cranes, cost savings were achieved at some activities with small inventories, thus avoiding the cost of maintaining a weight handling program.

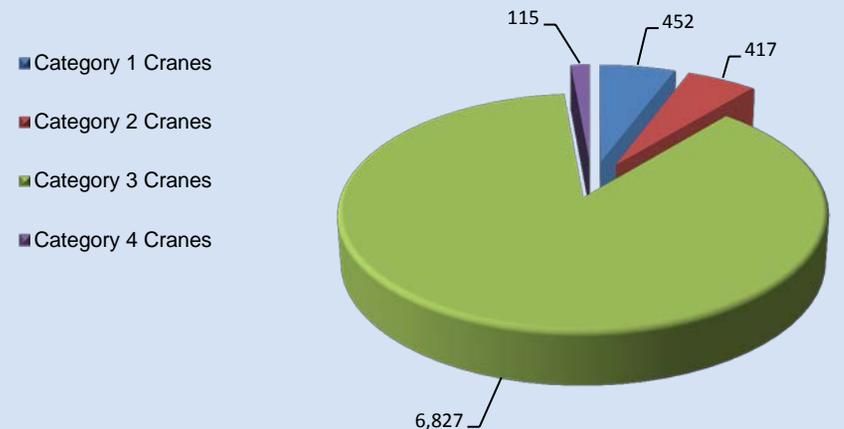
Satisfactory Weight Handling Program Compliance



Satisfactory Crane Condition



Navy Shore Crane Inventory



**Crane Categories**

- Category 1 Cranes: portal cranes, mobile cranes, floating cranes, mobile boat hoists, container cranes, tower cranes, etc.
- Category 2 Cranes: 20,000 pound capacity or greater to include most other types of cranes such as jib cranes, bridge cranes, wall cranes, and monorail cranes
- Category 3 Cranes: similar to category 2 cranes but with capacities less than 20,000 pounds.
- Category 4 Cranes: commercial truck mounted cranes, articulating boom cranes, pedestal mounted commercial boom assemblies.

# Accident Analytics

Analyzing the accident data leads to Weight Handling Safety and Training Briefs as well as areas of focus for the weight handling program evaluations.

In FY2015, there were no OPNAV 5102.1D Class A or B mishaps.

In FY15, crane accidents that are considered significant decreased 25 percent from FY14, primarily due to reductions in crane overloads and events resulting in injuries. In FY15, there were three OPNAV Class C mishaps.

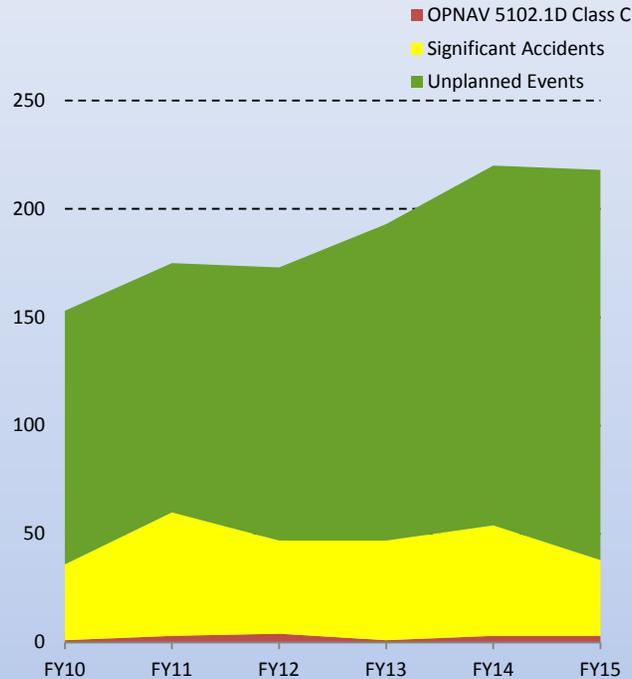
Rigging gear accidents decreased overall; however, the increase in severity coincides with less experienced personnel entering the trade. In FY15 there were four OPNAV Class C mishaps.

In response to this negative trend, in the latter half of FY15, the Navy Crane Center focused on in-hull rigging during evaluations and issued several weight handling safety and training briefs to target this area. Early FY16 data shows a sharp decline (>50%) in significant rigging accidents.

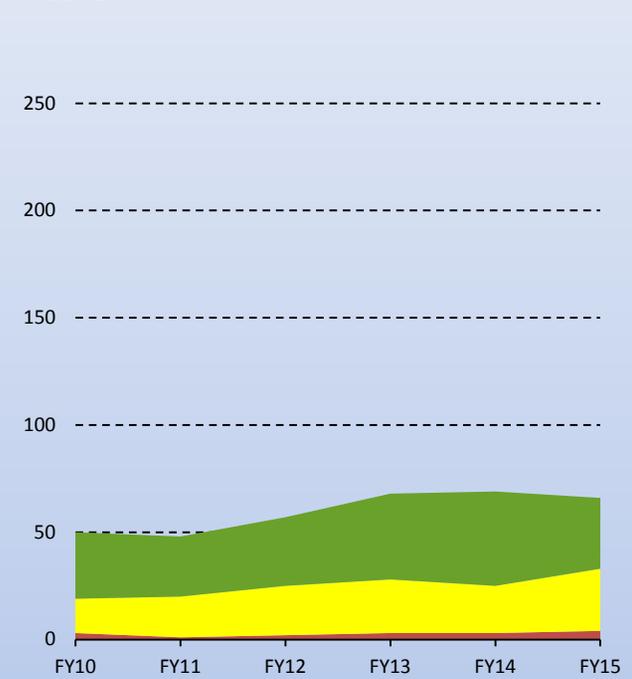
## Accident Definitions

- **Unplanned events:** 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.
- **OPNAV 5102.1D Classification C:** The resulting total cost of damages to DoD or non-DoD property is \$50,000 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.

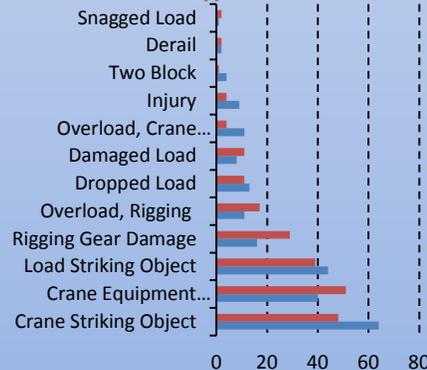
Crane Accidents



Rigging Gear Accidents

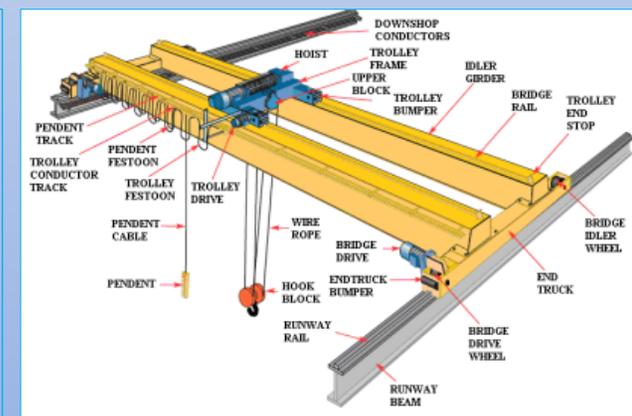


Crane Accident Type



### Two-block:

Over-hoisting so that the hook block and the upper block or trolley frame come in contact resulting in possible damage to the structure, parting of the hoist wire rope, and dropping of the load.



# Certification of Maritime Cranes

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 the Navy Crane Center’s publication, *Management of Weight Handling Equipment*, commonly referred as NAVFAC P-307.

### 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.

Annual Certifications and Interim Re-certifications



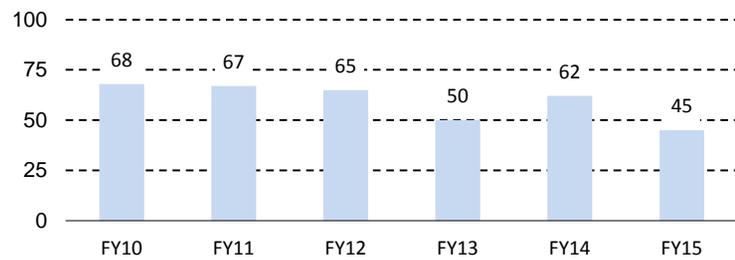
# Naval Nuclear Propulsion Program Crane Validation

As in the case of maritime crane certifications, improved maintenance programs based on adherence to the Navy Crane Center’s requirements and guidance for management of weight handling equipment resulted in fewer interim re-certifications for cranes supporting the Naval Nuclear Propulsion Program.

### Supporting the Navy’s Nuclear Program

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 certifications and for interim re-certifications that require a load test.

Naval Nuclear Propulsion Program Crane Validation



# Training

The Navy Crane Center offers instructor-lead and web-based training. Cost free to end users, web-based training has become the most utilized training approach. During FY15, approximately 9,400 Navy Crane Center courses were completed online. Since 2010, approximately 47,500 course completions have been recorded.

Web-Based Training Courses Completed



## Navy Crane Center issued six Weight Handling Safety Briefs in FY15

- Pinch Point Hazards
- Lifting Through Hatches
- Portable Floor Crane Requirements
- Shackle Use and Requirements
- Mobile Crane Tie-Backs
- Hoists, Preventing Pull/Load Chain Damage

## Navy Crane Center issued four Weight Handling Training Briefs in FY15

- Supervision's Human Factor Role
- Organizational Influence on the Deckplate
- Human Factors Analysis and Classification System
- Flat Synthetic (Nylon) Lashing

## Training for Safe Operations

The goals of training programs at the Navy Crane Center are as follows:

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

## Navy Crane Center Training Courses

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• General Crane Safety</li> <li>• General Crane Safety Refresher</li> <li>• Category 2 and Cab Operated Category 3 Crane Safety</li> <li>• Category 2 Crane Safety Refresher</li> <li>• Category 3 Non-Cab Operated Crane Safety</li> <li>• Category 4 Crane Safety</li> <li>• Crane Rigger (soon to be Rigging Practices)</li> <li>• Rigging Gear Inspection</li> </ul> | <ul style="list-style-type: none"> <li>• Load Test Director</li> <li>• Certifying Official</li> <li>• Crane Mechanic</li> <li>• Mobile Crane Mechanic</li> <li>• Mechanical Crane Inspector</li> <li>• Crane Electrician</li> <li>• Electrical Crane Inspector</li> <li>• Contractor Crane Awareness</li> </ul> |
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# Crane Procurement



## Quality Weight Handling Equipment Supporting Fleet Readiness

The project managers, engineers, and quality assurance personnel, alongside NAVFAC LANT 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

Safe weight handling operations begin with the procurement of quality equipment meeting the requirements of our design criteria in the Navy Crane Center's Design Guide and life cycle management criteria in Navy Crane Center's NAVFAC P-307. Weight handling procurement program is foundational to the Navy Crane Center's mission to promote safe weight handling operations at Navy shore activities around the globe. Over time, the effectiveness of a procurement expertise adds quality cranes to the Navy's inventory and contributes to the continuing favorable safety trends at Navy weight handling activities.

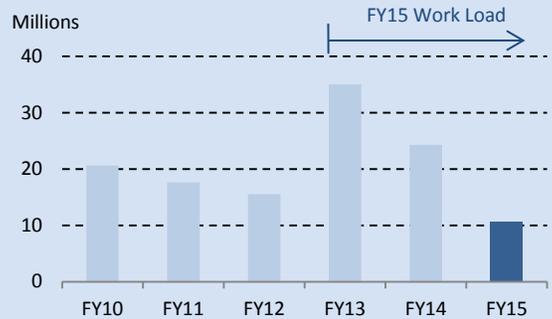
During the procurement planning phases, the Navy Crane Center partners with supported commands to gain a full understanding of budget, scope, and schedule.

### FY15 Procurement Summary

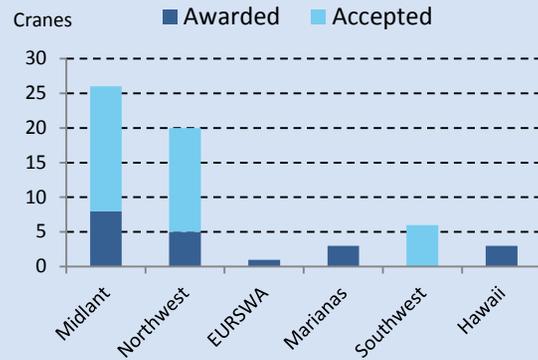
- Awarded 12 contracts or delivery orders for 21 cranes valued at \$10.6M.
- Completed on-site testing acceptance for 40 cranes valued at \$11.8M.
- 76 cranes under manufacturer representing a total award amount of \$45M.

While there was a drop in contract award value in FY15, the lower value is not indicative of a declining work load. The work supporting the larger award years, FY13 and FY14, continued into FY15. Two large awards are anticipated in FY16.

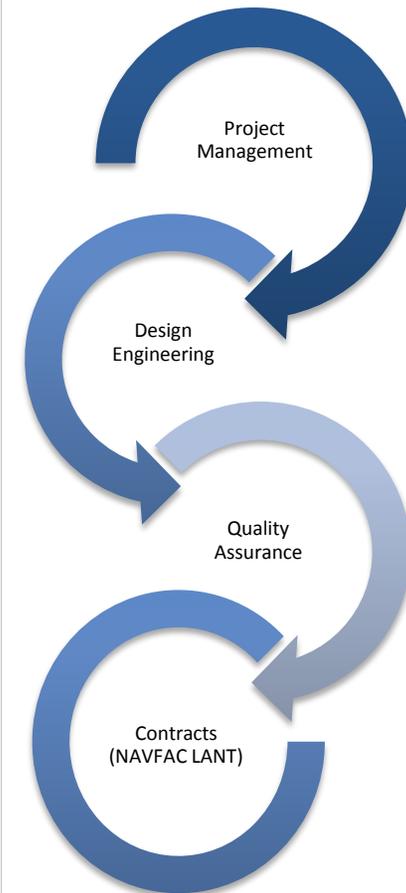
### Contract Award Value



### Crane Projects by Location



## Crane Procurement Team



# Design Engineering

Providing essential professional engineering expertise and ensuring technical adequacy of crane designs, the Design Engineering Division serves as the technical advisor in the procurement team. Supporting the procurement of weight handling equipment, Design Engineering develops procurement specifications to meet supported command needs commensurate with operational, schedule, and budget constraints. After contract award, Design Engineering reviews the contractor's crane designs to ensure full compliance with the specification requirements and applicable commercial standards, and performs field inspections to verify actual equipment condition and performance meet the approved designs. Delivering safe, reliable, and maintainable weight handling equipment to Navy shore activities and requesting commands worldwide is the Navy Crane Center's goal.

- Engineering Services**
- Equipment Selection Guidance
  - Facility Design Reviews for Crane Specifics
  - Crane Specification Reviews
  - Crane Design Reviews
  - Crane Related Certification Reviews
  - Rigging and Installation Plan Reviews
  - On-site Review of Weight handling procedures
  - On-site inspections of new or refurbished cranes
  - Crane Acceptance Testing
  - Technical advice during equipment warranty periods

## Procurement Engineering Support

Location	Crane(s)
Bangor, WA	Crane System Modernization 5 Ton (2) Bridge Cranes 15 Ton Bridge Crane
Charleston, SC	25 Ton Bridge Crane
Djibouti	20 Ton Bridge Crane
Guam	10 Ton (3) Bridge Cranes
Kings Bay, GA	60 Ton (2) Bridge Crane Rebuilds
Kittery, ME	15 and 20 Ton Bridge Cranes
Lakehurst, NJ	10 Ton Bridge Crane 15 Ton Bridge Crane
Mechanicsburg, PA	12.5 Ton (6) Bridge Cranes
Norfolk, VA	Portal Crane Service Life Extension
Pearl Harbor, HI	3 Ton Barge Mounted Crane

## MILCON Assists

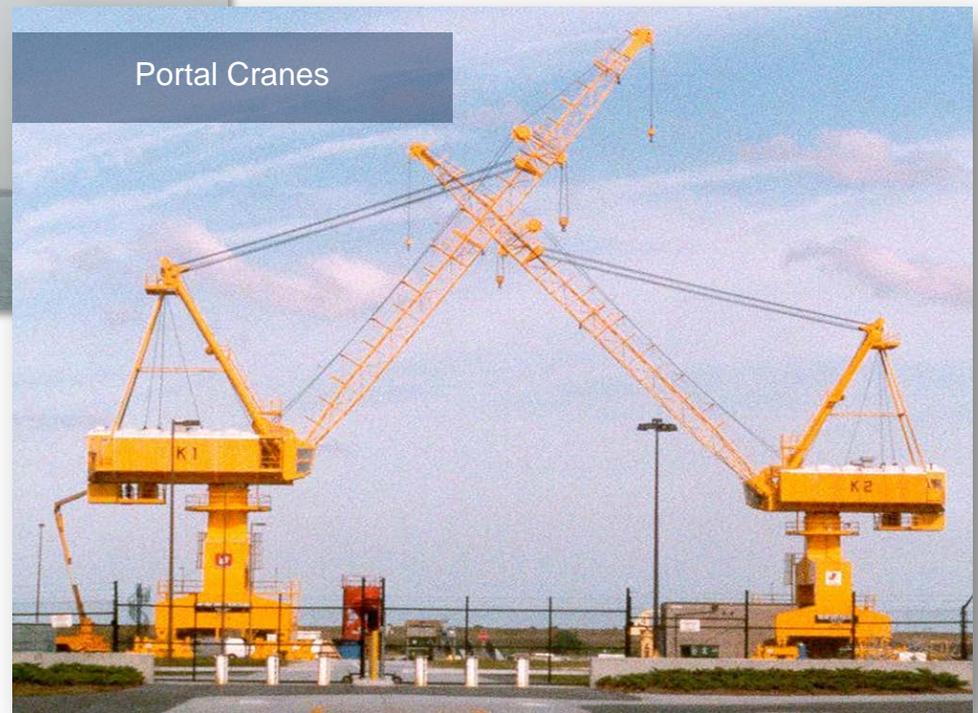
Procuring cranes through facility contracts places scheduling responsibility with the facility contractor. Navy Crane Center Design Engineering provides the technical expertise to successfully procure cranes using this method.

Location	Crane(s)
Bahrain	20 Ton Bridge Crane
Bangor, WA	120 Ton (2) Bridge Cranes 3 Ton Bridge Crane
Jacksonville, NC	7.5 Ton Bridge Crane
San Diego, CA	7.5 Ton (2) Bridge Cranes
China Lake, CA	7.5 Ton Bridge Crane
Guam	1 Ton (6) Hoists
Kaneohe, HI	7.5 Ton Bridge Crane
Miramar, CA	7 Ton (2) Bridge Cranes
New River, NC	8 Ton Bridge Crane
Oceana, VA	2 Ton Bridge Crane
Pearl Harbor, HI	7 Ton Bridge Crane 7.5 Ton Bridge Crane
Oklahoma City, OK	9 Ton Bridge Crane
Whidbey Island, WA	2 Ton Gantry Crane

## Other Assists

Location	Crane(s)
Albany, GA	35 Ton & 15 Ton Bridge Cranes 75 Ton (2) Bridge Cranes
Bloomington, IN	3 Ton(2) Gantry Cranes Monorail Crane
China Lake, CA	Pneumatic Hoist
Guam	5 Ton (3) Manual Monorail Cranes
Jacksonville, FL	25& 50 Ton Bridge Crane
Keyport, WA	Chain Hoist Crane
Kittery, ME	5 Ton Bridge Crane
Lakehurst, NJ	2 Ton Chain Hoist
Niskayuna, NY	20 Ton Bridge Crane Crawler Crane
Pearl Harbor, HI	Barge Pedestal Crane
San Diego, CA	Tandem Hoists
Seneca Lake, NY	10 Ton Telescope Boom
Washington, D.C.	2 Ton Telescope Boom Crane
West Mifflin, PA	3 Ton & 5 Ton Bridge Cranes 30 Ton Bridge Crane 70 Ton Bridge Crane 8 Ton(3) Bridge Cranes 9 Ton (3) Bridge Cranes 10 Ton (3) Bridge Cranes 25 Ton Bridge Crane

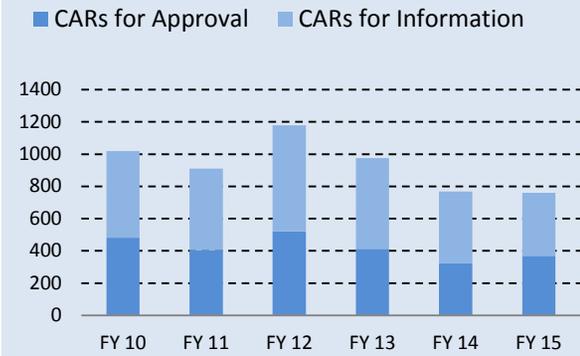
# In-Service Engineering



## 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 FY15 through the review of proposed crane alterations, configuration management for the Navy's portal and floating crane inventory, review Requests for Clarification, Deviation, and Revision, and issuing Crane Safety Advisories and Equipment Deficiency Memorandums in support of the Navy.

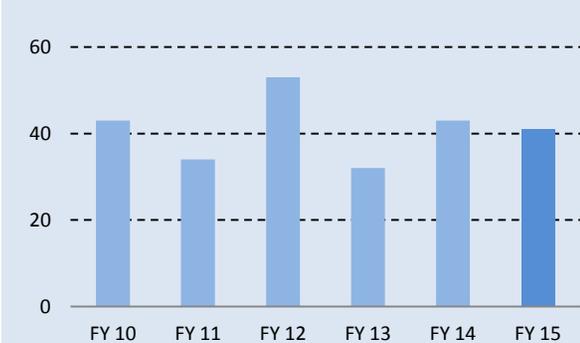
### Crane Alteration Requests



### Weight Handling Equipment Deficiency Reports



### RCDRs Received



### Crane Alteration Requests

Crane alterations are required for any changes to 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. Navy Crane Center approves crane alterations to load bearing parts, load controlling parts, and operational safety devices.

For alterations that do not involve load bearing parts, load controlling parts, or operational safety devices, only local activity approval is required. Locally approved alterations are also reviewed for information and archived for future reference by Navy Crane Center. A thorough engineering technical review of crane alterations is essential to ensure the safety of the equipment.

### Configuration Management

During FY15, the Navy Crane Center issued two mandatory crane alterations on AmClyde 171.5-ton portal cranes, three on Westmont 60-ton portal cranes, seven on Westmont 100-ton floating cranes, one on Samsung 151.2-ton portal cranes, and one on Samsung 60-ton portal cranes. A listing is available on the Navy Crane Center web site at [www.navfac.navy.mil/navfac\\_worldwide/specialty\\_centers/ncc.html](http://www.navfac.navy.mil/navfac_worldwide/specialty_centers/ncc.html).

### Crane Safety Advisories and Equipment Deficiency Memoranda

The 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 Safety 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 FY15 are below. Additional information is available on the Navy Crane Center web site at [www.navfac.navy.mil/navfac\\_worldwide/specialty\\_centers/ncc.html](http://www.navfac.navy.mil/navfac_worldwide/specialty_centers/ncc.html).

### Request for Clarification, Deviation or Revision

Activities submit Requests for Clarification, Deviation or Revision (RCDR) to Navy Crane Center for NAVFAC P-307, other Navy Crane Center documents, or directives. Navy Crane Center reviews the RCDRs and provides responses to the requests. RCDRs posted to the Navy Crane Center's website are applicable to all activities.

FY15 Crane Safety Advisories	
Cracked Brake Adjustment Nut on a DEMAG Type KBA 100B4 Brake Motor	
Broken Roll Pin in Wright-Way Tractor Drives	
Manual Brake Release Levers	
Possible Deficiency with Emergency Stop on Telecrane F21 and F24 Motors	
Possible Deficiency with Omron Relay Sockets	
Potential for Improper Activation of Hoist Lower Limit Switch on BUDGIT Model BEHC Hoist	
Cleveland Tramrail Arch Beam Welds	
Cracks in Vestal Adjustable Height Aluminum Portable Gantry Cranes	
ACCO Wright-Way Hoist Motor Coupling Design Change	
FY15 Equipment Deficiency Memorandums	
Abnormally Noisy Yale K Series Hoist Due To Gear Box Oil Type	
Left Side Manual Release Lever Design Deficiency On Steams 86,000 Series Disc Brake	

# Other Navy Crane Center Support

## Support of Seabee Operations

In 2015, the Navy Crane Center continued to conduct Seabee battalion weight handling program evaluations at the homeports. Prior to 2013, evaluations were conducted at the deployment sites during battalion turnover and some battalions were arriving at the deployment sites without the required training and proficiency. This new evaluation process, coupled with other improvement initiatives, has already demonstrated its value as the deploying battalions showed increased readiness with regard to their weight handling duties prior to deployment. Reach-back support was provided to the battalions and equipment reviews were conducted at remote sites (Rota, Guam, and Okinawa) when evaluations of other activities were conducted in those regions, resulting in a significant cost avoidance.

## Technical Reviews

The Navy Crane Center assisted NAVSEA in evaluating lift plans for the installation and subsequent removal of the upgraded Close in Weapons System and the installation of the Laser Weapon System on a Navy ship in Bahrain for trial deployment. All lifts were successfully completed. In 2015, the Navy Crane Center recommenced equipment inspections at private shipyards that perform Navy munitions lifting and handling on new construction ships in support of delivering these assets to the fleet. Inspections of munitions handling cranes at General Dynamics Bath Iron Works were also conducted.

## Weight Handling Program Fundamentals

The Navy Crane Center gave presentations to numerous Department of Energy weight handling managers stressing the value of a strong overall program management (e.g., self-assessment, metrics, surveillance, and internal audit programs) and the importance of identifying problems at the lowest possible level (safety triangle theory) to reduce the frequency and severity of significant events.

More information on Weight Handling Program fundamentals, see the Navy Crane Center Website.

[http://www.navfac.navy.mil/navfac\\_worlwide/specialty\\_centers/ncc/about\\_us/resources/safety\\_videos.html](http://www.navfac.navy.mil/navfac_worlwide/specialty_centers/ncc/about_us/resources/safety_videos.html)

## Human Involvement in Accidents

Bringing together human factors, operations, human systems, systems safety, and process issues to focus on the system instead of the individual, Human Factors Analysis and Classification System (HFACS) is a scientific system built to understand the human involvement errors in the work environment. The Navy Crane Center held a HFACS presentation explaining the value and use of HFACS as a tool for identifying root causes in order to establish effective corrective actions that can be utilized to improve weight handling safety. Attendees included weight handling and safety program managers, instructors, and supervisors from numerous shore commands.

People Helping People put Ships to Sea Through  
Weight Handling Safety

Supporting Fleet Readiness With A Strong Sense of Urgency

