

### The Naval Safety Center and Naval Safety Culture

presentation for the Defense Nuclear Facilities Safety Board 27 August 2014







#### Rear Admiral K.J. Norton, USN Commander, Naval Safety Center







- Background information
- Safety practices and procedures
- Tools and metrics used to improve, assess, and sustain a strong safety culture
- Current initiatives and the way ahead





# Background



- December 1951 Naval Aviation Safety Activity (<30 people)
- 1955 Naval Aviation Safety Center (88 people); flag officer
- 1968 Added Afloat safety programs
  - "Afloat" today = surface, submarine, and diving communities
- 1973 The Commander designated as the CNO's Safety Coordinator (N09F), reporting directly to the Vice Chief of Naval Operations
- 1992 USMC ground safety [HQMC(Safety Division)] detachment
- 2003 Navy Safety and Environmental Training Center
  - occupational safety, industrial hygiene, environmental protection, and emergency management
- 2010 Navy's Operational Risk Management (ORM) model manager
- 2013 Naval School of Aviation Safety
  - Pensacola, FL (formerly aligned under Naval Education and Training Command)





**Department of the Navy Safety Vision** (SECNAV Ray Mabus, 6 July 2009)

- "My goal for the Department is to...become the best military safety organization in the world"
- "...investments in safety have shown great payback. We must aggressively fund safety research and implement proven safety technology"
- "Mishaps, hazards and near miss events must be quickly identified, analyzed, and openly communicated so lessons learned will prevent recurrence"

#### **Department of the Navy Objectives for Fiscal Year 2014**

- Maintain Warfighter Readiness
  - "Safety will continue to be a focus as the Department strives to reduce accidents and mishaps"



## Mission

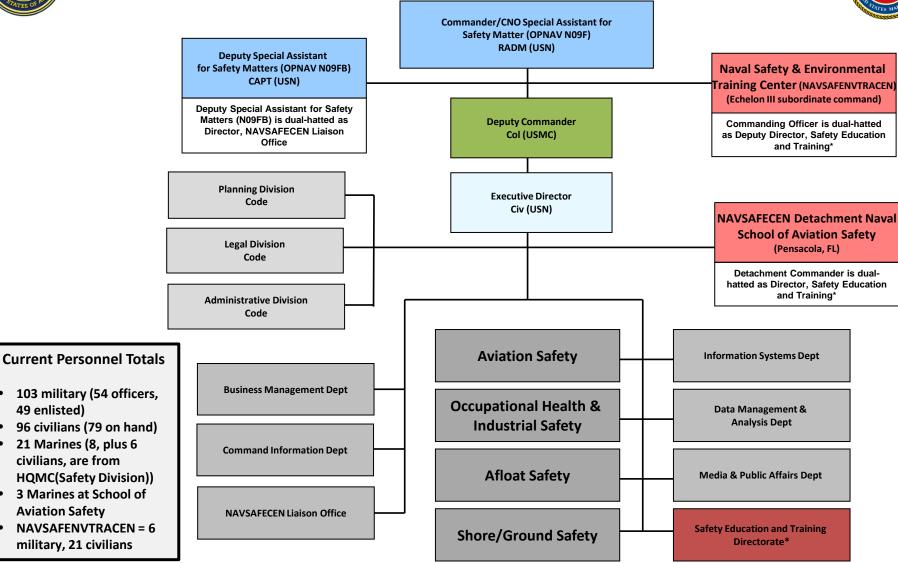


### The Naval Safety Center prevents mishaps to save lives and preserve resources. The advice, policies, services and risk management information and tools the Naval Safety Center provides enhance command culture, combat readiness and global war-fighting capabilities.

Source: OPNAVINST 5450.180E, Mission and Functions of the Naval Safety Center



### Naval Safety Center/OPNAV N09F



### Naval Safety and Environmental Training Center (NAVSAFENVTRACEN)

- Mission: Provide quality education and training for military and civilian Navy and Marine Corps personnel, both afloat and ashore, in the areas of occupational safety, environmental protection and emergency management
- 35 Safety and Environmental training courses across the Navy and Marine Corps enterprise
- Shore and Afloat based training
  - Tailored to all position levels
  - Aligned with DON vision and policies
  - Course lengths 2 to 5 days
  - Multiple venues resident and global online
- Staff 6 military, 21 civilians
- 458 classes at 74 worldwide locations; 48 global online classes; 9206 total students
- Executed first virtual Joint Safety Conference in DoD history (2000+ attended







# Naval School of Aviation Safety (Naval Safety Center Detachment Pensacola, FL)

The Greek "Sigma" in the school's crest symbolizes its charter to be and provide the "sum of all safety knowledge" in the following subject areas:

Safety Programs Aircraft Structures Aerodynamics Mishap Investigations Mishap Reporting Human Factors Aeromedicine Crew Resource Mgmt

Providing the most **Current, Relevant, and Credible** aviation safety education and training

#### in *Mission* Educate aviation officers at all levels to:

- Identify hazards
- Manage risks
- Investigate and report hazards and mishaps
- Develop and administer command safety programs

Foster and conduct safety-related research

Provide assistance to the fleet in support of the Naval Aviation Safety Program

#### **Customers**

USN, USMC, and USCG aviation safety officers Aviation pre-command officers Operational aviation commands Naval Safety Center and Navy Medicine Naval Postgraduate School USN flight school, allied nations, and other agencies











# Safety Culture



"Safety culture is how the organization behaves with respect to safety when no one is watching. It is the organization's safety personality. Successful, longlasting, and ongoing approach to accident prevention and loss reduction is when the executive leadership commits to integrating the practices of safety into the culture of the organization. This means that the safety aspects of the business are no longer an add-on or a nice-to-have, or something that is required by law, or forced upon them by a serious loss event, but simply part of the business all day, all night, 24/7."

-Ron C. McKinnon, *Changing the Workplace Safety Culture* 





## Leadership & Safety Culture



More from McKinnon:

- The key to a positive safety culture, a weak safety culture, or a change is management's commitment, involvement, and leadership of the safety drive
- Implementation of a safety management system with the intent of changing the safety culture <u>can only be successful if initiated, led, and</u> <u>supported by all management</u>
  - It will not be successful if safety is the "safety department's job" rather than the leader's
- Any attempt to change or improve the safety culture at any workplace will fail if there is not total commitment, leadership, and management involvement from the executive right down to and including frontline supervision
  - But...most executives don't see themselves as "part of the problem" [and] therefore, deep down, they do not believe that it is they who need to change, even though in principle they agree that leaders must model the desired changes (Keller)





## Safety Culture Challenges



- Military = can-do/high-risk mentality
  - "Anything, anywhere, anytime...at any cost"—desirable warfighter mentality perceived to conflict with safety
- "Do more with less" mindset (and...reality)
  - Sequestration; personnel gaps and reductions
- Distinctly different sub-cultures
  - -Air, Sub, Surface, Divers, Special Warfare, Shore...USMC
  - Varying approaches to hazard management & reporting
- Capturing, analyzing, and disseminating information
  - Fear of reporting (near misses and hazards)
  - Concept of Privileged Information vs need-to-know
  - Database: "Web-Enabled Safety System" (WESS) shortfalls



## Leadership Examples



### "Professional Execution $\rightarrow$ Safety...it underpins all we do!"

–Admiral Harry B. Harris, Jr., Commander, U.S. Pacific Fleet



Bottom Line: Leadership drives the Organizational Climate; Organizational Climate drives long-term culture change





### "Human Factors"



- Historically, 70-80% of mishaps have Human Factors/Human Error as causal factors...however:
- "Organizations need to understand and acknowledge that people at the sharp end are not usually the instigators of incidents (mishaps) and are more likely to inherit bad situations that have been developing over a long period."

James Reason (1997)







### Practices, Procedures, Tools and Metrics





# **Typical Activities**



Annually:

- ✓ 350-400 Safety "Surveys"
- ✓ 25+ Mishap Investigations
- ✓ 15-20 Assist Visits/Engagements
- ✓ 180+ Culture Workshops (100 Aviation, 45 Surface, 35 Submarine)
- ✓ Participation on recurring executive boards, working groups, and planning teams
- ✓ Strategic outreach, and hosting of seminars and information exchanges
- ✓4 magazines, a robust public website, and 24/7 fleet support
- $\checkmark$  2 school houses and 35+ online courses, training thousands
- ✓~200 dedicated personnel working daily to prevent mishaps





**Safety Surveys** 



- Not an inspection "white hat" visit ensures openness
- Experienced personnel, team sized/configured for unit
- Checks safety program compliance and reporting, observes processes, shares of best practices
- Adjusts focus for problem areas (e.g. damage control, traffic safety, hazmat control)
- Comprehensive debrief to Commanding Officer with recommendations tied to specific references

Surveys help units achieve and maintain warfighting readiness via on-the-spot training and advice







(Aviation) Safety Survey Results (recent/typical year)

- Surveyed 106 units (out of the local Norfolk, VA area)
- Average ~30 discrepancies per survey; ~ one-third involve safety-of-flight issues
- Aggregate results shared as best practices and lessons learned
- Results published by NAVSAFECEN aircraft analysts to unit Aviation Safety Officers
- Aggregate top 10 survey results submitted to the aircraft community systems working groups as action items for resolution





## **Culture Workshops**



- Reservist-led site visits; candid meetings with small groups from all rank levels and occupational specialties, and assessment outbriefs to leadership
- Allows Commanding Officers to identify human factors and concerns before they become problems
- Early warning of organizational challenges
- Forum to address foundations of culture

Aviation squadrons within a year of a culture workshop have dramatically lower mishap rates



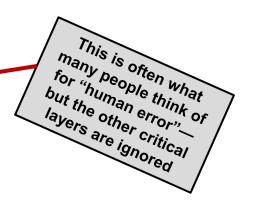


Department of Defense Human Factors Analysis and Classification System (DoD HFACS)



- Structured Analysis of Human Error
- Gets to the "Why"...Not Just the "What"
  - Organizational Influences
    - Supervision
      - Preconditions
      - Acts 🗲
- Data-driven approach
  - used in WESS database
  - new 7.0 version being implemented; application for all warfighting communities, not just aviation
- Human Factors Working Group joint analysis of DOD Human Factors







### **Naval School of Aviation Safety**



#### Crew Resource Management (CRM) Training

- Increasing Threat and Error Management training (airlines best practice) within the CRM course
- Assisting in training Dutch Navy in CRM
- Starting to export CRM to Navy Air Traffic Control, and other communities

#### **External Collaboration**

- Customs / DHS aviators prefer SAS ASO course many Border Patrol pilot students in our classes
- All USCG Flight Safety Officer attend ASO Course
- USCG COs attend the ASC course when available
- International Students take ASO, ASC and CRM course courses are highly respected in Australia and New Zealand Military Aviation



# Strengthening the Culture



- Aviation Safety Command Course required for every prospective Commanding Officer before taking command\*
  - 6 instructional days 39 hours of classroom instruction and 7 hours of lab work
  - Covers: SMS, aeromedical, human factors, investigations, reporting, risk management, crew resource management, aerodynamics, ethics and mishap response planning
- Concept of Privilege
- All mishaps and near misses are investigated and reports are sent up the chain of command for endorsement
  - Honest assessment of causal factors based on DoD HFACS accompanied with mandatory recommendations to mitigate hazards
- Commanding Officers understand that safety enhances mission readiness and combat effectiveness





# Strengthening the Culture



- Every aviation command has an Aviation Safety Officer (ASO) who is a graduate of the ASO Course
  - 23 instructional days 125 hours of classroom instruction and 23 hours of lab, with multiple "thesis" papers
  - Recommended 8 Graduate Credits by ACE
  - Has an enlisted assistant who has completed a 3 day course
- Safety Stand Downs
- "AnyMouse" Program (anonymous reporting)
- Human Factors Councils
- Aviation Safety Councils
- Enlisted Safety Councils
- Annual ORM training
- Annual CRM training for aircrew
- Hazard Report (HAZREP)/ Aviation Safety Awareness Program (ASAP) review





### **Department of the Navy** Assessing Safety Culture



- Climate assessment surveys (Command Safety Assessment/Maintenance Climate Assessment Survey)
  - USMC: Ground Climate Assessment Survey System
- Safety Surveys
- Culture Work Shops
- Data Analysis to Identify Trends and Leading Indicators





### **Naval Aviation** Assessing Safety Culture



- Naval Aviation Safety Culture is assessed via:
  - Every command completes a by bi-annual culture workshop and safety survey
  - Naval Safety Center team conducts interviews and observes squadron process to determine "how they do things around here"
  - Team debriefs commanding officer and a report is archived for trending data
  - Annual report of trends sent by Naval Safety Center to fleet
- Command Climate is assessed via:
  - Survey all squadron members after change of command and again 9 months after change of command
  - Reponses are benchmarked against like commands
  - Report goes to the Commanding Officer who debriefs his immediate superior in command
  - Roll up reports are reviewed up the chain of command
- Additional "real time" assessment if accomplished via Aviation Safety Awareness Program (ASAP)



### Afloat Community (Surface, Submarine, Diving) Assessing Safety Culture



- Full time Safety Officer with adequate safety training and operational experience
- Unit personnel involved in Safety at all levels of the Chain of Command
  - Safety Councils/Committees; Department / Division Safety personnel
  - Hazard identification and correction procedures that utilize existing watchstanders to ensure their involvement in Safety
- Processes exist for increasing knowledge and awareness of unit personnel on Safety issues
  - Command Indoctrination includes Safety and Occupational Health (SOH) topics
  - Annual refresher training; Safety Standowns occur prior to major unit events
- Regularly occurring Workplace Safety and materiel condition (zone) inspections
- Positive control of unit maintenance to ensure required work and inspections are completed on time, and correctly
- Safety programs exist to ensure that the workforce is thinking safety both at and away from the command
  - Driving Safety programs (car and motorcycle)
  - Holiday Safety Standowns
- Cultural Workshops
- Command Climate Survey and similar surveys
- Unit training: effectiveness during graded evolutions (both outside and inside command)
- Safety Surveys conducted by Naval Safety Center





# Current Initiatives and the Way Ahead



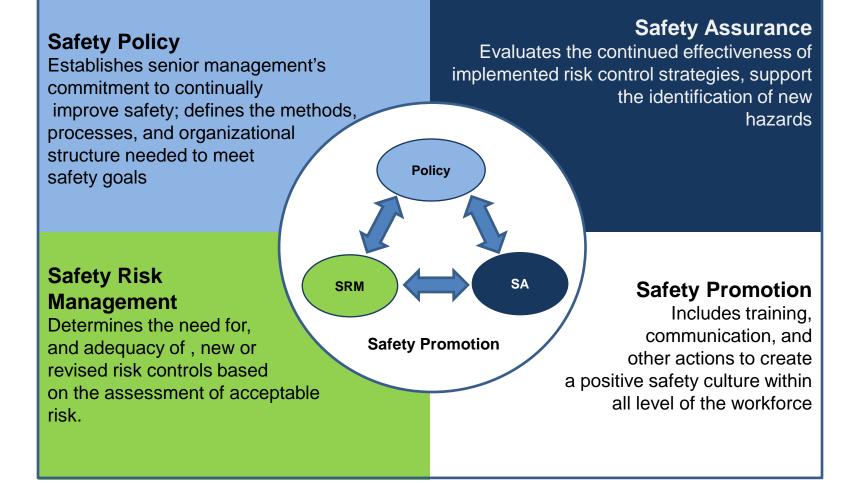


### U.S. Navy Fleet Safety Campaign Plan

- <u>Commander's Intent</u>: Implement safety culture change that results in a proactive and predictive risk management culture across warfighting communities in order to reduce personnel injuries/losses and materiel damages/losses and the resulting negative effects on combat readiness
- Institutionalizing of lessons learned/best practices sharing
- <u>Desired End State</u>: A proactive and predictive risk management culture exists Fleet-wide that operates a comprehensive Safety Management System – (our model has four components: Safety Policy, Safety Risk Management, Safety Assurance, and Safety Promotion)
  - Formalized into all lines of operations, integrated into all chain of command levels
  - Focus is on the culture, leadership, and command climate to reduce human error and prevent mishaps (identification of hazards, and reduction/management of risks)
  - Preventable mishaps are eliminated

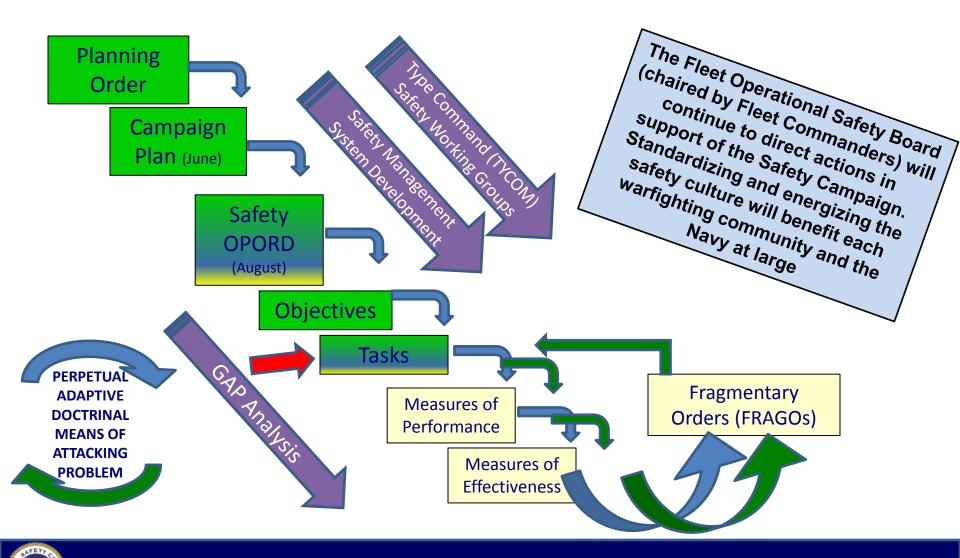


#### Safety Management System (SMS) (USN model is loosely based on FAA model)





#### "Operationalizing" Safety Culture Safety Campaign Plan Operations Order (OPORD)





- Safety OPORD FRAGOs
- Publish Joint US Fleet Forces/US Pacific Fleet Safety Management System Instruction
- Develop and refine mature safety analytics





## **Bottom Line**



 Naval Safety Culture is strong, but continues to evolve and improve

– Campaign Plan, Surveys, Workshops...

- Effective leadership and a healthy command/organizational climate set the stage for a strong safety culture
  - Senior leadership is critical; establishing the culture can not be "the safety officer's job"

"Safety Programs do not replace leadership. They are tools for leaders. We need the foundation of proper practices to ensure the safety of our military and DoN civilian personnel..."

-Admiral Jonathan W. Greenert, NAVADMIN 313/09, 28 Oct 09







## **Questions/Discussion**







## **Back-up Slides**





### Support for the Naval Safety Program



#### Policy and guidance

- Develops and implements safety policy, doctrine and guidance
- Membership on safety related boards, councils and committees
- Assists in the development of safety education and training

#### Safety data services

- Collects, analyzes and disseminates mishap data
  - Web Enabled Safety System (WESS); to be replaced by Risk Management Info (RMI)
- Tracks Navy and Marine Corps safety investigations and endorsements
- Disseminates lessons learned and best practices
- Responds to Freedom of Information Act requests for information

#### Safety program services

- Conducts safety surveys of fleet units
- Conducts cultural workshops of fleet units
- Provides mishap investigation technical assistance
- Provides assist visits to fleet units

### Strategic Engagement, Communication, & Public Affairs

Source: OPNAVINST 5450.180E, Mission and Functions of the Naval Safety Center



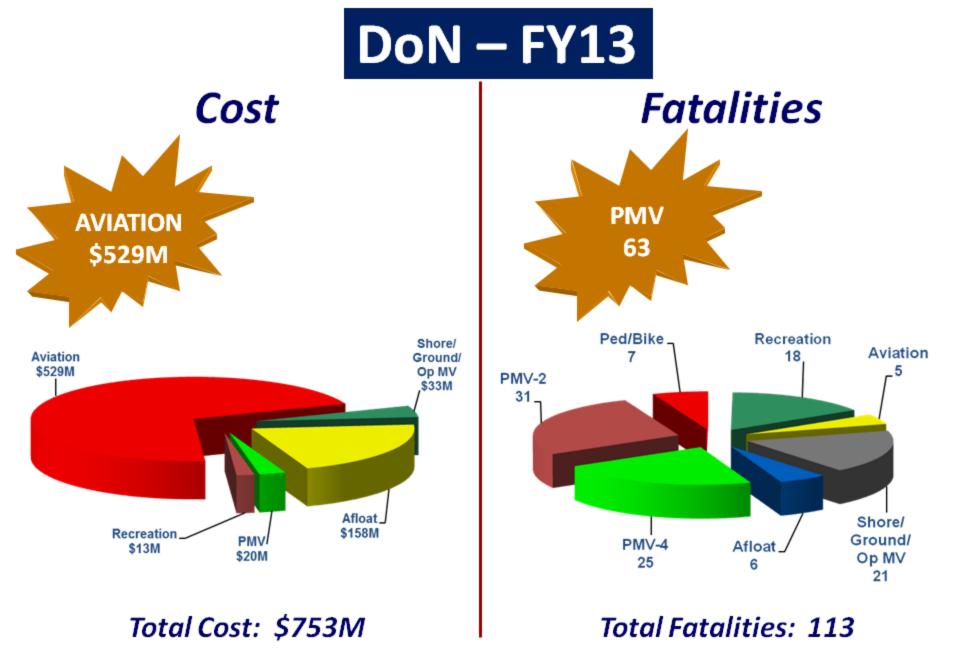


# Responsibilities



- Establish naval safety policy, doctrine and guidance;
- Implement, coordinate, maintain, and promote naval safety programs, policies, and procedures
- Conduct safety surveys ("white hat audits") of squadrons, air facilities, ships, submarines, dive units, high-risk training (e.g., parachute operations), and other selected programs
- Develop mishap investigation and reporting procedures
- Collect and evaluate aviation mishap and hazard data in order to identify significant problem areas and trends in support of aviation mishap prevention programs
- Promulgate trends, policies, procedures, techniques, and lessons learned to operating forces and those with systems safety engineering responsibilities
- Subject matter expertise in the fields of aerospace medicine, operational medicine, aviation physiology and human factors to support the Naval Safety Center and Naval Aviation Safety and consults on internal staff health issues





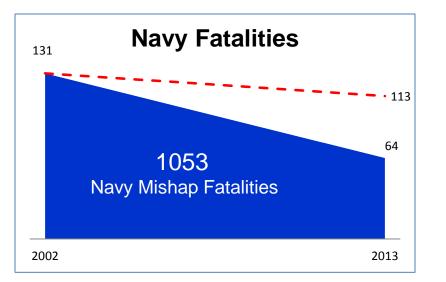
Current as of 21 Oct 2013



## **10 Year Impact**



Safety's "Return on Investment"





#### If 2002 mishap rates had continued...

- $\circ$  >400 additional Sailors would have lost their lives
- USN would have lost an additional \$2.0B in equipment
- Significant reduction in warfighting/combat readiness for the Nation









- Web-Enabled Safety System (WESS) is official required reporting tool for mishaps
- Meets DoD mandate to collect mishap information
- More than 18K active accounts
- More than 16K reports per year since 2006
- Data collected, stored, analyzed and disseminated to fleet customers and higher authority

You can't manage what you can't measure – WESS data is a mandatory part of the DoN safety system





### Risk Management Information (RMI)



#### **Current data-related challenges:**

- Under reporting, outdated system(s)
- Redundant reporting systems
- Connectivity challenges
- Stove-piped data systems
- Non-networked systems
- Inability to retrieve data
- Inability to aggregate data
- Lack of awareness of data available
- Inconsistent safety management
- Over 60 systems, applications and tools used by DON stakeholders for safety management

#### Thus, RMI:

A single enterprise-wide, IT architecture based on industry and government **best practices** to facilitate: •Capturing of all required DON safety data for consolidation, management and compliance with higher directives

•Streamlined reporting, analysis, identification and rapid dissemination of preventable mishap leading indicators both vertically and laterally across the enterprise

•Enterprise-wide ad hoc query and analysis of safety data

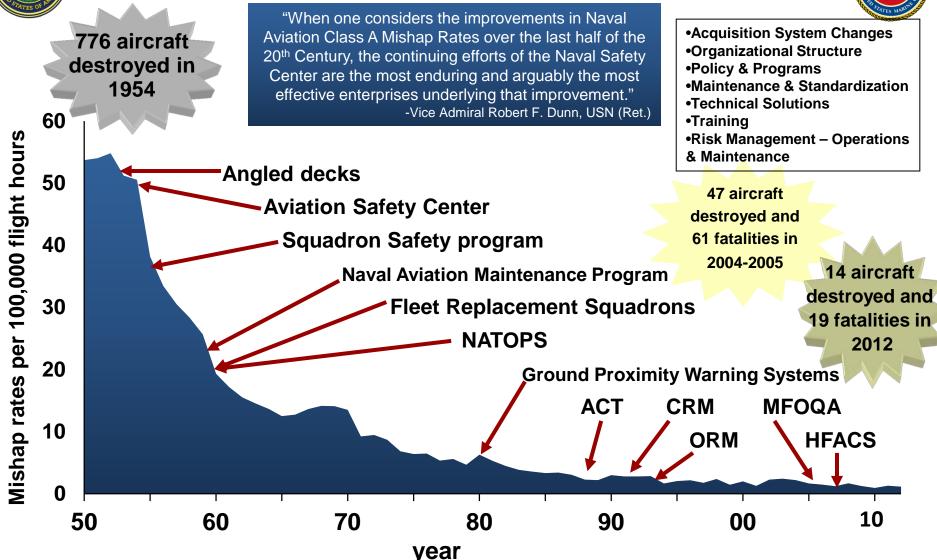
•Access to and utilization of non-safety, yet safety related databases for comparable analysis •Automated Unit-level Safety Program Management (Training, Qualifications, Medical Surveillance, HAZMAT inventories, etc)





#### **Naval Aviation History - Safety Improvements**







### Shore Command Examples – SMS and a culture of reporting



- Occupational Safety and Health Administration's (OSHA's) Voluntary Protection Program (VPP) recognizes those entities that have exemplary Safety Management Systems, which have proven to be highly effective in reducing organizations' incident rates and lost work days.
  - Military departments, agencies and installations participating in the VPP process not only expect an improved safety record but also an overall improved readiness.
  - All four of the Navy shipyards and Naval Submarine Base Kings Bay are VPP STAR sites. (<u>https://vppcx.org</u>)
- The Naval Sea Systems Command industrial operations continued to work initiatives that go beyond VPP Certification (most ship repair industrial activities have achieved VPP Certification and are recertifying when they become eligible).
  - Developed interdependency among workforce and reduced hazards
  - Improved the safety culture to one that sees errors as programmatic vice exclusively an individual's fault
  - Continue senior leadership and employee involvement in integrating and engineering safety into regular business practices, processes, and decisions





#### Shore Command Examples – SMS and a culture of reporting



Craney's Safety and Health Management program linked leadership and employee involvement

"We've worked hard to re-build a culture here where our employees aren't afraid to report hazards and near-misses either anonymously or directly to me," Quinones said. "Previously, if an employee had reported almost falling off of a ladder, he or she may have felt that it would have been used against them in some sort of way. Now the employees understand the importance of these reports and that the near-miss they don't report could result in an injury or fatality to one of their colleagues."

http://www.usace.army.mil/Media/NewsArchive/StoryArticleView/tabid/232/Article/486951/ craney-island-safety-health-management-program-reaches-pinnacle-earns-vpp-star.aspx







# **Other Fleet Initiatives**

- Submarine Force's "Force Improvement Program"
  - Upgraded Submerged Contact Management (SCM) Training
  - Enhanced Operational Planning and Risk Management
    - Improved Command Course curriculum
    - Conducted test of at-sea Operational Safety Officer
  - Crew Resource Management
    - Authorized 8-hour watches to accommodate circadian rhythm
  - Modified incident reporting criteria and established "near miss" reporting criteria
- Surface Force:
  - renewed focus on mishap root cause analysis
  - Bridge Resource Management course
  - Use of the "readiness kill chain" to define the surface requirement for safety planning and execution capabilities







# Surveys – An Overview





# Afloat Safety Survey Overview



- **Pre/Post Survey Preparation & Support** 
  - Survey checklists and refs on NSC Afloat Website
  - Water Front Seminars
  - Safety Afloat Publications News letters, Messages, Advisories
- Ships, Subs, Diving Commands surveyed every 2 years
  - Survey schedule developed in August, revised quarterly
    - Surveys grouped by Fleet Concentration Area
  - Greater than 800 individual line items checked during each survey visit
    - Big deck ships, CVN's, LHD's, LHA's, take two days to complete
    - All others (DDG's, CG's, FFG's, Subs) take one day to complete
    - Diving Surveys take 1-4 days to complete depending upon size of command
  - All discrepancies are documented. Significant, repeat and PMS-related discrepancies are annotated in the final report
- Survey focus areas
  - Surface: Safety Admin, Damage Control, Electrical, Main Propulsion, Aux, Combat Sys, Deck, Weapons, SOH
  - Sub: Safety Officer, General Departmental, Damage Control, Electrical, \_ Mechanical, Combat Sys, Deck, Hazmat, Medical
  - Dive: Admin, Training, Medical, Quality Assurance, 3M Material Management and specific diving systems/equipment







# Afloat Safety Survey Overview

- Surveys very quick snapshot of unit Safety Culture
  - Assist: Hazard / Discrepancy identification
  - Oversight: Program compliance
  - Impression: Materiel condition of ship, morale of crew...are they engaged or not?
- Forms basis of trip report to COMNAVSAFECEN

FY 12 74 ships surveyed FY 13 81 ships surveyed





## Aviation Safety Survey Overview



- Squadron Safety Survey Team
  - Scheduled by geographic plan and CO requests
  - 3 year schedule. Typically a 11-13 person team
  - 1 day "Snap shot" safety posture look
  - Squadron continues to operate
  - Operations, Safety, NATOPS, Maintenance, and ORM assessments (knowledge & application)
  - Contract maintenance squadrons. Typically only operations, training, safety and NATOPS
  - Training & resources provided as required
  - "White hat" look. Team lead will contact Director, Deputy Commander or COMNAVSAFECEN for unresolved significant safety of flight problems



## Aviation Safety Survey Overview



- Air Station Facility Surveys
  - 3 year schedule, 3 person team
  - 5 day survey
  - ATC, BASH, fuels, CFR/ARFF, arresting gear, T-Line, air terminal, airfield surfaces, AVOC, and traffic & motorcycle safety programs
  - Training & resources provided as required
- Fleet Area Control & Surveillance Facilities
  - New for FY-14
  - 3 year schedule, 2 person team
  - Operations, admin, SOPs
  - Training programs
  - Facilities condition



### **Exercise Safety Surveys**



- Support to CSGs and ESGs
  - Large unit exercises (C2X, MEU-EX, JTFEX)
  - Under development
  - Supported USS BATAAN MEU-EX
    - Observed CSG-4 exercise oversight risk management.
    - MEU risk management during exercise participation.
  - Observed
    - CSG-4 staff dynamics
    - Flight operations
    - LCAC operations
    - Well deck operations
    - VBSS (blue and red)
    - Ship and small boat operations
    - NGFS
    - UAS operations
  - Also supported USS THEODORE ROOSEVELT
    - Risk management presentations
    - TSTA-1





- High-Risk Training Safety Survey Team (Code-41)
  - Surveys of ECH II oversight and upon Training Agencies requests
  - Ensure OPNAV 1500.75 series compliance
  - The team conducts admin reviews, observes safety briefs/evolutions conducted for the course, facilities inspection and reviews of other safety programs ie; Traffic/RODS and ORM
  - Briefs, Training, Lessons Learned, Best Practices and mishap data are provided as required/requested
  - "White hat" look. Team lead will conduct an out brief and provide a report the last day of the survey discussing any discrepancies noted during the survey with the C.O.







- Private Motor Vehicle (PMV) and Motorcycle
  - Conduct on-site command installation traffic safety program reviews upon request from echelon 2 or 3 commands
  - Include traffic safety program reviews as part of all safety survey programs
    - Direct Traffic Safety SME support (Direct out-brief w/CO)
    - Checklist used by aviation/surface/sub team members (Feedback limited to checklist items)
  - Conduct traffic and motorcycle safety program quality assurance assessments of each Navy regional command biennially
    - Stakeholder meetings, MSR training, program and policy reviews, etc. (Direct out-brief w/CO and report to CNIC)







- Recreation and Off-Duty Safety (RODS)
  - On-site safety assessments are recommended every 4 years for aquatics, marinas, and auto skills centers. (CNICINST 5890.1)
  - Safety inspections of MWR organization facilities shall be performed on a regular basis (every 4 years recommended). (BUPERSINST 1710.11C)
  - CNSC conduct RODS surveys, staff-assist visits, and site visits for Department of the Navy (DON) commands and activities as directed or requested. (OPNAVINST 5100.25C)
    - (Direct out-briefs w/CO for all of above)







- Parachute program survey's (Code-44):
  - USN Instruction 3501.225 series
  - USMC MCO 3120.11
  - Survey team 1 rep for a 3-5 day survey/inspection
  - USN covers 35 commands, USMC covers 30 Units
  - Commands/Units continue to operate during visit
  - Survey/Inspected areas include: Administrative, Operations, Safety, Maintenance, ORM, Oxygen systems, and Facilities
  - Training, Lessons Learned, Best Practices and mishap data are provided as required/requested
  - "White hat" look (USN). Both team leads conduct an in-brief and out-brief with the CO or OIC. Official correspondence is sent to each command following visit within 45 days

