



U.S. Coast Guard



# **Aviation Safety Annual Report FY2014**



**Safety Program Management Division  
Aviation Safety Program (CG-1131)**

**Message from the Safety Program Management Division Chief**

It is with great pride that I write to you as the first Division Chief of the USCG's new Safety Program Management Division (CG-1131). Launched in June, 2014, the new CG-1131 is responsible for safety policies and programs across all operational communities, as well as ensuring adherence to federal environmental and occupational safety standards. While safety within aviation no longer falls under a standalone division, the leadership of the Safety and Environmental Health Division (CG-113) has directed that CG-1131 always be lead by an aviation officer so as to instill the best practices that typify aviation safety across the Coast Guard's safety culture.

This report represents a foundational best practice that the headquarters safety team hopes will provide you with information with which you can build strategies designed to address areas of vulnerability. We also hope that you will incorporate it into your unit safety stand downs and stand ups to illustrate to your pilots and aircrew that, while aviation continues to maintain a laudable safety culture, there remains much progress to be made.

This report has been designed to present mishap statistics from FY2014 along with some historical data for comparative purposes. It also spotlights mishaps from each airframe community. This best practice mimics the US Army's aviation safety publication *Flight Fax* by presenting a sanitized summary of a mishap report from which we felt valuable lessons could be learned.

Finally, it is worth noting that this report comes to you in advance of comprehensive annual safety report covering all Coast Guard activities – on and off duty - that is being produced by the Health, Safety, and Work-life Service Center and is scheduled for release in March, 2015. While we look forward to adding a robust aviation contribution to that report, we felt strongly that you and your unit would benefit from having this critical data at the earliest opportunity.

Good luck and FLY SAFE!

Commander Frank L. Flood

## Overall Performance Review

### Abbreviations

The following abbreviations apply to the safety information in this report.

**FM:** Flight Mishap, as defined as “mishaps involving Coast Guard aircraft damage/loss with or without other property damage, personnel injury/death, or occupational illness, where intent for flight existed at the time of the mishap.”

**FRM:** Flight-Related Mishap, as defined as “mishaps where there is no Coast Guard aircraft damage. Intent for flight must have existed at the time of the mishap, and other property damage, death, injury or occupational illness may have occurred. This includes near midair collisions, non-aircraft damage or injuries caused by rotor wash, and other reportable events with NO reportable Coast Guard aircraft damage.”

**AGM:** Aviation Ground Mishap, as defined as “mishaps involving damage to Coast Guard aircraft or aviation equipment, or where death, injury, or occupational illness occurred and no intent for flight existed (e.g., towing, maintenance, run-ups, servicing, etc.).”

**NMAC:** Near Midair Collision

**PF:** Pilot Flying. Formerly termed “pilot-at-controls.”

**PM:** Pilot Monitoring. Formerly termed “pilot-not-at-controls” or “safety pilot”

**HF:** Human Factor. For this report, HF implies a mishap in which a crewmember’s action, inaction, or decision was primary contributor or causal to the mishap event

**FDM:** Final Decision (Safety) Message, i.e., VCG’s final mishap report from major (Class A and B) mishaps

**DA:** Directed Action from VCG-released FDM

**RA:** Recommended Action from unit mishap report (Class C, D, or E; released via CGMS)

### Mishap Class Severity Thresholds

Mishap reporting requirements are detailed below.

Class	Personnel	Assets
A	Fatality; permanent total disability; missing or missing in action	<ul style="list-style-type: none"> <li>Reportable property damage <math>\geq</math> \$2M</li> <li>Acft missing, abandoned, beyond economical repair*</li> <li>Midair collision</li> </ul>
B	Permanent partial disability; 3+ personnel inpatient hospitalized	$\$500,000 \leq$ reportable property damage $<$ \$2M
C	Lost work time beyond event day or shift; placement on limited duty or restricted duty status; removal fm flight status; or, transfer of individual to different job	$\$50,000 \leq$ reportable property damage $<$ \$499,999
D	Require more than simple first aid but not Class C criteria	<ul style="list-style-type: none"> <li><math>\\$0 \leq</math> reportable property damage <math>&lt;</math> \$49,999</li> <li>High Potential for Loss (HIPO) mishaps IAW COMDTINST M5100.47 Section 3.E.1.f</li> <li>Near midair collisions</li> <li>Other flight-related mishaps IAW M5100.47A</li> </ul>
E	Not applicable	Engine damage only regardless of cost

\* A policy change is pending that addresses the “aircraft missing, abandoned, beyond economical repair” clause that may not apply to all Auxiliary aircraft mishaps; these events are classified by CG-113 on a case-by-case basis.

### **Overall Aviation Mishap Totals**

During Fiscal Year 2014, the Coast Guard (CG) aviation fleet logged over 109,000 flight hours with zero Class A Mishaps, zero Class B mishap, 24 Class C mishaps, 383 Class D mishaps, and 51 Class E mishaps. We provide a comprehensive summary of aviation mishaps by number and rate, differentiated by class, operational mode and airframe in the next section. We experienced a slight decrease in reported mishaps in FY14, fairly equally distributed across mishap class (C, D, and E) and OPMODE (flight, flight-related, and ground).

### **FY 2014 mishap count by Class (FY13 totals shown in parentheses)**

	Class A	Class B	Class C	Class D	Class E	Trend since prev FY	% change fm FY13	Flt hr delta since FY13
Rotary-wing	0 (0)	0 (1)	14 (32)	303 (341)	25 (38)	-70	-17%	+3%
Fixed-wing	0 (0)	0 (0)	10 (5)	68 (114)	26 (22)	-37	-26%	-3%
Auxiliary	0 (0)	0 (0)	0 (0)	7* (3)	0 (0)	+4	+233%	TBD
Non Asset-Specific	0 (0)	0 (0)	0 (0)	5 (14)	0 (0)	-9	-64%	N/a
<b>Total</b>	0 (0)	0 (1)	24 (37)	383 (472)	51 (60)	-112	-20%	+1%

\*Two CG Auxiliary mishaps in FY14 were deemed total loss events by the NTSB. Currently, each of these is being categorized according to preliminary damage cost estimates (in this case, Class D flight mishaps).

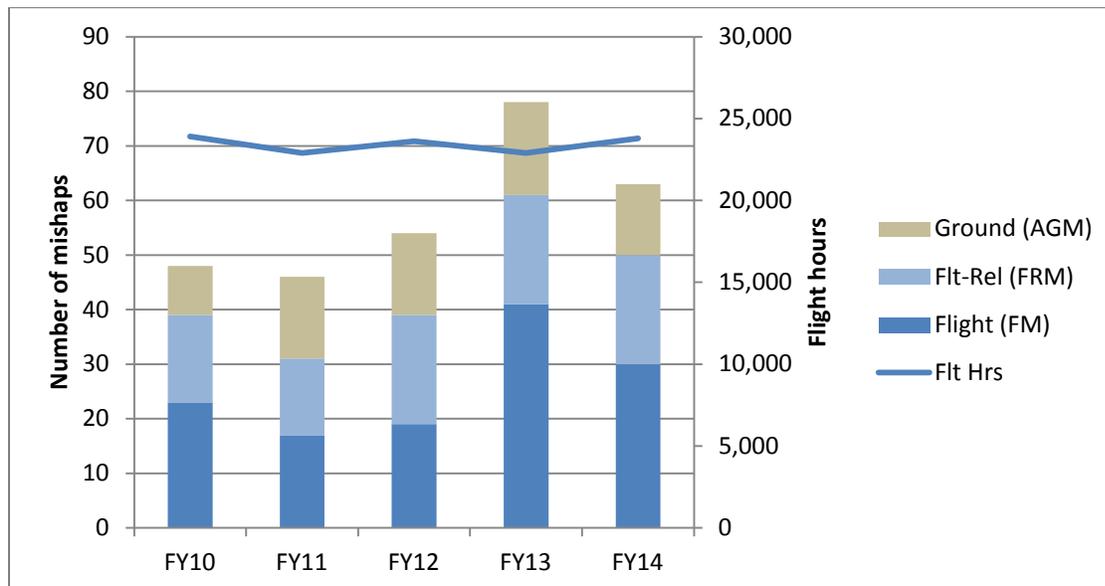
### **Mishap costs by OPMODE (FY 2014)**

	Class A	Class B	Class C	Class D	Class E	Total
Flight Mishaps	\$ -	\$ -	\$ 1,694,959	\$ 1,322,682	\$ 3,639,903	\$ 6,697,544
Flt-Rel Mishaps	\$ -	\$ -	\$ -	\$ 4,750	\$ 1,836	\$ 6,586
Ground Mishaps	\$ -	\$ -	\$ 478,061	\$ 247,406	\$ 875,567	\$ 1,601,033
<b>All</b>	\$ -	\$ -	\$ 2,173,020	\$ 1,574,838	\$ 4,517,305	\$ 8,305,162

## MH-60 Performance Review



### MH-60 mishaps by OPMODE (FY 2010-2014)



### MH-60 mishaps by Class

	Class A	Class B	Class C	Class D	Class E	Total
FY14	0	0	2	55	6	63
3-yr avg	0	0	7.3	52	5.7	65.0
5-yr avg	0.4	0	5.6	46	5.8	57.4

### MH-60 mishaps by causal factor (FY 2014)

	Materiel	Physical Environment	All HF	HF - Aircrew	HF - Maintenance	Total
FM	16	2	12	9	3	30
%	53%	7%	40%	30%	10%	
FRM	4	7	10	8	2	21
%	19%	33%	48%	38%	10%	
AGM	1	0	11	0	11	12
%	8%	0%	92%	0%	92%	
FM+FRM	20	9	22	17	5	51
%	39%	18%	43%	33%	10%	
All H-60	21	9	33	17	16	63
%	33%	14%	52%	27%	25%	

***MH-60 Mishap Factors***

<b>Materiel Factor Mishaps</b> Breakdown by affected / malfunctioning system		<b>Non-Materiel Mishaps</b> Breakdown by category	
MGB/IGB System	5	Maintenance error	16
Engine	4	Laser exposure	6
Airframe	3	Hoist Ops	6
Tail Rotor System	3	External Load Ops	2
Stabilator System	2	Stabilator strikes	2
Hydraulic System	1	Rotor blade strikes	2
Flight Control System	1	Fast Rope Ops	1
Electrical System	1	Birdstrike	1
Flt instruments	1	Ship-helo Ops	1
Total	21	Physiological Event	1
		FOD environment	1
		FCF event	1
		Other	2
		Total	42

***MH-60 Mishap briefs (non-privileged)***

**Engine Ng Overspeed – Class E:** During the DECU Contingency Rated Power (CRP) Limiter Check portion of a maintenance test flight, an MH-60T experienced an Ng overspeed above 102% for 35.25 seconds. The Ng overspeed resulted in a number one engine replacement.

**Engine Failure – Class E:** Following successful engine starts, the rotor brake was released and the pilot advanced the power control levers (PCL) towards the FLY detent. The entire crew felt a significant vibration and heard a loud popping noise on the right-side (No. 2) engine. Both pilots noticed the number two engine turbine gas temperature (TGT) spike above 950 degrees C. The pilot immediately performed an Emergency Engine Shutdown. TGT remained above 600 degrees C, prompting the pilot to engage the number two starter until TGT dropped below 300 degrees C. The flight was aborted and the engine was removed and replaced at a remote airfield.

**Engine Damage (FOD) – Class E:** MH-60T crew was conducting a LE patrol near a remote island area. While flying over the shoreline, the crew observed suspicious packages along the tree line as well as foot prints in the sand and an anchored small boat in the vicinity. The crew conducted a low pass of the beach to identify a suitable landing area to allow the LE crew to investigate the suspicious activity. The crew chose a hard-packed rocky beach area to land on. Considering the wind direction, and to avoid offloading the LE crew into the waterline, the crew planned to conduct a "two wheel" landing (main gear only) while maintaining sufficient power to prevent the tail wheel from settling into the soft sand and water. The crew conducted the approach and entered a low hover, less than one foot over the ground. The PIC directed the first agent to depart the aircraft while in a low hover. As the second agent was preparing to depart the cabin door, the entire crew heard a high pitched rubbing/grinding noise originating from above the pilot's heads. The crew agreed that it was an abnormal noise, aborted the LE crew offload, and shut down the aircraft.

**Rotorwash Mishap – Class D:** An MH-60T aircrew was conducting vertical surface training while another MH-60T orbited overhead to provide cover. The mishap MH-60T crew established a 72-foot hover and began conducting overhead checks. During this time, the turbulent air created by the orbiting helicopter's downwash caused the mishap MH-60T to yaw sharply to the right and begin an uncommanded descent. The PF instinctively pulled in power to arrest the descent and recovered at 36

feet. Both flight crews discussed the event, mitigated the hazard, and completed the vertical surface training without incident.

**Inadvertent IMC – Class D:** An MH-60T crew departed under reported VFR conditions for hoist training and encountered low visibility/clouds at 500 ft AGL. After returning to the airfield, the aircrew chose to fly an approved Low Visibility Route to avoid the fog. Once established on the route, the weather deteriorated below 300 ft and the crew inadvertently entered IMC (IIMC). The PIC directed a descent to 250 ft AWL in an attempt to regain VMC as the aircrew continued to fly outbound. While following the displayed navigational guidance, the PF initiated a turn and believed that the aircraft was turning left, but noticed the turn indicator and deviation bar indicated a turn to the right. Although the PF recognized the error and attempted to increase the flight control input for a left turn, the PF continued to allow the aircraft bank angle to increase to the right. The PM advised the PF that he was turning the wrong direction and the PF immediately announced "I have vertigo" and passed the controls to the PM. The PM took the controls and completed the Unusual Attitude Recovery Procedure steps. The crew continued the right turn, followed flight plan guidance back to the air station, and terminated the flight.

**Stabilator Damage – Class D:** An MH-60T was launched for a daytime cruise ship MEDEVAC of a 77 year old male experiencing heart attack symptoms. Since the aft decks of the cruise ship were covered in deck chairs, passengers and recreational equipment, the cruise ship preemptively prepared the bow for hoist ops and moved the patient to a position at the bow. Upon arriving on scene, the crew agreed that while a bow hoist was not ideal due to the expected relative wind in a hover (270 degrees at 15kts), they ultimately decided it was feasible (83% torque required, 125% torque available). The aircrew elected to hoist over the starboard section of the foredeck. This hover location would place the ship's mast behind the aircraft during the hoists. During the deployment, the cruise ship advised the aircrew over the radio that the helicopter appeared to be hovering very close to the forward mast. Since the PM was unable to see the mast, the FM stated that he did not visually see the mast. The PF then increased the hover height from 30 feet to 35 feet and completed the hoist. Upon completion of the hoist, the RS advised the aircrew via radio that a cruise ship deck hand stated that the helicopter brushed against the mast during the hoist. The aircrew did not observe any symptoms of system degradation, nor did they feel any helicopter flight control response associated with contacting the mast in a hover. The aircrew elected to continue with the MEDEVAC and subsequently recovered the patient, a cruise ship doctor, and the Rescue Swimmer. The crew then flew to the nearest MEDEVAC drop-off location and shutdown the aircraft. The left stabilator wing was replaced due to minor damage.

**Hoist Mishap – Class D:** An MH-60T crew attempted a basket hoist with trail line to a 45 ft RB-M Dead in the Water (DIW). The trail line and basket were delivered to the vessel without incident. As the pilot maneuvered the aircraft into position to pick up the basket, the lost visual reference with the hoisting area and called "lost target". There was an initial discussion of shearing the hoist; however, the FM under instruction felt he was able to conn the aircraft and unravel the cable. Approximately 5 seconds later with no progress untangling the hoist cable, the FM instructor called for the cable to be sheared. No damage occurred to the RB-M and the MH-60T landed at home station without further incident.

**Fast Rope Mishap – Class D:** An MH-60T crew was conducting Basic Fast Rope training with ropers. The fast rope was deployed for the third stick and the first roper began his decent followed by the second roper. With the second roper still on the rope, the boat and aircraft began to move apart causing the intended deployment area to move forward and right. This caused the two ropers to be over the water. The second roper locked out on the rope and the lead roper stopped downward progress. While the FM conned the aircraft forward and right, the lead roper elected to execute a controlled release into the water. The FM called roper in the water and conned the aircraft over the boat to deploy the second roper. The Safety Boat immediately responded and recovered the roper in the water. The flight was aborted and the lead roper was successfully recovered and did not sustain any injuries.

**Main Rotor Blade Strike – Class D:** Following the successful completion of three confined area landings (CAL) for training, the PIC decided to change locations to another nearby dirt road. The PIC briefed that this site would require a landing in which the tail wheel and one main landing gear wheel would touchdown while the opposite main landing gear wheel would remain suspended over the gully. The PF executed the CAL landing and departure without incident. The crew briefed that the next CAL would be similar but would approach from the opposite direction. While the tail wheel touched down, an aircrew member stated that the rotor blades contacted vegetation at approximately the 7 to 8 o'clock position. The PIC assumed the controls to prevent any further leftward drift into the vegetation, turned on the contingency power, and exited the confined area without further incident. While orbiting the site, the crew did not feel any feedback in the flight controls or abnormal vibrations and elected to return to the air station for inspection.

**Main Rotor Blade Strike – Class D:** An MH-60T crew was launched for a fallen hiker in the mountains. Once on scene, the RS was deployed to a nearby hillside to assess the survivor's medical needs. Given the lack of suitable landing sites and the critical status of the hiker, the aircrew placed the helicopter in a 50-foot hover within a ravine surrounded by trees. The survivor was successfully hoisted, but as the aircrew began a simultaneous recovery of the RS and one EMT, the tip of the main rotor system contacted the leaves on a tree. Upon completion of this hoist, the PF transitioned into forward flight. Given that the RS and EMT both relayed the urgent need to transport the patient to a Level 1 trauma center, the aircrew quickly discussed their LAND AS SOON AS PRACTICABLE landing criteria and the gain of saving the hiker's life. The aircrew decided to proceed to the nearest Level 1 hospital for patient transfer. The helicopter was shutdown and a thorough inspection of the rotor blades revealed no damage. A maintenance and CO's release was granted and the aircrew returned to the air station.

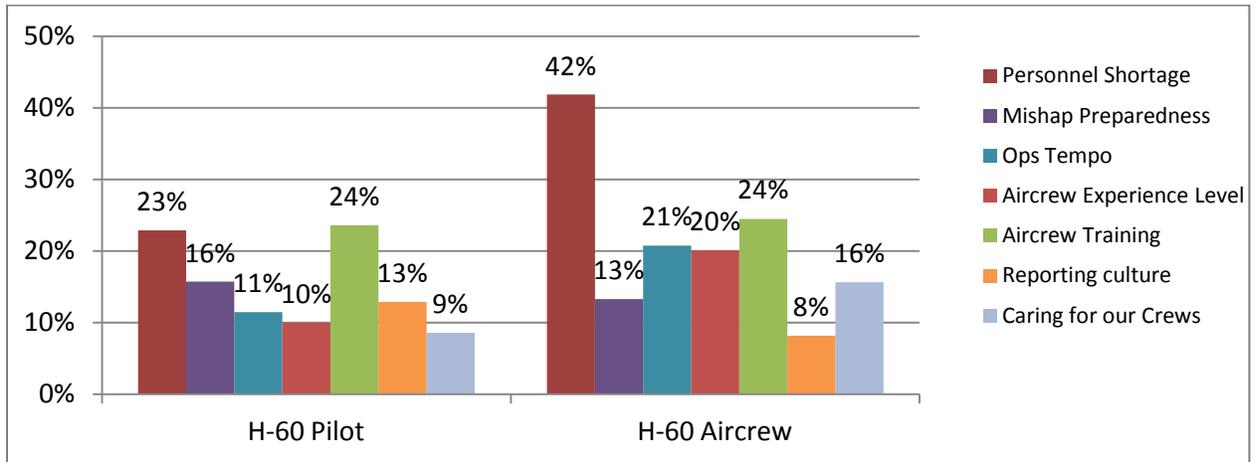
#### ***MH-60 Post-mishap corrective actions***

	Total DA/RA	Doctrine	Training	Materiel	Personnel	Other
FDM 6028*	15	6	3	6	-	-
FDM 6003**	10	3	4	3	-	-
Q1 reports	6	-	-	6	-	-
Q2 reports	0	-	-	-	-	-
Q3 reports	5	3	1	1	-	-
Q4 reports	10	3	3	4	-	-

\* CG6028 (Class A flight mishap; Air Station Elizabeth City, occurred Mar '10; FDM released Apr '14)

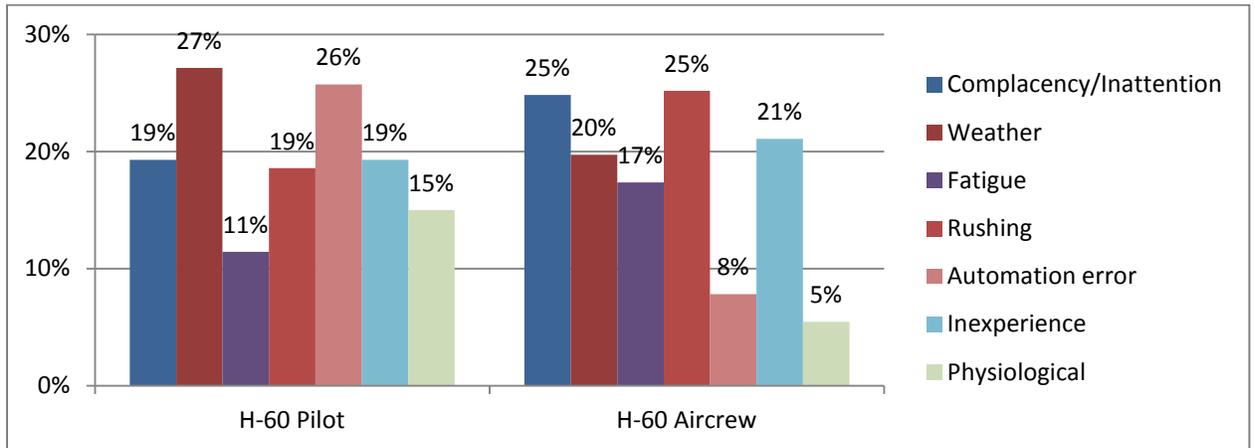
\*\*CG6003 (Class A flight mishap; Air Station Elizabeth City, occurred Nov '08; FDM released Mar '14)

**MH-60 Top Safety Concerns**



\*Only highest-scoring responses shown; lower-scoring responses were removed but are available on the FSO Portal.

**MH-60 Top Mishap-Producing Conditions**

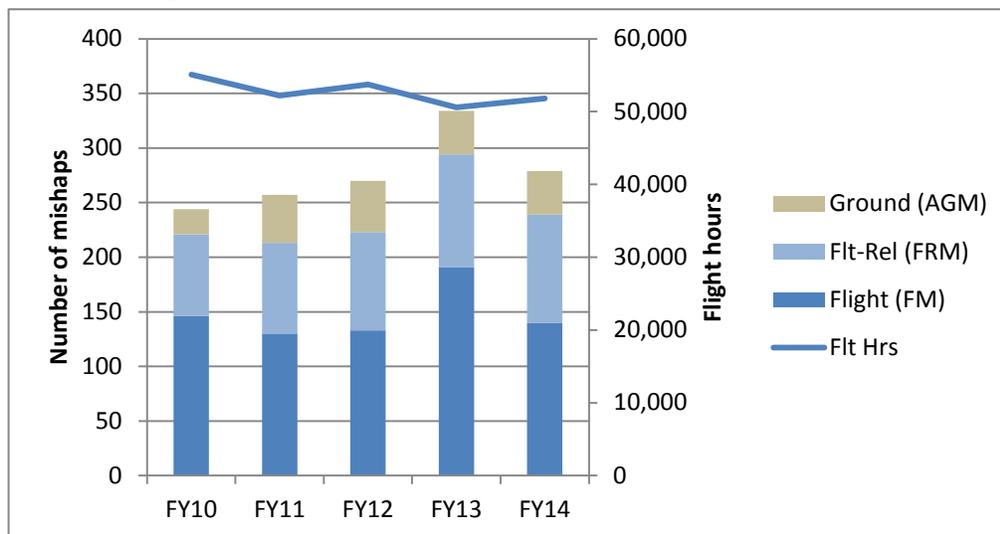


\*Only highest-scoring responses shown; lower-scoring responses were removed but are available on the FSO Portal.



## MH-65 Performance Review

### H-65 mishaps by OPMODE (FY 2010-2014)



### H-65 mishaps by Class

	Class A	Class B	Class C	Class D	Class E	Total
FY14	0	0	12	248	19	279
3-yr avg	0.7	0.3	14.7	253.7	25.0	293.4
5-yr avg	0.8	0.6	15.8	234.2	25.4	275.4

### H-65 mishaps by causal factor (FY 2014)

	Material	Physical Environment	All HF	HF - Aircrew	HF - Maintenance	Total
FM	77	8	58	50	8	143
%	54%	6%	41%	35%	6%	
FRM	13	29	54	38	16	96
%	14%	30%	56%	40%	17%	
AGM	3	1	36	6	30	40
%	8%	3%	90%	15%	75%	
FM+FRM	90	37	112	88	24	239
%	38%	15%	47%	37%	10%	
All H-65	93	38	148	94	54	279
%	33%	14%	53%	34%	19%	

***MH-65 Mishap Factors***

<b>Materiel Factor Mishaps</b> Breakdown by affected / malfunctioning system		<b>Non-Materiel Mishaps</b> Breakdown by category	
Engine	19	Maintenance HF	54
Electrical/Avionics	13	Near midair collisions	8
AFCS/Flt Control	12	Bird/wildlife strikes	0
Airframe	10	Hard landings	2
Flt Instruments	6	HIFR-related	2
Hydraulic System	4	Ship-helo ops	12
ECS	2	Weather	8
Fuel System	6	ALSE	1
Hoist System	3	ASM overtorques	7
Landing Gear	2	Other MGB overtorques	19
Main Gearbox	6	Weight & balance	6
Tail Gearbox	8	Cargo hook ops	2
Vibes (source unk)	1	Hoist, Rescue Swimmer	4
Main Rotor System	1	Hoist, Boat	14
<b>Total</b>	<b>93</b>	<b>Total</b>	<b>139</b>

***MH-60 Mishap briefs (non-privileged)*****Engine hot starts – Class E**

- Event #1: The pilot started the number two engine and observed Turbine Outlet Temperature (TOT) rapidly rising from 600 degrees to 800 degrees while the FADEC Control Switch was in the idle position. The flight mechanic standing fire guard observed white smoke coming from the engine. The pilot aborted the start. There were no indications of a post-shutdown fire. The engine was removed and returned to the manufacturer. Final OEM report pends.
- Event #2 (different aircraft): During a post-maintenance ground check, after placing the number one engine to IDLE, the TOT rapidly exceeded 750 degrees Celsius and continued to rise. The pilot aborted the number one engine start sequence as TOT rose above 900 degrees. The fire guard noticed a large fireball emanating from the engine exhaust. Once the engine control was switched off, the engine temperature decreased normally. The remaining aircraft systems were shutdown.

**MRM – Class C ground mishap**

- Event #1: During a ground run, after both engines were started, crew noted that the MGB pressure warning light and MGB PMP MAIN caution light were illuminated on the instrument panel, and the MGB pressure scale was 0. Crew secured the engines. In total, the rotors had been turning for approximately three minutes. After shutdown, maintenance personnel determined the MGB reservoir was empty of oil. As a result, the aircraft's MGB required a major overhaul.
- Event #2: While maneuvering a tow tractor in close proximity of an aircraft at night, the door of the tractor came open and struck the aircraft's nose radome and left side pitot tube.
- Hydraulic System – Class C: Crew experienced uncommanded aircraft movements while flying with Flight Director (FD) modes engaged. The symptoms persisted with the flight director disengaged, and the cyclic control became increasingly stiff. Crew made a Mayday call and conducted an emergency landing into a snow-covered corn field. After replacing some flight control system components, the aircraft was returned to service. Thirty-nine days and 15 flight hours later, the same aircraft exhibited

similar symptoms (flight director anomaly; onset of abnormal cyclic stiffness). The crew safely landed on a snow covered beach and the aircraft was shut down with no further incidents. Significant troubleshooting of the secondary hydraulic system revealed a broken check-valve in the secondary manifold body.

### Hoist mishaps – Class C

- Event#1: Crew was conducting night DIW (dead-in-the-water) training hoist with a CG training boat. After delivering the trail line, the crew used the aircraft's rotorwash to spin the training boat around for more favorable winds. The aircraft then moved into position for basket delivery and the flight mechanic (FM) lowered the rescue basket down towards the boat. As basket continued down, the pilot lost visual contact with the vessel and the FM gave a series of commands to help reposition the helicopter. The position of the helicopter in relation to the boat became unsafe and the FM sheared the hoist cable. The aircraft departed scene and recovered to the local Air Station without further incident.
- Event #2: During a night hoist training flight, the crew began a direct basket delivery to a 47-MLB underway. The hoisting direction was westerly (headed offshore), sea state was negligible, and there was zero illumination. During the hoist, the pilot lost nearly all visual reference to the MLB, and the hoist cable became fouled on the DF antenna mount of the MLB and the hoist cable separated. The MLB's DF antenna also broke off, striking a MLB crewman on the helmet. Both crews returned to base. Additional minor aircraft damage was sustained to the hoist boom, radome, pilots door, and pitot tube. A MLB crewman also suffered two minor (first-aid only) cuts to the hand.

**Aviation Special Missions training – Class C:** During special missions tactics training, pilot executed a go-around maneuver at 75' above the water. As the aircraft yawed to the right, the tail came through the wind line. The aircraft decelerated and began to descend. As the pilot increased collective to arrest the rate of descent, pilots noticed the aircraft's torque indication underlined in red and heard an aural tone. The aircraft leveled at approximately 10-15 feet. The aircrew discontinued training and climbed to a safe altitude. With level off checks complete, the crew checked the Engine Exceedance Page and noted a MGB overtorque of 107.9 percent.

### *Post-mishap corrective action items*

	Total DA/RA	Doctrine	Training	Materiel	Personnel	Other
FDM 6581*	4	3	1	-	-	-
FDM 6523**	19	9	4	3	3	-
FDM 6589***	6	4	2	-	-	-
FDM 6535****	10	5	1	3	1	-
Q1 reports	9	7	-	2	-	-
Q2 reports	12	6	-	6	-	-
Q3 reports	13	5	-	7	-	1
Q4 reports	15	8	2	4	-	1

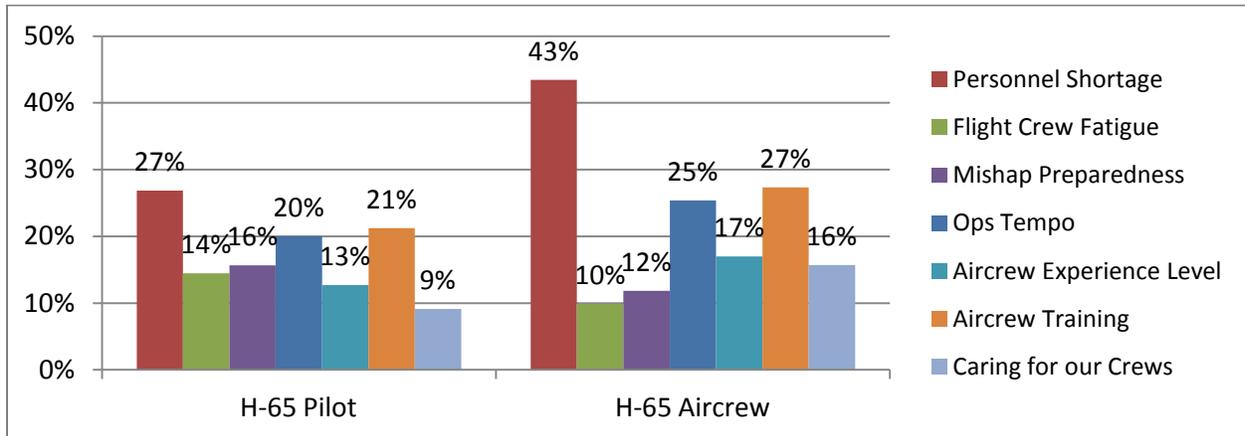
\*CG6581 (Class A flight mishap, Air Station Humboldt Bay, occurred Apr '10, FDM released May 2014)

\*\*CG6523 (Class A flight mishap; Air Station Detroit, occurred Apr '10, FDM released May 2014)

\*\*\*CG6589 (Class B flight mishap, Air Station Houston, occurred Oct '10; FDM released May 2014)

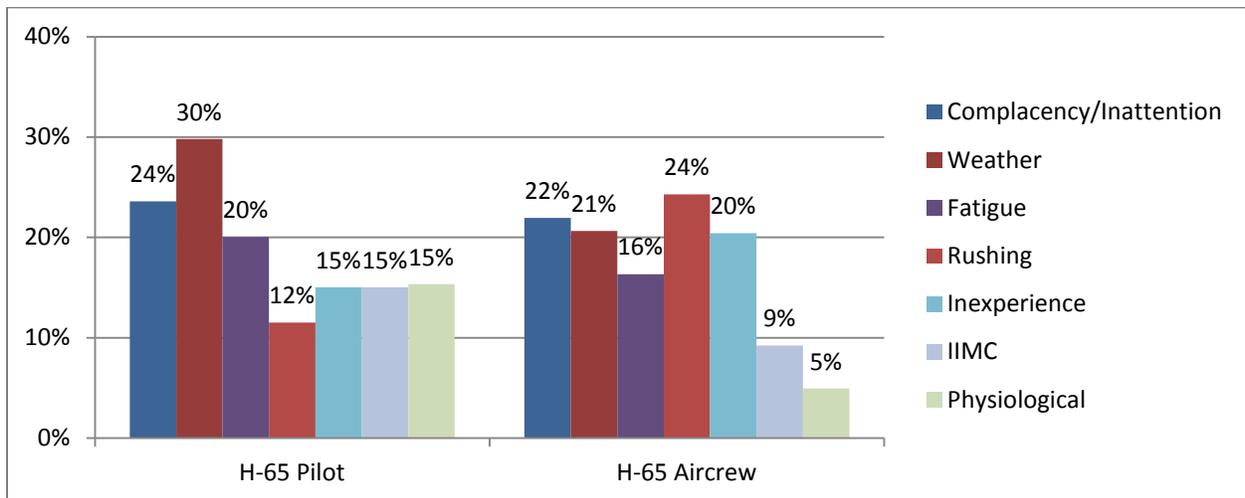
\*\*\*\*CG6535 (Class A flight mishap, ATC Mobile, occurred Feb '12; FDM released Feb 2014)

**Top Safety Concerns**



\*Only highest-scoring responses shown; lower-scoring responses were removed but are available on the FSO Portal.

**Top Mishap-Producing Conditions**



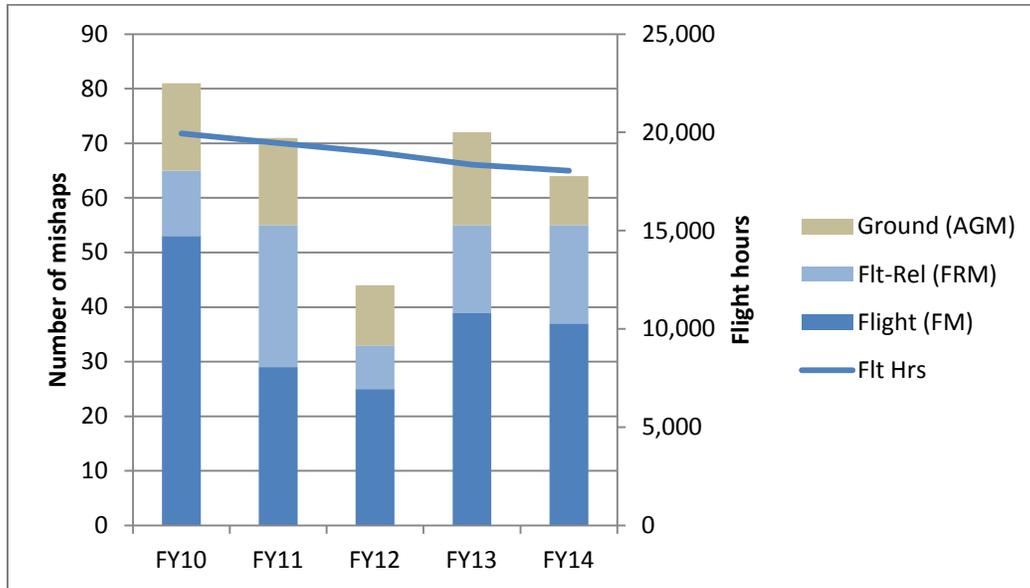
\*Only highest-scoring responses shown; lower-scoring responses were removed but are available on the FSO Portal.



## HC-130H/J Performance Review



### HC-130 mishaps by OPMODE (FY 2010-2014)



### HC-130 mishaps by Class

	Class A	Class B	Class C	Class D	Class E	Total
FY14	0	0	6	34	24	64
3-yr avg	0	0	3.7	39.3	17	60.0
5-yr avg	0.2	0	4.4	42.8	19	66.4

### HC-130 mishaps by causal factor (FY2014)

FY14	Materiel	Physical Environment	All HF	HF - Aircrew	HF - Maintenance	Total
FM	31	3	3	2	1	37
%	84%	8%	8%	5%	3%	
FRM	5	9	4	3	1	18
%	28%	50%	22%	17%	6%	
AGM*	0	2	7	0	7	9
%	0%	22%	78%	0%	78%	
FM+FRM	36	12	7	5	2	55
%	65%	22%	13%	9%	4%	
All HC-130	36	14	14	5	9	64
%	56%	22%	22%	8%	14%	

**HC-130 Mishap Factors**

<b>Materiel Factor Mishaps</b> Breakdown by affected / malfunctioning system			<b>Non-Materiel Mishaps</b> Breakdown by category	
	130H	130J		
Engine/Prop	17	-	Maintenance HF	9
-Valve housing	7	-	Bird/wildlife strikes	7
-Oil cooler flap	3	-	Near midair collisions	3
-Other engine/prop	7	-	Laser strikes	3
Hydraulic/Flt control System	4	2	Weather-related	22
Landing Gear System	3		Landing	1
Electrical System	2	1	Taxi	11
Flight instruments/indicators	3	2	ADS/Drop operations	12
Airframe/TFOA	2	-	Other	1
Total	31	5	Total	285

**HC-130 Mishap briefs (non-privileged)**

**Reduction gearbox system** (<\$100k repairs): Crew completed a training mission with no mechanical issues or unusual engine indications noted during the flight. Upon engine shutdown, the crew observed the number 2 engine shed a significant amount of oil. The oil sprayed onto the external fuel tank, wing flap and portions of the left fuselage and continued to stream out of the engine on to the ramp below. Upon inspection, several nuts from the torque meter assembly had come loose and were in the bottom of the nacelle. One bolt had also been sheared off completely. Following this mishap, Aviation Logistics Center Long Range Surveillance Product Line published message TCTO HC-130H T71050, requiring a torque check on all reduction gearbox torque meter housing nuts in the HC-130H fleet and report all discrepancies to ALC Engineering for evaluation.

**Rough area landing mishap:** Over a period of three days, crew completed four takeoffs and landings to a gravel runway to deliver personnel and equipment to a remote operations site. After each evolution to/from the gravel runway, the aircraft was inspected for damage. Crew noted some minor cosmetic damage. After the third takeoff/landing evolution the crew observed an increase in the level of damage to the left main landing gear. Parent unit decided that the aircraft was safe to fly another evolution to/from the gravel runway. Crew conducted a fourth and final landing/takeoff to the gravel runway. The crew completed the assigned mission and returned to parent unit. Upon return, it was determined that the damage warranted the replacement of the left main landing gear, tires, brakes, antennas, drains and cosmetic improvement to the skin of the fuselage.

**Class D flight mishap:** During a logistics mission to an OCONUS airfield, crew completed an uneventful offload. The crew briefed short field operations, taxi considerations and departure procedures for the runway. The crew taxied utilizing the parallel taxiway. The pilot offset the taxiway centerline by approximately 6-8 feet to the left to aid in clearing the right wing from the trees and obstructions located along the side of the taxiway. The pilot posted crewmembers to the windows to ensure proper clearance was maintained throughout the taxi. The aircraft was verbalized to be clear of obstruction until approximately the last 1,000 feet when a crewmember announced that the right wing tip had contacted a branch. The crew returned the aircraft to the ramp area where they subsequently shut down all engines and completed a thorough inspection. Upon inspection there was no damage and with concurrence from the parent command the aircraft was cleared for flight.

**Class D flight mishap:** Upon landing while still on the runway, aircraft experienced a fire coming from the pilot's side lower circuit breaker panel. The flight deck crew observed flames escaping from the circuit breaker panel and immediately extinguished the fire using the cockpit fire extinguisher. The pilots

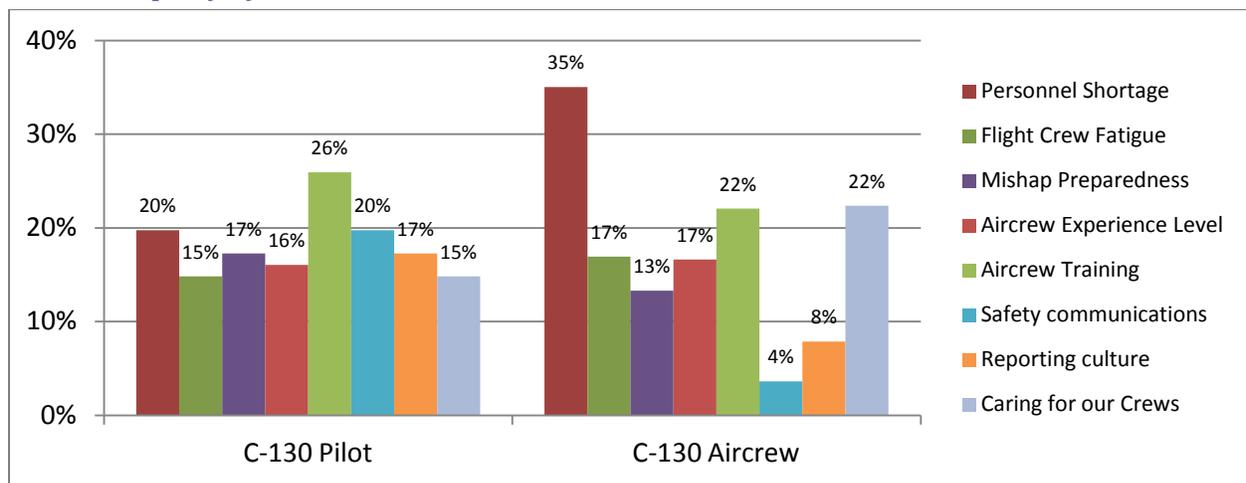
informed tower of the situation and taxied clear of the active runway for ground evacuation. Crew completed ground evacuation; there were no injuries. During the ensuing inspections, the fire damage was not significant (<\$10k). ALC believes the fire originated in the auxiliary pump relay and damaged additional wiring and relays inside the circuit breaker panel. ALC will continue to conduct an Engineering Analysis to determine the cause of the fire.

**HC-130 Post-mishap corrective action items**

	Total DA/RA	Doctrine*	Training	Materiel	Personnel	Other
FY14 (C-130H/J)	11	9	-	1	-	1

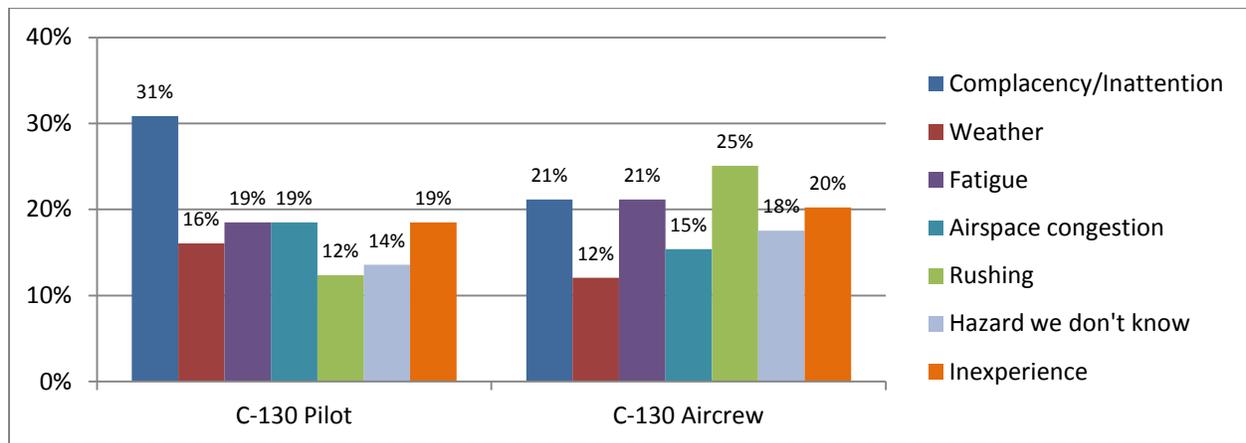
\*Doctrine action items include HC-130 flight manual and other TTP.

**HC-130 Top Safety Concerns**



\*Only highest-scoring responses shown; lower-scoring responses were removed but are available on the FSO Portal.

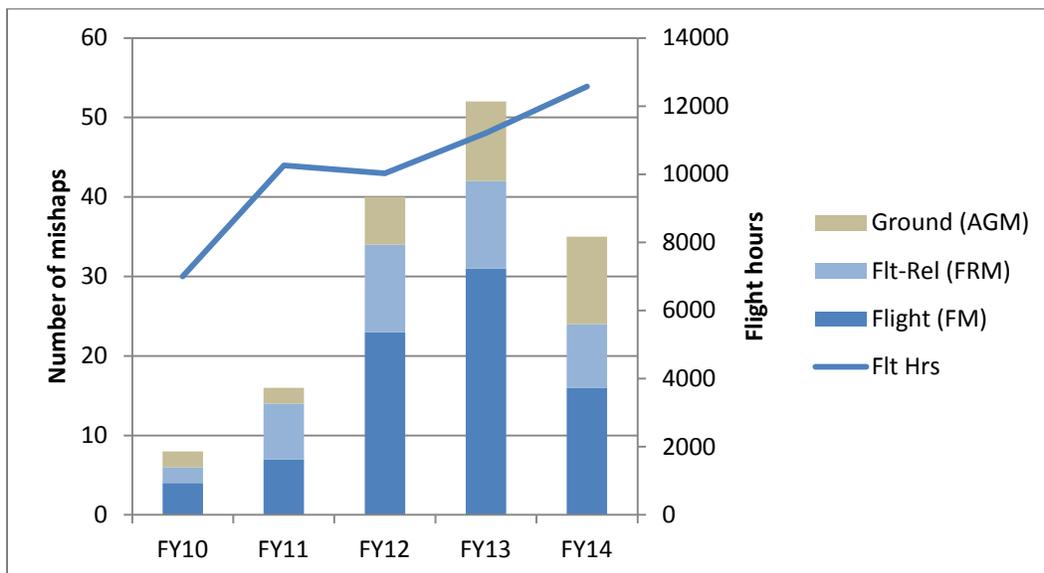
**HC-130 Top Mishap-Producing Conditions**



\*Only highest-scoring responses shown; lower-scoring responses were removed but are available on the FSO Portal.

**HC-144A Performance Review**

HC-144 mishaps by OPMODE (FY 2010-2014)

**HC-144 mishaps by Class**

	Class A	Class B	Class C	Class D	Class E	Total
FY14	0	0	4	29	2	35
3-yr avg	0	0	2.3	33.7	6.3	42.3
5-yr avg	0	0	1.8	23.8	4.6	30.2

**HC-144 mishaps by causal factor (FY2014)**

FY14	Materiel	Physical Environment	All HF	HF - Aircrew	HF - Maintenance	Total
FM	9	1	6	4	2	16
%	56%	6%	38%	25%	13%	
FRM	1	5	2	1	1	8
%	13%	63%	25%	13%	13%	
AGM	2	0	9	0	9	11
%	18%	0%	82%	0%	82%	
FM+FRM	10	6	8	5	3	24
%	42%	25%	33%	21%	13%	
All HC-144	12	6	17	5	12	35
%	34%	17%	49%	14%	34%	

***HC-144 Mishap Factors*****Materiel Factor Mishaps**

Breakdown by affected / malfunctioning system

Engine	3
Hydraulic System	3
Electrical System	2
Flight Control System	1
Airframe	1
ECS	1
Landing Gear System	1
<b>Total</b>	<b>12</b>

**Non-Materiel Mishaps**

Breakdown by category

Maintenance HF	10
Depot-level mx HF	2
Laser exposure	3
Aircrew HF	3
Engine overtorque	2
Near midair collisions	1
Bird/wildlife strikes	1
Other	1
<b>Total</b>	<b>23</b>

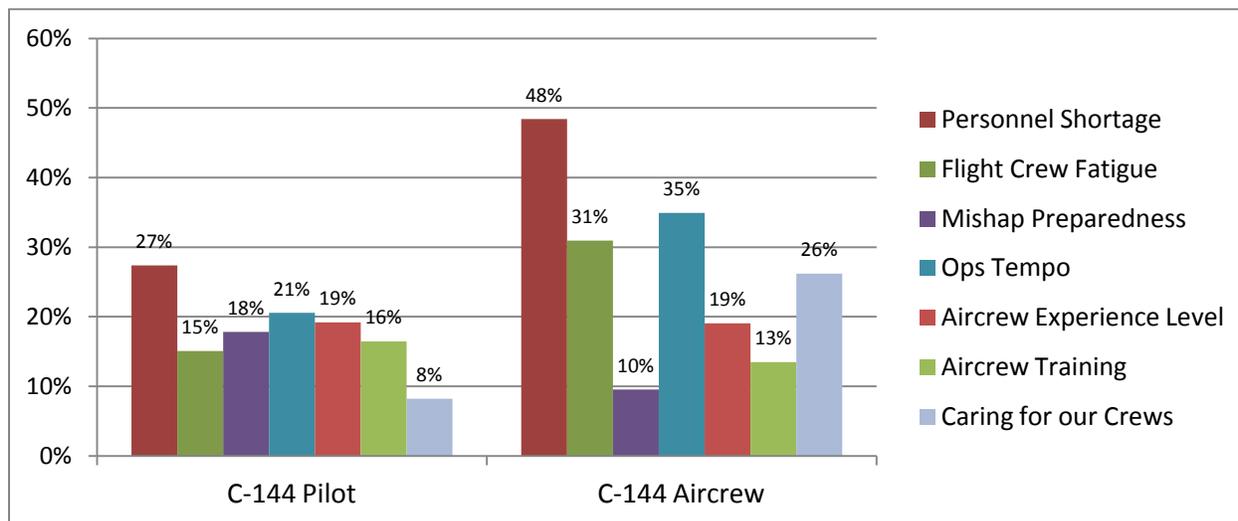
### ***HC-144 Mishap briefs (non-privileged)***

**Class C taxiway mishap:** On taxi for departure for night patrol at an uncontrolled field, aircraft made contact with a civilian jet aircraft that was holding short for takeoff. Narrative: The civilian aircraft called to taxi from a neighboring FBO. The CG aircraft called for taxi from the Coast Guard ramp and stated that they would follow the civilian traffic on the same taxiway to the same runway. The civilian aircraft held short of the runway on the taxiway and was awaiting IFR release from ATC. While holding short, the CG aircraft called to taxi behind the civilian aircraft using another converging taxiway. Moments later, the aircraft experienced a wing-to-wing collision. Total Cost: >\$400k.

**Class C Ground fire:** As external power was applied to aircraft in hangar, the blade de-ice system inadvertently energized creating a fire at propeller assembly. Fire was quickly extinguished. Final investigation/analysis pends. Total Cost: >\$150k.

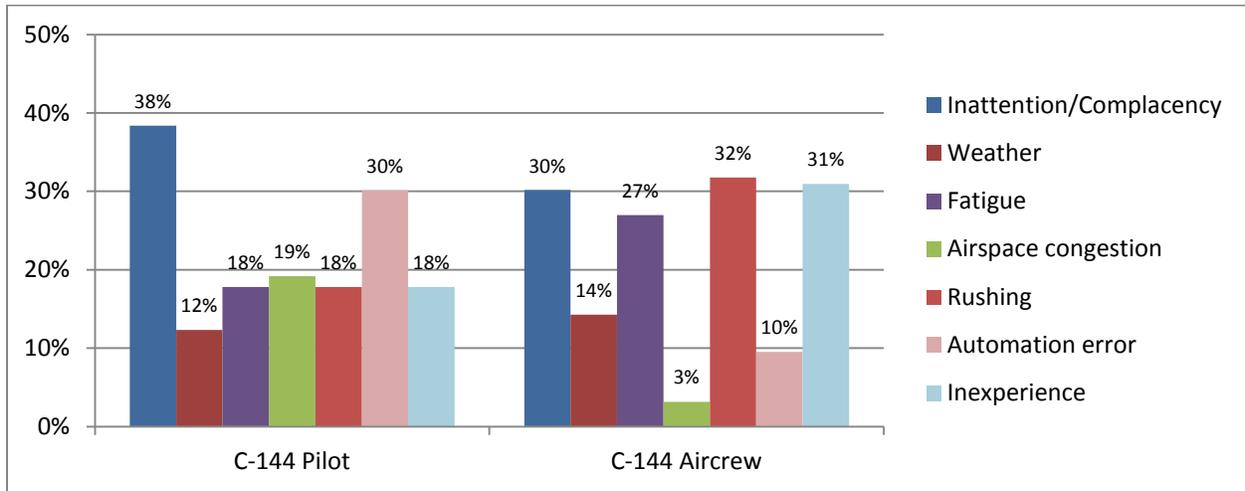
**Class C Overtorque:** On takeoff, pilot completed a standard rolling takeoff and advanced throttles to 70 percent Torque. At 70 percent Torque, pilots engaged the Constant Torque Holding System (CTHS). Immediately after takeoff, the pilots observed the number 1 ENG Torque gauge at 125 percent and the number 2 ENG Torque at 115 percent. Pilots immediately brought the throttles back to bring torque within limits. Crew entered the traffic pattern, and executed an uneventful full stop landing. Cost: \$241k.

**Class C Landing gear system:** Following a touch-and-go landing, the aircraft's nose landing gear failed to retract (both main landing gear retracted normally). The crew orbited overhead the airport to reduce fuel and to discuss the emergency. The crew secured both hydraulic pumps and when the pressure in the system dropped to below 400 PSI, the nose landing gear began to drop and soon indicated down and locked. The crew completed the Emergency gear extension procedure and all three gear indicated down and locked with the nose wheel canted approximately 7 degrees to the right. The crew discussed all possible scenarios, and completed an uneventful full stop landing. The crew performed the ground evacuation procedure and the plane was successfully towed off the runway. The entire nose landing gear assembly was replaced and the aircraft returned to service 21 days later. Cost: \$116k. HC-144 Top Safety Concerns



\*Only highest-scoring responses shown; lower-scoring responses were removed but are available on the FSO Portal.

**HC-144 Top Mishap-Producing Conditions**



\*Only highest-scoring responses shown; lower-scoring responses were removed but are available on the FSO Portal.

**HC-144 Post-mishap corrective actions**

	Total DA/RA	Doctrine	Training	Materiel	Personnel	Other
FY14 (HC-144)	10	4	3	4	-	-

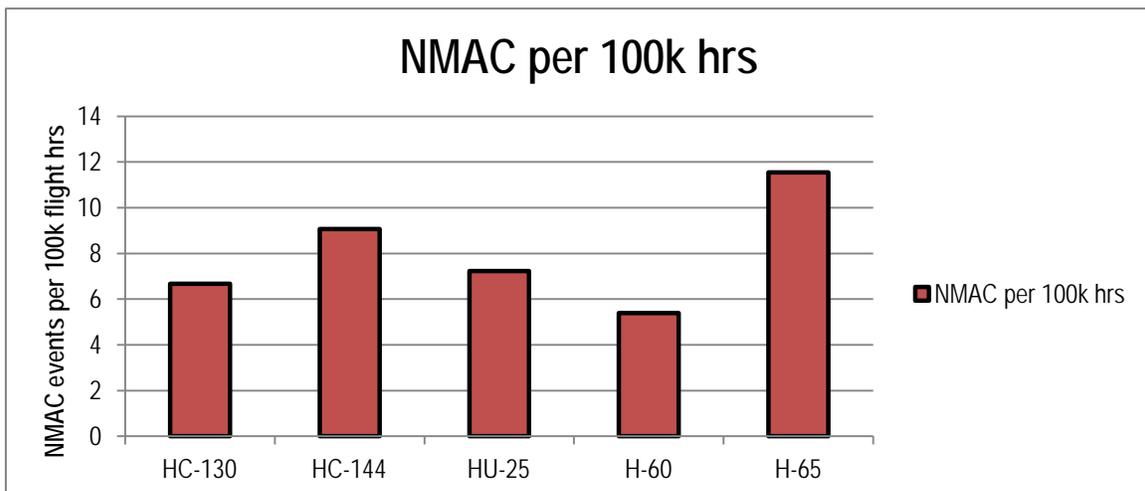
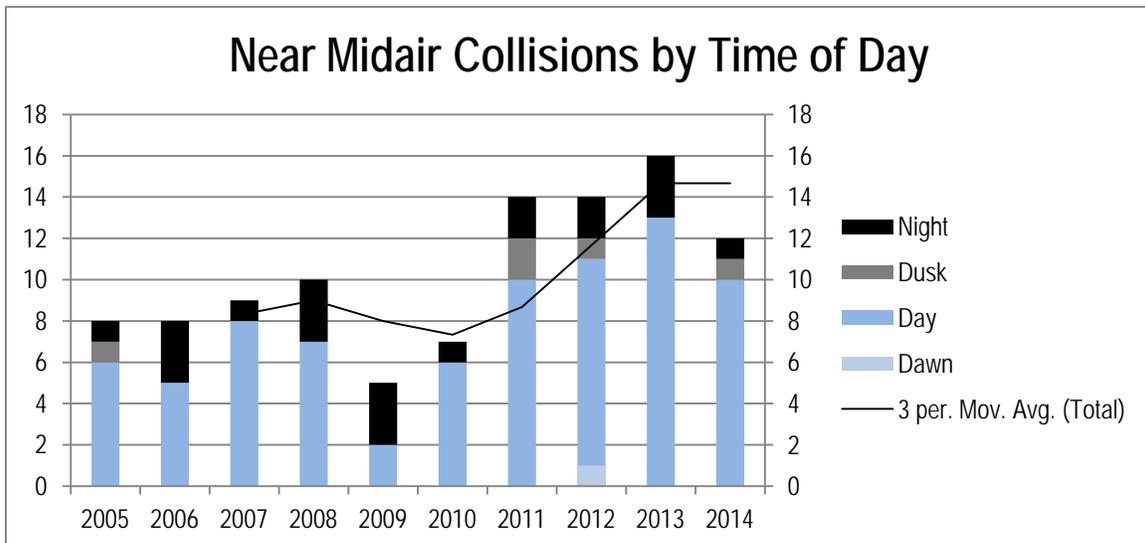
**Overall Fleet Considerations**

**Midair/Near Midair Collisions (MAC/NMAC) – All aircraft types**

Per COMDTINST M3710.1G, “A **Near Midair Collision** is an incident where a possibility of collision occurs as a result of proximity of less than 500 feet to another aircraft (excluding normal formation or air intercept flight), or a report is received from a pilot or a flight crew member stating that a collision hazard existed between two or more aircraft.”

“A **Serious Near Midair Collision** is an incident where a possibility of a collision occurs, and evasive action and/or bodily injury occurs as a result.”

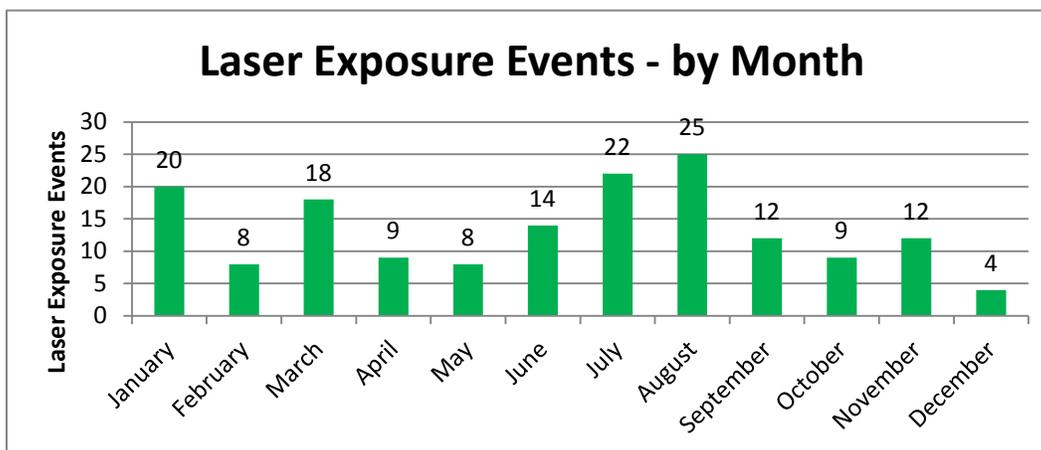
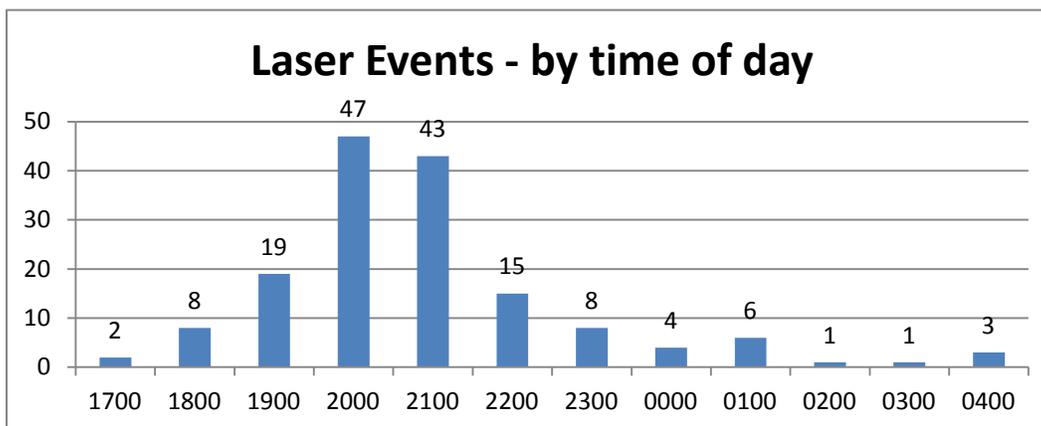
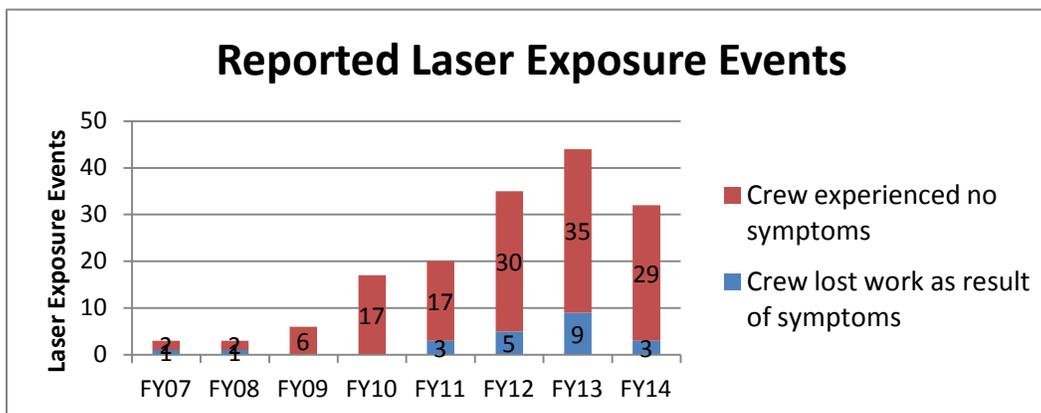
In the past year, at least three CG aircraft encounters with UAS have been categorized as NMAC. ALCOAST 402/14, “Reporting Suspicious Unmanned Aircraft Systems (UAS) Activity in the Vicinity of Coast Guard Assets and Maritime Critical Infrastructure and Key Resources (CIKR)” (DTG R 221453Z OCT 14), highlights the importance of reporting of operations/related encounters with UAS both for safety and security reasons.



### Laser exposure - Aviation

Between FY07-14, there have been 160 documented incidents of external persons aiming lasers at in-flight CG aircraft. While no crewmembers were permanently injured as a result of these attacks, some encountered temporary injuries (e.g., flash blindness, after image, headaches) that did require medical treatment. In FY14, the CG experienced 32 lasing incidences to aviation assets, a 27% decrease over the previous FY (44 events). Most events occurred during the early evening hours of 1900-2200 local (72%). This past FY, Air Station Atlantic City and HITRON reported the most laser strikes with five strikes each.

Laser Exposure Reporting (SEH Manual, Chapter 23: Non-Ionizing Radiation Program)

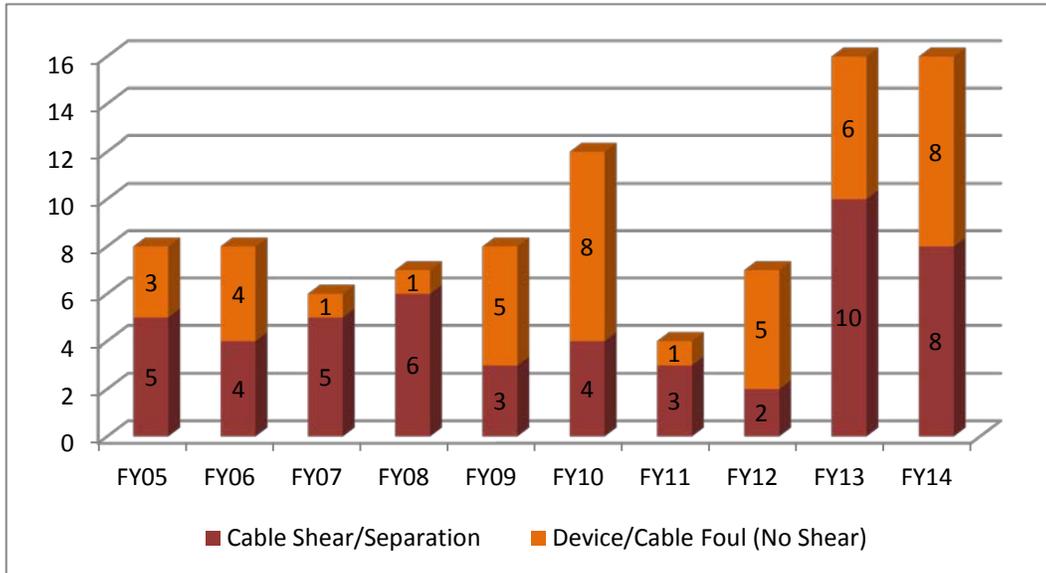


**Hoist mishaps**

In FY14, a total of 24 hoist-related mishaps were reported. Of these, 17 mishaps were related to boat hoisting, six were related to RS ops, and one event was a land hoist. 11 occurred during the daytime and 13 occurred at night.

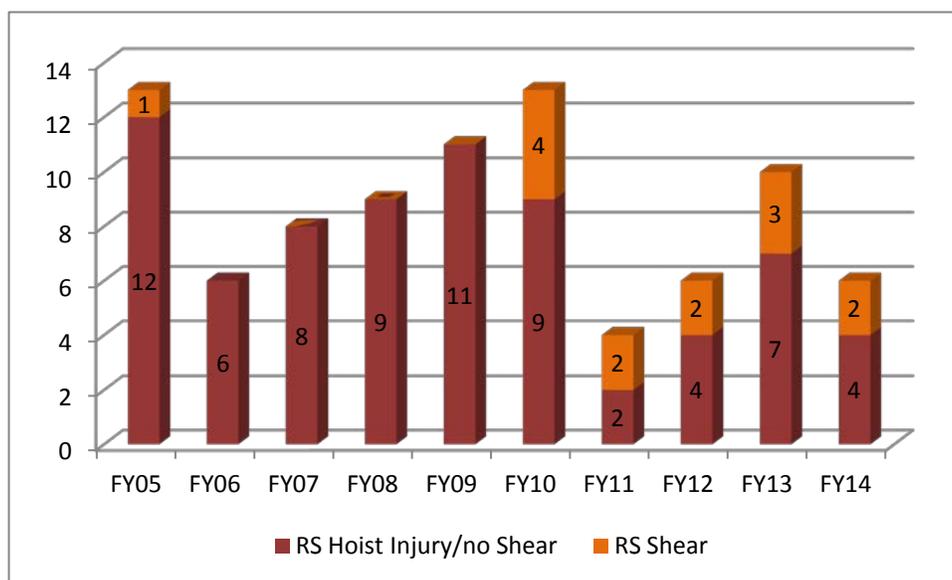
**RW Hoist Foul/Shear Event Summary**

RB-M's were the most frequent CG asset involved in the boat hoist mishaps (there were 7 occurrences), followed by MLB-47 (5 events) and contract vessels (2 events). Seven of the 17 boat hoist mishaps occurred during DIW hoists.



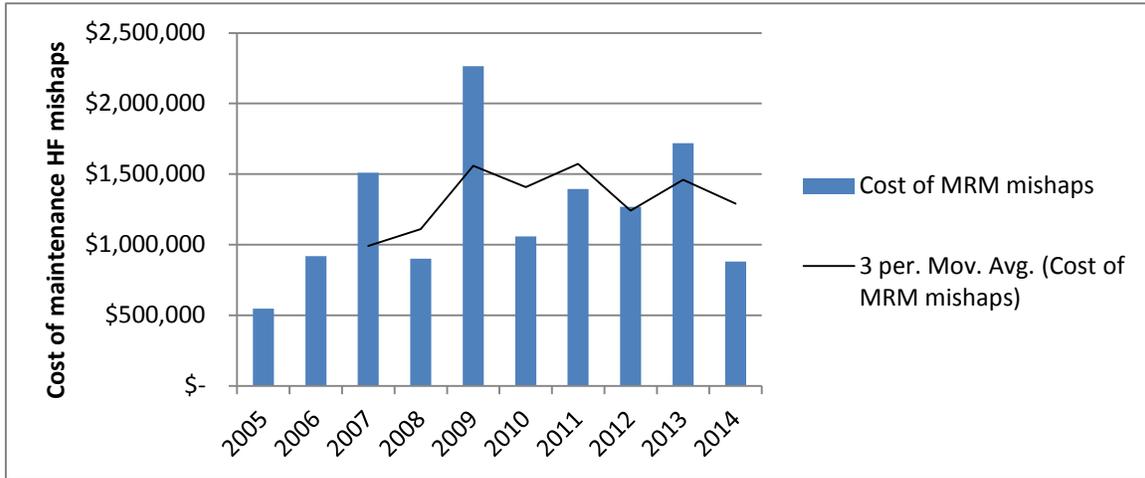
\* Excludes hoist equipment malfunctions and trail line damage only events.

**Hoist-related RS Injury/Shear Events**

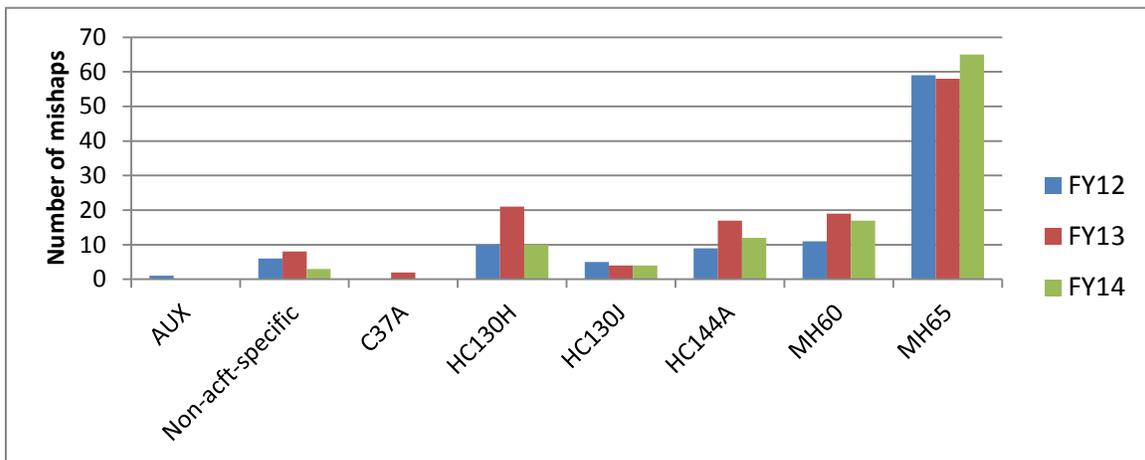


### Aviation Maintenance Human Factors

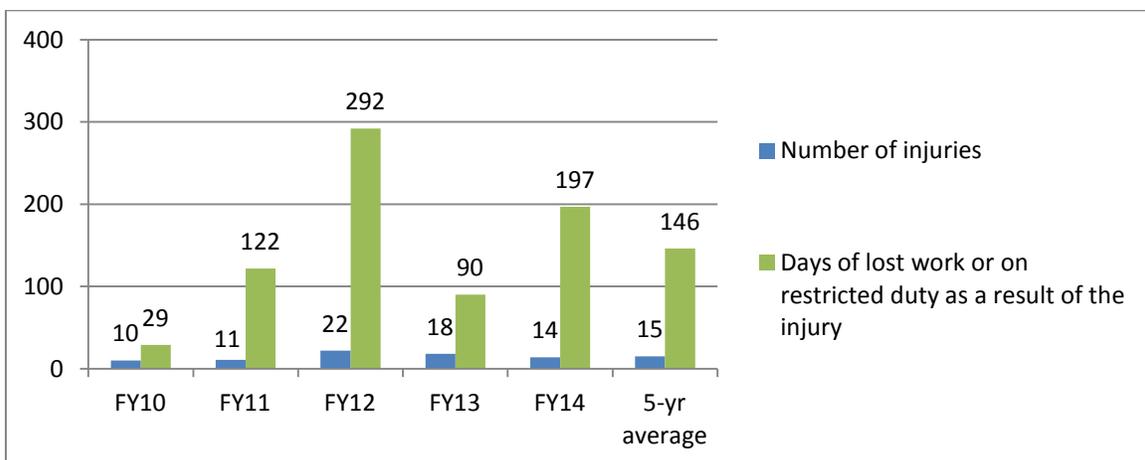
Cost of mishaps with a maintenance HF causal/contributing factor, prev 10 FY



Number of aviation maintenance HF mishaps, by airframe



Number of aviation maintenance-related injuries, prev 5 years

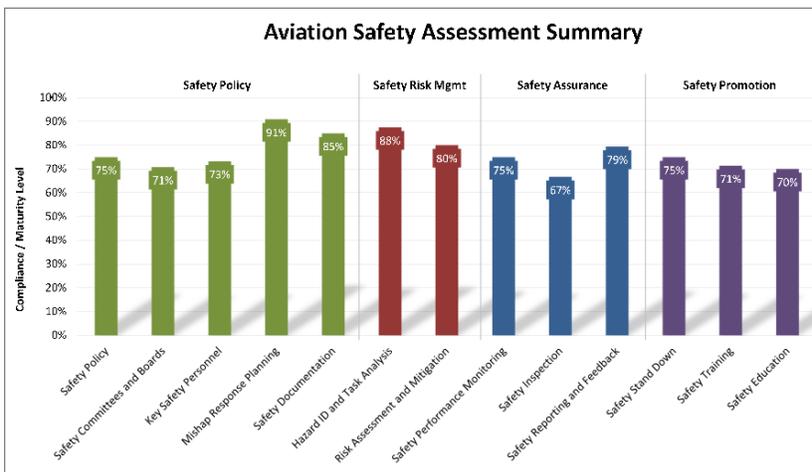


## Safety Stan Visits

The Aviation Safety Assessment Tool (ASAT) facilitates safety program assessments based on the latest CG policy and FAA Safety Management System (SMS) guidelines. The ASAT replaces legacy safety checklists and should be completed in its entirety to facilitate FSO transitions, unit self assessments and external safety audits.

Once scoring is complete, ASAT outputs include dashboards depicting safety program compliance and maturity linked to Policy, Risk Management, Assurance and Promotion and related subcategories. Results enable units to balance resolution activities based on unit priorities.

To achieve maximum value from future safety stan visit, we recommend that you provide a recent self assessment to CG-1131 five days prior to your visit. Additional Policy requirements are detailed in the SEH Manual, Section B-20: *Audits and Inspections*. A sample ASAT checklist and dashboard are depicted on the right.



## Stan Visit – Notable Areas for Improvement

There were 11 aviation safety standardization visits in FY14, nearly double FY13's count. We validated the new ASAT, receiving excellent feedback along the way. CG-1131 visits included: Traverse City, HITRON, Houston, Detroit, Kodiak, Astoria/Columbia River, Sitka, ALC, Los Angeles, the C27J APO, and San Francisco. All units continue to project a positive safety culture with highly engaged commands cadre and safety staff. Some common areas of emphasis during recent visits are listed below:

*Fall Protection (SEH Manual, Chapter 24):* Fall protection remains an area of vulnerability throughout Coast Guard aviation. Our SEH manual is clearly aligned with the companion OSHA requirements for fall protection. listed in We endorse adoption of local policies requiring use of head protection when working aloft if restraint or scaffolding systems are not available (whether in the hangar or on the ramp). The first command to take this action may set the wheels in motion for the rest of our aviation workforce. As a new unit, you have a unique opportunity to elevate the standard. We will continue to advocate for CG policy updates that protect our personnel from preventable mishaps stemming from known hazards.

*Operational Hazard Awareness Training (Air Ops Manual, Page 8-36):* In addition to reviewing the OPHAZARD briefs for units you plan to visit during cross country flights, what proactive steps do your RW deploying aircrews take to facilitate compliance with the following SEH manual policies?

Afloat COs: "COs shall solicit feedback and improvements to their aircraft MRP from embarked aircrews." (Page 20-25)

Deployed FSO: "Ensure the deployed unit has adequate Mishap Response and Salvage Plans." (Page 20-26)

A best practice we advocate is to exchange Airsta and Cutter MRPs. This is a great primer and gives you a chance to offer some expertise and assistance to cutters that may need to update their MRP.

*Human Factors Council (HFC) / Human Factors Board (HFC) (SEH Manual, Page 4-5, Section B.1.i.):* HFCs and HFCs are listed as one of ten program requirements that support hazard management activities.

The goal of the HFC is to identify and mitigate operators' human factors deficiencies before they result in a costly mishap. We recommend that commands communicate with their FSOs and Flight Surgeons to integrate and tailor human factors awareness through an active HFC/HFB.

### ***Recent Final Decision Safety Messages (FDM)***

The table below lists aviation FDMs released since last year's report. The CG6508 FDM was in the final stages of review prior to release of this report.

<b>Acft</b>	<b>Mishap Date</b>	<b>Mishap Class OPMODE</b>	<b>FDM DTG</b>	<b>Remarks</b>
6003	29-Oct-08	A / Flt-Rel	14100Z MAR 14	Survivor fatality during SAR
6028	3-Mar-10	A / Flight	281943Z APR 14	CFIT during x-country
6523	20-Apr-10	A / Flight	151642Z MAY 14	CFIW during trng
6581	29-Apr-10	A / Flight	132043Z MAY 14	Runway crash during trng
6589	14-Oct-10	B / Flight	151801Z MAY 14	Hard landing during trng
6539	22-Aug-12	A / Flt-Rel	032137Z NOV 14	GFV Fatality during AUF-CD
6508	4-Dec-12	B / Flight	In Progress	Hard landing during trng