

Preventing Corrosio



What you don't see can hurt you!



The corrosion types are evident, including exfoliation.

By AM1(AW) Vener Maranan

Corrosion is a menace wherever it lurks. Many people take this problem too lightly, but professionals know about or have seen the mishaps caused from this cancerous beast. We must fight corrosion to prevent the loss of an aircraft or shipmate. We ran into this old foe in my Hawkeye squadron and ended up with another lesson learned.

VAW-116 is in the process of transitioning to the new Hawkeye 2000 aircraft. My team and I were preparing good, old Hawkeye 602—one of the many workhorses of the E-2 community—for a trip to SDLM. The maintenance department had been tasked to take a hard look at her and to make sure that every corrosion discrepancy was identified and corrected before it left on its journey. Yes, our thoughts were to get rid of these old planes as fast as we could, so we could get the new ones. These old E-2Cs are not maintenance-friendly.

During the QA walkaround inspection, we found numerous corroded fasteners (screws and rivets) on the vertical-stab assembly, specifically on the port, upper and inboard side. Quality assurance wrote a VIDS/MAF for airframes to remove and replace the

fasteners. Because they were covered with heavy paint and sealants, we had difficulty identifying the extent of the corrosion, until the airframers began to remove some of the screws. That's when AM3 Cervantes and AM3 Manuel Garcia discovered the problem was migrating along the metal surfaces.

It wasn't an easy task to remove all the screws and rivets because most of them were stripped and corroded. Petty Officer Garcia decided to remove all the fasteners from the upper cap assembly, which is attached to the vertical stab. This step would allow him to find out how far the corrosion had migrated.

The photos in this story show the damage, and most of the maintainers reading this story quickly can identify the corrosion types. What appeared as a small area of surface corrosion actually turned out to be the most severe and deadliest form of corrosion: exfoliation! That category means it is so bad that most of the metal is destroyed. The doublers that support or attach the cap to the vertical-stab assembly were affected badly. We removed the doublers and sent them to AIMD to be remanufactured.

How could a problem this bad go undetected for so long? Was it because of poor maintenance practices or procedures that do not exist in the MRC decks? For one thing, no conditional inspection exists to remove this cap assembly to see what is hiding behind or

Corrosion-Related Mishaps



The upper cap assembly is not a corrosion-prone area.



The doublers show the extent of damage.

underneath it. The corrosion manual (NAVAIR 01-1A-509) does not list this area as corrosion prone. During 800-hour inspections, we remove all movable rudders and tabs to inspect the bushings and bearings. They then are replaced. However, the Hawkeye's port, upper, inboard, vertical fin is not a movable rudder. It has no bushings or bearings to replace, and it is not subject to this inspection. We often treat this area with the saying, "If it isn't broke, don't fix it."

We learned this answer isn't quite accurate. If you see something that is not right, investigate the situation or inform your supervisor, a chief, or the folks in maintenance control and QA. In this case, our extraordinary airframers, who like to take things apart anyway, got more than they bargained for and a lot more work. They took the initiative to look beyond the surface and didn't take a shortcut.

Using good maintenance practices and taking pride in an aircraft are two ways to help combat these types of corrosion. Everyone has the responsibility to detect and report any type of this insidious problem to maintenance control. Corrosion will appear where and when you least expect it. Fortunately, the only real damage was to the doublers. The other areas were made out of fiberglass.



Petty Officer Maranan is an airframe QAR at VAW-116.



Mishap Reduction Opportunity

**Corrosion-Related Mishaps and Hazreps
1 January 1980 to 24 September 2004**

We had 45 reports in the SIMS/WESS database where corrosion was reported as a causal factor. Those events included two Class A, eight Class B, and nine Class C mishaps. The damage from those incidents totaled \$48,196,195. We expend hundreds of thousands of hours on corrosion prevention and repair each year. These mishap numbers would be worse were it not for our vigilant efforts, but we need to do even better.

Breakdown By Type Aircraft

Acft	No. Events	Mishap Cost
H-53	8	1,127,076
H-60	8	1,978,510
FA-18	7	1,060,382
S-3	7	937,782
T-45	3	1,000,000
E-2	2	0
P-3	2	103,600
F-14	2	42,678,749
H-1	2	0
H-46	1	36,768
C-2	1	0
C-12	1	0
H-3	1	0