Aviation Maintenance

Improving the organization

by Maj David R. Haines

The current organization of Marine Corps aviation maintenance negatively affects readiness by maintaining aircraft in squadrons rather than centrally distributing them to squadrons for use as necessary. Pooled maintenance would reduce the number of sorties lost from unavailable aircraft, increase readiness, use available maintenance Marines more efficiently, and save costs by consolidating logistics.

Readiness is dependent on the number of flyable aircraft in a squadron equaling or exceeding the number of aircraft required by the daily flight schedule. But with a small number of aircraft in each squadron, the number of flyable aircraft can vary significantly from day to day or week to week. A Marine medium tiltrotor (VMM) squadron, for example, is typically assigned twelve MV-22s. Since one is usually in cyclical phase maintenance, and one is often used as a cannibalization aircraft to provide parts on short notice, ten aircraft provides an easy demonstration of the difficulty of maintaining sufficient readiness with a small number of planes.

At any given time, the squadron requires "X" aircraft to function, where X is the number of aircraft on the flight schedule for that day. Each aircraft has an individual probability of being up of around 40 percent. What are the chances that enough aircraft will be functional for a division flight, which requires three? With ten assigned flyable aircraft, one would expect four or five to be up at all times; in reality, the number of flyable aircraft varies wildly because of the small sample size. Sometimes squadrons are not able to provide enough aircraft for a division of three, sometimes not enough for a section of two. Other times a squadron may have far more than the required number of aircraft. Simply put, the more aircraft in the pool of potential flyable aircraft, the more likely that on any given day the percent of available aircraft will match the average individual "up" percentage for a given Type/Model/Series (T/M/S). If the up percentage for a V-22 is 40 percent, a pool of 100 planes will result in 40 aircraft, give or take a few, being up every day.

>Maj Haines is the former Quality Assurance and Operations Officer of Marine Medium Tiltrotor Squadron 363. He is currently the Associate Department Chair of the Naval Academy Political Science Department.

The design parameters for each aircraft takes into account the expected number of planes per squadron, the expected number of flights each day, and the expected individual readiness levels. Due to the small number of aircraft, however, readiness is not sufficiently high to prevent either cancellations because of aircraft unavailability or requirements for Marines to work weekends to maintain sufficient readiness levels. Individual squadrons can attempt to maintain enough up aircraft to meet their daily needs and still fail. Additionally, squadrons with more up aircraft than are required for their daily schedule may not distribute them to other squadrons, despite being in adjacent spaces. Of four squadrons at the same Marine Corps Air Station, one might be cancelling a flight for insufficient readiness while the others may have some number of extra aircraft each. Although providing aircraft does sometimes occur, it is not formalized and often depends on interpersonal relationships or proximately of squadron spaces. Squadrons do not give up aircraft because they fear not making their own flight schedules in the future, as they assume every hour flown is one hour closer to a problem with the aircraft that will leave it down for an indeterminable length of time.

Similarly, those Marines who are not required to conduct maintenance at their squadron are not distributed to contribute man hours to the maintenance efforts of other squadrons. It might be that one squadron which is "behind" on maintenance ends up working twelve hours on, twelve hours off, or the weekend, while another maintains sufficient readiness on normal garrison nine- to ten-hour shifts.

Pooled maintenance would be more efficient, utilize fewer personnel, and get better readiness as a result. Pooled maintenance means one maintenance unit owns all the specific T/M/S aircraft at an air station, and aircraft are distributed to squadrons based on training and flight schedule requirements. Going back to the math regarding aircraft, if there are 50 in the pool, one can except 5 or so to be in phase and possibly 1 or 2 to be used for parts, leaving roughly 17 available for training.[1] There are several major advantages to such a system.

First, it ensures that the maximum number of up aircraft on any given airfield are available to all squadrons, thereby maximizing efficiency. Second, that number will be more consistent than current readiness numbers. A consistent number of flyable aircraft means squadrons can have more confidence in achieving their long-term training goals on time. Currently, squadrons schedule based on a training plan and possible external support requirements and do so independently of maintenance readiness, since it is ephemeral. The result is that training may be scheduled several times until it finally coincides with suf-

ficient flyable aircraft. Under pooled maintenance, if the total number of aircraft up is generally ten for three squadrons, for instance, then two can schedule sections (two aircraft) while one schedules a division (three or four aircraft) with multiple back-ups available. The squadron able to schedule a division will simply rotate. Prioritization of flight schedules would be the responsibility of the MAG, which is the unit that owns the squadrons, but consistent numbers of aircraft should result in consistently met flight schedules. The amount of training accomplished in a given calendar period will increase accordingly.

Third, it consolidates all maintenance Marines into one entity, reducing the total number of required Marines as well as maximizing their production by ensuring every Marine is available to work on every aircraft. This would take the form of an additional division or divisions within the Marine aircraft logistical squadron (MALS), which is the unit responsible for intermediate-level (I-Level) maintenance while squadrons are currently responsible for lower organizational-level (O-Level) maintenance. There may even be an increase in overall fleet readiness percentages by utilizing maintenance Marines more efficiently.

Finally, aircraft transfers, which require a significant investment of maintenance and administrative man-hours for the transferring and receiving squadrons, in addition to time spent in pre-transfer deliberations, would be eliminated. There will be some loses by switching to this model, but the advantages fair out-weigh the consequences of change.

The Marine Corps would lose the large squadron mentality. Eliminating or reducing the number of maintenance Marines will make the squadron more officer-focused and likely have significant personnel reductions or other effects beyond the maintenance department. For instance, the number of assigned administrative Marines might decline. The caveat to that, however, is that deployed squadrons will require the same number of personnel, so deployed squadrons will be equivalent to squadrons in their current format. It does offer less time to establish camaraderie and *esprit de corps* prior to deployment, but squadrons regularly assimilate personnel pre-deployment, like S-2 officers, S-4 personnel, and detachments from HMLAs and HMHs, which arrive at VMMs with both maintenance Marines and officers.

There would also be a loss of available billets for squadron pilots. Currently, there are several aviators serving as officers in charge, quality assurance officers, or aviation maintenance officers in each squadron maintenance department. Eliminating squadron maintenance departments would eliminate these positions, which include the only ones which require a company grade pilot to act as officer in charge for groups of more than five or so Marines and a department head billet for field grade officers. That is, however, only about fifteen to twenty percent of the total company grade billets and one of three department head billets for field grade officers, and they would be required to be filled for work-ups and deployments, meaning the billets would exist for a year or more and at the most crucial times. The level of expertise needed is not so excessive as to require more than a work-up to become acquainted with the demands of each billet. In fact, a significant number of officers go through their careers without working in maintenance departments or work there only once. There is little to no discernable difference in leadership ability or selection rate.

What would this concept look like as a final entity? First, there will be the same number of squadrons but reduced extensively in number of permanent personnel, while the overall number of aviation Marines will be reduced owing to greater efficiencies at MALS. All logistics will be centralized, as will hazardous materials, and all maintenance Marines will be available to work on every aircraft.

Second, MALS itself becomes a larger entity, with responsibilities for the current O-Level of maintenance in addition to their current I-Level responsibilities. One way to approach this is to create O-Level work centers that mirror current squadron work centers, airframes, flight line/powerline, and avionics, and assign officers as appropriate. Physically, the new O-Level work centers could take over the current squadron maintenance spaces, consolidated appropriately, while aircraft remain in their present positions on the flight line.

Third, test crews could be drawn from the squadrons. Depending on the testing requirements for each T/M/S, the total number of test crews working on a given day could be reduced from one per squadron per day to a total of one or two per MAG.

Fourth, and crucially, the crew chiefs should remain permanently assigned to a specific squadron to increase crew effectiveness between pilot and enlisted crew members. They would work in the O-Level MALS division but be consistently assigned to fly with one squadron for training and deployment.

Squadrons preparing to deploy would assign an appropriate number of officers to serve in maintenance department positions and draw a maintenance detachment, including an avionics chief warrant officer, assistant aviation maintenance officer, and a maintenance material control officer, for workups and deployment. During a workup for deployment, maintenance Marines would continue working in O-Level MALS work centers while the squadron continues to draw aircraft from the pool, unless a squadron departs for a detachment for training or an at sea period.

There are a limited number of remaining efficiencies available to close the gap in flight hours and training. The reorganization of the flight line would constitute a significant investment of time and effort, but the result would be an immense improvement in available aircraft and flight hours for training, as well as a reduction in wasted resources and effort.

Note

1. Assuming as we do above that consolidating the aircraft will yield a more consistent number of up aircraft, the pressure to have an additional up aircraft is reduced, which in turn reduces the need to use aircraft for cannibalization on short notice because of supply constraints.