ALL HANDS

APRIL 1980

in this issue:

P-3 Orion Flight Engineer

Man with a Mission

The sun on the horizon kissed the ocean as the pilot pushed the flight controls forward. The patrol plane leveled off at 23,000 feet. The co-pilot completed the climb checklist and began plotting the course for home. Flight engineer Aviation Machinist's Mate First Class Tom Beaman glanced at the horsepower gauges and adjusted the power levers to bring the needles to a more efficient setting. He loosened his seatbelt and harness, slid his seat back and stood to stretch. A drop of perspiration rolled down his back.

Behind the cockpit, the weary VP-24 crew had just completed computations from eight hours of antisubmarine warfare maneuvers. The pressure and tension from the low altitude submarine hunt began to subside as they secured their computers.

The plane, now on automatic pilot, chased the final beam of setting sun. Talk of the mission gave way to thoughts of home as the engine's vibration lulled the exhausted crew.

Beaman's eyelids felt the weight of the mission. He put all his energy into keeping them open. When he began to lose the blinking battle with sleep, he called his second mechanic to relieve him.

Suddenly a piercing whine blasted Beaman's ears. Red lights lit up the cockpit and glared at his now wide open eyes.

"Fire on number three," he called out.

"Feather it," the pilot commanded.

Pulling the emergency handle, Beaman cut the systems to the number three engine. He then activated the fire extinguishing agent. He glanced at the rpm gauge and shifted his eyes to the feather button light. It seemed like minutes before it went out.

Most of the 11-man crew was now assembled at the rear of the cockpit watching the three men respond to the emergency. Only nine seconds had passed since the warning horn had sounded its alarm.

With the emergency under control, the co-pilot read off the checklist for the procedures that had just been performed from memory. All steps had been executed.

Beaman adjusted the power levers on the remaining three engines. He checked the fuel gauges and converted the 10,000 pound reading to 2.4 hours.

Meanwhile, the co-pilot had contacted Jacksonville tower to declare an emergency. He relayed the flight engineer's computations for fuel and the estimated time of arrival.

"This is what being a flight engineer is all about," Beaman said. "Enduring hours and hours of normal flight operations and still being able to handle an emergency effectively."

According to veteran P-3 pilot Lieutenant Jay Warren, "The flight engineer is an integral part of the P-3's flying team. He can make or break what goes on in the cockpit. He has to be tuned to the pilot and co-pilot or things just won't go smoothly."

Flying the P-3 in the patrol and antisubmarine warfare environment requires 100 percent of the pilot's and co-pilot's attention. That's one of the reasons why the flight engineer's job is so important—he helps them perform their mission by monitoring all the aircraft systems.

"It's a pretty complex airplane," Lieutenant (junior grade) Frank Huber, a pilot, said. "The flight engineer relieves the pilots from worrying about the systems so that we can concentrate on the flying. When we get down into the localization and tactical phase of ASW, the flight engineer backs us up on the airspeed and power settings. It's very easy for the pilot to get involved with the tactical picture during the mission. We have to be able to count on the flight engineer to help keep us out of the water."

Flight engineers are systems experts. They are responsible for monitoring the aircraft systems—fuel, pressurization and air conditioning, hydraulics and electrical.

Flight engineers get down to the nuts and bolts of the aircraft systems. Pilots are familiar with the systems, but it's the flight engineers who need to know them inside and out. Most pilots will agree that a flight engineer is an invaluable source of information.

Commander Francis Ferry, training officer for Fleet Readiness Squadron (VP-30), emphasized the importance of the flight engineer.

"P-3 pilots today are getting less flying hours. This makes the flight engineer's experience extremely valuable. We have always counted on the flight engineer, but now with having more junior plane commanders, the flight engineer's experience counts for even more. Our pilots are thoroughly checked out on Naval Air Training and Operating Procedures Standardization (NATOPS), but when you run out of procedures in the book you need to turn to somebody with systems expertise. The flight engineer has it."

But the cockpit is only a small part of the flight engineer's responsibility. Basically, though the plane commander signs for the airplane, it's really the flight engineer's baby.

To a flight engineer, a 12-hour flight means a 17-hour day. To prepare for the scheduled 8 a.m. mission, Beaman

Flight engineer ADJ1 Tom Beaman starts the No. 2 engine on the P-3 as the co-pilot goes through the start checklist.

began his day at 4:30 a.m. when, outfitted in an olive flight suit and lugging a book bag and gear bag, he made his way across the hangar deck to maintenance control.

The room buzzed with activity. He squeezed into an open space at the counter and asked for his aircraft's maintenance logbook. As the maintenance control chief looked on, Beaman reviewed the plane's maintenance history.

"Each airplane has a personality of its own," Beaman said, "You can learn a lot about an aircraft from the gripe sheets and maintenance records. Our flying schedules don't afford us the luxury of being assigned to the same aircraft all the time, so this maintenance review is a necessity."

Satisfied that all was in order, he went to awaken his baby.

The nine planes of VP-24 stood in a row outside the main hangar. Crossing the ramp, Beaman paused to turn and shield his eyes from the windblast of a taxiing P-3. Aviation Structural Mechanic Airman Barry Moll, the flight crew's second mechanic, had already begun the three-hour preflight routine. Greeting Beaman at the aircraft, the young first-termer briefed Beaman on his progress and responded to the flight engineer's instructions.

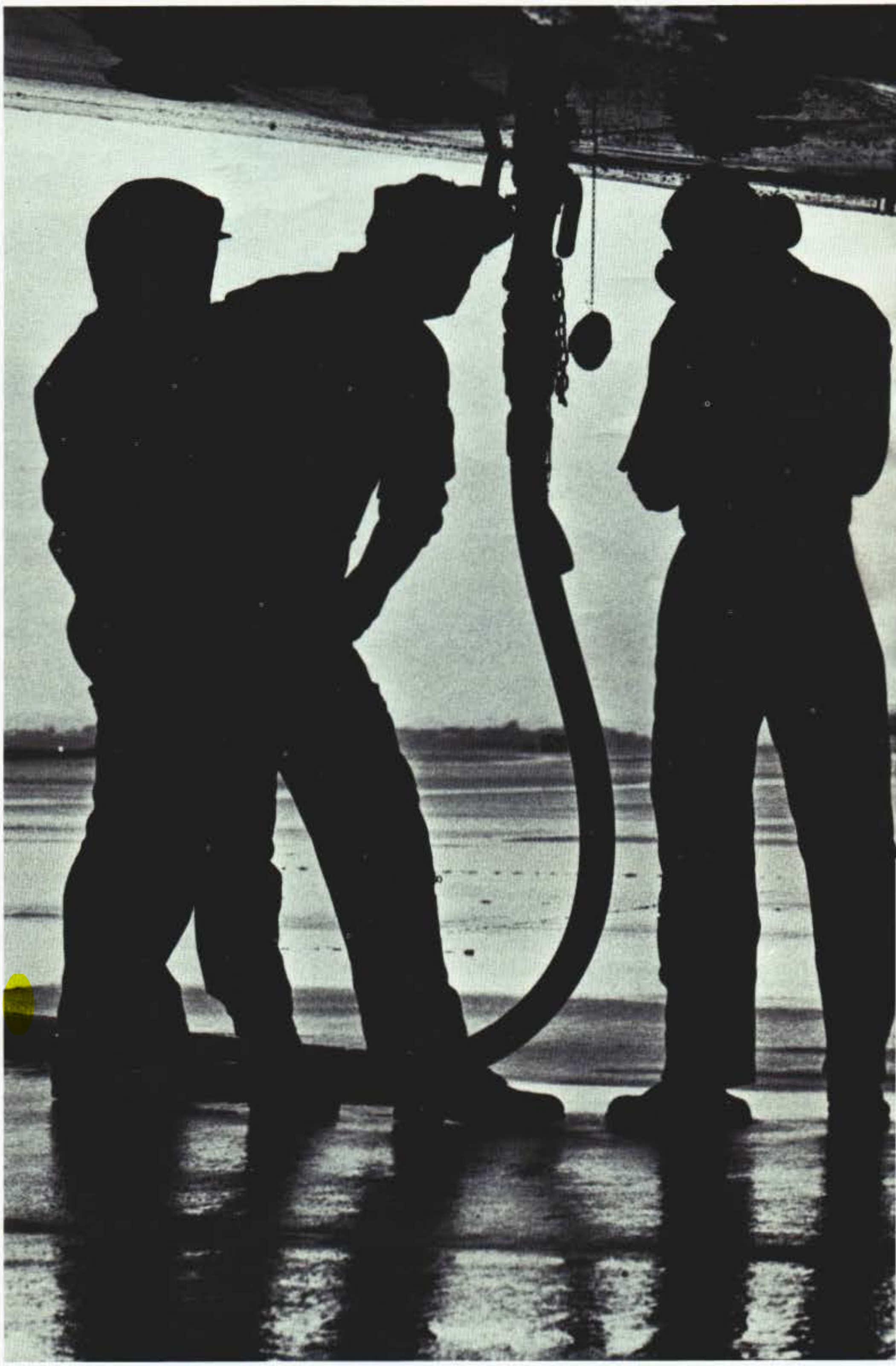
"A good second mech is like having four sets of hands," Beaman said. "Without Barry there just wouldn't be enough hours in the day to get all the work done."

After visually checking the P-3's exterior and interior, Beaman stowed his flight gear. Seating himself in the aircraft's galley, he spread the contents of his briefcase onto the table. Surrounded by a calculator, weight and balance slide rule, NATOPS manual and a folder stocked with forms, he began to work up the computations for the flight.

Beaman totaled the weight of the sonobuoys—later to be dropped into the water for submarine detection. He added this to the weight of other ordnance cargo and the crew to determine efficient weight and balance on the aircraft.

Next he computed the fuel required for the mission and added this to the total weight computations. With that, he was able to figure the rotation lift-

Calculating mission fuel requirements, determining efficient weight and balance, and fueling the aircraft are part of a flight engineer's three-hour preflight routine.



off speed and a refusal speed (point at which the takeoff cannot be aborted). Runway length and temperature, along with the total weight of the aircraft, determine this speed.

"The math is relatively basic," Beaman said. "It takes a while to get used to all the charts, but the paperwork is part of the job."

Other members of the antisubmarine warfare crew began to filter on board. They, too, have to test and preflight their equipment.

The overhead light in the cabin flickered. He went to the cockpit to see what was wrong. From the window, he shouted for his second mech to get another external power unit from the line crew. Because of the sensitivity of the plane's equipment, the cabin's power and air conditioning must remain constant—another responsiblity of the flight engineer.

He moved back to the galley where the plane commander (senior pilot on the mission) was waiting to discuss the flight engineer's figures. He approved Beaman's work and left to file the flight plan with the tower.

Hearing a new power unit pulling up outside, the engineer made his way back to the cockpit to restore power to

the aircraft. He hit the switch and signaled a thumbs up to his second mech as he watched the fuel truck pull up to the plane.

The ordnance team had just finished loading the second torpedo in the bomb bay, and the second mech was already connecting the fuel hose to the belly of the plane. Beaman came out to tell the truck driver the required load. The P-3 was almost ready.

With the plane fueled, Beaman was back on board taking the flight engineer's seat. The last crew members had returned from their last minute run for sandwiches and soft drinks. The flight team began the engine start checklist.

"Select and start number two," the pilot commanded.

Beaman glanced at the air pressure gauge. Adequate external pressure was indicated. He turned the engine start selector switch to number two and pushed the start button.

The four-bladed propeller responded immediately. Beaman watched the air pressure drop and glanced at the rpm gauge to verify rotation. As the propeller speed increased, the high-pitched sound from the spinning turbine turned to a roar. The flight engineer continued to monitor the gauges as the starter button popped out. His ears were well attuned to the familiar sound as the engine stabilized at 98 percent. It was a good start.

Becoming familiar with the procedures, systems, gauges and some thousand circuit breakers in the P-3 is not a process that comes easy.

"When someone chooses to become a flight engineer, he also is choosing a lifetime of studying," Beaman said. "In flight engineer school, you devote nights to learning the systems and memorizing the procedures. The 19-week school seemed more like an endurance test.

"I remember my first flight as an engineer. I really got sick. It was more nerves than anything else. Suddenly I realized that if I messed up, somebody could get hurt. I wasn't in a simulator anymore. This was for real. Later, I figured that this was the reason there is so much pressure on us in school. Flight engineers have to be able to handle mental stress, not only in responsibility, but in endurance and reactions, too."

Once a flight engineer graduates, he soon realizes that studying isn't a thing

of the past. It is now part of his occupation.

"I thought I was pretty sharp after graduation," Beaman said. "It was a relief to put away the books. When I got to my first squadron, I found this wasn't quite the story. You're not a flight engineer until you qualify. You really have to keep on your toes to earn that seat. And making it doesn't guarantee that you're going to stay there."

In this community there is no such expression as "once a flight engineer, always a flight engineer." Re-evaluation is a yearly process. A test, made up of both a written examination and a flight check, is administered by a NATOPS examiner.

"Many people don't realize how much book work it takes to stay qualified in this profession," Beaman said. "On long flights, I quiz with the pilots on the emergency procedures and systems. This has become an integral part of our training."

Today's flight was evidence of how that kind of training can pay off. It can put an ASW crew at ease to know they can depend on the flight engineer.

Rain beat against the windshield as the pilot turned the P-3 in on its final approach to Jacksonville Naval Air Station. As the wheels met the wet pavement, the crew braced themselves for the propeller reverse. The big bird was back home.

It took Beaman and his second mech only an hour to fuel and put the airplane to bed. Drenched from the rain, the two gathered their gear and headed out to file the maintenance gripes.

The clock hands were approaching 9:30 p.m. when Beaman stopped to check the next day's flight schedule—the daily list governs the life of a P-3 crew member. "Living day to day by a flight schedule can get pretty rough sometimes, but it's something that comes with the territory," Beaman said.

And to a flight engineer, the territory is what makes it all worthwhile. Ask any P-3 flight engineer what it is that keeps him going at such a pace. You're likely to get the same answer that Tom Beaman gives. "I've got flying in my blood. I don't know where it came from, but I know it won't go away.

—Story and photos by PH1 Jim Preston

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The Navy is seeking qualified Navy personnel to become P-3 flight engineers and wear the aircrew wings. Petty officers E-5 through E-8 in the AD, AE and AM ratings may apply.

Basic qualifications for this program are: physical qualification to be an aircrewman, GCT/ARI of 105 or higher, ability to pass a first class swimming test, eligibility for at least a secret clearance and a consistent record as a high performer.

Successful applicants will first attend a five-week Naval Air Crewman Candidate School in Pensacola, Fla. Upon successful completion of this school, applicants will attend 18 weeks of flight engineer training at either NAS Jacksonville, Fla., or NAS Moffett Field, Calif. Successful trainees are designated as NEC-8251 aircrewmen (P-3 flight engineers), and are eligible for flight pay.

Interested persons are urged to get more information by contacting: LT Lichwala or ADCS Robertson by message (NMPC 404E) or by calling AUTOVON 291-5836/63, commercial 301-427-5836/63. This program is also open to Naval Reservists desiring recall to active duty.

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Left: In the cockpit, the flight engineer is responsible for monitoring all the aircraft's systems and maintaining them at efficient settings. Below: a 12-hour mission is just another day for ADJ1 Tom Beaman and his second mechanic, ASMAN Barry Moll, as they head for the hangar.

The P-3 Flight

The Navy's P-3 flight engineer program, first established in 1962, demands the talents and professionalism of extremely dedicated sailors. The men who occupy today's P-3 flight engineer seats are every bit the professional systems experts the Navy expects them to be.

But for these flight engineers, maintaining this high level of dedication hasn't been quite so easy.

According to Vice Admiral Wesley L. McDonald, Deputy Chief of Naval Operations (Air Warfare), "Our flight engineers have been undermanned, overscheduled and overworked. It's been the kind of situation that defeats itself. As I've become more and more aware of the demands of the P-3 community, I've found that these men have really taken a hit. Something has to be done about it."

The problems which have been eroding the flight engineer program seem to have taken root in 1977 when the Navy discontinued the second mechanic school and training program.

Commander Roger P. Hulson, Enlisted Community Manager for Antisubmarine Warfare Aviation Support Programs, explains, "The second mechanic school was discontinued because it just wasn't producing the quality of first-term enlisted crew members that the P-3 community needed."

Instead of training second mechs to assist flight engineers, the Navy opted to attain a more ideal situation: putting two flight engineers on each P-3 flight. To accomplish this goal, the Navy increased the number of flight engineer billets per squadron from 17 to 24. It looked good on paper.

Unfortunately, this ideal situation has never been attained. There weren't enough flight engineers to fill the new openings. At the present time, there are approximately 800 flight engineer billets and some 175 are still vacant—a situation which has put pressure on the existing flight engineers.

"Our P-3 squadrons still have mission requirements to maintain. The aircraft have to keep flying those missions." CDR Hulson said, "To compensate for the undermanning problem, the flight engineers are being overscheduled."

At the squadron level, this problem is compounded. Squadrons sometimes use their flight engineer chief petty officers as maintenance supervisors. "They make superior quality control chiefs because of their vast systems knowledge," explained a squadron commander.

But, because they also occupy a flight engineer billet, assigning these CPOs to a shop decreases their availability to fly. The additional flight time requirement is then passed on to the remainder of the squadron's flight engineers.

"This is what I meant about the situation being self-defeating," VADM McDonald said. "A squadron commander knows he's got talent here. When you've got a man who can produce, you've got to use him to the fullest."

To help ease some of the burden, flight engineers are recruiting their own second mechs from among top-performing first-term enlisted men in the maintenance shops.

"You're really lucky when you can find a volunteer who has talent and desire," a flight engineer said. "We've got to be selective for the same reasons the Navy is selective with its flight engineers. A second mech not only has to know what he's doing, but also has to be able to shoulder the responsibility."

Another problem affecting the flight engineer community involves rate ad-

Engineer Program

vancement. Flight engineers are not in a separate Navy rating. They are volunteers from aviation machinist's mates, aviation electricians's mates, and aviation structural mechanic ratings. Once qualified as flight engineers, these enlisted men receive a primary Naval Enlisted Classification Code of 8251.

When it comes time for evaluations and advancement examinations, flight engineers are tested and evaluated on their rating knowledge. Therefore, along with studying to keep abreast of their flight engineer requirements, they must also study to maintain their rating proficiency. When a flight engineer spends all his time flying, it's difficult to get the kind of rate qualifications the CPO selection boards are looking for.

This dilemma has caused many flight engineers to take a good look at their career patterns. Also, the problems don't help to attract candidates needed for the program. One engineer commented, "I put up with it because my heart's in flying. It gets pretty frustrating when you have to leave what you've worked so hard to achieve just to acquire the necessary qualifications to make rate. I can't afford to let it get me down when I'm in that seat. I have people's lives at stake."

VADM McDonald is taking positive steps to improve the flight engineer community. "I want to maintain the high professional standards that I see in the cockpit now. To turn this problem around, we're going to have to make the flight engineer's program more rewarding—something to help us keep the flight engineers we have now. This will also make it a more attractive program to volunteer for."

VADM McDonald and Rear Admiral James R. Hogg, Director Military Personnel & Training Division are pulling together the resources of all the people familiar with the situation. This combined effort is producing positive solutions.

A bill currently before Congress proposes an increase in flight pay. This incentive pay hasn't been increased since the early '50s.

The CPO selection boards have been advised to consider candidates with an NEC of 8251 on professional performance as a flight engineer, rather than on his rating performance. This will allow them to be evaluated on a more competitive basis.

A selective reenlistment bonus (SRB) for flight engineers, to be implemented in fiscal year 1980, is now being seriously considered. This recommendation is also being carefully scrutinized to determine if earlier implementation might be feasible.

Flight engineers may soon be able to attain nine college credits for flight engineer school. This proposal is now being considered by accredited colleges that teach aviation programs.

The possibility of establishing a flight engineer rating is also being studied. "I feel that this is a viable option to the present problems. A separate rating would give flight engineers the opportunity to compete for advancement with men of the same professional background," VADM McDonald said.

"We're looking at every possibility to improve the incentive program for this community. The flight engineers I've seen are absolutely superb. They know their business and do their jobs with the highest degree of dedication and responsibility. We need to recognize them for it."