FLOWERS

GRUMMAN STUART OPERATIONS

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Grumman Specializes In Advanced Technology & Adds New Life To Proven Aircraft.

Lined up like sentinels, these Army OV-1 *Mohawks* are symbolic of the quality Grumman builds into its airplanes. Upgraded with the latest radar surveillance equipment and electronic intelligence systems, these aircraft will remain in the U.S. Army's inventory for many years to come.

The *Mohawk* OV-1D and RV-1D programs are among a dozen military and commercial aerospace programs flourishing at the Stuart facility, a vital component of Grumman Aerospace Corporation, one of the nation's top defense contractors. Innovative leadership and a widely diversified product line have established the corporation as a major producer of aerospace hardware and commercial products which play a significant role in both the domestic and international arena.

Today, Grumman is known in the aircraft field for its sophisticated military electronic systems which are typified by the F-14 air superiority fighter, E-2C advanced early warning aircraft, A-6E all-weather attack airplane, and the EA-6B and EF-111A tactical electronic countermeasures airplanes.

Grumman Aerospace Corporation, the largest subsidiary of the Grumman Corporation, maintains its headquarters on Long Island, New York. More than 28,000 employees work in 110 locations throughout the United States and around the world. This brochure highlights the unique capabilities of the facilities at Stuart, Florida. The Stuart Operations Center provides low-cost complete overhaul, maintenance and manufacturing services for military and commercial customers.

The Stuart Team, Keying On Its Management, Gets The Job Done.

Stuart has a winning combination, effective management, skilled labor, a well-designed facility, and a favorable climate. These attributes support a reputation for proven performance which spans a period of more than thirty years. Versatility is the key to Stuart's performance. The programs at Stuart require a broad spectrum of capabilities in many areas of current vehicle technology. These programs are supported by qualified personnel in design and manufacturing engineering, production planning and control, inspection, testing and checkout flight acceptance. Strong leadership produces quality products on time and within cost. The Center's management team is headed by a vice president who directs the overall operation. In this effort he is supported by seasoned department heads who are experienced in all phases of aerospace management.

With 1,200 employees, the Stuart Operations Center is the largest employer in Martin County, Florida. Each component, from a minute part to a large structural assembly, complies to rigorous military and commercial requirements.

Substantial portions of Stuart's resources are applied to the manufacture of major components to support Grumman's aircraft production programs at its Bethpage and Calverton facilities. Stuart also supports subcontract programs with other major aerospace firms. For both the company and its customers, Stuart's location is a definite asset. Easily accessible to truck, rail, and air transportation, the facility is situated 90 miles south of Cape Canaveral and 40 miles north of West Palm Beach, Florida. Convenient to the Sunshine Parkway, this

modern manufacturing and overhaul complex has a siding for the Florida East Coast Railroad on premise.

Ideal weather conditions and lack of magnetic interference permit year-round flight test capabilities at the Stuart facility which is located at the Martin County Airport. Also known as Witham Field, this busy county-owned airport with four runways ranging from 5,000 to 5,250 ft in length is capable of handling aircraft weighing up to 80,000 lbs. Grumman planes actually represent less than one percent of the total air traffic at this all-weather airfield which operates seven days a week between sunrise and sunset.

Grumman has a strong commitment to the Stuart facility which has enjoyed steady growth under several expansion programs. Its present facilities include 500,000 sq ft of floor space. Recent additions include Building 25, a building specifically designed to handle large assemblies such as the huge wing center sections for the Boeing 767 jetliner. And the adjacent 76,000 sq ft facility where engine buildup and other assembly operations are performed for the Cammacorp re-engining program for the McDonnell Douglas DC-8. These two buildings increased the manufacturing floor space by 25 percent to service present and future programs.

Large Structures Challenge Ingenuity, & Innovative Manufacturing Techniques Meet That Challenge.

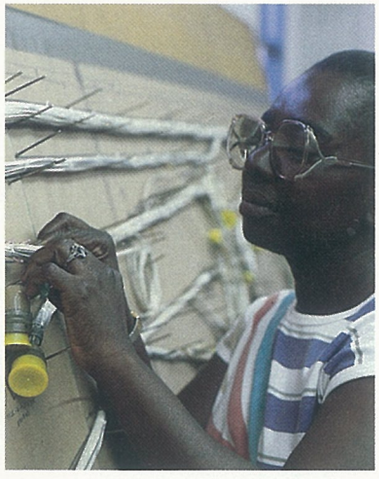
It's not just a well-designed facility which accounts for Stuart's outstanding performance record. It's the investment in machinery and equipment which keeps pace with the latest state-of-the-art, and it's also the skilled personnel who operate that equipment.

Manufacturing is an important aspect of the Stuart operation. Complex assemblies such as the full aft fuselage section of the U.S. Navy supersonic F-14 *Tomcat* are assembled by skilled craftsmen working to precise tolerances to insure the strength and integrity of this major component. Production is facilitated by computerized numerically-controlled machines. At Stuart, detail part fabrication covers a broad spectrum of processes. Tooling capability includes both prototype and production tooling for various aerospace and commercial products.

Personnel qualified in design and manufacturing engineering support the manufacturing programs. The engineering team performs both design and liaison tasks from initial concept through fabrication, final assembly, and testing of new production aircraft, as well as modifications to existing aircraft.

Stuart's high bay manufacturing areas, equipped with overhead traveling cranes and power trenches which supply air and electric power, are tailored for the assembly or rework of large bulky assemblies. These areas are used for aircraft and component manufacturing for major military projects such as the construction of the tail pylon and stabilizer for the Sikorsky CH-53 *Super Stallion* helicopter. The total package, including the aft fuselage, overhead door and cargo ramp, rotor pylon, and horizontal stabilizer is manufactured and shipped monthly. Final assembly of the large Boeing 767 wing center sections is performed in huge fixtures which are then loaded directly onto a railroad car for shipment.

Subassembly, the task of attaching two or more detail parts, is performed in many areas of the Stuart facility. The numerically-controlled Gemcor



riveting machine with TV-type monitors has made this task more efficient and accurate. Riveting is only one of the various joining methods used in the subassembly operation. An important support facility in this area is the welding shop equipped with three new Mig welding machines and four Tig Heliarc machines. Certified personnel have extensive experience in aluminum and stainless steel welding, and in brazing and silver soldering.

Complex electrical cabling is produced in Stuart's wire harness and cable fabrication department. This department produces finished electrical/electronic assemblies and subassemblies which must meet rigorous military and commercial requirements.

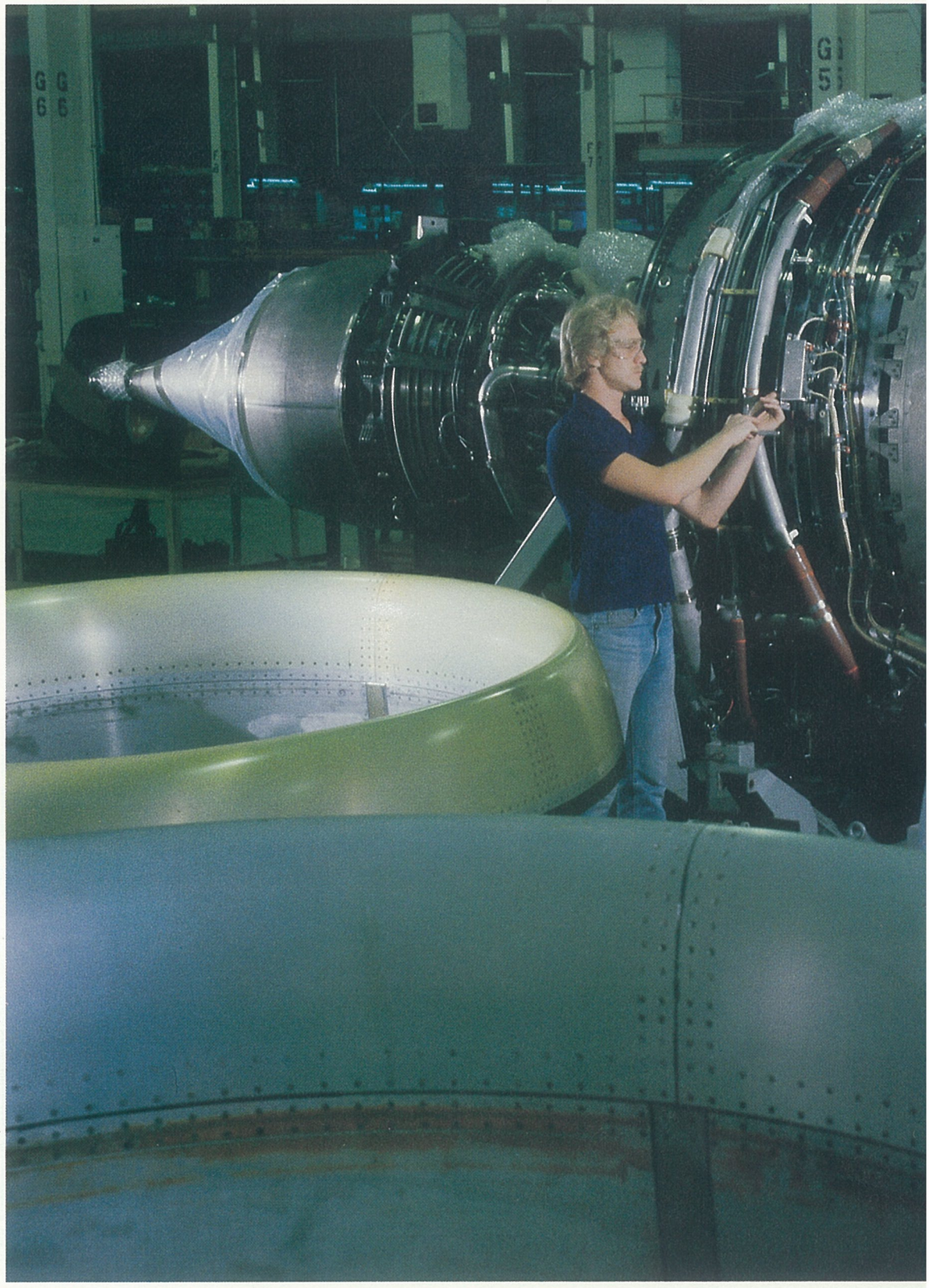
Modern aircraft are equipped with complex avionic equipment. Fully equipped avionics laboratories, shops, and skilled personnel are available for work ranging from the component level to complete electronic systems integration. The DITMCO computerized testing system performs automated circuit analysis of the electrical systems locating faults on the spot. A special shielded room is available for electromagnetic interference EMI testing.

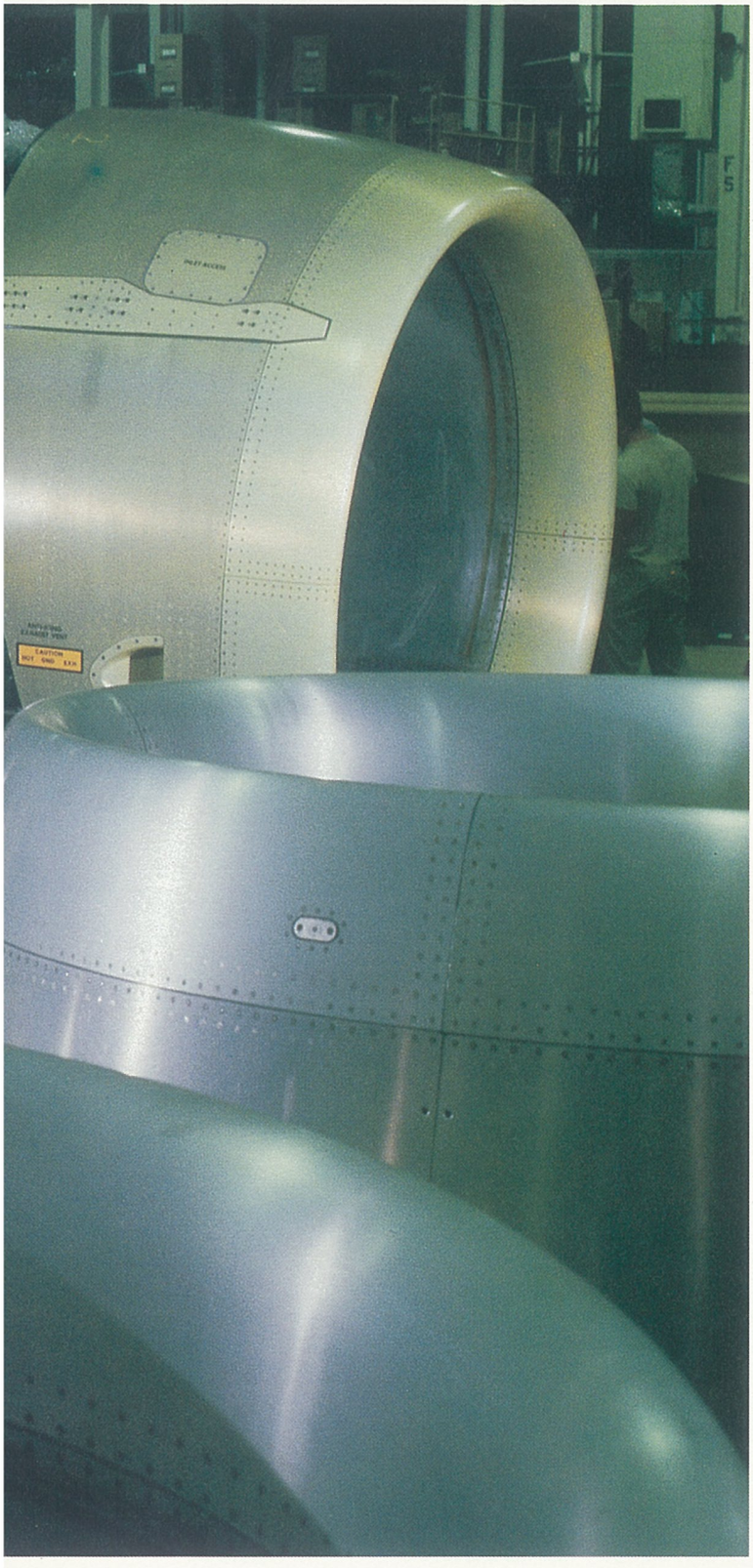
We Add Trust To Military & Commercial Products On Time & Within Cost.

Experience counts, and Stuart has extensive experience in engine nacelles and thrust reverser programs. Grumman designs offer lower fuel consumption and higher performance to meet the needs of the commercial transport and business jet markets. At the Stuart Operations Center, a 76,000 sq ft high bay facility houses the complete engine buildup capability for the Cammacorp re-engining program for the McDonnell Douglas DC-8 aircraft. Pumps, generators, controls, and newly manufactured hydraulic, fuel, and high pressure air lines are installed. A Stuart-fabricated nacelle and pylon complete the package.

Stuart builds engine nacelles with thrust reversers for a number of executive jet aircraft manufacturers including, British Aerospace, Dassault, Falcon, and Israeli Aircraft Industry. Shipped completely assembled, these ultra reliable thrust reversers and Grumman nacelles are designed for easy maintenance.

In addition to the aforementioned programs, the wings, flaps, ailerons, elevators, and engine nacelle cowlings are assembled here for the E-2C *Hawkeye*. These aircraft assembly functions require facilities for heat treatment and anodizing of aluminum parts. Stuart has these facilities and





relies on stringent quality control measures. The processing tank solutions are controlled by automatic instruments and are monitored by continuous laboratory analysis.

The chemistry laboratory and the non-destructive test (NDT) laboratory, recently incorporated in the Stuart facility, provide same-day turnaround for test results, and have added another dimension to the Quality & Safety Operations Department. This department employs inspection techniques which are the latest state-of-the-art in the aerospace industry. The Quality & Safety Operations Department works closely with both engineering and manufacturing to deliver defect-free hardware.

Quality pays off. Budget conscious customers realize that modification and remanufacturing programs extend the life of quality-built proven aircraft like the OV-1 *Mohawk.* Stuart has the capability to provide this service. Aircraft come in, are stripped down, rebuilt, reconfigured, and emerge ready for action. To support this operation, Stuart has a complete paint stripping shop and painting facilities. An open-air strip/cleaning shed uses a variety of approved chemical and mechanical means for strip/cleaning of surfaces. The adjacent paint shop is a filtered air-ventilated building which can accommodate fully assembled aircraft for application of high-quality paint coatings that meet stringent military requirements. As with all facilities at Stuart, both OSHA and EPA regulations are complied with to protect people and the local environment.

Remanufacturing, cyclic maintenance, and repair efforts are supported by the propeller and engine shop staffed by experienced personnel certified to perform engine and propeller teardown and buildup in accordance with military and commercial specifications. Turboprop engines are currently being processed in this facility. This shop also troubleshoots, component tests, and repairs engine-related systems such as fuel, oil, and exhaust systems. A fully equipped ordnance shop is also maintained at Stuart.

All of these facilities support the varied commercial and military programs accomplished at the Stuart Operations Center. They are constantly being upgraded to continue the tradition of producing quality products on time and within cost.

The Frontiers Of The Future Require Quality And Innovation. Stuart Plans To Meet That Need.

Quality is not just a word at Stuart — it's a way of life, and it affects every level of the organization from top management to each individual on the production floor. The ultimate test of aircraft performance is the flight test, and a broad background in flight test operations eminently qualifies Stuart's Flight Test Department to perform both developmental and production flight test programs. Our pilots are backed by specially trained and certified flight controllers and crash crews.

Continuous planning ensures a bright future at Stuart. Comprehensive training programs have been developed providing a steady buildup of skills and capabilities to keep this modern facility poised to meet the demands of future military and commercial programs.

The technical challenges of the future will continue to demand a strong motivation to explore, and a total commitment to excellence. The Stuart Operations Center is geared to meet this challenge. A vital component of Grumman Aerospace Corporation, Stuart is backed by an organization committed to developing advanced concepts for the next generation of tactical aircraft and space products. Grumman is dedicated to conquering new frontiers in aerospace technology.