

RG Perspective



IMPROVING AIRCRAFT READINESS

The next evolution in depot maintenance with
Automatic Resource Scheduling (ARS)



teamRG.com

T 703.548.7006

11 Canal Center Plaza, Suite 107
Alexandria, VA 22314

U.S. Air Force Top Priorities

In a letter to the Total Force, Secretary of the Air Force Heather Wilson, Air Force Chief of Staff Gen. David L. Goldfein and Chief Master Sgt. Of the Air Force Kaleth O. Wright released their priorities for the Air Force which include restore readiness, cost-effective modernization, and drive innovation. This white paper focuses on one of Air Force's readiness challenges which is maintaining an aging fleet of aircraft. A cost-effective solution was implemented in July 2017 and will be presented to address this challenge. The benefits of this innovative solution enable the Air Force to improve aircraft readiness as part of the existing maintenance, repair, and overhaul process.

Challenge of Maintaining an Aging Fleet

In testimony to the U.S. Senate, General Wilson, Air Force Vice Chief of Staff stated, "Sustained global commitments and funding reductions have eroded our Air Force to be one of the smallest, oldest-equipped, and least ready forces across the full-spectrum of operations in our service history." The Air Force has been involved in continuous combat operations for over 26 years and the average age of all the aircraft in the inventory is 27 years old.

This "tired" iron requires an increasing amount of depot maintenance to sustain status quo readiness levels. Modification packages and service-life extensions place demands on the limited planning and forecasting capacity of the Air Force Air Logistics Complexes (ALCs). Improvements in the ability to plan, schedule and execute depot maintenance would help meet the increased demands on the ALCs.

Solving Aircraft Readiness with Automatic Resource Scheduling (ARS)

The Air Force ALCs can increase readiness by improving current aircraft production levels across the Maintenance, Repair, and Overhaul (MRO) enterprise. Automatic Resource Scheduling (ARS) is available to the Air Force today as part of their existing MRO enterprise and addresses the challenge of maintaining an aging fleet. ARS, which is an enhancement to the Programmed Depot Maintenance Scheduling System (PDMSS), generates a resource loaded network, schedules it, and provides resource availability and forecast reports. The outcome is the ability to manage production based on a resource-informed critical path schedule.

ARS was designed to provide ALC managers with a detailed resource scheduling capability that minimizes the day-to-day user input, leverages existing G097 data, and is integrated within the existing ALC standard scheduling system. This system performs many tasks automatically, including rebuilding a schedule from a template and associating a tool or facility across multiple activities. These features provide high-fidelity resource (personnel, facility, and tool) scheduling and forecasting information to the G097 end user community.

The first improvement is a higher fidelity schedule built on a network of operations below the major job level. This schedule is also resource informed by automatically injecting real-world limitations of personnel, facilities, and specialized equipment or tools into the network of MRO activities. This high fidelity critical path schedule can highlight potential resource shortfalls or possible overages (by weapons system or across the enterprise) during the production cycle.

The next significant improvement is that planners can replicate an existing network to perform robust "What If" analysis. For example, it can determine the impact on the current production schedule if there

is a new modification package. It can also report the impact on production if half of a hangar is closed for emergency repairs. ARS also performs the “What If” analysis for out-year forecasting of personnel, facilities and tools for (notional) aircraft not formally in planning.

Additionally, ARS provides enhanced reporting to include Resource reporting, Maintenance progress reporting (including Aircraft Hotlist, Fever chart) and Dashboards by Aircraft & Weapon System. These enhanced reporting features allow for automated reporting of metrics from the system of record that can be tailored to meet the needs of decision makers.

Before ARS can be used operationally, two critical actions are required:

- **First, the maintenance team’s resource pools must be created and defined.**
- **Second, the master operations, associated with the aircraft types worked by the maintenance team, must be sequenced.**

Once these two tasks are completed, ARS can automatically generate the network, automatically resource load the network, and then generate the critical path schedule.

A key feature of this system is the transition mode. To ensure a smooth migration from “classic” G097 to full ARS, the production support team can run in transition mode while the “official” network remains in “classic” G097. This feature reduces risk to current production efforts while proving the value of resource-informed scheduling. Once the maintenance team is proficient with ARS they can disable transition mode and switch to full ARS operations.

The Next Evolution of Depot Maintenance is Here

Enabling programmed depot maintenance to evolve with the development and release of the ARS enhancement to PDMSS will directly contribute to the Air Force’s top priorities, specifically improving the efficiency of the MRO enterprise. Once the resource pools and network are defined, ARS will automatically generate a resource loaded network, schedule it, and provide resource availability and forecast reports. This enhancement gives ALC managers the ability to manage aircraft production based on a resource-informed critical path schedule. Utilization of ARS is expected to increase efficiency for aircraft depot maintenance and improve production throughput by up to ten percent. The innovation of ARS will address the challenge of aging aircraft and the priority of restoring readiness.