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2011 SECRETARY OF DEFENSE MAINTENANCE AWARDS ROBERT T. MASON AWARD NOMINATION PACKAGE

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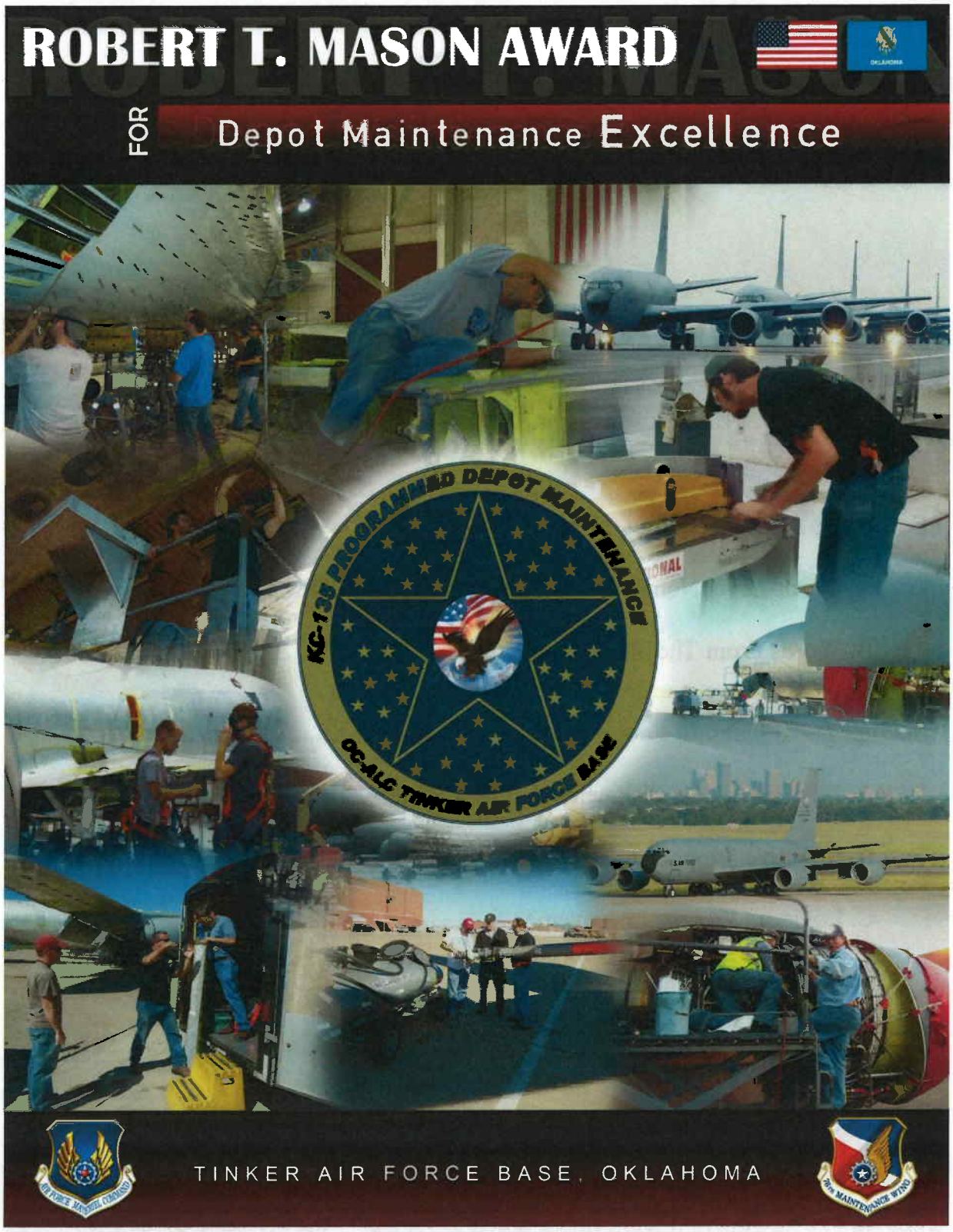
2017 SECRETARY OF DEFENSE MAINTENANCE AWARDS

ROBERT T. MASON AWARD NOMINATION PACKAGE

KC-135 PROGRAMMED DEPOT MAINTENANCE TEAM



KC-135 PROGRAMMED DEPOT MAINTENANCE TEAM

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KC-135 PROGRAMMED DEPOT MAINTENANCE TEAM

Team-Level Nomination Package Information Sheet

1. Military Service and/or Command
   - United States Air Force; Air Force Materiel Command
2. Major Depot Maintenance Facility:
   - Oklahoma City Air Logistics Center (OC-ALC)
3. Identification of nominated program:
   - KC-135 Program
4. Wing Commander name and nominee's mailing address:
   Maj Gen Bruce A. Litchfield
   76 MXW/CC
   3001 Staff Drive, Post 2AH73A
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KC-135 PROGRAMMED DEPOT MAINTENANCE TEAM

7. Background information of nominated program:

The KC-135 Programmed Depot Maintenance Team distinguished itself by superior performance in accomplishing aircraft maintenance during the period of 1 October 2009 through 30 September 2010. During Fiscal Year 2010 the team produced a record 55 programmed depot maintenance (PDM) aircraft back to the warfighter. This extraordinary achievement was accomplished through several innovations and strategic maintenance.

8. Program size: Government Civilians 5733 and Military 89 (as of 30 September 2010)

9. Mission Statement:

Provide our customers responsive, cost-effective Maintenance, Repair and Overhaul capabilities while delivering safe, reliable, and defect-free aircraft to enable our warfighters' mission accomplishments.

KC-135 PROGRAMMED DEPOT MAINTENANCE TEAM

SECTION 1B: WORDS FROM OUR WING COMMANDER

Maj Gen Litchfield

The KC-135 Programmed Depot Maintenance (PDM) team delivers on our promise to our customers, the warfighter, in a consistent and superior manner. As the primary PDM site, the OC-ALC's KC-135 squadron produced a record breaking 55 aircraft in Fiscal Year 2010 (FY10) while managing just over 1400 personnel across 20 different skills in six different facilities performing 24 hour maintenance operations. The KC-135 PDM team is comprised of the KC-135 System Program Office (SPO) and the 76 Maintenance Wing (MXW) with the KC-135 aircraft overhaul being performed within the 564 Aircraft Maintenance Squadron (AMXS). The 564 AMXS is the largest maintenance squadron in the Air Force Materiel Command (AFMC). The team is responsible for the complete PDM inspection, repair and overhaul of KC-135 aircraft for the Air Mobility Command, the Air National Guard, and the Air Force Reserve. The workload these men and women perform amounts to over 1.48 million man-hours annually worth over $230 million dollars. In addition to the PDM workload, the team performs repairs on an average of seven unscheduled depot aircraft yearly.

Continuous Process Improvement (CPI) is imbedded in our culture. Significant achievements were made across the production line which led to a 21% improvement in the overall flow day average. These essential improvements increased our ability to effectively manage and sustain our operational capability and therefore support the need for these aircraft at home and abroad. With nearly 50 thousand sorties being flown a year by these 50+ year old aircraft, a robust inspection and detailed thorough repair is necessary to keep these jets in the fight. In addition to our day to day accomplishments we also received a phenomenal Logistics Compliance Assessment Program result. OC-ALC was the only center in AFMC to achieve a satisfactory rating the first time, with 92 superior performers, nine superior performance teams, five Most Valuable Players and no failed Personnel Evaluations.

SECTION 2A: MISSION ACCOMPLISHMENTS

PRE- DOCK

Pre-Dock is the first stop for an aircraft going through the KC-135 PDM line. During this phase the plane is swiftly stripped of all flight controls, engines, the boom and the majority of the interior. They were able to achieve a 45% improvement (see figure 1 below) in their flow due to the development of the 'Engine Plumbing Kit'. This specific kit cut the inspection time by 50%, allowing for a quicker inspection. It consolidates everything the mechanics need to perform the work in one-foam inlayed, easy to identify kit.

Flight Control Removal in Pre-Dock

This is also the phase that removes all major flight controls from the aircraft and routes them to their next step. Over time, flight control surfaces have been experiencing aging aircraft issues due to corrosion, oversize holes, cracking, delaminating, and repairs not lasting between PDM cycles. These issues could potentially have a major impact to readiness. These flight controls are being replaced with overhauled parts during PDM. These parts consist of the tabs, elevators, fillet flaps, rudders and spoilers. As they are removed in pre-dock they are sent to Commodities Maintenance Group (CMXG) where they are repaired and overhauled through the Management of Items Subject To Repair (MISTR) program. Within this program CMXG was able to make several improvements that increased their efficiency. Specifically the implementation of a one piece flow that reduced the required labor on KC-135 elevators from 900 to 600 hours per elevator, an annual reduction of 60,000 production hours!

Overhauled aileron awaiting installation on aircraft

KC-135 PROGRAMMED DEPOT MAINTENANCE TEAM

INSPECTION DOCK (I-Dock)

The inspection portion of the flow is a crucial point for an aircraft. This 17-day window determines which of two categories an aircraft will fall into; either the standard and preferred "Speedy Structures" or the unfortunate "Extended Flow Aircraft" or "EFA". In this phase in-depth inspections are performed to assess the structure of the aircraft. The outcome will determine which dock would be best suited in the next phase, Structures/Build-Up. Not only is this important for Depot and the facility coordination, these more thorough inspections are also important to identify heavy structural repairs, ensuring a safe and reliable product is returned to the field units.

Inspection Dock "Superkit"

In 2010 the team was able to implement several important initiatives. Few examples include the development of an in-house plating process for the horizontal and main landing gear sections. This initiative reduced hand offs to CMXG by 60 hours. Additionally a "Superkit" was developed by folding six kits into one. This put everything for 78 tasks together, allowing for "on hold jets" to be reduced down from seven to none. Dock Status Boards were also developed throughout the PDM line to provide the mechanics with a visual guide of the aircraft production dates. By doing so the wait time for repairing these areas was dramatically reduced by an overall 30% improvement to I-Dock.

In addition to the increased inspections was the introduction of more advanced parts. Carbon fiber brakes are an example of this. These aircraft were in PDM they received a complete replacement from the 1950 original steel ones. These new carbon fiber brakes are lighter and will last up to 10 times longer than the steel. All KC-135's in the fleet are now flying with these high performance brakes.

Carbon Fiber Brakes

KC-135 PROGRAMMED DEPOT MAINTENANCE TEAM

STRUCTURES/BUILD-UP

Wing Panel Repair

In the Structures/Build-Up Phase the team focused their efforts on a Rapid Improvement Event (RIE) as well as other process improvements. These aggregately reduced the "extended flow" aircraft (aircraft that have a major structural repair) by 40% to an average of 69.9 days. The Speedy/Structure RIE was able to identify the flow in this phase was an average of 15.7 days longer than the 30 day plan. Due to a lack of standardized concurrent tasks performed within the Structures phase there was a variance of 29 to 63 flow days. Several countermeasures were put into place to rectify these problems;

1) Set up and accomplished a comprehensive supervisor communication and training session; this increased the flow of information allowing for improved decision making.
2) Revamped the "release point" meeting, (where the plane transitions from one phase to another), to include structure issues and the structure management to plan successfully.
3) Developed a standardized late find form to transfer the correct information and provide feedback to the previous phases; this allowed us to constantly refine our processes while eliminating duplication of errors.
4) Developed a method to mitigate the controversy of inconsistent defect criteria.
5) Ensured part issues were directed to the material support section versus handled by mechanics.

Due to the implementation of these countermeasures Structures/Build-Up saw an overall 14% improvement.

Another SPO driven initiative involving **rewire** was implemented at Depot. This final phase Time Compliance Technical Order (TCTO) included a reconfigured fuel quantity system and replacement of the fire suppression wiring, as well as remaining systems in the cockpit area not accomplished in previous phases. The KC-135 fleet implementation began in the second quarter of FY09. The OC-ALC has accomplished 66 of 417 aircraft fleet wide as of 30 September 2010.

One final initiative in this phase worth mentioning is **shipsets.** HQ AFMC Financial Management Office and AFMC/A4 approved the pre-ordering of one aircraft worth of shipsets or supply material in anticipation of need to ensure that all potentially required parts (10-100% replacements) are on-hand when the aircraft arrives on station for induction. The KC-135 Kitting program specifically was approved for $1.08 million in advance material purchases.

KC-135 PROGRAMMED DEPOT MAINTENANCE TEAM

SYSTEMS CHECK

In Systems Check the team used process mapping to lay out their entire process for this phase. This allowed them to streamline the workflow by scripting it in detail. In doing so, the Systems area saw marked progress over 2009, with an improvement of 12%. This progress was made while functioning at only 75% dock capability due to facility remodeling. Hanger doors were replaced which limited dock space to only 3 of 4. A plan was put in place to work aircraft without delay and no impact to flow days. Another situation to show that even with adversities, the Tanker team was able to continue to make improvements and break records!

Rigging Elevator System

Within Systems Check we introduced the field level technicians through **Operation Team Spirit (OTS)**. This is a process encouraging teamwork and a definitive partnership between the PDM sites and the owning unit. The program promotes the delivery of quality aircraft that are ready to fly and fight in minimum time, thus enhancing the war fighter's capability

The aircraft is at a point in the PDM flow that allows maximum visibility with the paint stripped, panels removed and flight controls rigged. Discrepancies found during OTS are identified and repaired at PDM prior to aircraft departure. Unit members and PDM personnel work together, sharing knowledge and expertise to produce quality aircraft sooner and with fewer discrepancies and less re-work. The owning units benefit by having a better understanding of the PDM process. The Sources of Repair use the shared knowledge and experience to identify areas where they add significant value to their processes, providing a higher quality aircraft in less time back to the War Fighter.

OTS has been a significant contributor to improved PDM (reduction of AFMC PDM possessed aircraft and better on time delivery, reduced flow days and quality defect rates) resulting in increased aircraft availability. In FY10 thirty nine Team Spirit Inspections were conducted resulting in the avoidance of an average of 61 major findings. Field units report an average of 5 days saved on their acceptance inspection and a new appreciation for the depot processes.

POST DOCK

During 2010 the entire Post Dock operation of 100+ personnel and equipment relocated to another facility located across the ramp putting them closer to the parking spots of the aircraft in their phase, and never missed a beat. Post dock also participated in process mapping which resulted in a process change that produced an impressive 30% reduction in aircraft flow days (see figure 1 below). These process changes were key to attaining an average of 1.97 flights per aircraft for the Functional Check Flights (FCF), beating the negotiated test fight goal of 2.5 flights per aircraft. This effort directly contributed to 31 aircraft produced early, and a record 55 produced in FY10.

Post Dock Ramp

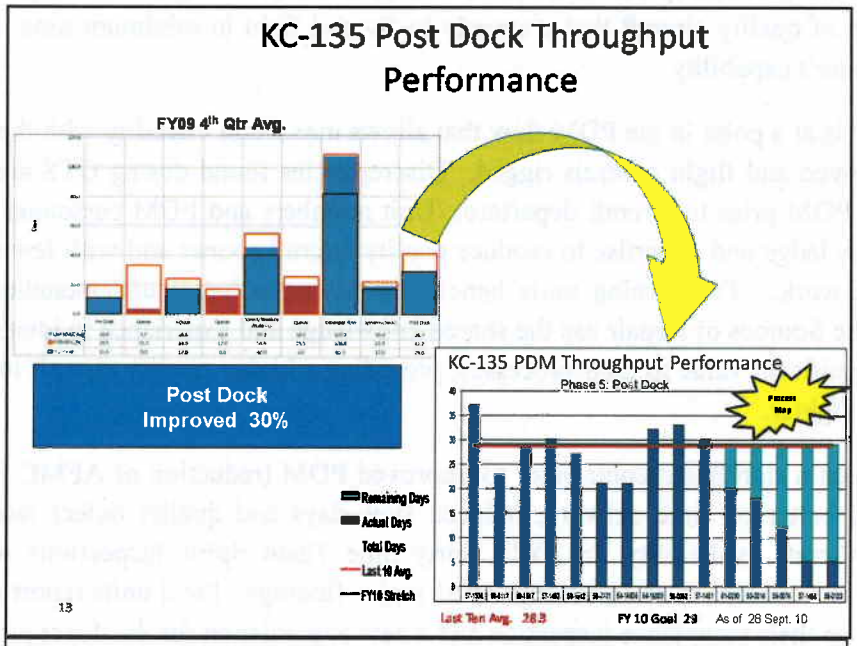

Figure 1. Post Dock Improvement Chart

SECTION 2B: EFFECTIVE SUPPORT TO WARFIGHTERS

Tinker Air Force Base is the home to the largest KC-135 Depot maintenance center. They support a fleet of 408 aircraft cycling through programmed depot maintenance every 60 months. These aircraft come from 30 different stateside bases ranging from Active Duty, Air National Guard and the Air Force Reserve as well as four OCONUS bases. (see Figure 2 at right)

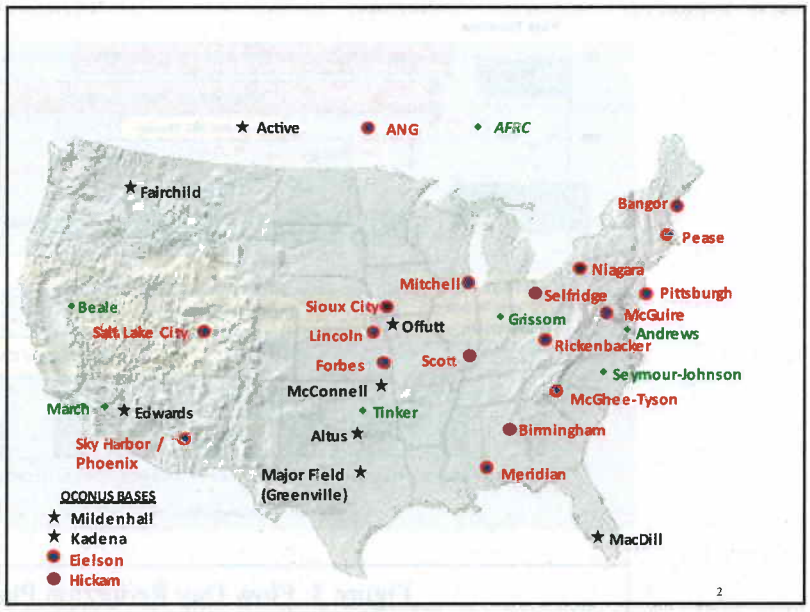

Figure 2. KC-135 Home Station Map

The aforementioned bases forward deploy their aircraft continuously to two primary locations in support of USCENTCOM for OPERATIONS ENDURING FREEDOM and IRAQI FREEDOM, and Horn of Africa missions. The Stratotanker was not given many breaks this past year with flying nearly 50 thousand sorties (over 1,300 of which were medical evacuation missions), refueling 115 thousand aircraft, offloading over 221 million gallons of fuel, and carrying 814 tons of cargo. OC-ALC has had to increase quality while decreasing flow days to support these wartime efforts.

In order for the warfighter to accomplish their mission the KC-135 PDM team had to increase their production output to ensure the maximum available aircraft were in the field units. A few initiatives we focused on in FY10 were key to this. The Road to 130, Staggered Line concept and a 50% surge in the 4th Quarter all played a part in providing necessary aircraft to the warfighter.

In FY10 **Aircraft Availability Improvement Plan** (AAIP) allowed Depot possession aircraft to drop from 75.1 aircraft in FY09 to 69.6 in FY10. This effort returns an average of 5.5 aircraft back to the field per year that normally would be in Depot possessed status. Additional initiatives reflect an improvement of 6.9 aircraft fleet wide.

The KC-135 System Program Office (SPO) hosted over 125 senior active duty, civil service, and industry partner participants during the annual **Roadmap conference** held in Oklahoma City. The two days of briefings and discussions provided valuable insight to the KC-135 community on subjects focusing on the fleet's logistics supportability, sustainment, and modernization efforts. Conference participants departed with a full-spectrum of the KC-135 continuing sustainment and future viability of this vital weapon system.

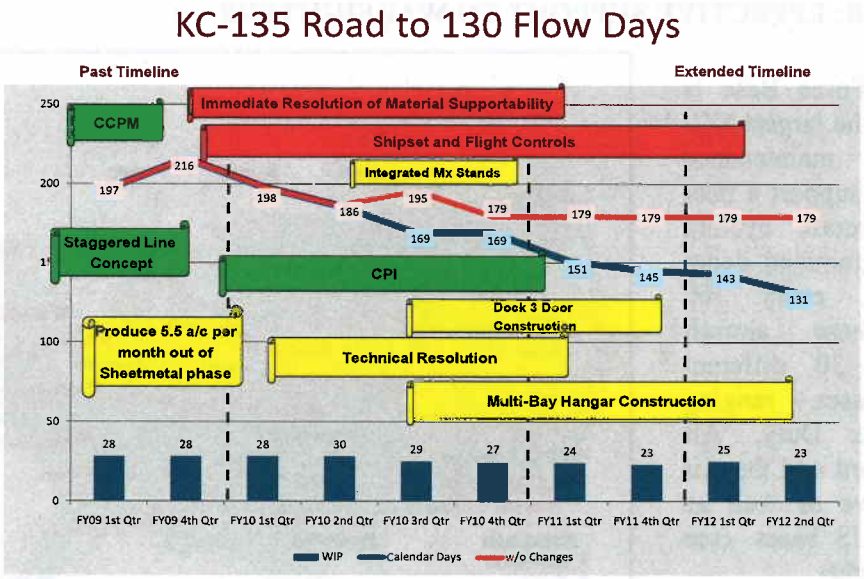

Figure 3. Flow Day Reduction Plan

THE ROAD TO 130

The Secretary of the Air Force mandated the Air Force should do more aircraft programmed depot maintenance work organically. By sending the work to a contractor, the government was spending approximately an extra $2 million per aircraft and threatening Congressional 50/50 mandates. In order to meet the 50/50 requirements, KC-135 PDM implemented the **Road to 130 Plan**. The mandate requires the organic PDM must support sixty four aircraft through the KC-135 Production Line by CY12. In order to reach this, aircraft flow days had to be reduced to 130. The goal of 130 flow days drives all process improvements and initiatives. (see figure 3 above) At the start of FY10 Critical Chain Project Management (CCPM) and the Staggered Line concept had already been implemented and continued to benefit the squadron by reducing flow days. CCPM is used as a high level guidance designed to reduce the flow to 130 days and meet the Aircraft Availability Improvement Plan (AAIP) goal of 23 possessed aircraft. Whereas the staggered line is a robust inspection process focusing on concurrent workloads. Additional changes in FY10 consisted of the Andon process, the visibility and timely response to flight controls, Form 202 technical resolutions, immediate material supportability, introduction of new integrated maintenance stands, and the incorporation of CPI. All of these changes combined made it possible to continue producing aircraft in a timely manner. Combined initiatives resulted in a **reduction of flow days from 216 to 179** for fiscal year 2010.

KC-135 PROGRAMMED DEPOT MAINTENANCE TEAM

The **KC-135 Production Machine** is the heart beat of the KC-135 PDM flow. It directs the total Work In Progress (WIP) aircraft and the takt time of each phase. It defines the allotted time required for each phase to ensure we meet our 130 day goal. In order for the machine to work effectively each phase must meet their flow day goal consistently. Back shop and support organizations are held to their performance requirements in order to support our increased production output. Since implementation of the production machine the aircraft production squadron has decreased aircraft flow day in FY10 14.6% versus FY09.

The 564 AMXS PDM **Staggered Line concept** was implemented in March 2009 and has further refined and improved to decrease depot aircraft capture time. (see figure 4 below) The concept behind Staggered Line is the reprioritization of maintenance, ensuring maximum concurrent workload and identifying heavy maintenance jobs early in the flow, which has thus far reduced overall flow days each of the five phases. Implementing the Staggered Line concept in conjunction with transformation events has laid the groundwork that allowed for implementing a planned approach of reducing depot maintenance days from 164 to 130.

Throughout the year, the team continued to increase production and **surge** the KC-135 PDM line to produce a record 18 aircraft for the 4th quarter. The 4th quarter production surge resulted in increased aircraft availably to the Air Mobility Command; which provide additional support in OPERATION ENDURING FREEDOM, OPERATION IRAQI FREEDOM and Horn of Africa Missions.

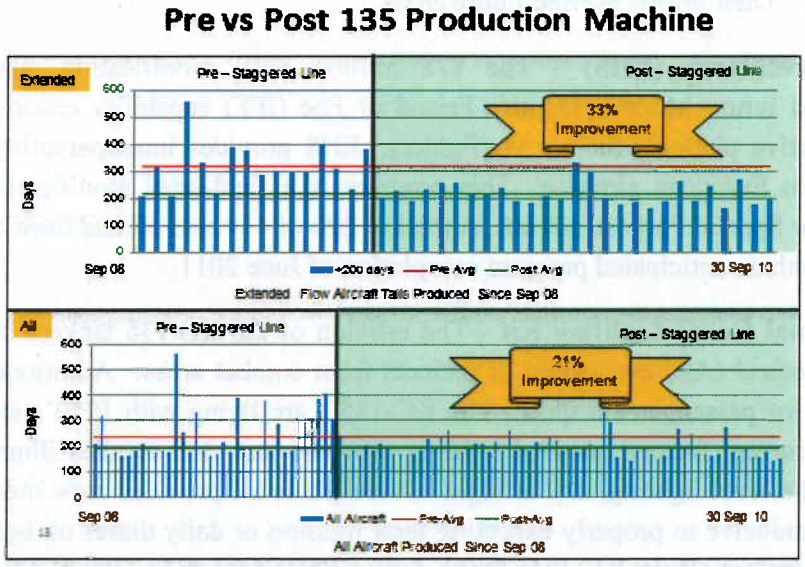

Figure 4. Staggered Line Chart

KC-135 PROGRAMMED DEPOT MAINTENANCE TEAM

In addition to the organic PDM line, the SPO delivered several improvements that helped the sustainment of the KC-135 fleet. Examples: field level Engineering Technical Assistance Requests (ETARs), Enhanced Surveillance (EHS), Portable Internal Cargo Lighting Kits, Aeromedical Evacuation Power Receptacles (AE Power), the Aircraft Structural Integrity Program (ASIP), and various supportability improvements led by the Logistics Integration Flight.

Engineering Support - PDM Engineers processed 2,581 organic request for engineering assistance (Form 202s). All work and non-work stoppage requests were answered within an average of 1.59 days, besting AFMC's goal by 80% and recognized by the 76 MXW as one of the best weapon systems for 202s. Our engineers also adopted the latest medical technology to locate corrosion and cracks buried within the aircraft structure. They also implemented a mobile ultrasonic scan on the skins and lap joints shortening the inspection process by over 20 man hours per aircraft. They led the oversight and development of aft terminal fitting inspection equipment and inspections giving a better insight into this critical part. Additionally, they designed and created an alternate drilling procedure and tooling until the technical data can be updated to meet the new standards. The engineers cut 10 days off the repair time by identifying fitting failures at the depot and prototyped an alignment tool. During the months of August and September our engineers provided support to PDM and the backshops 24 hours a day, 7 days a week to ensure maintenance met their goal of 54 aircraft. We received an additional 9.35% funding for vital engineering support at the depot which enabled our engineers to look at repeat 202s for surge capabilities of an additional 17 aircraft. When there was a wing over-pressure mishap at Boeing San Antonio, our engineers assessed the damage and provided a statement of work for the fix. Their efforts averted future crisis.

Enhanced Surveillance (EHS) - The $28 million EHS modification enables enhanced surveillance and future Mode 5 Identify Friend or Foe (IFF) capability ensuring the KC-135 remain an effective platform for our warfighters. EHS provides interoperability with civil air traffic control in European airspace. This program is a field-level modification to 415 KC-135R/T and four Special Purpose aircraft. A total of 270 of 419 aircraft had been modified by the end of FY10, with an anticipated program completion of June 2011.

Portable Internal Cargo Lighting Kit - The mission of the KC-135 tankers has expanded to include aero medical (AE) evacuation of patients from combat areas. Additionally the aircraft are being used for passenger transport. The KC-135's are flying with 1950's era compartment lighting. The current factory installed lighting provides just .3 ft candles illumination, which equates to candle-level lighting, day or night. Overall, this kit provides crew members a lighted environment conducive to properly executing their mission or daily duties on board the aircraft. The immediate impact affects KC-135s flying daily CENTCOM and CONUS AE missions.

KC-135 PROGRAMMED DEPOT MAINTENANCE TEAM

Aeromedical Evacuation Power Receptacle (AE Power) – The Aeromedical Evacuation Power Receptacle (AE Power) initiative was put in place to provide additional 115Vac, 400Hz, three-phase electrical outlets in the cargo area of all KC-135 R/T aircraft. Installation of the three new electrical outlets provides sufficient power availability to serve up to six critical care patients. Production of kits for the fleet was accomplished October 31, 2010. The fleet is expected to be fully modified be September 30, 2011.

Aircraft Structural Integrity Program (ASIP) - The KC-135 SPO has successfully ensured structural safety through its Aircraft Structural Integrity Program (ASIP). The program involves design, analysis, and testing activities to ensure that the aircraft structure is adequate to operate as intended. These activities provide information to aid fleet-management decisions, such as creating inspection and maintenance plans and setting modification priorities. In 2010 alone this program solved 257 issues and managed to avoid any Class A and B mishaps while maintaining airworthiness. Remarkable for a 50 year old aircraft!

Logistics Support - The SPOs Logistics Integration Flight focuses on Mission Capability (MICAP) and backorder reductions increasing KC-135 aircraft availability in support of contingency operations. The flight works closely with Supply Chain Managers (SCMs) to accomplish improved parts availability through identification of critical items, component parts constraints, urgent emergency purchase requirements, and corrections in cataloging actions. In addition, the flight optimizes supply chain performance by assisting the Mobility Air Force/Combat Air Force (MAF/CAF) Logistics Support Centers and AFR/ANG bases in locating assets to support grounding aircraft through lateral support, surplus vendor/local purchase, local manufacturing, Aerospace Maintenance and Regeneration Group (AMARG) reclamations and PDM pulls. These concentrated efforts result in improved mission capable status and supply chain effectiveness for the KC-135 weapon system. For the fifth year in a row, the weapon system achieved Total Non-Mission Capable Due to Supply (TNMCS) rate better than CSAF TNMCS standard of 8%. The KC-135 TNMCS rate was among the best in the Air Force and had decreased by 6.0 percent over the past ten years. The effects of the low TNMCS rate resulted in 10.1 aircraft being provided to the warfighter since FY03 and contributed significantly to KC-135 weapon system consistently meeting its aircraft availability target.

The KC-135 **Readiness Spares Package** (RSP) Managers within the SPO successfully led the RSP annual face-to-face review of Mobility RSP kits and Deployable High Priority Mission Support Kits (HPMSK). The review included 442 KC-135 aircraft containing 497 items and 17,799 units valued at $399 million with MAJCOM RSP Representatives. RSP Review Team's thorough and diligent efforts ensured that RSP kit configuration requirements for each MAJCOM were validated and funding requirements were identified and forwarded to HQ AFMC and Air Staff for review/approval.

SECTION 2C: LOGISTICS PROCESS IMPROVEMENTS

KITTING:

This is a backshop function within the 564 AMXS responsible for the storage, routing, repair and replacement of parts from the PDM line. They store all parts between removal and re-install. Kitting allows a preassembled package of the serviceable parts needed to perform a specific task.

In the Kitting shop our maintenance inspection team consists of ten mechanics. These mechanics continuously look at process improvement across the entire PDM line. The maintenance inspection team/Kitting shop implemented "just in time" kits for mechanics at point of use. It allowed for parts to be repaired and replaced at the earliest possible point during the PDM flow. This change directly aided to a 21% overall improvement in PDM flow days. The pictures on this page show just a few of the kits our employees prepared and delivered during FY10.

Engine Plumbing Kit

Mechanic Filling Kit with Repaired Parts

RAPID IMPROVEMENT EVENTS

Initiatives are Rapid Improvement Events (RIE) or 'Just Do Its' that pull subject matter experts together to dedicate a specified amount of time on walking through a process step by step and eliminating any areas of waste. Several RIE's were focused on process mapping the flow of jobs in each of the phases of the KC-135 PDM process. Speedy Structures, Extended Flow Aircraft, Systems Check and Post Dock all mapped out their processes to reduce their flow days. Some other areas that benefited from the events were the reconfiguring of kits in the Kitting back shop, the visual information boards for each aircraft in both Structures/Build-Up and System Check, and the process for routing the engineering disposition form 202. All of these events had action items and follow ups that ensured that they received continuous attention even after the RIE.

KC-135 PROGRAMMED DEPOT MAINTENANCE TEAM

FACILITY ENGINEER DISPOSITION (202) RIE

The team implemented a daily stand-up meeting, lessening time for technical resolution by 50%. This was a critical improvement because an average of 45 technical resolutions are submitted on each aircraft. The previous process for technical resolution of KC-135 repairs did not adequately consider the critical path, which is the sequence of activities that must be completed on schedule for the entire project to be completed on time, resulting in unnecessary flow day and facility impacts. Prior to this Rapid Improvement Event (RIE), an average of 23 flow days was taken for "resubmits", causing the aircraft to queue prior to structures phase. The primary goal set by this RIE was to formalize the critical path technical resolution process while reducing the technical resolution time. During the RIE the team highlighted areas to address the Form 202 technical resolution problem facing the squadron. The team was successful with both goals. Results included formalizing the critical path technical resolution process; this directly contributing to technical resolution time being reduced from 26 to an impressive 5 days!

FLIGHT CONTROL REMOVAL/ROUTING RIE

Another big money saver for the 76 MXW focused on the removal and routing of KC-135 flight controls. The primary problem was KC-135 flight controls were moved multiple times in support of Management of Item Subject To Repair (MISTR) parts and routed repair processes. These movements drove multiple storage/staging area requirements and multiple packing and unpacking actions. This created unnecessary damage due to multiple handling as well as weather exposure.

Specialty Flight Control Trailer

The team identified the problem then listed improvement targets and countermeasures to rectify this problem. Results were immediately evident after this RIE. Results included; a reduction in excessive and non-value added movements. This led to increased efficiency and contributed to a 14% decrease in Speedy Structure flow days, and decreased potential for damage and rework. Additionally a specifically designed flight control trailer/dolly and a redesign of the process flow were a result of the RIE. Finally it cut travel time by 19 miles, (64% less than pre-RIE), and times stored unprotected by 80%.

KC-135 PROGRAMMED DEPOT MAINTENANCE TEAM

NEW LEAN EQUIPMENT

Tanker's received their first set of high tech new integrated maintenance stands. The addition of these stands allows maximum mechanic touch time and man loading on each aircraft. Though the stands began arriving during the 4th quarter of FY10, the initial assessment looks positive. The addition of these stands to the Structures phase of the PDM line prevents multiple stand rearrangements throughout the 60 day process. Additional phases of the PDM line are identifying task that can be performed using the integrated maintenance stands.

Transformation Aircraft Stands

CONSTRAINT TEAM

Constraint Team Discussion

Tinker's first Constraint Buster Core Team belongs to the KC-135 PDM team. Its primary mission is to rapidly resolve current and future supportability issues encountered by the KC-135 PDM line. Issues can be process, policy, or parts. The cross organizational team is comprised of representatives from the PDM line, supportability specialists (System Program Office (SPO) and Defense Logistics Agency (DLA)) and Engineering all co-located together in one room. The key to the team is imbedded reach-back support. Each functional area can obtain information from organizations that are not co-located as our team is. To date the team has resolved 170 issues, 121 of those in FY10. These efforts were vital in resolving 26 KC-135 fleet-wide material work stoppages. The team also developed long-term material support strategies to ensure 100 percent sustainment (parts that must be replaced) issues were resolved. They solved critical work stoppage and safety issues affecting 43 PDM aircraft.

Additionally, the team supported the immediate repair of wind and hail damage that occurred to six KC-135 flight controls. Dispatching a team of engineers, maintainers, and support specialists, they were able to mitigate a parts crisis in a matter of weeks.

Finally, the team tackled packing and installation problems associated with an elevator issue that affected 40 assets, both at the organic and contractor locations. The new packing/installation procedures returned 20 assets to the Air Force inventory. These outstanding efforts were chartered and benchmarked for three other production squadrons in the 76th Maintenance Wing.

ANDON

The Andon system is a visual tool that was adopted as a new practice from Airlian Aviation. The purpose of the Andon system is to systematically elevate problems encountered during the PDM process up the chain of command until the problem is resolved. The Squadron pioneered an executive-level virtual "Andon" system to allow for swift upper management's attention in resolving critical work stoppages.

Figure 5 below is an example of the tracking sheet used at the Bi-Weekly Wing meeting. It allows all parties at senior leadership level to ensure a strategic level answer is developed as soon as possible to get the right support to the aircraft. This process has been a great success in the 76 Aircraft Maintenance Group (AMXG) and currently is being benchmarked in the Propulsion Maintenance Group (PMXG) for engine critical work stoppages.

The Andon system produced results: it has empowered everyone involved with the production machine to rapidly elevate a work stoppage problem. Since the inception of the Andon system 12 critical issues have been solved. Of the 12 critical issues 7 resulted in a one day resolution, without an affect on the aircraft flow. The remaining 5 Andons were worked to resolution within 3 days minimizing lost time (see figure 5 below).

ANDON FLASHES

"Everyone on the team needs to help us highlight and solve problems. Pulling an ANDON does not yet come naturally, but we must make problem solving a part of our culture and the ANDON is a tool to help us do that. When an ANDON is pulled, it's time for the entire team to come together to solve it so that we can achieve our most important goals." Gen Gillett

Date Submitted	Weapon System	ANDON ISSUE	Level Being Worked	Date Resolved	Resolution
31 August 2010	KC 135-20	Gear Components	Wing	Not Resolved	
31 August 2010	KC 135-21	MICAPP policy	Wing	Not Resolved	
17 Nov 2010	KC 135-29	Work Spec 1B25	Squadron	Partial Resolve	Meeting on Dec 1st to work on proto type
29 Nov 2010	KC 135-31	Plating certification	Squadron	Not Resolved	

Figure 5. Sample ANDON Tracking Sheet

SECTION 2D: PERSONNEL QUALITY OF LIFE PROGRAMS

VOLUNTARY PROTECTION PROGRAM (VPP)

KC-135 PDM team is in active participant in the Voluntary Protection Program. VPP was implemented to reduce the number of on the job injuries. There are two additional aspects of VPP, Catch a Star and Star Point Recognition that are in practice in the KC-135 team. The **Catch a Star** potion of the program was implemented to engage and empower the workforce. Catch a Star empowered employees to look at the task they perform and ask is this safe, and can I improve on the safety of the task I perform. **Star Point Recognition** program recognizes employees who have used the program to improve on the safety of the tasks performed.

Head Protection Covers

Currently 564 AMXS has 34 active members throughout every phase of the PDM line. These employees are known as **Voluntary Safety Representatives**. The VSR's look at the work performed throughout the PDM process. They are the bridge between the employee, management and the union. VSR's work the issues real time to get safety problems fixed quickly.

Head injuries were one area the VPP and VSR employees wanted to focus on. Antenna, engine cowls, and entry points were identified as areas were additional employee safety features could benefit the workforce. The VPP team designed and developed padded covers to provide additional safety. The covers were then kitted and are now mandatory when the aircraft comes in dock. The implementation of VPP, Catch a Star and Star Point Recognition programs the squadron has experienced an 11% reduction in Total Case incident Rates (TICR) and Days Away, Restricted or Transferred (DART) rates.

EMPLOYEE APPRECIATION DAY

Employee appreciation day is held annually to reflect on accomplishments the squadron has made and to focus on the way ahead. Lunch is brought in, the entire operation is brought together and the day is spent recognizing employees for achievements and focusing on improvements. Training and safety are also emphasized with recaps from the year.

Employee Appreciation Day

KC-135 PROGRAMMED DEPOT MAINTENANCE TEAM

SAFETY STAND DOWN

The purpose of a safety stand down is to highlight the inherently dangerous work the employees perform, as well as the dangers faced when off duty. Safety Stand down is held in May, prior to the 101 Critical Days of Summer. Safety Stand Down focuses on the VPP, Catch a Star and Star Point Recognition. A review of mishaps and a plan for action is outlined. During Safety Stand down all personnel identified a 'Wingman', or a person who is available for any problem personal or work related. In doing this people were able to identify someone to talk to if needed and help reduce depression.

THE 76 MXW and THEIR COMMUNITY

Individuals of the KC-135 PDM team participated in the annual holiday Wish List Program providing Christmas gifts for over 220 children in foster homes in the local area through the Department of Human Services (DHS).

DHS Foster Kid's Holiday Wish List Program

Additionally, squadron members donated their time to rebuild and provide comfort to those struck by the Oklahoma City tornado in May 2010.

Finally the KC-135 squadron was recognized with the 76 MXW "Early Bird Award" for the annual Combined Federal Campaign. Not only did they surpass their financial goal of $102,088 before any other squadron, they rallied together raising an impressive $117,800, 111% of the original goal.

2010 Oklahoma City Tornado aftermath

KC-135 PROGRAMMED DEPOT MAINTENANCE TEAM

SECTION 2E: RECORD BREAKING RESULTS

FY10 KC-135 Recognition Ceremony

General Donald J. Hoffman, Commander Air Force Materiel Command, recognized the 564 AMXS on their production of 55 aircraft in FY10. This output was an 18 year high, which was a force enabler for the Major Combatant Commanders responsible for OPERATIONS ENDURING AND IRAQI FREEDOM. During the **KC-135 Recognition Ceremony** he quoted "the aircraft you delivered back to the warfighter makes a huge difference globally. You put global reach in to the United States' combat effectiveness. You enabled global power and global vigilance".

The delivery of 55 aircraft not only enabled OEF/OIF/HOA missions, it also directly impacted the AAIP initiatives previously mentioned. Their changes to the flow and smart maintenance directly contributed to the 9.6 aircraft returned to the warfighter for use. The changes were evident with the production of 31 aircraft being delivered ahead of the original contract date, this up from the three in 2009. Based on their effort to support all their customers, the Air National Guard presented the 564 AMXS with the **2010 Air National Guard Minuteman Trophy.** Col Joseph Wilson, ANG Advisor to the OC-ALC Commander said, "with our alert commitments, deployments, exercises, training requirements and inspections the ANG needs every tail we own to accomplish the mission. The 564th has been instrumental in that by delivering quality jets on time when we need them."

KC-135 PROGRAMMED DEPOT MAINTENANCE TEAM

The 564 AMXS executed 45 initiatives and remapped the PDM stages to ensure the best use of time and space. These efforts were highlighted in the **2011 Laureate Award for Maintenance Repair and Overhaul**, sponsored by Aviation Week. The award was conceived to honor organizations that epitomize the values and visions of the global aerospace/defense industry.

KC-135 System Program office was nominated for the AFMC **2010 Outstanding System Program Office**. They led an impressive 2,581 engineering dispositions with a quick response time of 1.5 days. These efforts were crucial in producing an 18 year high for KC-135 overhaul.

The 76th Commodities Maintenance Group was nominated for the **2010 Chief of Staff Excellence Award** for the Tinker Aerospace Complex Lean team. Their efforts in increasing production of KC-135 flight controls was key to the reduction of total hours spent repairing these assets. They implemented a one piece flow resulting in a flow reduction from 900 to 600 hours.

Major Lori Minnick was awarded the **76 MXW Lance P. Sijan Field Grade Officer Award for 2010**. Major Minnick was instrumental in the continued success of the squadron serving as the 564 AMXS Deputy Director. She designed the strategic plan for the squadron LCAP which was benchmarked across 76 AMXG, resulting in the first time pass for OC-ALC.

Captain Andrea Ismirle was recognized as the **76 MXW Lieutenant General Leo Marquez, Company Grade Officer, for 2010**. Additionally she was recognized as the **76 MXW Company Grade Officer of the Quarter** 2nd Quarter CY10. Serving as the Flight Commander, Weapon System Support Center she focused on CPI. She spearheaded the creation of the superkit, and flight control RIE directly resulting in reduction of aircraft flow days.

Captain Jared Castaneda was nominated as the **AFMC Depot Maintenance Award, Company Grade Officer, 2010**. Additionally, he was selected as **76 MXW Company Grade Officer of the Year 2010**, second year in the row. He mobilized KC-135 PDM flight control initiatives slashing repair time by 300 hours per elevator as well as leaned the flow time for spoilers, reducing flow days by 58%.

Mr. Michael Wilburn was recognized as the **76 MXW Employee of the Quarter** 2nd Quarter CY10. Mr. Wilburn serves as a supply technician for the squadron. Mr. Wilburn ensures quick accessibility and accountability of parts flowing into the PDM line.

Mr. Jeffery Nuss was awarded the **76 MXW Maintenance Excellence Award** for the 3rd Quarter in CY10. Mr. Nuss was instrumental establishing the KC-135 Constraint Busters Team.

The KC-135/E-3 Spoiler Team was recognized as the **76 MXW Production Team of the Year** CY10. The team members consist of team lead Chad Deuel, David Barnes, John Breckenridge, Jon Bryce, Gerren Clemmons, Gary Clowdus, Kenneth Cuff, Caleb Daniels, Robert Daniels, Duyen Doan, Kenneth Dudley, Rollie Fansler, Kaleb Humphrey, Brian Kizer, Joshua Lawler, Christian Oliver, Gary Rusche, Travis Saylor, Kelly Sulanke, and Jason Welliver.

KC-135 PROGRAMMED DEPOT MAINTENANCE TEAM

CITATION TO ACCOMPANY THE AWARD OF

THE ROBERT T. MASON AWARD FOR DEPOT MAINTENANCE EXCELLENCE

TO

KC-135 PROGRAMMED DEPOT MAINTENANCE TEAM

The KC-135 Programmed Depot Maintenance Team distinguished itself by the accomplishment of superior depot maintenance during the period of 1 October 2009 through 30 September 2010. They produced a record breaking fifty five aircraft in fiscal year 2010, an eighteen year high. The KC-135 team planned and executed a twenty million dollar budget for aircraft modifications, depot repair, and overhaul. The 76th Maintenance Wing implemented many Rapid Improvement Events and executed forty five directly associated with KC-135 throughout the year. These changes allowed for an overall reduction of flow days from 216 to 179. This reduction of flow days allowed for the team to respond to a call for help from Air Mobility Command to support missions for OPERATIONS ENDURING FREEDOM, IRAQI FREEDOM, and Horn of Africa.