Top 10 Tasks Complete Sample Work Order Status Updates for Quality Assurance During Upgrade/Repair Simulations

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Here we describe simulation models for repair processes of field-level aircraft, suggesting ways to reduce work order schedule time and improve mission readiness. Effects of materiel availability and process redesign on repair schedule time and work-in-process supply line levels for critical parts are briefly outlined.

Simulation models have been created to address field-level challenges in many respects. In this report, we describe potential for work order sampling to be used as training tool to show each unit the effects of its behaviour on the other. Quality Assurance Metrics could be very useful.

Top level quality assurance metrics must have specific targets established so sustainment provider behaviour will be sampled based on if targets are met or instead fall short of expectations. Other metrics established to assist in dispatcher reviews aimed at understanding causative factors. Metrics for product support must be identified early in strategy establishment and made more effective as dispatchers progress into implementation of work order activity phases.

Running results from our simulation models indicate field-level units could significantly reduce work order schedule times for repair activities by increasing supply levels of available parts and establishing quality assurance sampling of current repair process behaviour by dispatchers.

Sustainment subject matter expertise is leveraged by dispatchers responsible for dealing with parts supply lines and other outside organisations. Dispatcher action forms collaborative working body comprising application of quality assurance skills to realise product support solutions. Directive control of dispatchers in all phases of Job Site behaviour evaluations is essential, so collective dispatch teams input and expertise are well suited for quality assurance sampling of product support work order tasks.

Chief objective of product support team establishment is to deliver on field-level requirement requests also to incentivise suppliers to innovate. Attributes of effective product support programmes arrangements include objective work order sample description to acquire successful product support outcome and establishing limited set of metrics linked to desired field-level mission outcomes.

Once the component to require repair is tagged at field-level unit, it is sent to the responsible work Job sites where repair teams conduct tests, fault isolation, and repair. After repair, dispatchers write about progress of repair actions in work order samples and perform testing before quality assurance inspection.

Well-defined dispatch team skill set structures drive success of pre-execution efforts to include

product support Quality Assurance function. When work orders are sampled, the component is processed for routing to another shop for any other required repairs. This process is repeated until all the required repair processes are completed. Then the component is routed by dispatch center for return to field-level units.

Field-level aviation readiness is directly linked to the availability of materiel for timely repair of aircraft. Dispatchers provide quality assurance for field-level primary functions to overhaul and repair aircraft and their components to include restoration of the designed levels of performance, reliability, and material condition. Work order sample Activities span complete rebuild through design upgrade, replacement, adjustment & servicing of system items.

Quality assurance work orders sampling are conducted randomly during the repair process. The randomness associated with the disaptch schedule and the completion times for repairs causes items to wait in a queue for the dispatch attention. Getting the attention of dispatch center and conducting all Quality Assurance assessments could reduce the randomness of work order sampling, allowing items to be quickly routed straight from repair shop without the queue time.

Are you experiencing problems and getting many complaints about job site & equipment maintenance? Are work orders taking too much time to complete? If this sounds familiar here are three quick maintenance metrics to help dispatchers identify causes/solutions. Quality Assurance Dispatchers can use these metrics to pinpoint the real issues and how to fix them. These metrics are not too difficult to collect. Use them even when everything seems fine to get a quick work order sample measure of your maintenance performance.

1. Work order schedule backlog:

This is usually measured in hours or days. It represents upgrade/repair work orders due but not yet been completed. Over time you want to see a backlog that remains about the same or is falling. Quality Assurance Dispatchers must have a good idea of your work order backlog and the trend over time.

Big jumps in your backlog need to be investigated. It can be due to planned maintenance work--for example during gaps in mission directives where you have much equipment to maintain. Or planned maintenance keeps getting delayed due to schedule conflicts or other reasons. If this maintenance is not critical you may want to close such work orders and reschedule the maintenance to a later date.

Waiting for critical spare parts or supplies can also delay work order completion. This results in an increased maintenance backlog. Dispatchers must talk with suppliers to get parts delivered when field-level demand signals are relayed. demanded by missions. Consider other suppliers if existing product support base cannot meet your needs.

2. Work order completion percent:

This represents what percentage of work orders scheduled in a period have been completed or closed. Again, you should not see major changes in this percentage over time. It should track

work order backlog in its trend. If there is a difference, for example work order backlog is steady but completion percent is falling – you may have a problem.

It means that smaller jobs ie, most probably preventive maintenance checks, are not being done. So there is less impact on the backlog but a big impact on the completion percent. Dropped preventive maintenance checks will most probably come back to bite you in the future when equipment breaks down.

3. Average time to complete work orders:

This tells you how many days on average it takes to complete a work order. You should not see large swings in this value over time. A large increase in this value is a signal that there may be problems completing work orders. You may have parts shortages or scheduling conflicts with maintenance technicians. To help fix this, it is better to break up large maintenance jobs into smaller tasks..

Each task will have its own work order. You could link these task work orders to each other by using something like the relative task quality assurance assessments. When one work order is marked as completed, the next work order on the line is scheduled.

Having big maintenance jobs broken up into smaller tasks ones makes it easier to track progress on the job as well as quickly identify where work is stuck. On the other hand, say you do not see much change in work order backlog or completion percent but average days to complete work orders jumps. This can mean you may start having satisfaction issues with field-level units. Work is getting done but is taking much longer to complete. This means field teams are waiting longer for fixes.

In the Next Section of our Report we define “Wrench time” as the amount of productive time in a day. It is the time spent actually fixing breakdowns. It does not include supply line parts orders, status update, transit of broken down aircraft, changing Job Site team composition, etc. Traditionally, wrench time was defined as time spent by the worker with tools working on physical application of labour. It includes direct troubleshooting.

How much time does it take to repair a gearbox or replace a pump seal? If you were thinking of the pure work time and assumed everything needed was right there in front of you, then you would be thinking of wrench time. But if you were thinking of the time from when the job is handed out to when the worker is available for the next job, then you are thinking of work order time.

There is the misconception that wrench time can be gotten from the work order system. Actually, there is no way to derive wrench time from work orders. The reason is that the work order is at best an approximate document. Both Minor and some major non-work activities are just not usually subject to quality assurance efforts.

Why is this important? Because all your productive maintenance and repair activity come from your wrench time. Obviously, if you have enough people for all your workload and projects then

wrench time is of lesser importance. But if you struggle to meet all field-level demand signals, then the wrench time becomes urgently important.

Another way of thinking of the non-wrench time is to think of friction. A certain amount of friction is needed to make things work. A certain amount of set-up time dependent on factors such as supply line capacity is necessary to do maintenance. But an excessive amount of friction soaks up the energy until eventually no useful work is done.

There are two ways to obtain accurate wrench time. The hard way is to position yourself so you can see most of the workers and assign quality assurance dispatcher and have them determine in detail how much time is spent doing what. The easy way is to use work sampling.

A simple way to understand work sampling is to imagine taking randomly timed snapshots of the whole Job Site wherever anyone would be working, then building your work order samples with sets of random snapshots into a table of checkmarks per activity. Once you have enough observations, you can determine the number of observations needed to determine wrench time.

If you remove encountered barriers then wrench time will improve. The barriers to improved wrench time include everything from inefficient platform systems to delayed status updates & use of too many metrics. Use work sampling to discover where lost time is hiding.

One of the main contributions of dispatch activities is to take your lost time and see if an quality assurance intervention would reduce adverse consequences. This information can be used to brainstorm ways of reducing the lost time, potentially without unintended consequences. Identification of lost time uncovered by work order sampling provides opportunities to improve wrench time.

Quality Assurance assessments provide sufficient decision-making information utilised for determining extent to which dispatcher review of work order samples is required. Confidence in assessment is limited by dispatcher ability to allocate performance metrics lower than major subsystems e.g., structure, propulsion, mission equipment etc.

In final section of report, we describe Status Update Assignment categories important for defining Repair Site Simulations. Unique quality of dispatcher capabilities in recognising importance of status updates has been well-demonstrated-- no other source is capable of providing work order samples of new components or new users. Dispatch competence in resolving Status Update challenges is made evident by finding most useful combination of additional spares, training, redesign, support infrastrucure, upgrade/repair tasks, etc.

Status Update Impacts must be sampled using primary quality assurance metrics to include Operational availability, materiel readiness, advantages of in-house supply line provisions & work order downtime. Identify & define any potential status update decision processes, planned integration & Job Site expectations in key Simulation assumptions.

Job Site Status Update Simulation standards can be used to collect work order samples based on parts supply issues with multiple execution steps. Being aware of quality assurance transitions

occurring on job site and writing dispatch team behaviour summaries accurately on status update application, such as “Dispatch part supply requirements impacting work order sample quality quickly and moves on to next task.”

Awaiting Parts Status exists when materiel is required to complete repair action are not available at field-level so no work orders can be completed due to a lack of ordered parts on supply line. Parts are not considered to be ordered until the field-level demand signals have been forwarded to the Supply Response dispatch Sections.

The point in time when Awaiting Parts status occurred because of supply line disruption and the length of time it lasted is recorded by dispatchers in work orders. Items which cause Awaiting Parts status during on-equipment work are identified in original Materiel Item Section. Items which cause Awaiting Parts status during off-equipment work are often times identified in another Materiel Item Section.

Individual Materiel Readiness Status shows items and supply levels of parts required so aircraft field-level activity is ready for the mission to which status update applies. Work Order Samples are used to establish formal, continuous work order sampling chain of dispatcher Quality Assurance actions for specific equipment and installed materiel designated for use on any target field-level aircraft Squadron.

Dispatcher Repair Expediting Operations entails processing for repair of components accomplished by the immediate removal of the component from the aircraft, expedited delivery and induction for repair, and the earliest return to request for status updates on supply line issue under standard material issue priority system.

Beyond Capability status is used by target field level when repair is not authorised at that level or when an activity is not capable of completing work order because factors include lack of equipment, job site infrastructure, technical skills, useful metrics or parts supply. Beyond Capability status is also used when Job Site work order backlog precludes repair within time limits specified by existing directives.

Consolidated Allowance Status is comprised of items and quantities of authorised parts supply line according to aircraft Type to support field-level missions. Status updates are tailored for each Type and the items listed are selected from Allowance Requirement Registers applicable to embarked aircraft.

Allowance status updates are based on field-level demand signals and dispatch support doctrine. Consolidated Allowance determinations allow for Product Support Package concepts to be included in applicable equipment Type work orders. Status updates are derived from pertinent dispatch Availability Readiness Reviews will have been included in work order samples.

Material Dispatch Control Quality Assurance Work Order Samples provide product support to field-level units and translate materiel requirements into accurate supply requests to be dispatched to Job Sites. Materiel Control centers are contact points within aircraft repair organisations where Direct materiel requirements are expedited by dispatchers to ensure:

1. Repair requirements for parts and materiel are forwarded to the dispatchers in a timely and continuous manner

2. Parts and materiel received are expeditiously routed to applicable work centers and not allowed to accumulate

3. Available Supply Rates for trackable components are current in status updates

4. Establish work order sample transit pickup points for materiel ordered

5. Maintain dispatch with supporting repair materiel activity to satisfy field-level demand signals

6. Prepare status updates for parts required by operational support & materiel carried in supply outlets

7. Furnish status updates to the Supply activity on identity & quantity of materiel

8. Establish procedures to ensure proper Job Site Disposition and work order performance

9. Ensure timely prep of status updates in the event of materiel availability deficits

10. Maintain adequate quality assurance sampling standards for materiel and equipment on job site work orders.