LARGE COMMERCIAL OPERATORS

Discussion Leaders

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The working group concentrated on four major cost areas that affect the profitability of commercial operators, particularly those with fleets greater than 25 aircraft: direct operating cost, reliability cost, minimum equipment list costs, and maintaining continuous airworthiness.

DIRECT OPERATING COST

Direct operating costs (DOC) are the parts and labor costs incurred by each hour of helicopter flight. There are other, somewhat varying, definitions of DOC used by helicopter operators and accountants, but the group agreed that the definition offered here would serve as a simple common starting point for discussion.

One member of the group offered a matrix to serve as a format for analysis of DOC with regard to parts and components. (Exhibit B) Data for all columns but "actual life" are readily available in manufacturers' publications. Actual like is a more useful item that manufacturer's estimated life because it reflects the realities of field operating experience. Large operators have considerable advantage over smaller operators in this area because their data base is far larger, and consequently their actual life estimates are more accurate.

EXHIBIT B

	Part Number	Mfgr. Life	Actual Life	Unit Cost	Cost per hr.
Resource for retirement					
Resource for component overhaul					
Repair cost for on condition					
Airframe (refurbish) parts					
Engine overhaul					
Engine retirement items					
Engine repairs					
Labor (scheduled)					
Labor (unscheduled)					

This format might be too detailed for some operators. A very close estimate can be made using historical cost summaries without going to all the trouble of such a detailed analysis.

The manufacturer's understanding and publication of DOC data has become far more accurate in the last few years. In the past, gross inaccuracies seemed to be the rule in manufacturer-supplied data.

One problem area in the DOC matrix; that of "on condition" parts. Historically, "on condition" applied to parts that had an exceptionally long life without maintenance. Today, however, entire engines with poor reliability are assigned "on condition" status, as are such items as new technology rotor blades. The example of a main rotor blade was discussed in some detail. How can a new operator know that an "on condition" main rotor blade will require, for example, $10,000 in unscheduled maintenance every 2,500 hours? The only way to know is through their experience. Unfortunately, this experience is available to only a relatively small segment of helicopter operators. Even for a large operator, a new model comes into service without historical cost data as an on condition item.

Another area in the DOC matrix that is frequently overlooked is refurbishment. Every helicopter requires periodic paint, corrosion control, seat covers, etc. Special environments, such as salt water, require special types of overhauls. Granted some operators treat this as a fixed cost directly related to years of service, but the large operator group felt this cost should be related to hours flown. This cost is often ignored by the majority of the helicopter transportation industry.

Labor can be a tough category in which to get any degree of accuracy and it is here that operators show considerable variation. Operators calculate internal labor hours in different ways. Only experience will show how many labor hours are actually needed to maintain the aircraft and all its components over the full life cycle. It is doubtful that full agreement can ever be reached on labor costs. However, in calculating DOC labor it is important to include all labor for all types of maintenance (routine, overhaul, and unscheduled). Some operators even break out labor by vendors, such as instrument repair specialists, in their labor calculation.

DOC, as defined by this working group, is an area that is readily quantifiable by the operator population. Certainly, a nationwide compilation of actual life would be helpful (especially in the categories of on condition, periodic overhaul, and labor), but most of the information is now available to the neophyte operator. On the whole, DOC is far more easily qualified and fitted into planning schedules than reliability costs, which are discussed next.

RELIABILITY COSTS

Reliability costs are those costs incurred in unscheduled maintenance actions. Some operators refer to this as indirect cost. Regardless of how classified, the working group agreed that reliability costs are the most serious economic threat to helicopter operators.

To illustrate reliability costs, a six-page operations department log of the events following an unscheduled replacement for an emergency medical service (EMS) operator was circulated. Costs included items and events such as: ownership of a back-up helicopter, position costs for back-up helicopter, ferry pilot transportation costs, management hours, shipping costs, positioning additional maintenance staff, contract penalties, and follow-up customer relations.

There was a second group of reliability costs associated with this event carried in a separate maintenance log. They were the costs of the spare engine, associated parts and labor, management hours, and shipping.

Reliability costs such as these are not as readily quantifiable as DOCs. Certainly, these costs are contained somewhere in the budget (in categories such as overhead or back-up fleet), but they are seldom explicitly related the causal event. In the example here, how many helicopter operators could translate the cost of the event directly to the replaced engine? The inability to do so will cause real problems in pricing a new project—especially if the project is in an area new to the operator.

The case cited here is for an EMS operator, but it could equally well apply to offshore and forestry activities. Each has the same problem whether the helicopter breaks down on a hospital helipad, an oil rig, or a logging camp.

A type of reliability cost worth noting is opportunity cost. Management, senior management, spends a large percent of time—too much time—'putting out fires" directly attributable to reliability problems. The result is often that less time can be devoted to important managerial concerns such as long-range planning and business development. Too often managers get so deep in reliability problems that they lose sight of the forest for the trees.

MINIMUM EQUIPMENT LIST COSTS

Minimum equipment lists (MEL) are regulatory requirements that specify the essential equipment a helicopter must have in operating condition to undertake commercial flight. MELs were used by large operators long before the FAA began strict implementation of the concept. In other words, MELs would be a part of our operating rules even if they were not an FAA regulatory requirement.

The problem is that something instituted by FAA as a safety concept has become a maintenance management concept. The intent seems to be to disallow the propagation of maintenance discrepancies rather than to provide safety-related guidelines. An example cited by a member of the group was a second VHF radio that became inoperative during a sightseeing operation in a local, non-ATC environment. The MEL process grounded the helicopter which could have, in fact, continued to operate in a safe manner in that role indefinitely even with the malfunctioning back-up VHF radio.

Another aspect of MEL management that can increase cost is the lack of uniformity among FAA regions in interpreting or enforcing requirements.

Poor MEL guidelines and poor MEL management result in expensive downtime for operators. As in most helicopter operations, remote projects suffer most as costs increase with every mile from a support base.

CONTINUOUS AIRWORTHINESS

The term continuous airworthiness was adopted by the group to denote the flexible scheduled maintenance concept sometimes referred to as "progressive schedules" or AAIP. The objective is to break down scheduled maintenance into segments that are most economical for a particular type of operation. For example, a scheduled helicopter airline will try to group its maintenance activities into segments no longer than the daily block of time when flights are not scheduled, rather than follow the traditional schedule that would ground the helicopter for several days every 100 flight hours.

Continuous airworthiness programs are approved by FAA and often follow manufacturer recommendations. Some manufacturers publish several alternative schedules for commercial use while others put out only traditional schedules and leave the development of continuous airworthiness programs to the operator and FAA.

This is a very technical area, requiring a high degree of specific knowledge of the vehicle model. Both the operator and FAA must have a clear understanding of, and agreement on, the objectives of the program.

How does a scheduled maintenance program affect cost? With some of today's light and medium twin-engine helicopters that operators try to fly 1,200 hours a year, it is not unusual to incur eight weeks or more of scheduled downtime. If this time were to be spent as a consecutive block of days in a hanger, the operator would get only ten months of use per year from the helicopter. If this maintenance time could be programmed into periods when the aircraft is not working (nighttime for offshore work for example), the operator could get a full year of productive work. Imagine two offshore operators competing, one without

a continuous airworthiness program and the other with. The one without loses 1/16 of his fixed cost and must incur the extra cost of providing a back-up. The one a continuous airworthiness program gets a full 12 months of service. There is no question of who will survive.

This area gets far too little attention from most manufacturers and FAA. With the exception of large and medium operators who have the resources to manage this sophisticated type of maintenance schedule, most operators cannot, or do not, make use of this valuable tool.

Like reliability cost, the cost of scheduled downtime are difficult to quantify. The topic is not being addressed by the industry as the endemic problem it is.

RECOMMENDATIONS

The major finding of the Large Operator group was that helicopter operators devote too much attention to DOC and not enough to reliability costs, MEL, and scheduled inspection. Without question, reliability costs are the greatest economic problem operators must face.

Direct Operating Cost

No further effort should be made to obtain an industrywide consensus on the definition of direct operating cost.

The definition would be general at best since it would be unlikely, if not impossible, to find acceptable definitions for each line item. A general definition would be of no practical value.

In tabulating DOC data, four broad categories would suffice: engines, airframes, dynamic components, and electronics.

HAI should abandon efforts to establish general business ratios for the helicopter industry. The services offered and the types of operation vary widely, as do the size and capabilities of helicopter transportation firms. There is little common ground. Arithmetic mean values of a "typical' helicopter operator based on an amalgamation of disparate kinds of operations and organizations and would probably be misleading.

Reliability

The major recommendation of the large operator group is that the MMIR data base begun by HAI should be expanded and improved. If we, as the industry, had followed through in 1987 on the concept of pooling information on maintenance interruptions, we would now have a data base available to members that would:

- provide more reliable information in the "actual life' column of the matrix described above,
- permit analysis of reliability cost and furnish operators and manufacturers a basis for attacking the reliability problem, and
- give operators and FAA a way to rationalize timetables for required overhaul and scheduled maintenance.

The MMIR data base does not provide adequate support to reach these goals. MMIR does not yet have universal submission of data, full manufacturer cooperation on information systems, and the necessary computer and management resources. The MMIR programs should be reorganized, adequately funded, and given the right management resources. Given the potential payoffs to the industry, this should be a high-priority effort.

Minimum Equipment List

The MEL process should be revisited by FAA with a view toward returning to the original safety objectives. Further, the efforts to achieve consistency between FAA regulations and uniformity of interpretation should be continued.

Continuous Airworthiness

Manufacturers should offer buyers of their products multiple options for scheduled maintenance programs to follow. Further, FAA personnel need more training on the technical aspects of designing individual inspection programs. Perhaps an effort should be made to centralize AAIP information so as to profit from the best of each program. However, a continuous airworthiness inspection program could be a competitive tool, and for this reason large commercial operators would probably prefer not to share schedules.

Operator-Manufacturer Communication

Direct communication between manufacturers and operators should be encouraged. This does not necessarily mean that all operators need be involved. A small cross-section of senior executives from helicopter operating firms conferring with counterparts in helicopter manufacturing firms would provide a sufficient dialogue on operating cost issues.

One manufacturer has recently instituted a helicopter advisory team for exactly such purposes. It mat be useful as an industry model.