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Focus on Fuel Savings

By Gardiner Porter, GMA Business Development Executive, Global Programs

You only have to pause and examine the receipt from putting gas in your car to know fuel prices are at an all time high. Fuel costs have doubled since the attacks of September 11, 2001, and crude oil prices have remained above $60 a barrel. To put this in perspective, consider that when an F-16 lights up its afterburners, it consumes nearly 28 gallons of fuel per minute!

The airline industry is among the hardest hit when it comes to rising fuel prices. Airlines paid a total of $92 billion for fuel in 2005, an increase of 50 percent from the previous year. The bill is expected to reach $112 billion this year based on an average oil price of $66 per barrel, the International Air Transport Association (IATA) estimates. Jet fuel has now become the single biggest expense for airlines and the sector expects to post an aggregate loss of $3.0 billion in 2006, despite increased traffic.

For militaries, the U.S. Department of Defense (DoD) is hard-hit with rising fuel costs. DoD is the largest buyer of oil in the world. The Pentagon estimates that a $3 gallon of gas probably costs in excess of $100 once it reaches its tank in Iraq *(Air Force Times, August 7, 2006)*. The U.S. Air Force is starting to take action as it relates to rising fuel costs, and for good reason. The U.S. Air Force consumed 3.2 billion gallons of aviation fuel in fiscal year 2005, which was 52.5 percent of all fossil fuel used by the U.S. government, Pentagon statistics

show. The total U.S. Air Force bill for jet fuel last year topped $4.7 billion. Every increase of $10 per barrel of oil drives up U.S. Air Force fuel costs by $600 million per year. So, the U.S. Air Force is conducting studies to come up with creative solutions to reduce fuel costs.

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In This Issue

JEPPESEN

From the Desk of Thomas Wede

Senior Vice-President
Jeppesen Commercial
and Military Aviation

Jeppesen Commercial and Military Aviation recently completed its 2007-2011 long term business plan and as we look to the future I am pleased to report that our military customers and the solutions and services we provide you remain a key area of our focus.

As we developed our plan, we took a hard look at our organizational vision and strategy and measured our current state against our future goals. Our focus during our long range planning sessions was consistently on you, our valued customers. I challenged my team to think about your current and future needs and tasked them to ensure that Jeppesen takes the steps required to meet your requirements. This process ensured that we are making the right investments now to ensure our future solutions continue to help you "Make Every Mission Possible."

One example of the many ways we are trying to provide solutions for your most pressing problems is fuel savings. Please take the time to read the *Focus on Fuel Savings* article found in this issue as it explains our industry leading fuel optimization capabilities that our flight planning customers enjoy on a daily basis. With fuel prices soaring, all of our customers are asking us to provide solutions that help reduce operational costs.

In past issues of the Flyer, we have told you about the Total Mission Solution, our integrated suite of solutions that addresses your requirements in a flexible, scalable, and modular way. From advance planning to day-of-mission to post-mission reporting, our solutions enable you to streamline your operations while reducing costs. Our solutions are also completely modular, allowing you to adopt new capabilities at your own pace and within your own budget.

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Focus on Fuel Savings *(continued from page 1)*

The U.S. Air Force Scientific Advisory Board has recommended a series of near, mid, and long-term solutions:

- Development of synthetic fuels
- Modifying training
- Modifying aircraft operations
- Developing aerodynamic technologies
- Putting new engines on older aircraft
- Making fuel efficiency a key factor in decisions

Jeppesen helps our customers reduce fuel costs through modified aircraft operations. In previous issues of the Flyer, we have discussed our Total Mission Solution (TMS) for managing and executing flight operations. The planning system MilPlanner™ makes use of Jeppesen's proprietary flight planning engine JetPlan® and includes important optimization tools to enable improved fuel savings for our customer. These tools include:

- Area avoidance
- Cost index flight planning
- Altitude capability
- ETOPS fuel planning
- E-RAD/CRAM
- Fuel tankering
- Climb and descent profiles
- Ability to plan through RNP airspace
- Optimal alternate airport considerations

JetPlan allows customers to compute multiple entire flight plans in a single request. This ability optimizes routes based on full route/aircraft-specific performance analysis. JetPlan also optimizes routes by:

- Ranking results on fuel, cost, or time.
- Presenting the best case scenario, with summary data for secondary scenarios.
- Combining customer routes to define most efficient alternatives.
- Allowing for minimum-cost computations including overflight charges.

The financial benefit you receive from this optimization comes from creating wind-optimal routes on the day of flight while still meeting political and operational constraints. This includes:

- Avoiding customer-defined single or multiple avoidance areas.
- Avoiding high overflight costs (if this is an issue).
- Avoiding areas of high delay (especially in Europe).
- Avoiding by distance around a checkpoint (e.g. 12 NM).

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Focus on Fuel Savings *(continued from page 2)*

- Avoiding checkpoints and/or air way segments (geopolitical and restricted airspace).
- Dynamic control over your restricted areas.
- Reducing unnecessary critical fuel uplift—typically affected by 2- or 3-engine aircraft that do not plan for ETOPS.
- Optimum routing (flyable first time) by complying with the European Route Availability Document (E-RAD).

Jeppesen offers a new capability specifically for fuel tankering in its MilPlanner and AOC systems that present options for tankered fuel considerations. *(See Figure 2.)*

ECONOMICS OF CARRYING EXTRA FUEL

	MAX	80PC	60PC	40PC	20PC
OPT EXTRA TIME 0426	0426	0338	0248	0155	0059
EXTRA FUEL 022833	022833	018266	013699	009132	004565
FUEL TO CARRY 001790	001790	001376	001041	000767	000326
PROFIT/LOSS 002208	002208	001781	001333	000869	000449

TANKERING ANALYSIS

TANKERING CRITERIA	00000.0000
FUEL COST DIFFERENCE	00.1171
OPTIMUM TANKERING AMOUNT	022833
ESTIMATED ENDURANCE TIME	0426
ADDITIONAL B/O DUE TANKERING	001790
AT 100.0PC MAX. TANKERING	

- Automatic conversion of currency and units
- Explicit calculation of cost to carry extra fuel
- Economics of different amounts shown—flight crew can pick the best one for the overall mission objective

Figure 2 -Tankering Analysis

Future fuel planning enhancements to JetPlan include:

- Ad hoc cost of higher thrust take offs – allow additional amounts to be added to POD fuel price and modeling maintenance cost increases
- Taxed and tax-free fuel prices—multiple prices per airport
- Better calculation of cost of higher thrust takeoffs
- Conditional Route Availability Message (CRAM) Type 2 integration

(explained in the *Did You Know* article below.)

Jeppesen has been in the fuel optimization and flight planning business for over 30 years. We have been working directly with our airline, military, and business jet operators to push the envelope of fuel optimization within our planning systems. The culmination of this activity now provides our customers with a vital capability at the most critical time. Air forces are flying greater and greater distances at a time in history when fuel prices are at their highest, with no end in sight.

Given the lengthy execution times for aircraft modernization programs, re-engining, and new aircraft procurements, the quickest and easiest way to improve fuel optimization today is through the use of JetPlan's optimization.

Finally, a crucial point when considering fuel optimization—and one that cannot be built in as functionality within a flight planning system—is trust. Adding additional fuel, because of a lack of trust in a system, all but negates any optimization resulting from it. The key to fuel optimization is to carry the least amount of fuel to execute the mission safely. Jeppesen's mission planning systems, MilPlanner and the AOC, not only enable this optimization, but are trusted by aircrews all over the world in all areas of the aviation market.

With the ability to bias aircraft performance down to the specific tail number, incorporate new criteria into your plan, like ETOPS, E-RAD, RNP, and CRAM, and coupled with the largest and most trusted navigational database in the world, we are enabling our customers to make every mission possible.

Did You Know? *By Tom Letts, GMA Business Development Executive*

Did you know there are roughly 8.5 million flights per year in European airspace? That equals approximately 28,000 flights daily!

We know how frustrating it can be to prepare a flight plan that is Eurocontrol compliant. A few years ago we introduced the ability to flight plan using European Route Availability Document (ERAD). This is a check box in JetPlan.com, JetPlanner,® or MilPlanner flight planning software. ERAD maximizes capacity and reduces complexity by defining restrictions that prevent disruption to the organized system of major traffic flows through European airspace. It is published every 28-days on the Aeronautical Information Regulation and Control (AIRAC) Cycle.

Daily changes to the route structure complement the restrictions that go into the ERAD. For those daily route changes, Eurocontrol creates a document called the Conditional Route Availability Messages (CRAM).

CRAM includes published times to identify whether certain airways are available (or made unavailable) for

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Tech Talk: Databases within Jeppesen Flight Planning Systems

By Andy Owen, GMA Operations Services Account Executive

This edition of Tech Talk will focus on the benefits of Jeppesen's industry—leading flight planning databases. These databases are the core of our flight planning solutions that give you the ability to increase operational efficiency while reducing workload.

Within the JetPlan engine, and also available in JetPlanner and Jetplan.com, we have 12 different types of databases. Each fulfills different roles and can be used to increase automation and create efficiencies within your flight operations.

This edition discusses four of the 12 databases—all of which can benefit the government and military aviation operator. For information about other Jeppesen databases you can refer to **www.jeppesen.com** or contact your account manager

In both JetPlanner and JetPlan.com, the method of accessing the available databases is the same.

JetPlan.com
Select the Database tab. Then select the tab for the required database.

JetPlanner
Select the Database Admin tab and Connect. Then select the tab for the required database.

The four databases covered in this article are:

1. Aircraft **2.** Route **3.** Alternate

4. Flight Brief

Other available databases include:

Airport, Airport Fleet, MDB
WXE, MEL/CDL, RST Area
Route Constraint, and Scenario

It is important to note that both JetPlanner and JetPlan.com have comprehensive Help menus that give detailed explanations of how each database works. From within the Help menu you can also access the JetPlan interactive user manual. To help you determine which database can offer greater assistance in daily operations Jeppesen offers tailored training courses that go step-by-step through each database in a classroom environment.

It is strongly recommended that database management should only be carried out by a small number of people within an organization. To allow any user the ability to create, edit, or delete any database can cause control/quality issues and for this reason we request that read/write passwords be set up and controlled so only nominated people can carry out this task. Persons who do not require the ability to create databases should be provided with a read only password.

Additional passwords can be set up by your Jeppesen account management representative.

Databases

Aircraft

The Aircraft Database is probably the most important database and the one which most users are familiar. Within this database you can create, edit, copy, and review all the different aircraft configurations that have been built under your JetPlan ID. Data stored within each record (database) can apply to an individual aircraft. The data stored defines many of the functional parameters that are applied as part of the flight plan calculation. You can also store information relating to ATC filing information, radio/navigation equipment, and certification information (such as RVSM, MNPSM, 8.33 etc). You can also store advanced information such as ETPs/ETOPs and driftdown. The beauty of the Aircraft Database is that should one aircraft operate different to another similar type within your fleet you can tailor that specific database exactly.

Within the Aircraft Database it is also possible to bias some basic aircraft performance data. Jeppesen also has the ability to bias climb, descent, and alternate figures—this is known as below-the-line biasing and it can only be carried out by Jeppesen staff unless your JetPlan ID has been granted super user access and received the required training.

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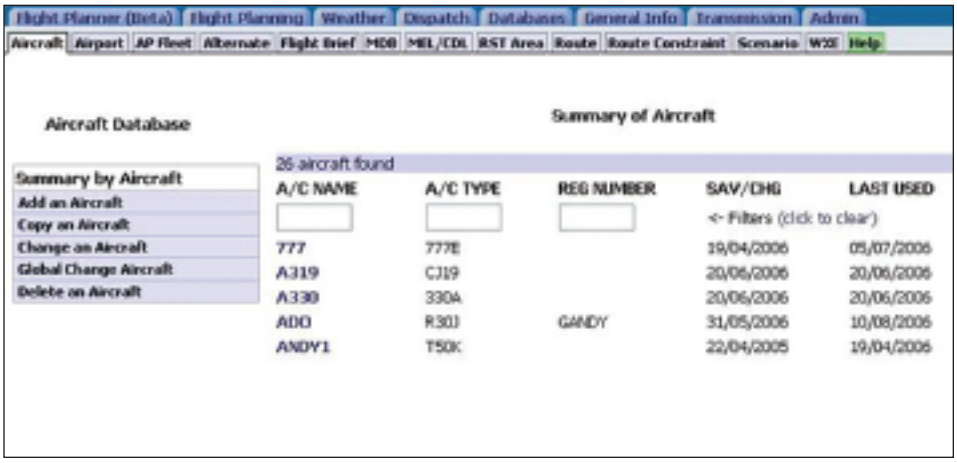

Figure 1 - Aircraft Database

Tech Talk: Databases within Jeppesen Flight Planning Systems

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Route

In Jeppesen flight planning products, the Route Database enables you to create, edit, and review route files you use in planning flights. Using routes stored in this database to produce flight plans provides security and confidence in the final product. The Route Database allows you to flight plan more efficiently because your stored routes are known entities that have been reviewed and verified prior to crunch time—when a flight plan is needed immediately. You will know the flight's route before even submitting the flight plan request. If planning flights in Europe you can also validate the routing via the central flow management unit test system so you are confident that your stored route will be acceptable to that organization.

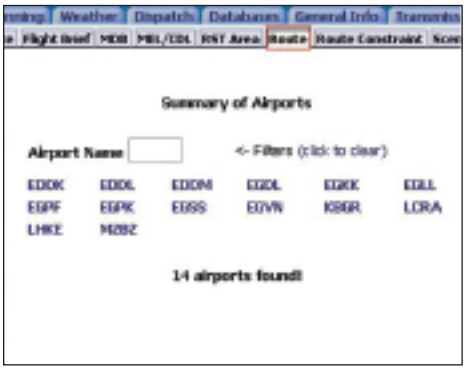

Figure 2 - Route Database

Other features of Route Databases includes the ability for the JetPlan engine to automatically correct routings after an AIRAC cycle.

Alternate

Closely related to the Route Database is the Alternate Database. With this database you can build a route between an arrival airport and an alternate. This will allow the system to select an airways routing rather than planning a great circle (direct) routing from POA to the alternate. This distance could sometimes be somewhat shorter as it assumes you will take a straight line from POA to alternate and not fly a SID from POA and STAR into the alternate.

A format enhancement (layout of your flight plan) may be required to allow you to show the routing from POA to alternate on your flight plan. Within the Alternate Database you can build flight level constraint which will better control the altitude which the diversion will be flown at rather than an optimum level which may not be practical.

To use an Alternate Database you must first build a Route Database and "attach" that stored routing into the Alternate Database. The JetPlan engine will automatically identify that there is a stored route and show the routing and profile for that route.

Figure 3 - Alternate Database

Flight Brief

The Flight Brief Database (FBDB) allows you to include remarks in either the ATC filing strip or in the crew's flight release package. The types of remarks you can add may be diplomatic clearance information, company notes, or weather information.

The database additionally provides control parameters that allow you to define the criteria by which a remark is included in the delivered product. These control parameters act as keys to receiving the information stored in the flight brief record. They include items such as the flight number, the aircraft fleet type, and FIR identifiers. When a database record has no control parameters, the remark in the record is automatically included in the flight release or filing strip. Otherwise, remark output is constrained to those flights that contain the defined control parameter criteria specified in the database.

Examples of information that can be stored in a Flight Brief Database includes a flight status eg. STS/Protected or diplomatic clearances which have been granted for an extended period. This eliminates the need to enter this information in item 18 of the ICAO Flight Plan each time you file that plan.

The codes for different displays of information are as follows:

A Diplomatic clearance remark (default). Use this option if the remark is intended for ATC (that is, filing strip only).

F Format data. Using this option, combined with a three-character (format) ID entry in the Flight Brief Text field, changes the flight plan output to the format specified. You may tie the application of this option with one other parameter from the list below:

1. Tail number

2. Aircraft type

3. City pair (POD/POA combination)

4. POA

5. POD

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From the Desk of John Kinsman

Senior Manager,
Global Business Development
Jeppesen Government
and Military Aviation

Greetings from Denver! I hope this letter finds you and your families safe and sound as you accomplish your important missions around the world.

The Jeppesen Government and Military Aviation (GMA) group has had a very busy summer. In July, we attended The Royal International Air Tattoo and Farnborough International air shows in the United Kingdom. It was great to catch up with many of you at these shows and talk with you about the exciting things we are doing to "Make Every Mission Possible" for our customers. Farnborough also offered us the opportunity to announce our preferred bidder status for the Air Operations Center (AOC) for the Royal Air Force's Future Strategic Tanker Aircraft (FSTA) program, as a sub-contractor to VT Communications.

We also saw many of you at our 2nd annual military Electronic Flight Bag (EFB) Summit in Eindhoven, the Netherlands, in early June. We presented a stimulating conference that included six other companies and over 40 military customers from around the world. Our co-sponsors and our customers learned much about the promise of this exciting addition to the military cockpit environment and paved the way for a speedy introduction of this force multiplying technology.

You may have seen Jeppesen in the news this summer, as our acquisition of Carmen Systems and the pending acquisition of C-Map graced the business pages of newspapers around the world. These acquisitions will significantly expand the portfolio of Jeppesen's services and allow us to more effectively meet the full spectrum of your needs. I will spend more time in the future talking about the specific technologies these new additions to the Jeppesen family bring to our solution mix, but, suffice it to say, you'll like what you see!

I would like to take this opportunity to highlight the valuable contributions of our strategic partners. In particular, I want to

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Royal Netherlands Air Force Deploys Jeppesen Class 1 Electronic Flight Bag

The Royal Netherlands Air Force (RNLAF) became the military launch customer for Jeppesen's Electronic Flight Bag (EFB) in February, 2006 when it deployed the solution to eight of their mixed fleet of eleven transport aircraft at Eindhoven Air Force Base, the Netherlands, in February.

Representatives from Jeppesen's Government and Military Aviation unit, International Computer Marketing (ICM), and Panasonic worked side-by-side with the Dutch 334 squadron to install the solution, which included the assembly, training, and deployment of 17 Class 1 EFB hardware systems. Each system included a Panasonic CF-18 ToughBook, an 8.4 inch NavAero kneeboard screen, a VGA converter, a specially designed Class 1 EFB bag, and appropriate power strips.

"The RNLAF 334 squadron was identified as an ideal EFB launch candidate due to their approach to EFBs," said Oivind Moldestad, Jeppesen Government and Military Aviation Manager of Global Sales. "They plan to start slowly with Class 1, working with their internal Operational Research and Evaluation Department to develop operational guidelines and approvals. They also plan to convert the Class 1 into a Class 2 solution for their C-130 and KDC-10 when they implement their planned cockpit modification program."

The Jeppesen EFB software build included application manager, terminal charts with EJEP01 coverage, and PDF chart viewer. The 334 Squadron downloaded National Geospatial Intelligence Agency (NGA) Flight Information Publication (FLIP) charts for Europe and North Africa to use in the PDF chart viewer. The squadron will have EJEP02 when it is available. They plan to add more modules, including the Enroute Moving Map (EMM).

The 2006 Jeppesen Electronic Flight Bag Summit

"Integrating People, Process, and Technology in a Network-centric Environment"

The 2006 Jeppesen Electronic Flight Bag (EFB) Summit was held June 7-8 in the Dutch city of Eindhoven. We were very pleased to host 44 representatives from 11 military organizations at the event, which featured an information-rich agenda covering all aspects of Jeppesen's EFB solution as well as presentations from our hardware and integrator partner companies.

A highlight of the summit was a presentation by Major Hans-Albert Groothuis, who joined us to discuss how his organization, the Royal Netherlands Air Force (RNLAF), is adopting EFB technology. The RNLAF became the military launch customer for Jeppesen's EFB solution in February, 2006. *(See article page 6.)*

Attendees had many opportunities to discuss EFB solutions with each other during hands-on demonstrations in the exhibition room throughout the two-day conference as well as at the conference dinner.

"The goal of the summit was simply to inform," said Oivind Moldestad, Jeppesen Government and Military Aviation Manager of Global Sales. "We wanted our guests to leave here with no question unanswered."

We want to thank all of you who attended the 2006 EFB Summit. We also want to thank our co-sponsors, including Panasonic, International Computer Marketing (ICM), Rockwell Collins, Paradigm/Virtual Papyrus, CMC Electronique, and NavAero for joining us in Eindhoven.

If you would like to receive copies of the information presented at the 2006 Jeppesen EFB Summit or if you would like to receive information as plans progress for 2007, please e-mail **andrea.stumpf@jeppesen.com** or contact your account representative.

From the Desk of John Kinsman

(continued from page 6)

draw attention to APM, our Swiss partner that specializes in crew and fleet scheduling optimization tools. They have recently created a new add-on, diplomatic clearance module to SchedulePlanner, their long-range task scheduling tool. We have consistently heard from our customers that getting and managing "Dips" is one of your most laborious and frustrating tasks as you plan and execute your global missions. The APM team in Geneva has built a user-friendly tool that helps manage all of your diplomatic clearance activities at the same time that you manage the rest of your mission planning activities.

Let me close by quickly mentioning a pending organizational change at Jeppesen that will affect some of our government customers. We are in the process of standing up a new government-focused business unit that will operate separately from our military business unit. Many of you know that Jeppesen has long-standing relationships with every Civil Aviation Authority around the world. As the international airspace system becomes more complex and the data standards required for operation in airspace become more stringent, it is our goal to establish closer working agreements and partnerships with our government partners as they fulfill their aeronautical data provision responsibilities for the nations they serve. This new government-focused business unit will be charged with fostering those important government relationships. While this new business unit stands up, all of our existing government customers will continue to receive the outstanding service they have come to expect from the legacy GMA group. Our military customers can expect the "status quo", as the old "Government and Military Aviation" group, will simply be renamed the "Military Aviation" group and will assume military customer responsibility only.

As always, keep yourselves safe out there. Thanks for your willingness to put yourself in harm's way on behalf of the nations you serve, and thanks for the opportunity you give Jeppesen to serve you.

Did You Know? *(continued from page 3)*

enroute navigation. JetPlan has historically factored in the use of Conditional Routes (CDR1s), but with the forthcoming implementation of JetPlan CRAM functionality, JetPlan will be able to calculate even more efficient use of routes that often include shortcuts, which are only available for a small portion of a given day.

An aircraft can use a time-controlled airway if it enters the airway within the window defined by the open and closed times. This capability has always been possible for use with the JetPlan flight planning engine, but Jeppesen is now ninety-nine percent complete with development efforts to provide this new CRAM feature automatically in our flight planning engine.

The obvious benefit to mission planners is the ability to plan shorter routes, leading to smaller fuel uplifts, shorter flights, increased payloads, and longer mission range. Moreover, there will be improvements to operations on the basis that the plan will have a better processing rate within Eurocontrol's message processing system, leading to better air traffic control slots.

Tech Talk: Databases within Jeppesen Flight Planning Systems *(continued from page 5)*

N Company note or remark; added to the crew's flight release package only.

R Diplomatic clearance remark. Use this option if the remark is intended for the flight crew (that is, flight release package only).

W List of weather maps; added to the crew's flight release package only. The list is simply a reminder to the crew to retrieve and use specific weather maps on this flight.

X List of airports (or FIRs) for enroute weather reports; added to the crew's flight release package only. The list, which must be entered using four-character airport or FIR identifiers—each separated from the other by a space—is used by JetPlan to push enroute weather reports for the stations or regions identified to the flight release.

It is important to remember that if you are going to build databases they must be maintained and it can be a time consuming task.

Automation can take care of some of the maintenance, however with Route Databases for example, occasionally the system may be unable to correct a VOR or other waypoint name change. It is recommended you have a dedicated person responsible for your databases to ensure all information is up-to-date.

If you need any help or additional information on any of the databases please do not hesitate to contact your Jeppesen account manager.

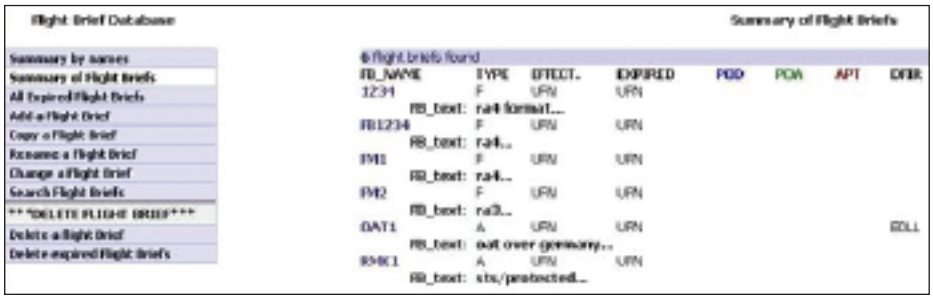

Figure 4 - Flight Brief Database

From the Desk of Thomas Wede

(continued from page 2)

I want to personally invite you to visit us at the Airlift/Tanker Association Convention held in Orlando, Florida October 28 – November 1, 2006 (booth number 813) and see a demonstration of the Total Mission Solution so you can see why we are so excited about the future. Our Military Aviation team members are looking forward to talking with you and giving you an opportunity for hands-on experience with our technology.

You are truly a valued Jeppesen customer, and I look forward to keeping you informed on further exciting developments in the Military Aviation group in the months ahead.

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