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HONEYWELL FMS QUARTERLY UPDATE AND NEWSLETTER

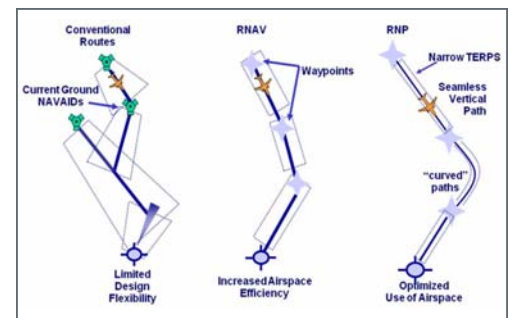
JANUARY 2010

RNP – Required Navigation Performance and AR

In 2003, the FAA published THE ROADMAP TO PERFORMANCE-BASED NAVIGATION, which publicly announced the strategy to modernize the NAS (US National Airspace System). Performance based navigation is a general term that defines navigation performance requirements for an air traffic route, instrument procedure, or defined portion of airspace. Performance-based navigation provides a basis for the design and implementation of non-conventional flight paths for airspace design and obstacle clearance. Using this strategy, the FAA intends to address current limitations on air transportation capacity by making more efficient use of the airspace. The strategy bases its foundation on two key navigation concepts: RNAV (Area Navigation) and RNP (Required Navigation Performance).

RNAV systems and their associated operational procedures have been evolving for air transport, regional and corporate aircraft for many years. Most RNAV systems are capable of utilizing navigation signals from various ground and space based facilities to achieve a high level of position accuracy. The performance requirements for these systems are defined in specific FAA Advisory Circulars and Technical Standards Orders. RNP is the latest advancement in RNAV systems evolution. RNP defines the navigation performance level required to operate in a particular airspace or on a designated route (i.e. Enroute, Terminal, or Approach). These systems also have the ability to navigate with a much higher degree of accuracy along with the ability for the flight crew to monitor the navigational performance of the system and alert the flight crew if a certain performance requirement is not met. This capability enables operations with reduced obstacle clearance criteria for terminal area procedures as well as

closer route spacing - a major contributor to the benefits of performance-based navigation. The graphic below depicts the general benefits to RNAV and RNP over conventional airspace design, routes, and procedures.



The benefits of RNP & RNP AR (Authorization Required) are derived directly from procedure design flexibility, the use of reduced obstacle clearance areas, and curved flight paths. RNP procedures are considered “3-Dimensional” as they provide longitudinal, lateral and vertical path deviation information. Conventional procedure design predicated on ground-based navaids uses trapezoidal obstacle clearance areas which increase as a function of the distance from the navaid (navigation accuracy increased as the aircraft came closer to the facility). Whenever obstacles are observed to be within the obstacle clearance area, approach minimums must be raised to ensure clearance from these obstacles. RNP procedures rely solely on satellite based navigation (GPS) and, therefore, use linear obstacle evaluation areas for procedure design and determination of approach minimums. For the purpose of procedure design, RNP represents the navigation performance required to maintain flight within the obstacle evaluation area associated with the procedure.

continued on page 2

Required Navigation Performance

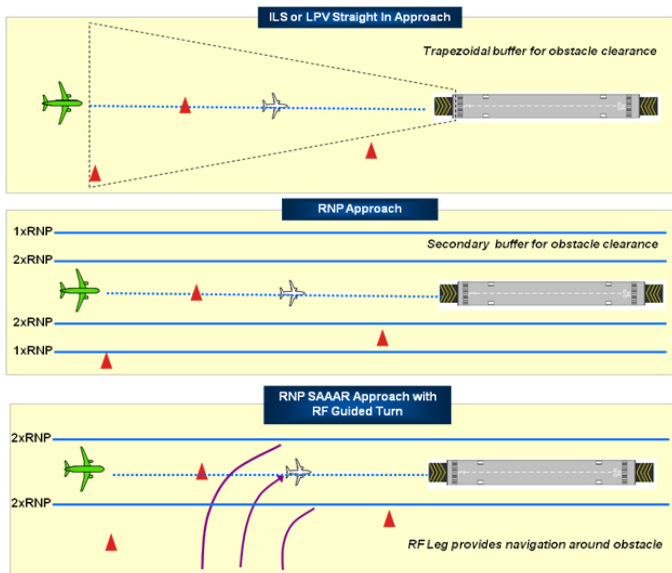
from cover story

In general terms, an approach with a specified RNP value means the perpendicular distance between the course centerline and the nearest obstacle must be at least 2X the RNP value specified for the approach. For example, an approach with an RNP value of 0.3 means that the closest obstacle perpendicular to the course centerline must be no closer than 0.6 NM away. The result is a lower approach minimum because obstacles that were previously considered using the trapezoidal method are no longer a factor when using linear containment criteria specified for RNP. The figure below depicts the differences in the obstacles clearance areas for traditional, RNP and RNP AR (procedures that require special approval to fly) procedures.



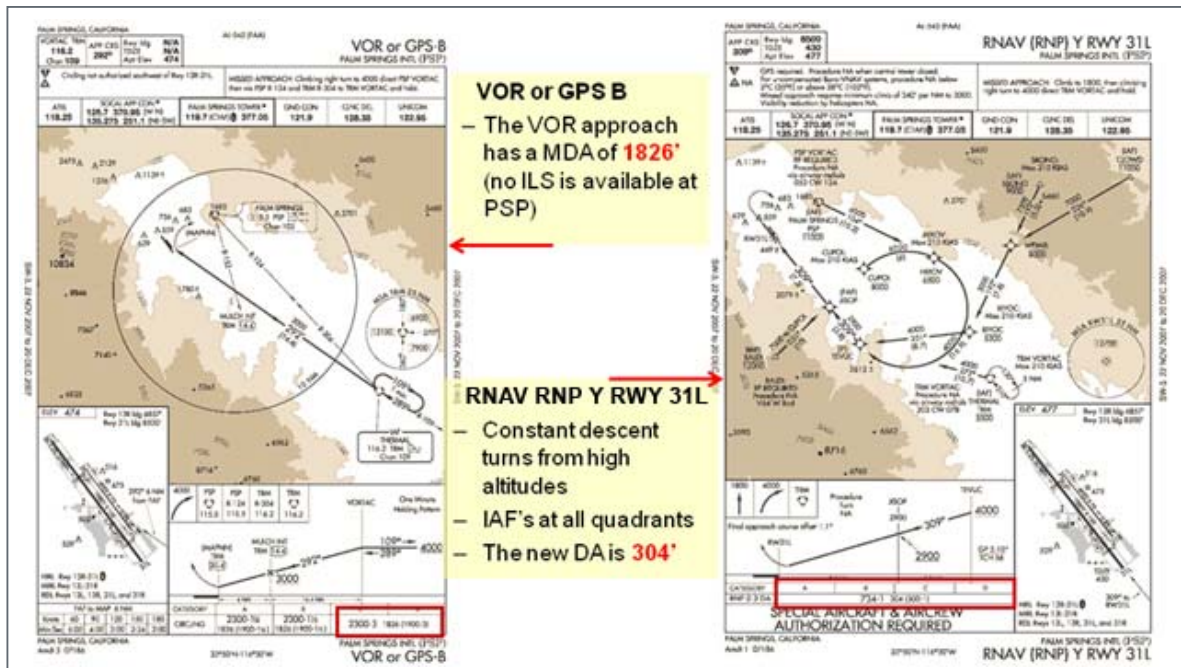
Benefits of RNP AR approaches, departures and arrivals:

- Better access to terrain challenged airports and special use airspace
- Enables parallel runway, converging and adjacent airport operations
- Improved access to business airports in proximity to high traffic airports
- Lower Minima resulting in fewer weather-related delays and diversions
- Better access for environmental concerns
- Reduced flight time due to optimized routing
- Smaller environmental footprint due to reduced noise and fuel use
- Enables early, guided turns on missed approach
- More reliable, repeatable flight paths



Examples of Benefits provided by FAA published RNP AR Approaches:

PALM SPRINGS, CA



Required Navigation Performance

from front page 2

How can an operator implement RNP AR?

For RNP AR implementation, the following are required:

1. Aircraft equipment for RNP certified by the aircraft manufacturer
2. Operational approval/Letter of Authorization (LOA) for the operator showing compliance to AC-90-101
3. Navigation Database Validation in accordance with the AC 90-101
4. RNP Monitoring in accordance with the AC90-101

How can Honeywell help?

Go Direct Services – Go Direct provides a full line of services to not only help ease the burden of the FAA approval process, but also to simplify the implementation of RNP AR into customer's flight operations. Aircraft operators that obtain full operational approval will be able to fly all the FAA created public RNP AR approaches.

www.honeywell.com/godirectservices

Consultancy – technical expertise and guidance to assist with the RNP AR approval process for compliance with AC 90-101 regulations, providing the most timely and efficient integration of requirements into current flight operations.

Navigation Database Validation – comprehensive validation process that is synchronized with the Navigation Data production process to ensure that RNP AR procedures are validated in-cycle for each new navigation database update.

Monitoring Program – provides record keeping of operators RNP AR operations per AC 90-101 requirements.

Aircraft Equipment – offers both hardware and software upgrades to meet all the RNP AR requirements in accordance with AC 90-101 for several aircraft.

Technical Update

ATTENTION PILOTS

Important FMS Service Information Letters Published

A joint investigation between the FAA and Honeywell identified an insufficient explanation in the Honeywell Pilot Operating Manuals regarding flight plan changes activated while on an arrival or approach. It was determined that due to pilot work load in this phase of flight, a more detailed explanation was required to alert flight crews on how FMS software is designed to handle such changes.

As a result of the joint investigation, Honeywell has issued two important SILs (Service Information Letters) to clarify how to properly perform flight plan changes and provides a detailed operational example.

The FAA has issued **SAIB NM-10-12** (Primus Epic) and **SAIB NM-10-13** (NZ-2000/FMZ-2000). All applicable aircraft are referenced in the Service Information Letters.

Honeywell recommends that all pilots review the applicable SIL referenced to the right:

To download a copy of these SILs please visit:

<http://www.honeywell.com/myaerospace> or
<http://www.honeywellaes.com>

If you have any questions regarding these SILs please contact the Honeywell Technical Operations Center (TOC) at 1-800-601-3099 (U.S.) or 1-602-365-3099 (Int'l) or send an email to aerotechsupport@honeywell.com

Primus Epic Aircraft:

SIL Publication Number: D200909000044

Aircraft	Top Level Operational Software
Agusta AW-139	Phase 3 and Phase 4
Cessna Sovereign	Phase 3 and Phase 4
Gulfstream 350/450/500/500	Cert Charlie, Delta and Echo
Hawker 4000	Load 19.X

Aircraft with NZ-2000, IC-600, IC-800, IC-1080

SIL Publication Number: D200908000055

Aircraft	FMS Software Version
All	4.X, 5.X, 6.0

GNS-XLS Qualified for P-RNAV and AC 90-100A Operations

The latest TSO certified GNS-XLS software upgrades for P-RNAV compliance, FAA AC 90-100A compliance and a 20MB memory upgrade to the new worldwide navigation database continue to be available in 2010. This upgrade is designed to meet the new operational standards in Europe and the United States.

The key features of the upgrade include:

Precision Area Navigation (P-RNAV) compliance to allow certification under Eurocontrol's Temporary Guidance Leaflet (TGL) -10.

- Includes full ARINC – 424 leg procedures – no more discontinuity between which part of the procedure that the FMS handles and which it does not
- Selected cross track for multiple waypoints vs. single active waypoint
- Adds automation to the missed approach procedure which was previously flown manually

Advisory Circular 90-100A compliance to meet FAA AC concerning terminal RNP 1 RNAV SID/STAR procedures.

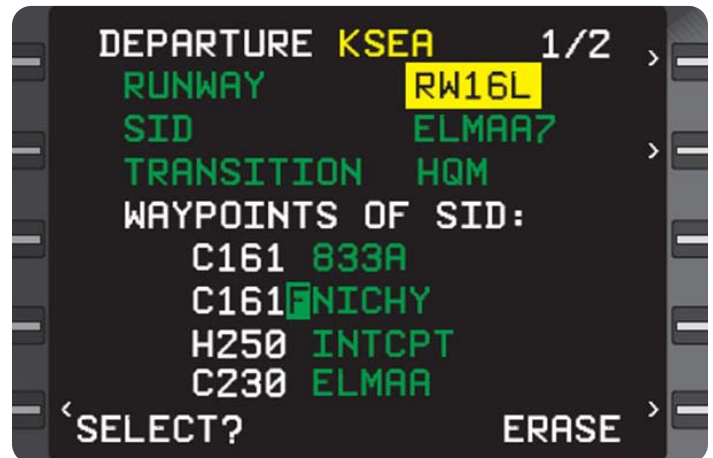
- Same enhancements as above additions

20 MB memory expansion to allow for worldwide navigation database installation.

- Includes additional approaches that were screened from previous databases due to memory limitation – teardrop procedures, all localizer (ILS/LOC), etc.
- Now puts them on the Multifunction Display (MFD) for enhanced situational awareness

Precision Area Navigation (P-RNAV) is a continuance of Required Navigation Performance (RNP) evolution in Europe from Basic Area Navigation (B-RNAV) or RNP 5 to RNP 1.

P-RNAV is achieved via a software change enabling compliance with TGL-10 with the addition of ARINC-424 procedural leg types and a DO-200A compliant navigation database procedure. This is a software-only upgrade and will be one part of a single software upgrade package and part number change combining the above three features. While not a full mandate, P-RNAV is quickly becoming a necessity in Europe as access to airspace for non-compliant aircraft becomes more restrictive. Advantages are quickly realized by lesser hold times and more efficient routing allowing for quicker en route times. It is not clear if P-RNAV will become a full mandate in Europe, but with the continuing addition of terminal airspace requiring P-RNAV compliance, the addition to the GNS-XLS is a key new feature.



Compliance with Advisory Circular 90-100A is also achieved with this update. AC 90-100A is the FAA document titled "US Terminal and En Route Area Navigation (RNAV) Operations". Aircraft compliance to AC 90-100A enables acceptance of the new RNAV SID/STAR procedures. As more of these types of terminal procedures are developed and deployed, this feature, like P-RNAV, becomes invaluable to the operator flying in tightly controlled airspace.

The new 20 MB memory upgrade to the GNS-XLS is also part of this upgrade package. The new software enables access of a new 20 MB PCMCIA memory card containing the 28-day Worldwide Navigational Database (NDB). This database supersedes the multiple regional databases currently used by the GNS-XLS and will allow the operator to load one database regardless of where the aircraft travels in the world.

For more information on Bendix/King products, go to www.bendixking.com

NZ2000 and FMZ Aircraft Database and SmartPerf Learning

What is the SmartPerf Learning function?

The SmartPerf Learning function is a sub function of the FULL PERF function of the Flight Management System (FMS). The FULL PERF function uses the Aircraft Database (ACDB) to generate aircraft performance predictions. ACDBs provided by Honeywell with Nav Databases are generic to airframe types, (G-IV, G-V, GEX and etc.). The SmartPerf Learning function allows the FMS (on most aircraft) to fine tune the generic ACDB for a given airframe type to the characteristics of a given aircraft serial number. Note that in some cases, the aircraft data base is hard-coded to SmartPerf Learning OFF.

A number of questions arise when an operator loads the generic Aircraft Database (ACDB) into the NZ-2000. The first question that occurs is “How do I turn on SmartPerf?” followed by “How long should SmartPerf be left on?”

SmartPerf is turned on or off via page 2/3 of the FLIGHT CONFIG pages of the CDU. Page 2/3 of the FLIGHT CONFIG page can be accessed with the following key strokes.

Press CDU Key	Page That Will Display
NAV	NAV INDEX 1/2
NEXT	NAV INDEX 2/2
MAINTENANCE (Line Select Key 2 Right)	MAINTENANCE 1/3
Next	MAINTENANCE 2/3
SETUP (Line Select Key 4 Left)	FMS SETUP 1/1
FLIGHT (Line Select Key 1 Right)	FLIGHT CONFIG 1/2
NEXT	FLIGHT CONFIG 2/2
Toggling SMARTPERF LEARNING (Line Select Key 4 Right) will turn SmartPerf on & off	

Note: SmartPerf will be turned on until the above steps are performed to turn it off. Power cycling of the FMS does not affect the status of SmartPerf being on or off.

How long should SmartPerf be left on?

Honeywell's recommendation is to leave SmartPerf on until you are satisfied with the predictions the FMS is providing. Once you are satisfied with the predictions, we recommend turning off SmartPerf and downloading the ACDB to the USB stick or floppy so it can be loaded again into a replacement FMS or into an FMS after a battery failure or replacement.

The Honeywell ACDB group will store your downloaded ACDB for you in their archives if you like. You can e-mail the ACDB you would like stored to joan.ferrell@honeywell.com.

We have received complaints from customers that after loading the generic Aircraft Database (ACDB) for their aircraft and having SmartPerf on for ten or more flights, the system predictions still do not match their airframe. This normally is due to flying a number of flights shortly after turning on SmartPerf that do not match the normal flight profiles flown. An example would be if the aircraft was coming out of maintenance at the time the database was loaded and SmartPerf was turned on for a number of short maintenance

test flights that do not match the long range flight profile the aircraft is normally flown.

If you are experiencing the situation where your ACDB is not matching your airframe, we recommend reloading the generic ACDB and turning on SmartPerf. The system should learn your airframe using the flight profile you are presently operating. If this does not correct the problem contact Mike Faulkner at mike.faulkner@honeywell.com to determine what other actions can be taken to correct the problem.

The following procedure is used to download a learned ACDB to a floppy disc if your aircraft is equipped with a DL-900 data loader or USB stick if your aircraft is equipped with a DL-950 data loader.

- Apply power to the data loader using the appropriate aircraft circuit breaker and press the data loader power switch.
- Wait for the LED on the front of the loader to light. The LED will light after the power up Built-In-Test (BITE) sequence has been completed.
- Select LEFT, RIGHT, or AUX (third FMS) to down load from the respective FMS.
- Insert floppy disc or USB into the data loader.
- Perform the following key strokes on the CDU.

Press CDU Key	Page That Will Display
NAV	NAV INDEX 1/2
NEXT	NAV INDEX 2/2
MAINTENANCE (Line Select Key 2 Right)	Maintenance 1/3
DATA LOAD (Line Select Key 4 Left)	DATA LOAD 1/1 DATA TO BE LOADED
AIRCRAFT DB (Line Select Key 2 Right)	DATA LOAD 1/1 TRANSFER OF
TO LOADER (Line Select Key 2 Right)	DATA LOAD 1/1 CONFIRM TRANSFER OF
YES (Line Select Key 4 Right)	Note: After pressing the Line Select key next to YES the DATA LOAD 1/1, CONFIRM TRANSFER page will display for only a few seconds and will be followed by the display of the DATALOAD 1/1, DATA TO BE LOADED page. When the DATALOAD 1/1, DATA TO BE LOADED page is displayed the transfer of the ACDB to the disc or USB has been completed.

The downloaded ACDB will be identified on the floppy disc or USB as a file with the format: tail number .LRN. The tail number is the tail number entered on the PERFORMANCE INIT 1/5 page. Since each FMS learns differently, we recommend saving the ACDB from each FMS. After downloading the ACDB, use a PC to rename the .LRN file by appending with FMS1 or FMS2.

Pilot Training & Operational Support

Honeywell's Customer & Product Support organization employs a group of experienced pilots dedicated to supporting fielded aircraft and the avionics and FMS installed during production or retrofit. Pilots are aircraft manufacturer focused and can be contacted via email or phone for operational-type questions.

Contact Information:

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For field support or to find your local Honeywell representative, consult the Business & General Aviation Customer Support and Aftermarket Sales Directory.

<http://www51.honeywell.com/aero/common/documents/BGA-Customer-Support-Aftermarket-Sales-Directory.pdf>



Upcoming Pilot Training Events

Training includes Honeywell Operators Conferences as well as full day FMS and weather radar seminars co-hosted by CAE. These seminars are primarily for pilots, but maintenance personnel and technicians are encouraged to attend as operational tips, new products, and upgrades are covered. This year we will add Engine Operating Tips seminars to enhance performance and cost of ownership. Additional information such as registration and agendas can be found using the 'Quick Links' at www.honeywelltraining.com.

Date	Description	City/Country
February 24	FMS v6.1 and v7.1 software/hardware update briefing (all aircraft)	Denver, CO
March 4	FMS v6.1 and v7.1 software/hardware update briefing (all aircraft)	St. Louis, MO
March 9	FMS v6.1 and v7.1 software/hardware update briefing (all aircraft)	Morristown, NJ
March 10	FMS v6.1 and v7.1 software/hardware update briefing (all aircraft)	White Plains, NY
March 23	FMS v6.1 and v7.1 software/hardware update briefing (all aircraft)	San Jose, CA
April 13	FMS v6.1 and v7.1 software/hardware update briefing (all aircraft)	Washington, DC
April 20	FMS v6.1 and v7.1 software/hardware update briefing (all aircraft)	Atlanta, GA
April 27	FMS v6.1 and v7.1 software/hardware update briefing (all aircraft)	Houston, TX
May 11	FMS v6.1 and v7.1 software/hardware update briefing (all aircraft)	Seattle, WA
May 18	FMS v6.1 and v7.1 software/hardware update briefing (all aircraft)	Milwaukee, WI
May 25	FMS v6.1 and v7.1 software/hardware update briefing (all aircraft)	Scottsdale, AZ
May 25	NZ 2000/FMZ FMS All-day Seminar	Ft. Lauderdale, FL
May 26	Understanding Weather Radar Seminar	Ft. Lauderdale, FL
May 27	Epic FMS All-day Seminar	Ft. Lauderdale, FL

Interested in attending a seminar? Contact Pam Mannon at (913) 961-1901 or Pamela.mannon@honeywell.com.

More seminars coming in 2010 to a city near you.

Data Loading Dos and Don'ts for Nav and Chart Database CDs

The following is a tips list for those operators who use CDs to load the navigation database onto the aircraft:

- Follow Airframe Original Equipment Manufacturer (OEM) published loading procedures
- Epic Database updates available for web download at epicinds.com
- Disable firewalls and anti-virus protection software before attempting any load
- Disable all power saver/sleep modes on the laptop
- Check all connections for secure fit - PCMCIA card, Dongle, Terminating Resistor, T-connector, etc.
- Whether using ICS LTEPIC-25 (Dongle) or LANTAP-10, confirm configuration per SIL A23-9999-030
- Avoid power interruptions to the aircraft during a data load
- Verify PCMCIA card is inserted into slot closest to CD-ROM drive
- Ensure Blue CD charts data is loaded to PCMCIA card through DMU and not via the laptop
- Load new cycle Red CD prior to loading new cycle Blue CD

- Wait 15 minutes before cycling aircraft/avionics power after an unsuccessful database load
- If multiple attempts are unsuccessful to load a module or module appears failed after a database load, attempt to "ping" the module before replacing it
- If module ping request is successful, attempt an Operational software target load to the failed module
- If module ping request is unsuccessful, cycle power to respective MAU or power cycle the aircraft and ping module again. If module fails to respond after power cycle, the module may need to be replaced.
- If the charts serial number is not retained during aircraft power cycles, replace the PCMCIA card first. If fault persists, check the status of all Aircraft Personality Modules (APMs) for validity via the Central Maintenance Computer (CMC).
- For further assistance, contact your local Field Service Engineer or the Honeywell Technical Operations Center at 1-800-601-3099 or email at aerotechsupport@honeywell.com

Technical Ops Center FAQs



Q. What type of USB stick should I purchase to load my Nav DB with the DL 950?

A. The Honeywell Nav Database group has found USB sticks produced by Kingston Technology have been the most trouble free and we use only Kingston USB sticks for the Nav Databases we ship out. USB devices with U3 software will not work with the DL950 Data Loader. For a stick to work with the DL950 they must be formatted in FAT. USB sticks greater than 2Gig will not format to FAT, therefore they cannot be used with the DL-950 Data Loader.

Q. How are the DL 950 Data Loaders installed? Per an STC or field approval?

A. A few STCs have been created while others are certified by field approvals. Customers should contact the aircraft manufacturer for aircraft-specific details.

Q. Where do I find my Aircraft Database (ACDB)?

A. The aircraft database is included with the navigation database. Every time you download the database from the website or receive the database via the mail, the ACDB will be included.

Q. How do I know which ACDB to load on my aircraft and which disc it is on (floppy users)?

A. On disc # 1 there is a file named ACDBNAME.pfd that will specify which ACDB should be used for each aircraft and which disc it is on. If using DL-950 the file still will be on the memory stick. Ensure that the proper ACDB is installed on your aircraft as many platforms have more than one available. Most are based on aircraft gross weight.

Q. Why does the Perf Init page only show 1/1 (when there are normally 4 pages)?

A. This is common after the FMS battery has been changed or a new Aircraft Database (ACDB) has been loaded.

- Re-enter the tail number. Select:
 1. PERF
 2. PERF INIT
 3. Enter tail number
- Save the V-speeds Select:
 1. MAINTENANCE pg 2
 2. SETUP
 3. VSPD LABELS (don't need to enter any numbers, simply select SAVE on page 1 and 2).

Q. My FMS will not go into Dual operation. What could be the problem?

A. Check MAINTENANCE page 1 (NAV, NEXT, MAINTENANCE). If your FMS recognizes a problem, there will be a PROBLEMS prompt on 3R. Make sure your Custom and Aircraft Databases are the same. Check your NZ software versions to make sure they are identical. If there is a Custom DB mismatch, use the DATALOAD prompt and copy the Custom database from one FMS to the other. The system will automatically reselect the Dual Mode.

To contact the TOC, call 1-800-601-3099 or
+1-602-365-3099 or
email aerotechsupport@honeywell.com

NextGen Task Force Recommends Operational Capabilities

NextGen is an umbrella term for the ongoing, wide-ranging transformation of the United States' National Airspace System (NAS). At its most basic level, NextGen represents an evolution from a ground-based system of air traffic control to a satellite-based system of air traffic management. This evolution is vital to meeting future demand, as well as avoiding gridlock in the sky and at our nation's airports. It will also open America's skies to continued growth and increased safety while reducing aviation's environmental impact.

To realize these goals, the RTCA NextGen Mid-Term Implementation Task Force was formed this year to identify and recommend the most beneficial operational capabilities for near-to-mid term implementation. This team produced a list of suggested operational capabilities in five areas. The final report of the Task Force, which is available on RTCA website, resulted from seven months of intensive meetings involving industry and FAA representatives. The Task Force was set to deliver a short list of actionable

recommendations and to identify the most beneficial operational capabilities for near-to-mid term implementation. Some of the key areas of emphasis in the report are: airport surface management, integrated plans for specific metro areas, data communications, runway capacity, and en-route flows. Accelerated deployment of Performance Based Navigation (RNP/RNAV, SBAS/LPV) and utilization of Future Air Navigation System (FANS 1/A) equipped aircraft for digital communications in National Air Space are among some of the key capabilities that will enable NextGen Operations.

Industry and FAA officials believe that the latest recommendations will lead to a shift in NextGen priorities, redirecting attention to the problems that most concern airspace users.

To learn more about NextGen, visit <http://www.faa.gov/about/initiatives/nextgen/defined/what/>.

VISION

The Technical Operations Center vision is to provide timely one call resolution of customer technical issues, enabling a 24x7 proactive service approach.

- Technical expert availability
- Knowledge on demand
- Issue ownership and tracking
- Global virtual resources
- Simplified contact options

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420-234-625-500 Direct Dial option for EMEA customers

Give Us Your Feedback

We value your feedback. Please email talkfms@honeywell.com with your comments or questions on our newsletter content and format and you will automatically be entered to win a NEW Bendix/King AV8OR handheld MFD! The sleek, new AV8OR display, valued at \$799.99, provides GPS guidance on the ground and in the air as well as airborne weather and multimedia entertainment. You must enter to win, so please email any comments by April 1, 2010. If you wish to be entered in the drawing, please include your name, email address, phone number and shipping address. We look forward to your comments.

Congratulations to Steve Golden with Darden Aviation who was last quarter's AV8OR winner!



Honeywell