



U.S. Department
of Transportation
**Federal Aviation
Administration**

DEC 8 2003

**Transport Airplane Directorate
Aircraft Certification Service**

1801 Lind Avenue S.W.
Renton, Washington 98055-4066

In Reply
Refer To: 130S-03-582

Ms. Colleen M. Porch
Certification Services Administrator
Honeywell International, Inc.
15001 N.E. 36th Street
Redmond, WA 98052

Dear Ms. Porch:

**Technical Standard Order (TSO) Approvals for
TSO C92c Authorization of Ground Proximity Warning Functions;
TSO C117a Authorization of Windshear Warning Functions;
TSO C151b Class A Authorization of Terrain Awareness and Warning System Functions
of the Honeywell MK V and MK VII Enhanced Ground Proximity
Warning Computer (EGPWC)
and TSO C129a Class C3 Airborne Supplemental Global Positioning System (GPS)
Navigation Function of the New MK V w/ Mercury
Global Navigation System Sensor Unit (GNSSU)**

We received your letters 03FAA237, dated November 7, 2003, and 03FAA237 Revision A, dated December 1, 2003, in which you certified that a major change to the EGPWC constitutes a change in EGPWC function resulting in nine new part numbers. You also certified that the new MK V and MK VIII EGPWC part numbers listed below meet the applicable requirements of TSO-C92c, TSO-C117a, and TSO-C151b Class A and the new MK V EGPWC/GNSSU part number listed below meets the applicable requirements of TSO-C129a Class C3 and are in conformance with Federal Aviation Regulations (FAR) Part 21, Subpart O.

| EGPWC Type | Unique Characteristics | Certification Baseline | New Part Number |
|------------|---------------------------------------|---------------------------------------------|---------------------------------------------|
| MK V | 115 VAC, -40°C, no GPS | 965-0976-003-217-217 (ref: 960-0329-020) | 965-0976-003-218-218 (ref: 960-0329-021) |
| MK V | 115 VAC, -40°C, Internal GPS Receiver | 965-0976-020-217-217 (ref: 960-0336-007) | 965-0976-020-218-218 (ref: 960-0336-008) |
| MK V | 28 VDC, -55°C, no GPS | 965-0976-040-217-217 (ref: 960-0335-015) | 965-0976-040-218-218 (ref: 960-0335-016) |
| MK V | 115 VAC, -40°C, w/Mercury GNSSU | 965-0976-060-217-217 (ref: 960-0337-003) | 965-0976-060-218-218 (ref: 960-0337-004) |
| MK V | 115 VAC, -40°C, Upgraded CPU, no GPS | 965-1690-050 | 965-1690-051 |

| EGPWC Type | Unique Characteristics | Certification Baseline | New Part Number |
|-------------------|-------------------------------|---------------------------------------------|---------------------------------------------|
| MK VII | 115 VAC, -40°C, no GPS | 965-1076-001-217-217 (ref: 960-2226-010) | 965-1076-001-218-218 (ref: 960-2226-011) |
| MK VII | 115 VAC, -40°C, w/Pxpress GPS | 965-1076-020-217-217 (ref: 960-2225-008) | 965-1076-020-218-218 (ref: 960-2225-009) |
| MK VII | 28 VDC, -40°C, w/Pxpress GPS | 965-1076-030-217-217 (ref: 960-2230-004) | 965-1076-030-218-218 (ref: 960-2230-005) |
| MK VII | 28 VDC, -55°C, no GPS | 965-1076-040-217-217 (ref: 960-2224-010) | 965-1076-040-218-218 (ref: 960-2224-011) |

You submitted Honeywell Document 060-4314-047, Revision A, dated December 1, 2003, entitled "MK V/VII Enhanced Ground Proximity Warning Computers (EGPWC), Honeywell P/Ns 965-0976-XXX, 965-1690-XXX and 965-1076-XXX Summary of Compliance with TSO-C151b, TSO-C117a, TSO-C92c and TSO-C129a; Including DO-178B Software Data," with your letter, along with the other supporting data required by TSO-C151b, TSO-C117a, TSO-C92c and TSO-C129a.

The FAA confirms your certification is in conformance with the 14 Code of Federal Regulations (CFR) Part 21, Subpart O, as described in your letter. Your quality control manual has been previously approved by the Federal Aviation Administration (FAA) and is on file in the Seattle Manufacturing District Office (ANM-108S).

TSO-C151b identifies RTCA DO-161A as the minimum operational performance standard for the equipment. DO-161A specifies in paragraph 2.1.2 and Appendix A page 4, a dynamic envelope of 1250 feet to 1050 feet AGL in Mode 2A conditions. Honeywell requested a deviation to reduce the Mode 2A maximum altitude from 1250 to 950 feet. The deviation only affects Excessive Closure Rate to Terrain and is activated only under a defined set of conditions that ensure that Terrain Awareness and Warning System (TAWS) functions provide terrain avoidance protection. The Seattle Aircraft Certification Office (SACO) reviewed the deviation request and forwarded it to FAA Headquarters for concurrence via SACO memorandum 130S-03-529, dated November 21, 2003. Concurrence was provided via the enclosed AIR-100 memorandum, dated December 8, 2003

The MK V and MK VII EGPWC meet the performance standards for TSO-C92c, TSO-C117a, and TSO-151b, Class A equipment. In addition, the MK V EGPWC/GNSSU meets the performance standards for TSO-C129a, Class 3. The data received with your letters to support this application have been reviewed and added to our files. We acknowledge the FAA Forms 8110-3, signed by Designated Engineering Representative (DER) Esko Mannisto, that were submitted approving the software accomplishment summary and other related data for this application. We also acknowledge receipt of FAA Form 8100-3, signed by DER J. Mark Jenkins, recommending approval of test procedures and results for the EGPWC/GPSSU.

Effective this date, you are authorized to use TSO procedures as prescribed by Subpart O of 14 CFR Part 21 and to identify the MK V and MK VII Enhanced Ground Proximity Warning

Computer for the referenced part numbers above, with the applicable TSO markings as required by TSO-C92c, TSO-C117a, and TSO-C151b. You are also authorized to identify the MK V with Mercury GNSSU, part number 965-0976-060-218-218, with the applicable markings as required by TSO C129a, Class C3.

Any design changes made to these TSO's must be forwarded to this office as outlined in 14 CFR 21.611(a), with minor change submittal intervals not to exceed six months. As a TSO manufacturer, you are required to report to the FAA any failure, malfunction, or defect related to your TSO authorization within 24 hours in accordance with the provisions of 14 CFR 21.3. You must also notify the FAA when you no longer manufacture a TSO approved article as required by 14 CFR 21.613(b).

This authorization pertains only to the manufacturing operations at the above address, and this office must be notified in advance of any proposed relocation.

If you have any questions, please contact Mr. Patrice Adjibly of the Systems and Equipment Branch at (425) 917-6459.

Sincerely,


for Angelos G. Xidias
Manager, Systems and Equipment Branch
Seattle Aircraft Certification Office

Enclosure