Controller's Office

To the Honorable Mayor and City Council of the City of Houston, Texas:

I hereby certify, with respect to the money required for the contract, agreement, obligation or expenditure contemplated by the ordinance set out below that:

(✓) Funds have been encumbered out of funds previously appropriated for such purpose.

( ) Funds have been certified and designated to be appropriated by separate ordinance to be approved prior to the approval of the ordinance set out below.

( ) Funds will be available out of current or general revenue prior to the maturity of any such obligation.

( ) No pecuniary obligation is to be incurred as a result of approving the ordinance set out below.

( ) The money required for the expenditure or expenditures specified below is in the treasury, in the fund or funds specified below, and is not appropriated for any other purposes.

( ) A certificate with respect to the money required for the expenditure or expenditures specified below is attached hereto and incorporated herein by this reference.

( ) Other - Grant Funds Available

C. Brown
Jenna Poll

Date: 9-2, **20** 20 **City Controller of the City of Houston, Texas**

SGC **FUND REF:** 8001 2300 520114 **AMOUNT:** $ 160,250.00 **ENCUMB. NO.:** V
OA46-16274 SRO45-332534

City of Houston, Texas Ordinance No. 2020-802

AN ORDINANCE APPROVING AND AUTHORIZING A MAINTENANCE AND TECHNICAL SUPPORT AGREEMENT BETWEEN THE CITY OF HOUSTON AND HONEYWELL INTERNATIONAL INC. FOR THE GROUND BASED AUGMENTATION SYSTEM NAVIGATION EQUIPMENT AT GEORGE BUSH INTERCONTINENTAL AIRPORT/HOUSTON; (PROJECT NO. 691); PROVIDING A MAXIMUM CONTRACT AMOUNT; CONTAINING PROVISIONS RELATING TO THE SUBJECT; AND DECLARING AN EMERGENCY.

* * * *

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF HOUSTON, TEXAS, THAT:

Section 1. The City Council hereby approves and authorizes the contract, agreement, or other undertaking described in the title of this Ordinance, in substantially the form as shown in the document which is attached hereto and incorporated herein by this reference. The Mayor, or, in the absence of the Mayor, the Mayor Pro Tem is hereby authorized to execute such document and all related documents on behalf of the City of Houston. The City Secretary, or, in the absence of the City Secretary, any Assistant City Secretary is hereby authorized to attest to all such signatures and to affix the seal of the City to all such documents.

Section 2. The Mayor is hereby authorized to take all actions necessary to effectuate the City's intent and objectives in approving such agreement, agreements, or other undertaking described in the title of this Ordinance, in the event of changed circumstances.

Section 3. The City Attorney is hereby authorized to take all actions necessary to enforce all legal obligations under said contract without further authorization from Council.

Section 4. The total allocation for the contract, agreement, or other undertaking approved and authorized hereby shall never exceed **$551,250.00** unless and until this sum is increased by ordinance of City Council.

Section 5. There exists a public emergency requiring that this Ordinance be passed finally on the date of its introduction as requested in writing by the Mayor; therefore, this Ordinance shall be passed finally on such date and shall take effect immediately upon its passage and approval by the Mayor; however, in the event that the Mayor fails to sign this Ordinance within five days after its passage and adoption, it shall take effect in accordance with Article VI, Section 6, Houston City Charter.

PASSED AND ADOPTED this 23rd **day of** September, **20** 20.

APPROVED this _____ day of _____, 20_____.

Mayor of the City of Houston, Texas

Pursuant to Article VI, Section 6, Houston City Charter, the effective date of the foregoing Ordinance is SEP 2 9 2020.

City Secretary

CAPTION PUBLISHED IN DAILY COURT REVIEW
DATE: SEP 2 9 2020

FUNDING SOURCE:
$551,250.00 from HAS Revenue Fund (Fund 8001)

(Prepared by Legal Dept. Enid Howard by permission SB
(EMH/anv 09/11/20) Senior Assistant City Attorney
(Requested by Mario Diaz, Director, Houston Airport System)
(L.D. File No. 0042000015001)

AYE	NO	
✓		**MAYOR TURNER**
....	....	**COUNCIL MEMBERS**
✓		PECK
✓		DAVIS
✓		KAMIN
✓		EVANS-SHABAZZ
✓		MARTIN
✓		THOMAS
✓		TRAVIS
✓		CISNEROS
✓		GALLEGOS
✓		POLLARD
✓		MARTHA CASTEX-TATUM
✓		KNOX
✓		ROBINSON
✓		KUBOSH
✓		PLUMMER
✓		ALCORN
CAPTION	ADOPTED	

Rev. 5/18

Honeywell

SmartPath®
Ground Based Augmentation System (GBAS)
Maintenance and Technical Support Agreement
between
Honeywell International Inc.
and
City of Houston, Texas

Agreement Number:

Date:

Maintenance and Technical Support Agreement

This SmartPath® Ground Based Augmentation System (GBAS) Maintenance and Technical Support Agreement (this "**Agreement**") is made and entered into as of the date of last signature below ("**Effective Date**") by and between Honeywell International Inc. a Delaware corporation acting through its Aerospace Commercial Aviation business with its primary office at 1944 E. Sky Harbor Circle, Phoenix, AZ 85034 ("**Honeywell**" or "**Seller**") and the City of Houston, Texas, a home-rule city of the State of Texas principally situated in Harris County ("**City**" or "**Buyer**"), either or both of which may be hereinafter referred to as a "**Party**" or the "**Parties**" respectively.

BACKGROUND

Honeywell, an approved United States Federal Aviation Administration ("FAA") Repair Station, maintains and operates certain facilities for the repair, maintenance, modification and functional testing of Honeywell manufactured equipment; and

Buyer has expressed a desire to have Honeywell perform such services to maintain the technical functionality of Buyer's purchased SmartPath® Ground Based Augmentation System ("GBAS") installed at George Bush Intercontinental Airport, Houston, Texas, on an exclusive basis during the term of this Agreement;

Honeywell is willing to perform such services for Buyer's SmartPath® GBAS on the terms and conditions set forth in this Agreement.

In consideration of the foregoing and of the mutual covenants contained in this Agreement, the Parties agree as follows:

1.0 Definitions

ABUSE: Any intentional failure of Buyer to comply with all requirements regarding the proper installation, storage, operation, removal, maintenance, testing, Repair and/or modification of the Equipment as specified by the Ground Equipment Manual or in accordance with all applicable Honeywell publications.

COMPONENT: Any self-contained part, combination of parts, or subassemblies of Equipment, which perform a distinctive function necessary to the operation of a system.

CONTRACTOR: A qualified vendor hired by Honeywell to provide maintenance and technical support to the SmartPath® Ground Based Augmentation System (GBAS). Contractor is limited to Level 1 and Level 2 Repairs only and is a liaison between Honeywell and Buyer in the repair, operation and procurement of replacement components. The Contractor must be certified and trained to Repair the GBAS system in accordance with the GEM.

DAYS: Calendar days unless stated otherwise. In case the end of a period falls on a public holiday or non-working day, the period is automatically extended to the next working day.

DIRECTOR: The Director of HAS or his or her designee.

EQUIPMENT: Part numbers identified in **Exhibit "B"** of this Agreement.

FAILURE: A loss or degradation of the SmartPath® signal-in-space or complete loss of use of the GBAS system due to a system outage.

FAULT: Any event that does not create a Failure.

FOREIGN OBJECT DAMAGE ("FOD"): Damage to any portion of the Equipment caused by an outside or foreign object, debris, or substance.

GROUND EQUIPMENT MANUAL ("GEM"): Honeywell's then-current SmartPath® GBAS manual that contains a description of the GBAS system, Components, spares, and guidelines for installation, maintenance, testing, and approval of the system as a whole.

HAS: The Houston Airport System.

INTELLECTUAL PROPERTY RIGHTS: All copyright, patents, rights in designs, rights in inventions, confidential information, rights in databases, trademarks, trade names and service marks including all applications to register such rights and all rights of a like nature.

LEVEL 1 MAINTENANCE: Troubleshooting GBAS performance including on-site diagnosis and re-configuration.

LEVEL 2 MAINTENANCE: On site preventative and corrective maintenance of the GBAS including restoration, replacing defective LRUs (or parts) with spares, and testing and validating replaced LRUs.

LINE REPLACEABLE UNIT ("LRU"): A component that may normally be removed and replaced on the GBAS system without the removal of any larger subset of the SmartPath system.

REPAIR: The disassembly, inspection, rework, or replacement of Components as necessary, and re-assembly and test as required, to return the Equipment to a Serviceable condition.

SERVICEABLE: A condition in which Equipment is in reasonable operating condition within the limits defined in Honeywell's then-current maintenance manuals, documentation and/or publications.

TIME AND MATERIAL ("T&M"): Charges which may be quoted on an itemized basis or as a standard or flat fixed price, without either labor or materials or both itemized. The term "T&M" charge, fee, Repair, rate, quotation, or price, is synonymous with "Over and Above" or "Out of Scope" charge, fee, Repair, rate, quotation, or price.

UNSERVICEABLE: A condition in which Equipment is not in reasonable operating condition within the limits defined in Honeywell's then-current maintenance manuals, documentation and/or publications.

2.0 Terms of Service Agreement

This Agreement commences on the Effective Date and will be valid for a period of five (5) years, unless earlier terminated in accordance with Section 9.4 or any other applicable terms.

3.0 Limited Warranty

3.1 "Nonconformance" means failure to comply with, or failure to operate due to noncompliance with applicable Honeywell drawings or having defects in workmanship or material. Normal wear and tear and the need for regular overhaul and periodic maintenance do not constitute a Nonconformance.

3.2 Components that are normally consumed in operation or which have a normal life inherently shorter than the foregoing warranty period including, but not limited to, consumables (e.g. flashtubes, lamps, batteries, storage capacitors) are not covered under this warranty.

3.3 Honeywell warrants that at time of shipment to Buyer, Equipment will comply with applicable Honeywell drawings and will be free from defects in workmanship and material. This warranty is valid for 12 months after completion of Site Acceptance Testing.

3.4 Buyer must notify Honeywell in writing during the warranty period of a Nonconformance. At Honeywell's election, the Product may be repaired or replaced by Honeywell at Buyer's site, or returned to Honeywell's designated facility within 30 calendar days of discovery of the Nonconformance in accordance with Honeywell's written instructions. Honeywell's obligation and Buyer 's sole remedy under this warranty is repair or replacement of any Product Nonconformance. All Products repaired or replaced will be warranted only for the unexpired portion of the original warranty period. These warranties run to Buyer, its successors, permitted assigns, and customers.

3.5 Honeywell assumes round trip shipping costs for Nonconforming Equipment in an amount not to exceed actual reasonable direct shipping charges to and from Honeywell's nearest warranty repair facility for the Equipment. If Buyer removes Equipment at Honeywell's direction in accordance with FAA approved practices Buyer will provide copies of freight invoices to Honeywell upon request. Round trip shipping costs expressly exclude freight

forwarding charges, taxes, duties and tariffs. The Party initiating transportation bears the risk of loss or damage to Equipment in transit. If Honeywell reasonably determines that a Nonconformance does not exist, then Buyer will pay all expenses related to the improper return including, but not limited to, analysis and shipping charges.

3.6 Honeywell will not be liable under this warranty if the Equipment has been exposed or subjected to any:
(a) maintenance, Repair, installation, handling, packaging, transportation, storage, operation or use which is improper or otherwise not in compliance with Honeywell's instruction;
(b) alteration, modification or Repair by anyone other than Honeywell or those specifically authorized by Honeywell;
(c) accident, contamination, foreign object damage, abuse, neglect or negligence after shipment to Buyer;
(d) damage caused by failure of a Honeywell supplied Component not under warranty or by any hardware or software not supplied by Honeywell;
(e) use of counterfeit or replacement parts that are neither manufactured nor approved by Honeywell for use in Honeywell's manufactured Equipment; or

3.7 Honeywell has no obligation under this warranty unless Buyer maintains records that accurately document operating time and the nature of the unsatisfactory condition of Honeywell's Product in a Honeywell issued Maintenance Log. Upon Honeywell's request, Buyer will give Honeywell access to these records for substantiating warranty claims.

3.8 Honeywell's warranty does not cover network issues beyond the output data output cable(s) of its Equipment.

3.9 THESE WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER WRITTEN, EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE. IN NO EVENT WILL HONEYWELL BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, OR INDIRECT DAMAGES, EVEN IF INFORMED OF THE POSSIBILITY OF SUCH DAMAGES AND NOTWITHSTANDING THE FAILURE OF THE ESSENTIAL PURPOSE OF ANY LIMITED REMEDY. NO EXTENSION OF THIS WARRANTY WILL BE BINDING UPON HONEYWELL UNLESS SET FORTH IN WRITING AND SIGNED BY HONEYWELL'S AUTHORIZED REPRESENTATIVE.

4.0 Maintenance Requirements

4.1 All Level 1 Maintenance and Level 2 Maintenance of the GBAS system will be carried out by Honeywell or Subcontractor with accredited maintenance technicians in accordance with the FAA approved practices. Honeywell shall maintain documentation of the accreditation of Honeywell's or its Subcontractor's maintenance technicians and provide same to the Buyer upon request.

4.2 All GBAS system maintenance shall be carried out to the standards specified in the Ground Equipment Manual (GEM) which is incorporated herein by this reference.

4.3 The Maintenance Technician(s) responsible for GBAS system will perform:
- Periodic maintenance
- Corrective maintenance
- Return-to-Service tasks
- Modification of hardware
- Loading software
- Documentation of system performance in Maintenance Logs
- Spares management

4.4 On mutually agreed upon dates, Honeywell will perform the annual periodic maintenance actions and periodic testing actions as specified in **Exhibit "A"** (excluding Flight Inspection and battery replacement). During the periodic maintenance Honeywell may identify specific maintenance actions for the Buyer to perform (i.e. shelter Repair/maintenance) and will log such maintenance in the Honeywell maintenance log referenced in Section 2.7 of this Agreement. Honeywell is responsible for all travel costs associated with maintenance requirements as described in this Section 3.0.

4.5 Honeywell will provide 24/7 technical support, at no charge to Buyer other than the charges in this Agreement, via Honeywell's Technical Operations Center (TOC) which can be reached by calling 1-800-601-3099 (Domestic), 1-602-365-3099 (International) or via e-mail at AeroTechSupport@honeywell.com.

4.6 In the event of Failure, Director will notify Honeywell and Honeywell or Subcontractor will diagnose and repair such Failure in a timely manner.

4.7 To assist in the initial diagnosis of the Fault condition, Honeywell will ask Buyer to provide additional information that may appear on the GBAS MDT and Buyer will allow Honeywell to remotely access the Equipment.

5.0 Maintenance Technician Requirements

Any Honeywell and Subcontractor personnel responsible for the operation, maintenance, and installation of SmartPath® are required to possess minimum qualifications. The following defines the minimum qualifications for installed systems:

- Formal training as an Electronics Technician, Electrical Engineer, or equivalent;
- Successful completion of a Federal Aviation Administration (FAA) approved factory training program;
- Demonstration of skills and abilities required to adequately operate and maintain the GBAS system;
- All license requirements imposed by the FAA in order to perform work on Air Navigation Aids under its jurisdiction.
- Compliance with applicable Drug & Alcohol monitoring and testing program requirements for Technicians mandated by the FAA in order to perform work on Air Navigation Aids under their jurisdiction.

6.0 Unit Repair and Turn Around Time

6.1 Honeywell or Subcontractor will be responsible for troubleshooting, diagnosing, and removing Unserviceable Equipment and replacing it with Serviceable Equipment.

6.2 Honeywell will perform the necessary Repairs to return the Unserviceable Equipment to Serviceable condition. Honeywell's Turn Around Time (TAT) is sixty (60) Days or less for Repair of Equipment. TAT begins upon receipt of Equipment at Honeywell's designated repair facility and ends when the Equipment is shipped to Buyer. At Honeywell's discretion an exchange Equipment may be provided in place of an Unserviceable Equipment. TAT excludes excusable delays and delays due to (i) Abuse (ii) FOD, (iii) accidents, (iv) Obsolete Equipment, (v) refurbishment, (vi) Buyer or Honeywell requested modifications, or (vii) any Buyer-caused reason, including, but not limited to (a) special instructions from Buyer, (b) special investigations, (c) absence of Repair orders with removal reasons, (d) missing parts, (e) missing or incomplete documentation, or (f) time waiting for Buyers' instructions.

6.3 If an urgent or critical need arises, Honeywell will ship an exchange unit within five (5) days of request. Exchange Equipment will be subject to availability. Urgent or critical need includes any Nonconformance that causes Failure of the GBAS system.

6.4 Honeywell will, at its sole expense and risk, deliver Equipment to be Repaired to Honeywell's designated Facility. After completion of Repair, Honeywell will ship Equipment to Buyer's designated Facility. Honeywell reserves the right to impose additional charges for any special routing, packing, labeling, handling or insurance requested by Buyer, or for Equipment shipped that Honeywell finds to be subject to FOD or Abuse.

6.5 Honeywell will be responsible for risk or loss or damage while Equipment is in the possession or control of Honeywell. Buyer will be responsible for risk of loss at all other times.

6.6 Honeywell and Buyer each warrant that its title is free and clear of all encumbrances for Exchange equipment; and each will deliver to the other such documents as may be necessary to transfer title and release any encumbrances affecting said Equipment. If Buyer's interest is that of a lessee or the Equipment is subject to encumbrances, Buyer will reasonably obtain the consent of the owner or encumbrance holder of the Equipment in a form satisfactory to Honeywell. For purposes of this Agreement, Exchange is terminology used to describe a swapping of Buyer's Unserviceable Equipment for like Serviceable Equipment with the Equipment returned to Buyer having a different serial number from the Equipment sent to Honeywell for Repair.

7.0 Engineering Updates and Modifications

7.1 During the term of this Agreement Honeywell will incorporate, at no additional cost to Buyer, those Equipment modifications required by FAA directives to maintain a Category I GBAS System. All other Equipment updates and modifications may be incorporated at Honeywell's discretion and expense or will be offered and quoted to Buyer upon request.

7.2 Should Honeywell offer an upgrade of the Category I SmartPath to an FAA certified Category II/III capable system prior to year five (5), and if Buyer purchases this upgrade, the upgraded system would include a new, one-year parts and labor warranty. The remaining value of the original extended warranty plan would be refunded to Buyer by Honeywell on a pro rata basis or applied as a credit to a new extended warranty plan at the then established extended warranty plan price for the Category II/III system.

8.0 Limitation of Liability

IN NO EVENT WILL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, PUNITIVE, STATUTORY, OR INDIRECT DAMAGES, LOSS OF PROFITS, REVENUES, OR USE, OR THE LOSS OR CORRUPTION OF DATA, EVEN IF INFORMED OF THE POSSIBILITY OF THESE DAMAGES AND NOTWITHSTANDING THE FAILURE OF THE ESSENTIAL PURPOSE OF ANY LIMITED REMEDY. THE AGGREGATE LIABILITY OF SELLER FOR ANY CLAIMS ARISING OUT OF OR RELATED TO THIS AGREEMENT IS LIMITED TO DIRECT DAMAGES NOT TO EXCEED THE AMOUNT PAID FOR THE SPECIFIC PRODUCT OR SERVICE THAT GIVES RISE TO THE CLAIM. TO THE EXTENT PERMITTED BY APPLICABLE LAW, THESE LIMITATIONS AND EXCLUSIONS WILL APPLY REGARDLESS OF WHETHER LIABILITY ARISES FROM BREACH OF CONTRACT, INDEMNITY, WARRANTY, TORT, OPERATION OF LAW, OR OTHERWISE.

9.0 Prices and Payment

9.1 The price for the five (5) year term of this agreement is $110,250.00 USD per year.

Prices are stated in U.S. currency, and payments must be made in U.S. currency.

9.2 Seller shall invoice Buyer for the total annual purchase price of this agreement ($110,250.00) upon this Agreement's execution. Buyer shall then be invoiced annually thereafter for the Term of this Agreement.

9.3 All invoices are to be paid within thirty (30) calendar days after receipt of the invoice and associated documents, if required. If Buyer is delinquent in any payment obligation to Seller, then Seller, at its election and in addition to any other remedy at law or in equity, may:

(i) Upon written notice to Buyer withhold future shipments and services until all delinquent amounts (including late fees and interest, if any) are paid;

(ii) Charge interest on delinquent amounts at a rate of 1.5% per month or the maximum rate permitted by law, if lower, for each month or part thereof;

(iii) Recover all costs of collection including, without limitation, reasonable attorneys' fees; and

(iv) Combine any of the above rights and remedies as may be permitted by applicable law.

These remedies are in addition to those available at law or in equity. Seller may re-evaluate Buyer's credit standing at any time and modify or withdraw credit. Buyer may not set off any invoiced amounts against sums that are due from Seller.

9.4 Limit of Appropriation

The fees specified in Article 9.3 above are Honeywell's total compensation for its services under this Agreement. The City's duty to pay money to Honeywell under this Agreement is limited in its entirety by the provisions of this Section.

In order to comply with Article II, Sections 19 and 19a of the City's Charter and Article XI, Section 5 of the Texas Constitution, the City has appropriated and allocated the sum of **$551,250.00** to pay money due under this Agreement during the City's current fiscal year (the "Original Allocation"). The executive and legislative officers of the City, in their discretion, may allocate supplemental funds (each a "Supplemental Allocation" and

collectively, the "Supplemental Allocations") for this Agreement, but they are not obligated to do so. Therefore, the Parties have agreed to the following procedures and remedies:

The City has not allocated supplemental funds or made a Supplemental Allocation for this Agreement unless the City has issued to Contractor a Service Release Order, or similar form approved by the City Controller, containing the language set out below. When necessary, the Supplemental Allocation shall be approved by motion or ordinance of City Council.

NOTICE OF SUPPLEMENTAL ALLOCATION OF FUNDS

By the signature below, the City Controller certifies that, upon the request of the Director, the supplemental sum set out below has been allocated for the purposes of the Agreement out of funds appropriated for this purpose by the City Council of the City of Houston. This Supplemental Allocation has been charged to such appropriation.

$ _____

The Original Allocation plus all Supplemental Allocations are the "Allocated Funds." The City shall never be obligated to pay any money under this Agreement in excess of the Allocated Funds. Contractor must assure itself that sufficient allocations have been made to pay for services it provides. If Allocated Funds are exhausted, Contractor's only remedy is suspension or termination of its performance under this Agreement, and it has no other remedy in law or in equity against the City and no right to damages of any kind.

10.0 Taxes and Duties

10.1 The City is exempt from payment of Federal Excise and Transportation Tax and Texas Limited Sales and Use Tax. Consultant's invoices to the City must not contain assessments of any of these taxes. The Director will furnish the City's exemption certificate and federal tax identification number to Consultant if requested.

10.2 Seller's pricing excludes all taxes (including, but not limited to, sales, use, excise, value-added, and other similar taxes), duties and charges. Buyer is responsible for all such taxes, duties, and charges resulting from this Agreement or Seller's performance, whether now or hereafter imposed, levied, collected, withheld, or assessed.

10.3 If Seller is required to impose, levy, collect, withhold or assess any such taxes, duties or charges on any transaction under this Agreement or any Purchase Agreement or Order issued under this Agreement, then in addition to the purchase price, Seller will invoice Buyer for such taxes, duties, and charges unless at the time of order placement Buyer furnishes Seller with an exemption certificate or other documentation sufficient to verify exemption from such taxes, duties or charges.

10.4 This clause will survive expiration or any termination of this Agreement or any Purchase Agreement or Order issued under this Agreement.

11.0 Disputes

11.1 Any dispute arising out of or relating to these terms and conditions, including the breach, termination or validity thereof (**"Dispute"**), will be finally resolved by arbitration. The arbitration will be conducted in English.

11.2 If Buyer is incorporated in the United States, a single arbitrator will apply the Center for Public Resources Institute for Dispute Resolution Rules for Non-Administered Arbitration then currently in effect to finally resolve the Dispute. The arbitration will be governed by the Federal Arbitration Act, 9 U.S.C. secs. 1-16, and judgment upon the award rendered by the arbitrator may be entered by any court having jurisdiction thereof. The place of arbitration will be Harris County, Texas.

Any award will be payable in U.S. dollars, and judgment on the award rendered by the arbitrator(s) may be entered by any court having jurisdiction thereof. Either party may apply to the arbitrator seeking injunctive relief until the arbitration award is rendered or the controversy is otherwise resolved. Either party also may, without waiving any remedy under these Conditions of Sale, seek from any court having jurisdiction any interim or provisional relief

that is necessary to protect the rights or property of that party, pending the arbitrator's determination of the merits of the controversy.

11.3 If any dispute, or response to any dispute, includes an allegation that potentially concerns whether any intellectual property right owned, controlled or licensable by either party is invalid, unenforceable or infringed or misappropriated, or is otherwise limited in scope or application, then either party may, in its sole discretion, elect to have that dispute adjudicated before a court of competent jurisdiction in Harris County, Texas and this section will not be binding on either party with respect to that dispute in its entirety or any related dispute, including any portions of a dispute that do not concern intellectual property rights.

12.0 Applicable Law and Forum

This Agreement shall be construed and interpreted in accordance with the applicable laws of the State of Texas and City of Houston. Venue for any disputes relating in any way to this Agreement shall lie exclusively in Harris County, Texas.

13.0 Cancellation of Agreement

Buyer may cancel any Order or portion of an Order by giving Honeywell written notice specifying the detailed reason for the cancellation only if: (1) Honeywell fails to correct a breach of these terms and conditions within 90 calendar days of written notice from Buyer of the breach; or (2) any insolvency or suspension of Honeywell's operations or any petition filed or proceeding commenced by or against Honeywell under any state or federal law relating to bankruptcy, arrangement, reorganization, receivership or assignment for the benefit of creditors; or (3) in accordance with Section 9.4 of this Agreement.

14.0 Modification of Agreement

MODIFICATIONS TO THIS AGREEMENT WILL BE NON-BINDING UNLESS MADE IN WRITING SIGNED BY THE PARTIES AND EXPRESSLY MARKED AS A CHANGE MODIFICATION, AMENDMENT OR SUPPLEMENT.

15.0 Severability

If any provision of this Agreement or an Order is determined to be illegal, invalid, or unenforceable by an arbitrator appointed under this Agreement or a court of competent jurisdiction, then the validity and enforceability of the remaining provisions of this Agreement will not be affected and, in lieu of such illegal, invalid, or unenforceable provision, there will be added as part of this Agreement one or more provisions as similar in terms as may be legal, valid and enforceable under applicable law.

16.0 Excusable Delay

Honeywell will not be liable to Buyer for any failure to meet its obligations due to any cause beyond its reasonable control including, but not limited to: government embargoes or any other government acts that interfere with performance; blockades; seizure or freeze of assets; delays or refusals to grant an export license or the suspension or revocation thereof; fires, floods, severe weather conditions; any other acts of God, quarantines or regional medical crisis; labor strikes or lockouts; riots, strife, insurrection, civil disobedience, armed conflict, terrorism or war, declared or not or impending threat of any of the foregoing, if reasonably expected to cause injury to people or property; and shortages or inability to obtain materials or components. The due date of any performance affected by such an event will be extended by the period of time that Honeywell is actually delayed. If the inability to perform continues for longer than 6 months, either party may terminate the affected Order by providing written notice to the other party.

17.0 Data

Honeywell may receive data output from, input to, generated by or otherwise accessible through the Equipment as a result of its use or operation (hereinafter "Equipment Data"). Buyer gives Honeywell the irrevocable right to retain, use, copy, modify, license, and disclose the Equipment Data for any purpose.

18.0 Changes

Honeywell may, without notice to Buyer, incorporate changes to Products or Services that do not alter form, fit, or function. Honeywell may, at its discretion and with written notice to Buyer, also make such changes to Products or Services previously delivered to Buyer.

19.0 Entire Agreement

This Agreement contains the entire agreement between the Parties with respect to the subject matter hereof and supersedes any prior representations or agreements, oral or written, and all other communications between the Parties relating to the subject matter hereof. This Agreement will not be varied except by an instrument in writing subsequently executed by an authorized representative of each Party.

20.0 Validity

This Agreement is offered to Buyer and is valid for execution by Buyer through April 15, 2020.

THIS SPACE LEFT BLANK INTENTIONALLY

21.0 Signature/Acceptance

The Parties have executed this Agreement in multiple copies, each of which is an original. Each person signing this Agreement represents and warrants that he or she is duly authorized and has legal capacity to execute and deliver this Agreement. Each Party represents and warrants to the other that the execution and delivery of this Agreement and the performance of such Party's obligations hereunder have been duly authorized, and that the Agreement is a valid and legal agreement binding on such Party and enforceable in accordance with its terms. The Parties hereby agree that each Party may sign and deliver this Agreement electronically or by electronic means and that an electronic transmittal of a signature, including but not limited to, a scanned signature page, will be as good, binding, and effective as an original signature.

HONEYWELL INTERNATIONAL, INC.
Acting through its Aerospace Commercial Aviation Business

DocuSigned by:
By: Martin T. Jones II
Name: Martin T. Jones II
Title:
Date:

CITY OF HOUSTON, TEXAS

By:
Mayor

ATTEST/SEAL:
Signed by:

City Secretary

DS BB

APPROVED:
DocuSigned by:
Mario Diaz
Director, Houston Airport System

APPROVED:

Chief Procurement Officer

APPROVED AS TO FORM:
DocuSigned by:
Sr. Assistant City Attorney
L.D. File No.

COUNTERSIGNED BY:

City Controller

DATE COUNTERSIGNED:

EXHIBIT "A"
Service Level Requirements

1.0 Maintenance and Periodic Activities

All maintenance shall be carried out to the standards specified in the relevant Commercial Instruction Book. Equipment shall be removed and returned to operational service in accordance with the CIB.

1.1 Periodic Maintenance Schedules

Periodic maintenance schedules are listed in Table 10-1.

Table 10-1. Periodic Maintenance Schedule

Item	Task	When	System Shutdown Required?
Passwords	Change password Note that passwords expire after 365 Days.	Yearly	No
Battery	Check for corrosion on battery terminals, remove as needed. Check replacement date (normally 4-years), replace batteries as required	Yearly	No— For inspection. Yes—For Battery replacement
Tower	Clean and inspect exterior cabinet, look for foreign matter within the cabinet such as cob webs, dust, animal droppings, etc. Check Fan Banks and the Fan Tray for dust accumulation, remove dust as required	Yearly	Yes—Access to voltages, removal of Fan Banks, etc.
Shelter	Check for any damage, signs of water infiltration, heating and air conditioning operation, evidence of any settling if the concrete slab, evidence of lightning strike damage	Yearly	No

Item	Task	When	System Shutdown Required?
RSMU	Check for excessive vegetation height, physical damage, evidence of lightning strike damage, standing water, new objects in the LOCA, new construction in the area	Yearly	No
Surge Panel	Check for evidence of lightning strike damage or impending failure	Yearly	No
Surge Panel Gas Discharge Tubes	Inspect Gas Discharge tubes for evidence of lightning strike damage	Yearly	No
VDB Antenna	Check for mechanical damage, check mounting clamps for corrosion and for tightness, evidence of lightning strike damage	Yearly	Yes—Radiation hazard
VDB Transmission Line Feed Line Connector to the VDB Antenna	Check for damage, deterioration of weather proofing material, water infiltration at the RF input connector	Yearly	Yes- Radiation hazard
Fan Tray	1. Visually check to see that the fans are operating. 2. Remove GBAS power. 3. Inspect the fan blades for excessive dust build-up. 4. If excessively dusty, remove the fan tray and clean blades.	Yearly	No
RPDP LED's	Check the RPDP - Robust Bus CCA LED's to ensure that the fault LED is not illuminated red, and that all the other LED's are illuminated green.	When Checking for Service Alerts.	No

MDT	Verify UTC leap seconds (offset) is properly configured in MDT. This value can be obtained from Honeywell.	Yearly	No
Chi-Squared Disabled Threshold (MSD File)	1. Re-establish the Chi-Squared Disabled Service Alert threshold in MSD file. See the *MSD Process* document (68003959). 2. If new threshold is established: a. Update MSD file and load on station b. Update MSD Report with new	First periodic maintenance interval	No
Local Magnetic Variation (Adaptation Data)	Check that the Local Magnetic Variation in the Adaptation Data file is up to date. Note: the process and period of magnetic variation updates will vary by state. For the U.S. this process is defined in FAA Order 8260.19E with updates made every 5 years.	Yearly	No
SV Status (Adaptation Data)	1. Monitor GPS launch schedule for GPS satellites which are not approved for use per section 5-1.3 2. If necessary, disable the SV within Adaptation Data and load on GBAS.	6 Months	No
SBAS Antenna	Check for excessive vegetation height, physical damage, evidence of lightning strike damage, new objects in the LOCA, new construction in the area.	Yearly	No

1.2 Periodic Testing Requirements

Honeywell will perform validation of the VDB signal of the SmartPath® service area in accordance with Periodic Testing Requirements in Table 10-2. Honeywell is not responsible for flight test or flight inspections at this time.

Table 10-2. Periodic Testing Requirements

Item	Task	When
VDB Transmitter	Check Transmitter Frequency, RF Power Output	Yearly
VDB Receiver	Check Local Oscillator Frequency	Yearly
VDB Receiver	Check Operation of the VDB Receiver (Power, Frequency)	Yearly
VDB Transmission Line	Check VSWR	Yearly
VDB Transmitter VSWR Monitor	Check Operation of the VDB Transmitter VSWR Monitor	Yearly
VDB Signal Coverage	Flight Test	Every Two Years, or as Required by Local Authority.
Space Vehicle Signal Reception Evaluation	1) Download the Sigma Event Queue and send to Honeywell for Evaluation. 2) A Visual Inspection of the Reference Receiver Environment should be Evaluated.	Yearly/ or if a RSMU is Excluded Multiple Times by the Sigma Monitor RSMU (Event 4123).
Temperature Data Check	Check for erroneous data from the Tower Cabinet and Shelter Temperature Sensors	Yearly
Cooling Fan Control	Check power control for the Cooling Fans	Yearly
Fan Bank Fault Containment Module Short Circuit Test	Verify there is no short circuit between the fans	Yearly
Coverage Volume Check	The VHF Signal Volume Coverage shall be Evaluated every 60 months or sooner if deemed Necessary by New Construction/ New Antenna Locations or Pilot Problem Reports	60 months
Availability Analysis (optional)	Check Satellite Availability	Yearly
Blitzductors®	Verify Blitzductors are still capable of surge protection.	Yearly
Code-Carrier Divergence (CCD) Event Check	Check event log, if 10 CCD Monitor events occur within a 30 day period (since the previous check), then provide event log and CAP files to Honeywell for analysis.	Yearly (and recommended during other visits)

EXHIBIT "B"

Honeywell Project for SLS-4000 Cat I GBAS Modification: Block II Software with WAAS

1. Purpose

This project is for incorporation of a Space Based Augmentation System (SBAS) receiver into the FAA approved, SLS-4000 Category I Ground Based Augmentation System (GBAS) installed at Customer's airport. The use of SBAS as an adjunct to GBAS will increase system performance as detailed below. Use of the US SBAS (also known as WAAS — Wide Area Augmentation System) for this purpose was validated under the Honeywell SmartPath GBAS Block II FAA System Design Approval (SDA) process. Successful SLS-4000 modification with Block II software and WAAS receiver integration will improve availability and enable advanced approach and landing operations in the WAAS coverage region for GBAS installations utilizing this capability.

2. Negative Ionospheric Effects

The ionosphere contains high levels of ions and free electrons which can accumulate in irregular electron densities. Geographic Positioning System (GPS) signals passing through the ionosphere can be delayed by varying amounts. When the GBAS ground station and the airborne user experience a difference in ionospheric delay, the airborne user can experience a differential position error sufficiently large to adversely impact integrity.

Within the mid-latitude regions these phenomena is generally manifested as an ionospheric storm that has been modeled using a wedge model.

3. Operational Impacts

Existing GBAS ground stations do not have the capability to monitor for ionospheric gradients. To mitigate the potential effects of ionospheric gradients the Honeywell SmartPath GBAS evaluates the impact of an ionospheric gradient as a function of satellite geometry and either excludes weak geometries that could produce excessive position errors or ensures that any potential error is bounded by the protection level computed in the aircraft. This is a very conservative approach which has the following negative operational impacts:

- Reduced availability
- Worse case obstacle clearance surface assumption at the decision height
- Reduced maximum service volume
- Degradation in differential correction position services.

4. SBAS Adjunct to GBAS

Use of SBAS data by a GBAS ground station enables a method to mitigate the anomalous ionosphere threat. The SBAS-based mitigation makes use of additional information about the state of the ionosphere,

made available through integration with a SBAS receiver. The most recent SLS-4000 implementation, referred to as Block II (BLK II), has already been integrated with the North American version of SBAS or WAAS.

By integrating an SBAS receiver with the SLS-4000 Ground Subsystem, SBAS Grid Ionospheric Vertical Error (GIVE) information can be used to monitor for the presence of a disturbed ionosphere capable of containing ionospheric gradients. When the ionosphere is undisturbed the additional bounding currently used for mitigation can be removed or reduced, thus improving system performance.

Operational Benefits of WAAS Integration

Integration of BLK II software and a WAAS receiver should support the following operational benefits:

- **Improved Availability:** WAAS integration enables reduction in the GBAS broadcast σ_{vig}. This leads to lower airborne computed protection limits and therefore improved operational availability.

- **CAT I Autoland:** WAAS integration enables removal of the assumption that the worst-case anomalous ionospheric gradient is present. This in turn enables removal of the worst-case obstacle clearance surface (OCS) assumption at the decision height. Reduction of this worst case OCS assumption is expected to enable CAT I GBAS Landing System (GLS) Autoland operations in the Continental United States (CONUS).

- **Reduced Decision Height Operations:** For the same reasons described above for CAT I Autoland, removal of the worst=case obstacle clearance allows construction of a safety case for GLS operations below a 200-foot Decision Height (DH). These could take the form of Special Authorization (SA) CAT II operations (see FAA Order 8400.13D for more background), SA CAT I operations, or Other Than Standard (OTS) CAT I operations.

- **Extended Service Volume:** WAAS integration reduces the magnitude of spatially de-correlated errors which leads to improved Extended Service Volume (ESV) and coverage performance (Dmax). This enables improved performance for lateral guidance for parallel approaches and allows for use of GBAS broadcast information beyond 23 nmi.

- **Differential Correction Positioning Services (DCPS):** WAAS integration also leads to improved DCPS performance in support of RNP operations.

- **Existing Avionics:** WAAS integration for the above operational benefits allows users to continue to use their current GLS avionics.

5. Project Responsibilities

There are several interdependent elements to the project. It is necessary for all elements to be accomplished to obtain the operational benefits. In addition to the software and hardware modification to the SLS-4000 GBAS Honeywell will perform, actions by Customer, United Airlines, Boeing, and the Federal Aviation Administration are also required. These activities are summarized below:

Organization	Required Tasks
Honeywell (GBAS supplier)	• Install Block II software and WAAS equipment (see specific tasks below) • Perform Site Acceptance Test • Support FAA Facility Inspection/Approval of modified GBAS • Provide training on Block II with WAAS to FAA Non-Fed inspector • Support safety case for autoland and Cat II operations on the modified Cat I GBAS with ground station related inputs
Customer	• Manage overall project • Define airport operations for Integrated Control and Monitoring System (ICMS) with input from FAA • Incorporate updates into ICMS
United Airlines (Airline applicant)	• Create an Approval Plan for autoland and CAT II operations on the modified SLS-4000 Cat I GBAS. • Create a safety case for autoland and CAT II operations on the modified SLS-4000 Cat I GBAS with SBAS (with inputs from Honeywell and Boeing) • Perform an Operational Safety Assessment (with input from Boeing) • Request FAA operational approval to perform autoland and CAT II operations on the modified SLS-4000 Cat I GBAS (may be done as separate approvals). • Conduct pilot training
Boeing (Aircraft manufacturer)	• Document accuracy performance of aircraft that will perform autoland and GLS CAT II approaches using the modified SLS-4000 Cat I GBAS. • Define any required changes to the FASLAL. • Develop new approaches. • Support United Airlines with safety case and operational safety assessment.
FAA	• Agree to approval plan for autoland and Cat II approaches using the modified SLS-400 Cat I GBAS. • Define and approve ATC operations including ICMS requirements • Define and approve TRACON operations • Perform Facility Inspection/Approval • Flight inspection for approach to touchdown

6. Honeywell Statement of Work

The modification of the SLS-4000 GBAS to incorporate Block II software and WAAS project includes the following:

Activities for Milestone 1

- Support joint stakeholder kickoff meeting
  - 1 day
- Lead SLS-4000 modification project kickoff (Customer, United Airlines, airport, local ATC, FAA Tech Center)
  - 14 days
- Coordinate station down time with Customer, airport, and FAA ATC (ensure NOTAM issued)
  - 1 day (downtime dependent on length of stability test; NTE 30 days)
- Install Block II software
  - 1 day
- Install WAAS receiver
  - 1 day
- Install WAAS antenna (including shelter civil works)
  - 3 days
- Create and document new MSD file
  - 14 days
- Install new MSD file
  - 1 day
- Coordinate new ICMS messages from modified SLS-4000
  - 60 days
- Perform Site Acceptance Test (SAT)
  - 2 days
- Update Commercial Instruction Book and station logbook
  - 1 day
- Provide training on Block II with WAAS to FAA Non-Fed inspector(s)
  - 5 days
- Support FAA Facility Inspection/Approval of modified GBAS
  - 3 days
- Return station to service
  - 30 days (stability test)

Activities for Milestone It

- Support safety case for autoland on the modified Cat I GBAS with ground station related data and analysis
  - Length TBD
  - **Activities for Milestone Iit**
- Support safety case for Cat II operations on the modified Cat I GBAS with ground station related data and analysis
  - Length TBD
- Load new approaches

- 1day
- Support flight validation of new approaches
- 3 days

7. Warranty

Newly installed software and hardware will be covered by the terms of the existing warranty for a period of 12 months after successful completion of SAT or for the duration of the GBAS extended warranty, whichever is longer.

1. Honeywell Contacts

The primary contacts at Honeywell are:

CarrieAnn Kowalke
GBAS Program Manager
Honeywell Inc.
8840 Evergreen Blvd.
Minneapolis, Minnesota, USA 55433
Phone: 763-957-3418
FAX: 763-957-4731
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Minneapolis, Minnesota, USA 55433
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FAX: 763-957-4731
E-mail: brian.koosmann@honeywell.com

2. Project Milestones

Milestone 1: completion of Block II and WAAS implementation and satisfactory station return to service

Milestone 2: approval of GBAS autoland operations for United or other airline

Milestone 3: approval of landing minimums below 200' DH using the modified GBAS station

Honeywell is committed to supporting the achievement of these milestones, however achievement of milestones #2 and #3 are dependent on multiple organizations other than Honeywell, as described in Section 5 above. The scope of effort required to achieve these milestones is currently being defined and will be agreed to by these organizations after the effective date of this Amendment 1. Therefore, Honeywell reserves the right to determine the level of support it will provide as the scope is finalized. For the avoidance of doubt, Honeywell's determination of support is within Honeywell's sole discretion. Honeywell recognizes that under this Agreement it will not receive payment for milestones #2 and #3 unless and until they are fully achieved as defined in this Section 9.

10. Payments (USD)

Invoices will be sent upon successful completion of each milestone. Terms will be NET 30 days from date of invoice.

EXHIBIT "C"

Operations and Maintenance Manual for Ground Based Augmentation System (GBAS)-IAH

At the

George Bush Intercontinental Airport Houston

Exhibit "C"

Operations and Maintenance Manual for Ground Based Augmentation System (GBAS)-IAH At the George Bush Intercontinental Airport Houston

TABLE OF CONTENTS

Page No. [N/A]

Part I. OPERATIONAL REQUIREMENTS

The following requirements must be met to operate a facility in the National Airspace System (NAS). Failure to comply with these requirements will result in withdrawal of approval for use of the facility.

1. LICENSING.

a. Facility. The Federal Communications Commission (FCC) license is to be conspicuously posted at the facility or if the facility cannot accommodate it, at a designated location. The normal period of the station license is five years, after which time it must be renewed. FCC Form 406 may be obtained from the FCC office. Each application must contain a statement indicating that the FAA has been notified and the date of notification. Renewal applications must be made at least 180 days prior to expiration. Copies of the application and the new license when received must be provided to the appropriate Technical Operations (AF) office.

b. Maintenance Technician. The equipment shall be operated and maintained only by persons approved by the FAA and licensed by the FCC as required below. This person is hereafter referred to in this manual as the Non-Federal Technician (NFT).

(1) An FCC license is required for all NFTs who maintain Radio Frequency RF transmitting equipment. A general class radio telephone operator license satisfies the FCC requirement. A copy of this license must be provided to the FAA regional/field office.

(2) FAA approval will be granted following the successful completion of both of the following:

(a) FAA or FAA-approved manufacturer's school or satisfactory completion of a concept examination to be administered by a representative of the FAA. It is to be understood that the satisfactory completion of the concept examination precludes the necessity of the resident training.

(b) A performance examination to be given by a representative of the FAA.

(3) A letter of technical verification will be provided by the FAA stating that these requirements have been met.

2. NOTICE TO AIRMEN. A Notice to Airmen (NOTAM) contains the establishment condition, or change in any aeronautical facility, service, procedure, or hazard, the timely knowledge of which is essential to personnel concerned with flight operations. Deviation from normal operation or failure of this facility is to be promptly and accurately publicized by a NOTAM. The sponsor and the technician responsible for the equipment maintenance shall be notified immediately of reports concerning irregular operation of this facility by pilots or other persons detecting the irregularity. The sponsor or the authorized representative shall ensure that a NOTAM has been filed through the associated FAA Operations Control Center (OCC). The sponsor or the representative shall communicate NOTAM information and other matters related to the facility status to the OCC. The OCC telephone number is listed on Part IV, par. 3.e. (1) of this Operation and Maintenance Manual

(OMM). Collect calls to the OCC are acceptable. The OCC will be responsible for coordinating with the Flight Service Station and all other FAA offices on all matters pertaining to non-federal facilities. The sponsor or the authorized representative shall also ensure that the OCC is notified of any facility failure or abnormal facility condition exceeding or expected to exceed 24 hours. A NOTAM which has not been initiated by the sponsor or the representative but is issued by an FAA Non-Federal Facilities Inspector, OCC personnel or flight inspection personnel shall be canceled only by the issuer and shall not be canceled by the facility sponsor or the representative. When a NOTAM has been issued showing a facility out of service, the facility shall be turned off or may radiate continuously only with the identification removed.

3. MONITORING.

a. Policy. It is FAA policy that a remote monitoring system be provided for all electronic navigational facilities used in support of instrument flight procedures. Suitable monitoring equipment must be in a secure location and accessible for inspections.

(1) A malfunction or failure of the transmitter equipment.

(2) A malfunction or failure of the monitor equipment itself.

b. Facility Classification. Navigational facilities are classified in accordance with the manner in which they are monitored. No change of monitoring status of the navigational aids shall be effected without prior FAA approval. The monitoring categories are as listed below:

(1) Category 1. Internal monitoring with a status indicator installed at a manned control point. Facilities can be used for instrument flight procedures without limitation. In the event of failure of the remote status indicator at the manned control point, a NOTAM must be issued that the facility is operating unmonitored (i.e. reverts to Category 2 status).

(2) Category 2. Internal monitoring with an inoperative status indicator at a control point, but pilot reports indicate that the facility is operating normally. This is a temporary condition and is not considered in procedures development. These facilities are taken out of service by issuing a NOTAM when two pilot reports indicate facility malfunction.

(3) Category 3. Internal monitoring only. A status indicator not installed at a control point or if a non-fail-safe condition exists. With the loss of internal monitoring, the facility is removed from service and a NOTAM issued. Facilities may be used in accordance with the following limitations:

(a) Alternate minima shall not be authorized if the facility provides a final approach course guidance, is required for procedure entry, is used to define the final approach fix, or is used to provide missed approach guidance.

(b) When the facility is used to designate a step-down fix, alternate minima shall be no lower than the circling minima required without the step-down fix.

(c) Dogleg airways or routes shall not be predicated on these facilities.

(d) Navigational fixes developed from crossing radials of category 3 facilities shall not be used to break a minimum en route altitude to a higher minimum en route altitude.

(4) Category 4. This category is applicable only to non-directional beacons. Internal monitoring is not installed but a remote status indicator is provided at a control point. Failure of the status indicator will render the facility and the approach procedure unusable during the outage. Facilities may be used in accordance with the following limitations:

(a) Alternate minima may be authorized when the remote status indicator is located in an FAA traffic facility and then only during periods that the control point is attended.

(b) If the control point is other than an FAA facility, a written agreement shall exist whereby the OCC is notified of indicated changes in facility status.

c. Remote Status Indicator Failure. To issue a NOTAM permitting continued operation for a facility where the remote status indicator has failed, the following conditions must be met:

(1) The facility is equipped with a properly operating automatic shutdown feature.

(2) No reports of abnormal facility operation are received.

NOTE: If these conditions are not met, the OCC shall be notified to issue a NOTAM to place the facility out of service.

4. SHUTDOWN FOR ROUTINE MAINTENANCE. Maintenance shall be performed only when the following conditions exist:

a. Conditions. Scheduled interruptions shall be confined to visual flight rules (VFR) conditions, daylight hours, and periods of light traffic unless conditions are such that imminent facility failure requires immediate corrective action.

b. Coordination. The interruption of service shall be coordinated through the OCC. The OCC shall coordinate with other FAA offices to ensure NOTAMs are appropriately issued and canceled. Notification shall be made so that the notice of shutdown or interruption will be published in advance of the proposed interruption. At no time shall a request for shutdown be made less than one hour prior to the shutdown unless emergency conditions require a shorter notification time frame. Facilities shall not be shut down without OCC approval.

c. NOTAM. A NOTAM shall be in effect announcing the scheduled interruption and the facility will not be shutdown until that specified time has arrived. The advance notification of the interruption will state that the interruption will last for a specific period of time, or will indicate a starting time and an indication that the interruption will be until further notice (UFN) if the ending time of the interruption is unknown. Pilot Reports PIREP and NOTAM procedures between the Airport Operator and the FAA Air Traffic Control Tower (ATCT) are included in the Field Reference Data File (FRDF) and Facility Approval documents.

d. Facility Identification Signal. The facility identification signal shall be disabled while maintenance is being performed.

5. PILOT REPORT. The sponsor shall remove the facility from service immediately upon receipt of one pilot report (PIREP) of malfunctioning. The facility will remain out of service until either the NFT and/or the flight inspection aircraft, if necessary, can confirm the proper operation. PIREP and NOTAM procedures between the Airport Operator and the FAA ATCT are included in the FRDF and Facility Approval documents.

6. REQUIRED SUPPORT ITEMS.

a. Test Equipment. The sponsor or sponsor's maintenance contractor shall provide FAA-approved test equipment needed for maintenance of the facility. Test equipment must be capable of accurately measuring to the appropriate technical standards and tolerances to be used for facility verification. This test equipment must be calibrated in accordance with this order and the appropriate operations and maintenance manual. All test equipment calibration shall be accomplished by a test equipment calibration shop or lab with standards traceable to the National Institute of Standards and Technology. A calibration tag/sticker indicating the last and next calibration date will be affixed to the calibrated test equipment.

b. Spare Parts. There shall be a stock of spare parts sufficient to make possible prompt replacement of components that fail or deteriorate in service.

7. EMERGENCIES.

a. Military. In a case of a national defense alert, the facility shall be shutdown in the shortest possible time after the alert is received from the OCC and shall remain off the air until official notice is received that the alert is over.

b. Aircraft Accident. Part III of this manual provides guidance in case of an aircraft accident.

8. ADJUSTMENT OF EQUIPMENT THROUGH REMOTE MAINTENANCE MONITORING (RMM). Any non-Federal facility having RMM uplink adjustment capability shall have an associated printer that documents all maintenance activities. This printer shall make a record for the review of visiting FAA personnel of all logons and equipment adjustment that may be initiated from a remote terminal. Printouts will be maintained a minimum of 2 years before being discarded.

PART II. MAINTENANCE REQUIREMENTS

9. GENERAL.

a. Facility Maintenance. The facility shall be maintained in accordance with the applicable subparts of FAR Part 171 and manufacturer's instruction books, maintenance technical handbooks, and/or other FAA-approved requirements. FAA standards and tolerances will be used. If they do not exist, then the manufacturer's handbook will be used.

NOTE: The maintenance schedules and requirements contained in these publications are to be considered the minimum level of maintenance in accordance with FAR Part 171 and this document.

b. FAA Responsibilities. The FAA shall be responsible for providing FAA forms and appropriate FAA publications or excerpts from FAA publications required for maintenance of the facility. These forms will be made available by the FAA office having inspection responsibility at no charge. The same office may be contacted for information on obtaining Orders and handbooks, in their entirety, if desired.

c. Maintenance Violations. If a verified maintenance technician is not assigned or if the maintenance schedules as set forth in FAA-approved maintenance procedures are not adhered to, the equipment shall be removed from service unless the sponsor or his/her designated representative has coordinated the exact circumstances with the FAA

d. Facility Reference Data File. The facility reference data file FAA Form 6030-17 series (facility requirements performance and adjustment data forms, shall be completed by the owner or the owner's representative at the time of the facility commissioning. One copy must be kept in the permanent records of the facility and one copy must be sent to the FAA office having inspection responsibility. The sponsor or the sponsor's representative must revise the data after any major repair, modernization, or retuning to reflect an accurate record of facility operation and adjustment. In the event the data is revised the owner or the owner's representative shall notify the FAA office having inspection responsibility of such revisions and forward copies of the revisions to that FAA office within 10 working days.

e. Facility Maintenance Log FAA Form 6030-1.

(1) This log record of all the activities required to maintain the facility. In the event of an aircraft accident/incident the log pages and other maintenance records may be subpoenaed for legal proceedings. Log entries shall be clear, complete, concise, and recorded in Universal Time, Coordinated (UTC). The entries must include all malfunctions encountered in maintaining the facility, including information on the kind of work and adjustments made, equipment failures, causes (if determined), and corrective action taken. In addition, the entries must include statements describing periodic maintenance activities required to maintain the facility, facility verification statements, and NOTAM information. The FAA Form 6030-1, Facility Maintenance Log shall be terminated on a cycle that corresponds to the minimum or most frequent Preventative Maintenance (PM) schedule and yellow pages, or copies of the log pages, shall be sent to the appropriate AF office within 10 working days of the termination date. If these log pages are not received timely or within 60 days after the scheduled PM or termination date, a NOTAM may be issued (at the discretion of the FAA inspector) for the facility, indicating that the approach procedures are out of service until the

required records are received. Unscheduled verification of the facility does not require submission of the log pages, unless the NFT changes the schedule based on the unscheduled verification. The log may be terminated and pages sent in more often, at the sponsor's discretion. The original white pages of the maintenance logs shall be retained at the facility for a period of 3 years or longer, if there are unresolved claims against the owner with regard to the facility following an aircraft accident/incident. Please see Attachment 4 for more detailed logging instructions and Part IV,3.f. for mailing addresses.

(2) Among the most important entries in the facility maintenance log are those indicating the verification status of a system, subsystem or equipment. For the purpose of this OMM, the word "certification" used in FAA directives shall be synonymous with "verification." Verification statements shall be entered in the facility maintenance log (FAA Form 6030-1) in accordance with appropriate FAA directives and orders. A verification statement shall be made before returning a system, subsystem, or equipment to service after the system has been out of service due to hardware or software failure. A verification statement shall also be made whenever maintenance work has been performed which may have affected verification parameters and on a periodic basis not to exceed the maximum intervals as specified by Attachment 2 of this OMM.

(3) Remote Controlling Manual Log. Each remotely monitored non-Federal facility shall be listed on the cover of the remote controlling manual log ("manual log" refers to FAA Form 6030-1) in the space reserved for subsidiary logs. Each non-Federal facility shall be the subject of a manual log at the actual facility site. All logging events conducted from the remote location will be included in the remote controlling manual log. Log entries at the actual facility shall relate only to events that occur while the site is occupied. These entries need not be repeated in the remote controlling manual log. The remote facility log format shall be the same as the local facility log format as described in Attachment 4 of this OMM. At no time will entries made in the remote facility log contradict entries made in the local facility log. The remote controlling and site manual logs shall be terminated in accordance with the requirements for Facility Maintenance Logs in paragraph 9e(1), preceding and copies of the remote controlling manual log and site log shall be collected by the FAA inspector, when terminated, in accordance with those same requirements.

f. Technical Performance Record (TPR). The Technical Performance Record forms (FAA Form 6000 Series), contains a record of system parameters recorded during each scheduled visit to the facility. Copies of the TPR's shall be submitted to the appropriated AF office with the log pages as described in paragraph 9.e.(1). TPR's shall be filled out and retained at the facility for a period of 3 years, or longer, if there are unresolved claims against the owner with regard to the facility following an aircraft accident/incident.

g. Incorporation of Improvements or Modifications. Improvement in maintenance procedures or equipment modifications, hardware or software, shall be funded and incorporated by the sponsor following approval by the FAA. The sponsor shall submit any proposed modifications to the facility to the FAA for approval and shall not permit any modifications to be performed without specific FAA approval. Approved changes shall be appropriately recorded. An addendum to the OMM, approved by the FAA, shall be completed if necessary. Consult with the FAA office having inspection responsibility for information on current forms and procedures.

h. Replacement or Relocation of Equipment or Antenna. Neither the equipment nor antenna will be replaced or relocated without prior FAA approval. No construction is to be planned in the

vicinity that may alter or affect the facility without first coordinating with the FAA. Status monitor receivers shall not be removed or relocated without FAA approval.

i. Obstructions. Vegetation, snow depth, and other potential obstructions to accuracy of the facility operations shall be controlled in accordance with applicable FAA handbooks. Consult with the FAA office having inspection responsibility for information on current policy/practice.

10. PHYSICAL SECURITY. The facility shall be kept secure when unattended. Normal protection shall be provided to ensure that unauthorized personnel do not have access to the facility or equipment. Authorized personnel with access to the facility shall include the Houston Airport System (HAS) GBAS Project Manager, IT Inspectors, Airport Operations staff and designated FAA staff. Authorized personnel must notify the FAA Mid states Operational Control Center at 1-866-432-2622 and the HAS Communication Center at 281-230-1300 before entering the facility and advise to disregard any alerts / alarms pertaining to the GBAS Air Traffic Status unit (ATSU) at this time.
Once departing the facility authorized personnel shall contact the FAA Mid states Operational Control Center @ 1-866-432-2622 and the HAS Communication Center @ 281-230-1300 and advise that the work has been completed, system is operational, personnel are departing the area and ATSU monitoring resumes.

11. FLIGHT INSPECTIONS. Flight inspections will be performed as stipulated in FAA Order 8200.1, United States Standard Flight Inspection Manual. The sponsor shall provide ground-to-air communications on 135.85 or 135.95 megahertz for flight inspection when required. The NFT shall participate in this inspection if required by the FAA. Any activities that might change the signal in space and cannot be verified by ground test equipment or the facility executive monitor (either because the monitor does not check the parameter or because of concurrent changes to the monitor) require a confirming flight inspection.

a. Examples of these activities include, but are not limited to:

(1) Replacement of one or more antennas, relocation or replacement of the antenna array or changing the length of one or more antenna feedlines.
(2) Relocation or replacement of the transmitter/monitor.
(3) Facility frequency change.
(4) Permanent power reductions of more than 50%.
(5) Permanent power increase to improve usable distance.
(6) Changes to the environment around the antenna which could affect the radiation pattern.
(7) Modifications of published approaches or fixes.

b. Additional activities requiring flight inspection are outlined in the FAA maintenance technical handbooks and orders.

c. The OCC is responsible for coordinating the scheduling of all special flight checks that are requested from the field regardless of the nature of the request. The NFT shall make all requests for flight checks on non-federal facilities through the OCC. The OCC shall coordinate the flight check with the District Non-Federal Program Coordinator and the FAA Flight Inspection Office and advise

the NFT of the approval or disapproval of the request. The OCC shall also provide the NFT with the date and time information on approved flight checks requests.

12. GROUND INSPECTIONS.

a. FAA Ground Inspection. FAA ground inspection will be accomplished on a periodic basis. Prior notification of ground inspection will be given to the facility technician after coordination with the sponsor. Failure to meet the technical standards for equipment maintenance or failure to perform a FAA ground inspection within the tolerance period (Attachment 4, Table 1) may be grounds for cancellation of the facility's instrument approach procedure. If this becomes necessary, a NOTAM will be issued showing the facility out of service and action initiated to remove the instrument approach from publication.

b. FAA Follow-Up Inspection. The FAA may conduct a follow-up inspection when a facility may have been a factor in an aircraft accident/incident (see Part III). Other follow-up inspections may be required due to findings during the normally scheduled ground inspection or because of excessive reported facility discrepancies.

13. SAFETY. Occupational Safety and Health Administration requirements should be followed to ensure personnel safety. Vegetation shall be controlled to allow access to the facility.

14. NAPRS DATA. (To be provided by AJW-162)

PART III AIRCRAFT ACCIDENT PROCEDURES

15. GENERAL. This part has been provided to help expedite the certification/verification of facilities in the event of an aircraft accident and to help ensure that all required actions are accomplished. It contains the following:

a. General information checklist

b. Facility evaluation checklist (completed for each facility evaluated by the certifying/verifying technician).

NOTE: The NFT completes original checklists. The original accident checklists shall be retained in owner/sponsor office with a copy to the FAA System Management Office (DO).

16. INFORMATION AND INSTRUCTIONS

a. There are a series of steps to be performed following an aircraft accident. These steps need to be performed in a very precise manner so that a true and accurate status of a facility is documented. The most current edition of FAA Order 8020.11, Aircraft Accident and Incident Notification, Investigation, and Reporting, is the controlling directive and will take precedence over other instructions where there are conflicts. The OCC is the single point of contact. The OCC shall provide information to the AF Aircraft Accident Representative (TOAAR) and in turn notify all concerned parties of TOAAR instructions. In general, the steps to be performed are outlined below and will be performed in the following sequence:

(1) Coordination with the controlling OCC (refer to Part IV, para. 3.,g.)

(2) Initial determination of facility status. (paragraph 17)

(3) Notification of the OCC of facility status. (paragraph 18)

(4) Technical evaluation of facility. (paragraph 19)

(5) Documentation of the condition of the facility. (paragraph 20)

(6) Notification to the OCC of "as-found" condition. (paragraph 21)

(7) Flight check if applicable. (paragraph 22)

b. When a facility has been identified as possibly being used by an aircraft involved in an accident, the NFT will be notified by the OCC. **If notification comes from anyone other than the OCC, then the NFT shall contact the OCC for instructions.** Generally, the DO manager (or his/her designee as shown in Part IV 3g) will be the TOAAR and will provide the guidance through the OCC to the NFT as to who will do what and when. In accordance with FAA Order 8020.11, FAA Flight Standards will assign an FAA Investigator In Charge (FAAIIC) who will direct and control all FAA participation in the investigation. The FAAIIC will be in direct contact with the OCC and the TOAAR. **All instructions for the NFT shall come from the OCC.**

NOTE: Complete the General Information Checklist.

17. INITIAL DETERMINATION OF FACILITY STATUS This is important because it provides both AT and AF with information that is needed to make other decisions vital to public safety. Unless instructed to the contrary, an NFT shall not do this step alone. Another person shall accompany the NFT to ensure that there is no question in the future as to what took place at the facility. The NFT making the initial determination of the facility status must have current certification/verification authority on the facility. The person accompanying the technician should be an FAA technician but, if necessary, can be someone else in order to save time. Log entries shall be made indicating the purpose of the visit and the results of the initial determination. The type of information to be obtained during an initial determination visit to a facility are only those items that can visually be learned to ascertain whether a facility was or was not operating normally immediately preceding or at the time of the accident. No adjustments or control functions are to be performed; only that information, which can be learned by looking at equipment indicator, meters, etc., shall be used.

NOTE: Complete paragraphs 1 through 2a (4) (d) of the Facility Evaluation Checklist.

18. NOTIFICATION TO OCC OF FACILITY STATUS - The information obtained on the facility status shall be communicated to the OCC as soon as possible. An entry stating the time of the call and the initials of the OCC person who was given this information shall be made in the facility log.

NOTE: Complete paragraphs 2a(4)(e) and 2b of the Facility Evaluation Checklist.

19 TECHNICAL EVALUATION OF FACILITY - When an NFT has been notified by the OCC that a complete technical evaluation of a facility is to take place; two people shall be involved in the evaluation process. One person will be the NFT responsible for performing the evaluation and is required to possess current verification authority on the facility involved. The other person shall be an FAA technician or an individual designated by the OCC, who will act as an observer and will normally possess current certification/verification authority. The requirement for an observer can only be waived by the TOAAR. The request for a waiver shall be made to the OCC. If no waiver has been granted, the technical evaluation is NOT to take place without an observer. If the observer requirement has been waived, then the person doing the evaluation shall not be the last person who verified the facility. When a waiver has been granted, the person doing the evaluation shall have the same verification authority on the facility as the last person who verified the facility.

NOTE: Complete paragraphs 3 and 4 of the Facility Evaluation Checklist.

20. DOCUMENTATION OF THE CONDITION OF THE FACILITY - This step is just as important as any other and needs to be done with attention to detail. This includes entries in technical performance records, facility maintenance logs, RMM screens, and ground check forms. The statements shown in the facility evaluation checklist have been established to provide a standard

description that can be uniformly interpreted by everybody concerned with the accident. It is extremely important that all entries are accurate and complete.

21. NOTIFICATION TO THE OCC OF "AS-FOUND" CONDITION - This step needs to be completed as soon as possible so that decisions can be made regarding further actions, such as whether or not to call for a flight check. If the decision is made to call for a flight check of the facility, the OCC will communicate this to the NFT and will take the necessary action to request the flight check.

22. FLIGHT CHECK IF APPLICABLE - This is determined by the FAAIIC.

NOTE: ***Do not write on these checklists. Use blank copies of checklists.***

GENERAL INFORMATION CHECKLIST
(Aircraft Accident/Incident)

NOTE: This checklist is to be completed by the non-Federal technician (NFT). The original will be retained in the owner/sponsor office. A copy shall be sent to the FAA Central Service Area, ATTN: TQAAR, through the District office having inspection responsibility. Only one General Information Checklist needs to be filled out for all facilities involved. Each facility involved, however, requires a separate Facility Evaluation Checklist.

1. Print below the name of the first Non-Federal person contacted by the OCC

_____

Print below the name of the OCC person who made the contact

_____

Write the time (in UTC) below that the contact was made by the OCC

_____

2. The non-Federal person in paragraph 1 above shall contact the facility owner/sponsor and others as required by these instructions.

Enter the time of completion of paragraph 2 (above) requirements.

Time completed _____

3. The TOAAR will determine with the help of Air Traffic Control at the crash site which facilities may have been or were used by the aircraft; the aircraft number and type and location of crash; time of crash; and the type of flight plan. The OCC will advise the NFT of which facilities require further action. All facilities requiring further action shall be listed below. Fill out a separate facility evaluation checklist for each facility requiring further action. All pages in the checklist shall be filled out for each facility involved.

FACILITIES IDENTIFIED BY TOAAR

_____	_____
Fac Ident./Fac. Type	Fac Ident./Fac. Type
_____	_____
Fac Ident./Fac. Type	Fac Ident./Fac. Type
_____	_____
Fac Ident./Fac. Type	Fac Ident./Fac. Type
_____	_____
Fac Ident./Fac. Type	Fac Ident./Fac. Type

AIRCRAFT INFORMATION

Aircraft Type: _____ Aircraft ID _____

Date/Time of Accident: _____

Location of accident, if known: _____

Aircraft on: __IFR ___ VFR ___ No flight plan

NFT_____ _____

Print Name Signature

FACILITY EVALUATION CHECKLIST

Facility Ident./Type_____ Facility Location_____

Date of this Evaluation_____ Name of NFT_____

Name of Observer_____

NOTE: This checklist is to be completed by the non-Federal technician (NFT). The original will be retained in the owner/sponsor office. A copy shall be sent to the FAA Central Service Area, ATTN: TOAAR, through the DO office having inspection responsibility. Complete a separate facility evaluation checklist for each facility listed on the General Information checklist.

1. If the facility is remotely monitored, contact the facility responsible for monitoring and ask if there were any monitoring alarms or pilot reported problems. If the facility is remotely monitored by an FAA office, contact the OCC to obtain this information.

a. Remote monitor alarms prior to accident? Yes___No___ N/A _____

b. Pilot reported facility malfunction of non-Federal equipment prior to accident?

Yes ___No___ Unknown____

2. The TOAAR, through the OCC, normally will direct the owner/sponsor to designate his NFT and the observer (if not waived) to complete an initial determination of facility status. The NFT may be contacted directly by the OCC, if the sponsor is not available, to accomplish this requirement.

a. Initial determination of facility status - If the facility has no remote monitoring or RMM, it will be necessary to get two pilot reports to confirm proper operation or go to the facility. If you go to the facility, enter required data in the facility log upon arrival at the facility. An observer will normally be required; however, under certain conditions, the observer requirement may be waived by the TOAAR. The OCC will advise the sponsor or NFT if the observer requirement will be waived.

(1) Observer requirement waived by the TOAAR? Yes_____ No___

(2) If yes, record the name or initials of the OCC contact person reporting the waiver of the requirement to the NFT. _____

(3) If yes, record the name below of the NFT that last verified the facility.

_____

(4) Make the following entries in the facility log and check off when completed:

(a) Arrival time at facility (in UTC): _____

(b) Weather condition at facility: _____

(c) The completion of an initial evaluation of facility operational status. _____

(d) Which equipment is in service, if applicable (main or standby; #1 or #2); status of power (commercial, or standby on); monitor alarms, transfers, etc. _____

(e) OCC notified of initial determination:

(f) Initials of OCC person contacted _____

b. Initial determination of facility status Normal_____Abnormal_____

In Service _____Out of service_____

Time facility verification was completed, if applicable_____

3. If instructed by the OCC, the verifying NFT shall proceed with the technical evaluation and measurement of the facility performance and make appropriate entries in the facility log and technical performance records. Arrange for an observer with the OCC. Do not proceed with the technical evaluation until the observer is on-site. The technical performance of facilities, systems, or equipment shall be determined by checking all key performance parameters required by Attachment 1 of this OMM. Key performance parameters are indicated by an arrow (→) to the left of the parameter. The verification parameters are listed in Attachment 4 of this OMM in the verification statement page(s). With the observer at the facility, measure all required parameters or observe at the RMM positions as applicable.

a. Did the OCC inform the NFT that the observer requirement was waived by the TOAAR? Yes _____ No_____

b. If no, wait for the observer to arrive before beginning the evaluation.

c. If yes, record the name or initials below of the OCC contact person who reported the waiver of the observer requirement to the NFT.

_____

d. If yes, record below the name of the NFT who last verified the facility:

_____

NOTE: NO EQUIPMENT ADJUSTMENTS ARE TO BE MADE UNTIL THE "AS-FOUND" READINGS ARE RECORDED AND/OR AFTER THE FLIGHT CHECK (IF REQUIRED) IS ACCOMPLISHED.

b. If a transfer has occurred since the last facility visit, take the following action:

Check off

(1) If the facility is remotely monitored, contact the monitoring point and ask if there have been any short duration alarms or facility transfers indicated. Contact the OCC if the monitoring facility is an FAA office. _____

(2) If no transfers or intermittent alarms have occurred within a period beginning 1 hour prior to and ending 30 minutes after the accident, take the necessary action to verify only the equipment found in operation upon arrival. If there is any question about whether the standby equipment was in operation at the time of the accident, verify it also. When in doubt, verify. _____

(3) If unable to determine if there were any transfers or alarms within the times specified in subparagraph (2) above, proceed to verify the equipment (main and standby, if applicable) and record the action with a verification statement log entry. _____

c. If the facility is not operational upon arrival, proceed as follows:

(1) Note the status of the monitor and transfer unit if such a unit is installed. Record the facility status in the log. (Verify monitor indications at the remote monitoring facility, if practical) _____

(2) Dial or push the reset button; do not make any adjustments. _____

(3) If the facility returns to normal, make required meter readings and log entries, then notify the monitor location and the OCC. _____

(4) If the facility fails to restore to normal after resetting it, notify the OCC immediately for further instructions. _____

d. Facilities with published ground-check procedures shall have the ground-check performed. _____

4. Are any verification parameter out of tolerance? Yes___ No___

a. If no, proceed to checklist paragraph 5.

b. If yes, list below the verification parameter(s) found out of tolerance:

_____

_____

_____

c. Take appropriate action to remove the facility from service and advise the OCC of the out-of-tolerance condition(s) found. Measure and

record all key performance parameters. _____

d. Was any key performance parameter listed in Attachment 1 of this OMM determined to be not "germane" (relevant) to the evaluation and thus not measured? Yes_____No_____

NOTE: Determination of what parameters are not "germane" must be coordinated with the OCC.

If yes, were details of the unmeasured parameter(s) and initials of the OCC person contacted logged in the facility log? Yes_____No_____

5. Is a flight check required? Yes_____No_____

NOTE: Coordinate with OCC for this determination.

6. Specific Documentation of Data and Adjustments

a. Meter readings shall be recorded accurately on the appropriate FAA Form 6000 series, Technical Performance Record(s), or on FAA Form 6030-1, Facility Maintenance Log(s) if a block to enter the measurement is not provided in the 6000 series form(s). For RMM facilities, all required verification screens shall be taken and a hard copy retained if remotely verified. Each screen must be verified. If the equipment involved is operational, a set of "as-found" readings or screens shall be recorded prior to any preventive or corrective maintenance. Normally, no such maintenance will be accomplished at a facility subject to flight check until after the flight check crew has determined the "as-found" condition of the facility. However, if weather or other circumstances cause the flight check to be unduly delayed and there is an urgent need to restore a failed facility to normal operation prior to flight inspection in order to make it available to other users, the NFT shall make no adjustments until instructed to do so by the OCC. The decision to restore a facility to service under these circumstances will be made jointly by the air traffic, technical operations, and flight standard FAA division managers and communicated to the NFT by the OCC.

(1) This decision should be based upon the recommendations of the responsible AF DO manager and the AT facility manager and if it occurs, the NFT will be advised by the OCC. If a facility subject to flight check is restored to operation preceding the start of the flight check, a set of "as-left" readings or screens shall be recorded and so identified following any maintenance action(s). A statement that the system, subsystem, equipment, or facility is NOT verified for user use shall be entered following the "as-left" statement on the facility maintenance log. The OCC shall be advised of this action.

(2) If the system, subsystem, equipment, or facility cannot be restored or is considered unreliable (in the judgment of the NFT), the verification shall be removed and the facility will be left off the air.

(3) A statement shall be entered immediately below each set of readings or each screen identifying whether they are "as found" or "as left" following. . . (specify exactly what preventive or corrective action was taken). If no adjustments or other maintenance were accomplished, a single statement will suffice, followed by a verification statement if the entries were

made on the facility maintenance log. The statement to be used on the technical performance record is shown below:

FAA FORM 6000 SERIES AND RMM SCREENS

"I verify that the above is a true record of the

_____meter readings
(Enter facility location identifier and facility type)

_____
(Enter "as found" or "as left" or "as found and left" or "screens")

at the date and time indicated.

Check Off

NFT:_____ Done_____
(Signature)

_____
(Printed name)

Observer:_____ Done_____
(Signature)

_____
(Printed name)

Observer _____
(Title)

b. Facility maintenance log entries shall describe conditions as found in clear, concise language. A typical entry covering an instrument landing system (ILS) glide slope post-accident evaluation visit wherein no out-of-tolerance conditions were found might be as follows:

"08 1030 - The operation of the ILS glide slope on runway 09 was checked at 0930 this date and found to be normal. Verification performance parameters or screens are within established standards and tolerances and verified."

For RMM facilities, all facility maintenance log verification entries shall be entered in the appropriate remote facility log.

c. Each entry covering checks made as a result of an aircraft accident shall be verified. The statements to be used for facility log entries are shown below:

FAA Form 6030-1 Log

"I verify that this is a true and complete statement of my findings with regard to the

_____

(Enter facility ident./facility type)

for the date and time indicated."

NOTE: The word "verify" above refers to the statement in paragraph 6c above, not facility verification.

"The following corrective action(s) were accomplished (if applicable)."

_____

_____

"The following key performance parameters were not germane to this evaluation and are omitted (if applicable)."

_____

"The _____ is

(Enter Facility ident./Facility type)

_____."

(Enter verified, or out-of-service, or unreliable, and verification is removed in accordance with Attachment 4, par. 4. a. of this OMM).

Check Off

NFT:_____ Done_____

(Signature)

Observer:_____ Done_____

(Signature)

Observer Title_____

Requirement for Observer Waived Yes___ No___

Ground Check Performed: Yes_____Not Applicable_____

d. In the event that a facility flight inspection is to be performed as a result of an accident, the NFT shall record on the FAA Form 6000 series, screens (if applicable) and the FAA Form 6030-1 using the above format, the following:

(1) Conditions "as found" before the flight check.

(2) Concise description of all adjustments or other maintenance performed subsequent to the accident and the reason therefore.

Note: No adjustments shall be made on facilities that were determined to require a flight check, prior to the flight check except as indicated in par. 6 a. and 6. a. (1) on of this checklist. See subpar. (3) below for action associated with adjustments required during the flight check.

(3) Concise description of all adjustments made during the flight inspection.

(4) Conditions "as left" following the flight inspection.

PART IV. NON-FEDERAL FACILITY DATA

1. Facility

   a. Type GBAS

   b. Identifier "IAH"

   c. Facility Name INTERCONTINENTAL

   d. Airport Name HOUSTON INTERCONTINENTAL AIRPORT

   f. Directions to Facility NORTH LIGHTING VAULT

   e. Location (City & State) HOUSTON, TX

   g. Site elevation (MSL) _____

   h. Antenna Elevation (AGL) _____ feet

   i. Latitude/Longitude _____

   j. Frequency _____

   k. FCC Licensed Power/Modulation Class 70W / D8PSK

   l. License Number CALL SIGN: WQLA522; FILE NUMBER 0003993514

   m. License Expiration Date 11-12-2019

2. Equipment

   a. Manufacturer HONEYWELL INT'L.

   b. Transmitter Model EM 9009 Telerad

c. Internal Monitor/Shutdown: Yes X

d. External Monitor/Status: Yes X

e. Receiver Manufacture Telerad_____

f. Receiver Model RE9009

g. Transmitter Antenna Type/Model Horizontally polarized omni-directional Polar
Electronics / Model 214AH-3

h. Standby Power (Type) BATTERY_____ _____

3. Contacts

a. Sponsor's Name: THE HOUSTON AIRPORT SYSTEM

b. Sponsor's Representative:

(1) Name/Titles: William D. Zrioka, Senior Project Manager

(2) Telephone: 281-233-1364
Work:

(2) Address: 16930 John F. Kennedy Blvd.
Houston, Texas 77032

c. Maintenance Technician:

(1) Name: (To be Supplied By the maintenance contractor)

(2). Telephone:
Mobile:
Home:

(3) Address:

(4) FCC License #: 0021100011

(1) 2nd Priority Callback:

(2) Telephone
Mobile:
Work:

(3) Address:

(4) FCC License #:

d. Person in charge of monitoring location:

(1) Name: HAS Communication Center
(Name varies depending on shift)

(2) Telephone: 281- 230-3024 available 24 hours / 7 days

(3) Address: Houston Airport System
2800 North Terminal Road
Houston, Texas 770032

(4) Monitoring Hours: 24/7 via Air Traffic Status Unit (ATSU) installed by Honeywell

e. Federal Aviation Administration-(For Facility, Flight Check and Aircraft Accident Coordination)

(1) Mid-states Operational Control Center desk 866-432-2622

f. Submit required forms to appropriate Technical Operations Office:

(1)	Name:	FAA/HTSC ATTN.: Stan Jarema
(2)	Address:	16600 JFK BLVD. Houston, Texas 77032
(3)	Telephone	HTSC 281-230-6343 Houston TSC (281) 230-6341

Operations and Maintenance Manual

for

IAH (Facility/Identifier) GBAS (Facility Type)

at

Houston, TX

(Location)

The sponsor of this facility is required to comply with the latest version of FAA Order 6700.20 (the "Non-Federal Order"). Among other things, it addresses the requirements for facility operation and maintenance. This manual is designed to help the sponsor comply with those requirements.

Operations and Maintenance Manual (OMM) Approved By:

Designated FAA Representative — Date: 7/31/19

Sponsor (or representative) — Date: 8.13.19

NOTE:

Throughout this document you will see references to the "Sponsor's representative," and "Non-Federal Technician." The former refers to HAS Operations, and the latter refers to Honeywell.

Part I. Operational Requirements

The FAA will not allow a facility to operate in the National Airspace System (NAS) unless the following requirements are met. If the Sponsor (and/or its representatives, non-Federal technicians, etc.) fail to comply with this manual, the FAA will rescind its approval for the facility's operation.

1. Licensing.

a. Facility. The facility's Federal Communications Commission (FCC) license must be conspicuously posted at the facility. Sponsor must ensure that the FAA Inspector has a copy of the license. Licenses must normally be renewed every 10 years. The FCC Application for Radio Service Authorization may be obtained from the FCC. Each application must reference a Non-Government Tracking Number (NG T#) as proof of FAA coordination. It must also reference the FAA Office where notification was made, and the date of notification.

b. Non-Federal Technician. The technicians who operate and maintain this facility must receive FAA approval to do so. They must also meet FCC licensing requirements. Typically, this requirement is met if the Non-Federal Technician holds a General Class Radiotelephone Operator License (GROL). Technicians must provide a copy of their GROL to the FAA District Office (or designee), in accordance with the latest version Order 6700.20. FAA approval will be granted after the successful completion of both of the following:

i. FAA-approved manufacturer's school.

ii. A performance examination to be given by a representative of the FAA.

Note: The FAA will provide the Non-Federal Technician with a site-specific, system/equipment specific "verification authority" letter. It will state that these requirements have been met for this specific facility.

2. Notice to Airmen.

a. A Notice to Airmen (NOTAM) contains the establishment, condition, or change in any aeronautical facility, service, procedure, or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

b. Deviation from normal operation or failure of this facility is to be promptly and accurately publicized by a NOTAM.

c. The Sponsor must ensure that NOTAMs have been filed through, NOTAM Manager or appropriate FAA facility.

d. Events requiring NOTAMs include but are not limited to:

i. Confirmed PIREPs as reported by ATC to the Sponsor.

ii. Scheduled system maintenance.

iii. Planned flight inspections.

iv. Unscheduled outages as indicated by Sponsor's monitoring system, the SLS-4000 Remote MDT.

e. In the event of a failure or deviation exceeding (or expected to exceed) 24 hours, the Sponsor (or representative) must notify the OCC listed in Attachment 2 – *Facility Contact Information.*

f. To facilitate NOTAM coordination and PIREP reporting, the Sponsor must enter into a written agreement (such as a Letter of Agreement, or "LOA"), with the ATCT and TRACON. (See Section 5 for additional details.)

3. Monitoring.

a. It is FAA policy that a remote-status monitoring system be provided for all electronic navigational facilities used in support of instrument flight procedures. Suitable monitoring equipment must be provided at an appropriate and secure, yet inspection-accessible, location that enables detection of any of the following conditions.

i. Malfunction or failure of the transmitter equipment.

ii. Malfunction or failure of the monitor equipment itself.

b. Navigational facilities are classified in accordance with the manner in which they are monitored. The classification categories and their descriptions are identified in FAA Order 8260.19.

c. GBAS operates as an internally-monitored Category 1 NAVAID. Due to GBAS system design, if the internal monitor system itself fails, the GBAS shuts down and a NOTAM must be issued changing the status of the GBAS to Out of Service. In the case of the remote status monitor display failure (i.e. SLS-4000 Remote Maintenance Data Terminal (MDT)), with no other indications (PIREPs, etc.) of abnormal system operation present, the GBAS reverts to a Category 3 NAVAID. In this case, the GBAS must be NOTAM'd as Unmonitored until the remote status indicator display is functional.

Note: In this sub-section, the term "category" refers to "monitoring category" – not "instrument approach category."

4. **Shutdown for Routine Maintenance.** Routine maintenance must not be performed unless all of the following conditions exist:

   a. The interruption of service was coordinated with the airport's ATCT/TRACON, as specified in the LOA.

   b. The ATCT/TRACON has approved the service interruption, as specified in the LOA.

   c. A NOTAM will be issued in advance of the interruption, and will state the specific period during which the interruption will occur.

   d. The facility identification signal will be disabled while maintenance is being performed. (For GBAS, this means that the system must either be placed in "test mode," or transmission must be entirely disabled.)

5. **Pilot Reports.**

   a. Sequence of Events: The Sponsor (HAS Ops) must initiate a NOTAM to remove the facility (or impacted approach*) from service, immediately upon receiving notice of confirmed** Pilot Reports (PIREPs) of abnormal GBAS operation from Air Traffic. The LOA between the sponsor and Air Traffic must define how Air Traffic will confirm PIREPs (i.e., ensure that the PIREPs are not indicative of an issue with a single aircraft). The Sponsor must also notify the Non-Federal Technician about the PIREPs, and the NOTAM. The facility (or impacted approach) must remain out of service until the Technician confirms it is operating correctly, and/or it is flight inspected (if necessary).

   ** It is the responsibility of Air Traffic and the Sponsor to decide whether to remove the affected procedures from service – or the entire GBAS. Repeated PIREPs during approaches to the same runway end, or geographically near ends, while others have completed without incident, may point to a local RFI source as the issue. In these cases, it may be desirable to NOTAM only those procedures that are impacted rather than losing use of all GLS procedures. This decision should be made, and documented, in the LOA. That way, when and if a PIREP is received, the course of action is clear.*

   ^ Evidence of local RFI is that some pilots are having no trouble flying a specific approach, while others are issuing PIREPs. However this is not definitive proof.

   *** PIREPs are commonly confirmed by Air Traffic soliciting and receiving reports from other aircraft in the area.*

6. **Required Support Items.**

   a. The Non-Federal Technician must use FAA-approved test equipment, when performing maintenance on the facility. FAA-owned test equipment must not be used. Test equipment that's used to measure key performance parameters must be calibrated in

accordance with the schedule in the facility's SLS-4000 Commercial Instruction Book, or the test equipment instruction book. (Whichever period is the shortest.) All test equipment calibration must be accomplished with standards traceable to the National Institute of Standards and Technology.

b. The Sponsor must ensure that sufficient spare parts are available to ensure that the facility's service is reliable. The Sponsor must have a spare-parts plan for replacement parts. The plan may include such things as on-site spares, maintenance contracts with an original equipment manufacturer (OEM), or spares located at an OEM facility.

7. Emergencies.

a. Military. In a case of a national defense alert, the facility must adhere to directions received from the FAA, and must remain in compliant status until official notice is received that the alert is over.

b. Aircraft Accident. Part III of this manual provides guidance in case of an aircraft accident.

8. Adjustment of Equipment through Remote Maintenance Monitoring (RMM).

RMM is not currently authorized for GBAS.

Part II. Maintenance Requirements

9. Non-Federal Technician.

a. This facility must be maintained in accordance with the SLS-4000 Commercial Instruction Book (CIB), Honeywell Document # 10165326.

i. The CIB's maintenance schedules and requirements reflect the *minimum level* of maintenance necessary to comply with this OMM.

b. This facility must be maintained by a non-Federal technician who has received site-specific, system-specific verification authority from the FAA.

i. Verification authority must be in writing.

ii. The Non-Federal Technician's name and work-contact information must appear in Attachment 2, *Facility Contact Information.*

iii. The Non-Federal Technician must be on site for all FAA ground inspections.

c. At all times, there must be a technician assigned to maintain this facility.

d. Failure to meet any of the requirements in this sub-section may result in the facility being NOTAM'd out of service.

i. Exceptions may be granted if the Sponsor (or representative) has coordinated the exact circumstances with the FAA.

10. Modification of Maintenance Procedures must comply with the same requirements that apply to facility modifications. Refer to the following section.

11. Modification of the Facility.

a. Definition. A modification is a configuration-managed change to a NAS baseline for hardware, software, firmware, equipment, or documentation. Modifications are also changes to electronic or mechanical components, software or firmware code, documentation (e.g., schematic, wiring diagrams, physical outline, floor plan, plot layout, structural details FAA directives, equipment instruction books, parts list or catalog etc.), existing standards and tolerances/limits, or the need for establishing new standards and tolerances/limits. Updates to facility configuration files (e.g., adaptation data file and measured site data file) that are a part of established installation and/or maintenance activities are not considered to be modifications.

b. Requirements:

i. The Sponsor must pay for all modifications.

ii. The Sponsor must submit all proposed modifications for FAA review.

1. The FAA Inspector is the point of contact.
2. Submission via email is strongly encouraged.
3. The proposal must describe the general modification plan and schedule (i.e., the scope of the modification, and the relevant timeline).
4. The FAA must explicitly approve the modification(s), in writing.
5. This OMM must be updated to reflect the modification(s). However, the update may take the form of an addendum to this OMM.
6. The FAA Inspector must complete the latest GBAS Ground Inspection Form (FAA Form 6700-12) before the facility is returned to service.
7. The FAA Inspector must confirm that the modification(s) and associated return-to-service verification/test activities were completed successfully.

c. Emphasized Examples.

i. The FAA must provide explicit, written approval before any modifications are made. This requirement is especially emphasized for the following cases:

1. The facility is relocated.
2. An antenna is relocated.
3. The facility's configuration is updated to a new version.

12. Obstructions to Facility Operation. Vegetation, snow depth, and other potential obstructions that may adversely affect facility operation must be controlled in accordance with applicable technical documentation.

a. The Sponsor must maintain the facility and relevant surroundings in an "as installed" condition, in accordance with the latest versions of the *GBAS Siting Order* (FAA Order 6884.1), the Honeywell *SLS-4000 Siting Plan*, and the *SLS-4000 Commercial Instruction Book*, Chapter 9, *Installation, Integration, and Checkout.*

13. Relevant FAA Forms & Publications.

a. General:

i. The FAA must provide the Sponsor with the forms and publications that are required for facility maintenance.

ii. Forms and publications will be provided free of charge, by the FAA office that has inspection responsibility.

iii. Some FAA forms and orders are publicly available via the following websites:

- The Federal Aviation Administration public website: http://www.faa.gov/regulations_policies/faa_regulations
- The Non-Federal Program's public website: www.FAA.gov/Go/NonFed

b. Technical Referenced Data Record (TRDR). A record of facility operation and adjustment.

i. The FAA will provide a copy of this form, or an FAA-approved equivalent.

ii. It must be completed by the Non-Federal Technician at the time of the facility commissioning.

iii. One copy must be kept in the permanent records of the facility, and another copy must be sent to the Service Area Director for Technical Operations (or designee).

iv. In order to maintain an accurate record of facility operation and adjustment, the Non-Federal Technician must revise the TRDR data after any major repair, modernization, modification, or return to service.

v. When the TRDR is revised, the Non-Federal Technician must notify the Service Area Director for Technical Operations (or designee), and then forward copies of the revisions within 20 business days.

c. Technical Performance Record (TPR). A record of system parameters, as recorded during each scheduled visit to the facility.

i. The FAA will provide a copy of this form.

ii. The Non-Federal Technician must keep a copy* of the TPR at the facility, and send another copy to the Service Area Director for Technical Operations (or designee). (Timeframes and methods for submitting TPRs are set forth below.)

** If the TPR is generated by hand, rather than electronically, the original copy should remain at the facility.*

d. Facility Maintenance Log, FAA Form 6030-1. A permanent record of all of activities required to maintain the facility.

i. The FAA will provide copies of the log.

ii. Log entries must:

1. Be clear, complete, concise, and recorded in Greenwich Mean Time (GMT).

2. Include all malfunctions encountered in maintaining the facility, including information on the kind of work and adjustments made, equipment failures, causes (if determined), and corrective action taken.

3. Include:

a. NOTAM information.

b. Statements describing periodic maintenance activities required to maintain the facility.

c. Facility verification statements.

i. Among the most important entries in the maintenance log are those indicating the verification status of a system, subsystem, or piece of equipment.

ii. For the purpose of this OMM, the word "certification," which is used in FAA orders and other directives, is synonymous with the word "verification."

iii. Verification statements must be entered in the log in accordance with appropriate FAA orders and other directives.

iv. If the performance of the facility has changed, and whenever maintenance work that has been performed may have affected verification parameters, a verification statement must be made before returning to service a system, subsystem, or piece of equipment.

v. Verification statements must be made using specific terms. For instructions, refer to the latest version of the *Paper Maintenance Logs SOP*. (The FAA Inspector will provide the Sponsor with a copy of the SOP.)

4. The original logs must be retained at the facility for a period of three years.

5. A copy of the log pages must be sent to the FAA Inspector.

6. Timeframes and methods for submitting logs are set forth below.

7. Guidelines for logging requirements can be found in the latest version of the *Paper Maintenance Logs SOP*.

8. **Events and activities that must always be entered in the paper log:**

a. **All Service Outages* Lasting Longer Than 60 Seconds (Scheduled Or Not).** The Non-Federal Technician must make entries regarding:

i. When the outage occurred; and

ii. When the facility was verified and returned to service.

b. **Any Restoration and/or Verification-Related Activity.**

** "Service Outages" refers to actual system failures – not brief constellation-based losses of service.*

e. Timeframe for Submitting Copies of Logs & TPRs to FAA Inspectors.

i. General. Inspectors will typically pick up copies of facility logs and TPRs during the periodic inspection. Non-Federal Technicians may elect to submit their logs and TPRs more frequently. If they choose to, submission arrangements must be discussed with the Inspector.

ii. Periodic Inspection. If logs and TPRs are not available for pick up at the time of the periodic inspection, the Sponsor must submit copies to the Inspector within 20 business days following the periodic inspection. A one time, limited extension may be negotiated.

iii. Unscheduled Outages Lasting Longer Than 60 Seconds. The Non-Federal Technician must submit copies of all logs and TPRs to the Inspector within 20 business days of the facility being returned to service. A one time, limited extension may be negotiated. The Sponsor (or representative) must submit the request for an extension to the Inspector. The request must include the timeframe negotiated. It must also be in writing, for documentation purposes.

iv. Failure To Submit On Time. The FAA may issue a NOTAM, removing the facility from service if logs and TPRs are not submitted timely in accordance with the above noted requirements. The NOTAM will remain in place until the Sponsor submits its facility's logs and TPRs.

14. Physical Security. The facility must be kept locked at all times. Protection must be provided to ensure that unauthorized personnel do not have access to the equipment.

15. Flight Inspections.

a. Activities requiring flight inspection are outlined in the SLS-4000 Commercial Instruction Book.

b. Flight inspections will be performed in accordance with the latest version of Order 8200.1, *United States Standard Flight Inspection Manual.*

c. When required by the FAA, the Sponsor must provide ground-to-air communications in support of flight inspection. These communications must be on VHF frequency 135.85 or 135.95 megahertz.

d. The FAA requires that the verified Non-Federal Technician participate in the flight inspection.

16. Ground Inspections.

a. The FAA will conduct periodic ground inspections.

b. The FAA office that has inspection responsibility must coordinate the inspection with the Sponsor and Non-Federal Technician.

c. The FAA may cancel the facility's instrument approach procedures if it fails to meet the agency's technical standards for maintenance.

d. The FAA may conduct a follow-up inspection, if a facility may have been a factor in an aircraft accident/incident. (See Part III of this OMM.)

17. Safety. All relevant state and local personnel-safety requirements must be followed. If the Inspector believes that the site is unsafe, (s)he may discontinue the inspection until the situation is resolved. This section extends to vegetation, which must be adequately controlled to allow safe access to the facility.

18. NAPRS Data.

Part III. Aircraft Accident Procedures

19. **General.** This part of the OMM is provided to help expedite the verification of facilities that are suspect in an aircraft accident, and to help ensure that all required actions are accomplished. It contains the following:

a. *General Information Checklist.*

b. *Facility Restoration Checklist.*

Note: The Non-Federal Technician is responsible for completing these checklists. The Technician is also responsible for forwarding the *Facility Restoration Checklist* to the FAA's National Technical Operations Aircraft Accident Representative (NTOAAR), and send a copy to the Sponsor.

Non-Federal Technician who completed the *General Information Checklist* and *Facility Restoration Checklist*:

_____
Name

_____ _____
Signature Date

Person who reviewed the Facility Restoration Checklist for completeness and accuracy:

_____
Name

_____ _____
Signature Date

20. Information and Instructions.

a. There are a series of steps to be performed for facilities that are suspect in an aircraft accident. These steps need to be performed in a very precise manner so that the true and accurate status of a facility is documented. The latest version of Order 8020.16, *Air Traffic Organization Aircraft Accident and Incident Notification, Investigation, and Reporting*, is the controlling directive. It will take precedence over other instructions, where there are conflicts. In general, the steps to be performed are outlined below, and will be performed in the following sequence:

i. Initial determination of facility status.

ii. Facility status notification to Technical Operations Services/Air Traffic.

iii. Technical evaluation of facility.

iv. Documentation of the "as-found" condition of the facility.

v. Notification to the Technical Operations Aircraft Accident Representative (TOAAR) of "as-found" condition.

vi. Flight check, if applicable.

b. When a facility has been identified as being suspect in an aircraft accident:

i. The Operations Control Center (OCC) must contact the Sponsor's representative, and the Service Area point of contact. (See Attachment 2, *Facility Contact Information*.)

ii. The point of contact must in turn contact the technician listed in Attachment 3 (*Facility Contact Information*), who will generate the "as-found" documentation, and restore the facility to service.

iii. If the Non-Federal Technician is not available to document "as-found" conditions in a timely manner:

1. The OCC must identify an FAA Airway Transportation Systems Specialists (ATSS) who has certification authority on the facility type involved.

2. The Sponsor must immediately provide facility access to that ATSS.

iv. The ATSS will complete the "as-found" documentation (but not the restoration).

21. Initial Determination of Facility Status. The purpose of this step is to determine if the facility was operating normally immediately before – or at the time of – the accident.

This step is important because it provides Air Traffic and Technical Operations Services with information needed to make decisions that are vital to public safety.

a. Unless instructed to the contrary, the Non-Federal Technician must not perform this step alone.

b. An observer must accompany the Non-Federal Technician to ensure that, in the future, there is no question as to what took place at the facility.

c. The observer must attest that the recorded findings and actions by the Non-Federal Technician represent a true and accurate description of the witnessed activities.

d. The OCC will locate and dispatch an observer for each potentially suspect facility that is removed from service. (However, the on-duty TOAAR may waive this requirement.)

e. The technician making the initial determination of the facility's status must have current verification authority on the facility.

f. Ideally, the observer will be an FAA ATSS. But if need be, the observer can be anyone, in order to save time.

g. The technician must make log entries that indicate the purpose of the visit, and the results of the initial determination.

h. The type of information obtained during an initial determination visit is limited to that which can be visually learned.

   i. ***No adjustments or control functions may be made during the initial determination.***

   ii. *The initial determination must be made using only that information which can be gathered using a hands-off process.*

      1. In other words, information may only be gathered by looking (at equipment indicators, meters, etc.).

i. As stated at the beginning of this section, the goal of the visit is to determine if the facility was operating normally immediately before – or at the time of – the accident.

22. Notification to AT/Technical Operations Services of Facility Status. The information obtained on the facility status must be given to the TOAAR as soon as possible. A log entry stating who was given this information must be made at the facility.

Note: Section 1 of the Facility Restoration Checklist must be completed.

23. Technical Evaluation of Facility. When a non-Federal technician has been notified by the TOAAR that a post aircraft accident technical evaluation of a facility is required, two people will be involved in the evaluation process. One person will be the non-Federal technician responsible for performing the evaluation and who is required to possess current verification authority on the facility involved. The other person will act as an observer and will normally possess current certification authority. The requirement for an observer can only be waived by the TOAAR and if no waiver has been granted, the technical evaluation is not to take place. If the observer requirement has been waived, then the person doing the evaluation must not be the last person who verified the facility.

Note: Section 2 of the Facility Restoration Checklist must be completed.

24. **Documentation of the Condition of the Facility.** This step is just as important as any other and needs to be done with attention to detail. This includes entries in technical performance records, facility maintenance logs, and ground check forms. The statements shown in the Facility Restoration Checklist have been established to provide a standard description that can be uniformly interpreted by everybody concerned with the accident. It is extremely important that all entries are accurate and complete.

    Note: Section 3 of the Facility Restoration Checklist must be completed.

25. **Notification to the TOAAR of "As-Found" Condition.** The Facility Restoration Checklist must be forwarded to the NTOAAR with a copy to the Sponsor. This step needs to be completed as soon as possible so that decisions can be made regarding further actions, such as whether or not to call for a flight check.

    Mail the original checklist and As-Found readings to:

    FAA/AJW-620
    National Technical Operations Aircraft Accident Representative (NTOAAR)
    3702 Macintosh Dr
    Warrenton, VA 20187

Figure 1-1. General Information Checklist

Note: The Non-Federal Technician must complete the original version of this checklist. The Sponsor must then retain the original on file in its office and send a copy to the NTOAAR at the address listed above.

1. Non-Federal _____ / AT _____

   (Name of first non-Federal person contacted by AT and name of AT person.)

   If not notified by AT, indicate who made the initial notification on the above line.

   Time of notification: _____. (All times in GMT.)

2. The non-Federal person must contact the TOAAR, the Sponsor, and any others as required by these instructions.

   _____time completed.

3. The TOAAR will determine with AT's help which facilities may have been or were used by the aircraft, also the aircraft number and type and location of crash, time of crash, and type of flight plan.

   Facilities Identified by TOAAR:

Location ID	Facility	Location ID	Facility
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

   Aircraft Type: _____

   Aircraft ID: _____

   Date/Time of Accident: _____

   Location of Crash if Known: _____

   Aircraft on: ____ IFR ____ VFR ____ No flight plan

Figure 1-2. Facility Restoration Checklist

Figure 1-2 is required for each facility removed from service as identified by the duty TOAAR.

1. Complete the following initial items:

   a. List the facility that has been identified to be returned to service. The restoration can be accomplished via verification and/or operational status check.

      Facility: _____ **Ident:** _____

   b. Identify the Non-Federal Technician who last verified the facility, and the observer:

      (1) Record below the name of the technician who last verified the facility or equipment. Control point visits or phone calls may be required to learn who last verified.

_____ _____
Facility **Non-Federal Technician who last verified facility**

      (2) An observer will normally be required; however, under certain conditions the observer requirement may be waived by the TOAAR. Has the observer requirement been waived by the TOAAR? **Yes**_____ **No**_____

      (3) If the answer to (2) is No, identify who is to be the observer below:

_____ _____
Observer Name **Observer Title/Phone**

   c. Upon arriving at the facility, log the following information:

      (1) Arrival date and time at facility: _____

      (2) Reason for facility visit: _____

      (3) Current weather conditions (not at time of accident/incident) at facility.. This is your "unofficial" observation of the general weather conditions upon your arrival at the facility. See the following example text.

      _____

      _____

Examples of typical initial log entries: (not necessary to use word-for-word)

GMT	Log Entry
1258	Arrived site to initiate verification and/or restoration of facility in a post-aircraft accident/incident.
1303	Presently the weather conditions are overcast and snowing with 2 feet of snow on the ground.
1305	Found GS was operating on commercial power with no alarms or transfers indicated. Air traffic reported no pilot reports of malfunction of this facility during the last 5 hours.

2. Initiate action to verify and restore facility.

   a. If the facility is shut down, record the status of the equipment in the facility log. Reset the equipment, and MAKE NO ADJUSTMENTS. If the facility fails to restore to normal after resetting, notify the duty TOAAR immediately for further instructions. If the facility resets successfully, continue with the next step.

   b. Immediately record as-found technical data (see Section 3 below), MAKING NO ADJUSTMENTS. IF OUT-OF-TOLERANCE CONDITIONS ARE FOUND, notify the duty TOAAR immediately for further instructions.

   c. If a flight inspection has been requested, MAKE NO ADJUSTMENTS prior to commencing the flight inspection, and then make only those adjustments requested by flight inspection personnel.

   d. Once as-found technical data has been recorded (see Section 3 below), and any flight inspection activities have been completed, corrective maintenance in support of facility restoration may begin. Record as-left technical data (see Section 3 below).

   e. Verify the facility as required and initiate restoration coordination. Record all activities in the facility maintenance log.

3. Documentation of the condition of the facility.

   a. Technical performance parameters must be recorded accurately on the appropriate FAA form, Technical Performance Record (TPR). If the equipment involved is operational, a set of "as found" readings must be recorded prior to any corrective maintenance, followed by recording a set of "as left" readings.

   b. Authentication of Technical Readings: An authentication statement must be entered immediately below each set (as found, as left) of parameter values, on each TPR form, identifying whether the values are "as found" or "as left." The authentication statement is not necessary on copies of electronic log pages. If no adjustment or other maintenance was accomplished, a single statement will suffice. The authentication statement to be used on each set of readings on each TPR is as follows:

I certify that the above post-accident/incident data is a true record of the (facility or equipment type) parameter values (as found, as left, or as found and left) at the date and time indicated.

Non-Federal:	**Observer:**
Name: _____	Name: _____
Title: _____	Title: _____
Signature: _____	Signature: _____

Note: In the above authentication statement, you must compose, select, or modify the text in parentheses as appropriate. Example: "I certify that the above is a true record of the **XYZ GBAS** parameter **values as-found** at the date and time indicated."

c. Terminate each TPR page that contains accident/incident data in accordance with FAA Order 6000.15.

d. Enter the date and time of uploading automated logs, if any, on the blanks provided on page 1 of this checklist.

4. Completion:

a. Confirm restoration coordination is complete.

b. This completes the facility restoration process.

Figure 1-3. Aircraft Accident/Incident Package Cover Page

Minimum Package Contents:

1. Cover page (this page; use additional copies as required for all signatures)
2. Technical data (for each facility removed from service): **Initials**

   a. Facility Restoration Checklist, Figure 1-2. _____

Reviewed for completeness? _____

   b. Hardcopy printout of all facility log entries, regardless of the logging method used, covering the period beginning with removal from service and ending with restoration to service. _____

Do the log pages contain the proper verification statement? _____

   c. A complete, original set of Technical Performance Record Forms. _____

Data entered per FAA Order 6000? _____

Nominal values listed where appropriate? _____

Signed by supervisor (each page, in header)? _____

Authenticated (each page, per section 2b of Figure 1-2)? _____

Non-Federal Technician / personnel who completed the facility restoration process:

(Signature)	(Date)	(Facilities)
(Signature)	(Date)	(Facilities)
(Signature)	(Date)	(Facilities)
(Signature)	(Date)	(Facilities)

Service Area designated office manager who reviewed this package:

(Signature)	(Date)	(Service Area Designated Office)

Part IV. 6000-Series FAA Forms

1. Technical Performance Record **(TPR)**

- The FAA will provide a copy of this form or an FAA-approved equivalent.

2. Technical Reference Data Record **(TRDR)**

- The FAA will provide a copy of this form or an FAA-approved equivalent.

3. Facility Maintenance Log **("Log"): Form 6030-1**

- The FAA will provide a copy of this form or an FAA-approved equivalent.

Part V. Non-Federal Facility Data

1. Sponsor: Houston Airport Systems

2. Facility
   a. Type SLS-4000 GBAS
   b. Identifier IAH
   c. Facility Name Intercontinental
   d. Airport Name Houston Intercontinental Airport
   e. Location (City & State) Houston, TX
   f. Directions to Facility North Lighting Vault
   g. Equipment Locations:

	Latitude	Longitude	Elevation (MSL)
Equipment Shelter	30,00,03.35	95,20,30.81	108 ft
VDB Antenna	30,00,02.34	95,20,29.00	94 ft
RSMU #1	30,00,01.51	95,20,22.01	95 ft
RSMU #2	30,00,04.31	95,20,21.09	93 ft
RSMU #3	30,00,06.64	95,20,18.49	94 ft
RSMU #4	30,00,06.58	95,20,25.22	94 ft

   h. Frequency 114.275 MHz
   i. Time Slots
   j. FCC Licensed Power 70 W Modulation Class 14K0G7D
   k. License Number WQOK372
   l. License Expiration Date 11/12/2019

3. Equipment
   a. Manufacturer: Honeywell
   b. Model: SLS-4000 Block II

c. Part Number: YG4031EA03 (Block II)

d. Standby Power Type: Battery

e. SBAS Option? __Yes__

Attachment 1. Equipment-Performance Standards & Tolerances

- *SLS-4000 Commercial Instruction Book, Honeywell Document Number 10165326*

Attachment 2. Facility-Contact Information

The OMM does not need to be re-signed/re-approved if any of the below information changes.

If there is more than one Sponsor's representative, verified non-Federal technician, etc., you (the Sponsor) may modify this addendum to include additional points of contact.

1. Sponsor's Representative:
   a. Entity Name HAS Airport Operations
   b. Name / Title Bill Zrioka, Division Manager
   c. Telephone Work / Home 281-233-1364
   d. Address 16930 John F. Kennedy Blvd., Houston, TX 77032

2. Verified Non-Federal Technician:
   a. Name / Title
   b. Telephone Work / Home
   c. Address
   d. Email Address:
   e. FCC License Number

3. Verified Non-Federal Technician:
   a. Name / Title Ryan Stankovic
   b. Telephone Work / Home (443) 921-5068
   c. Address Honeywell International, 8840 Evergreen Blvd., Coon Rapids, MN 55433
   d. Email Address Ryan.Stankovic@honeywell.com
   e. FCC License Number PG00058467

4. Verified Non-Federal Technician:
   a. Name / Title Dan Bertrand
   b. Telephone Work / Home (763) 957-3989
   c. Address Honeywell International, 8840 Evergreen Blvd., Coon Rapids, MN 55433
   d. Email Address Daniel.Bertrand@honeywell.com
   e. FCC License Number PG00037407

5. Verified Non-Federal Technician:
   a. Name / Title Brian Koosman
   b. Telephone Work / Home (763) 957-3053
   c. Address Honeywell International, 8840 Evergreen Blvd., Coon Rapids, MN 55433
   d. Email Address Brian.Koosman@honeywell.com
   e. FCC License Number PG00037408

6. Contact Information for Monitoring Location:
   a. Location Manager HAS Communication Center
   b. Email Address
   c. 24/7 Telephone 281-230-3024
   d. Location Address Houston Airport System, 2800 North Terminal Rd., Houston, TX 77032
   e. Monitoring Hours: 24/7

7. Associated OCC Telephone Number 866-432-2622

8. Service Area Point Of Contact For Submitting Required Forms, Logs, and Reports:
   a. **Primary FAA Inspector**

      Russell "Pete" Martin
      FAA
      PO Box 20167
      New Orleans Int'l Airport
      New Orleans, LA 70141
      russell.martin@faa.gov
      504-717-7874

   b. **Secondary Inspector**

      John Richards
      16600 JFK Blvd.

Houston, TX 77032
john.d.richards@faa.gov
281-743-4382

9. FAA Telephone Numbers To Call If There's An Aircraft Accident:
   a. Midstates OCC 866-432-2622
   b. _____
   c. _____

10. Contact Information for the ATCT:
   a. Facility Manager Veronica Holmes
   b. Email Address veronica.holmes@faa.gov
   c. 24/7 Facility Telephone 281-209-8660 (watch supervisor desk)
   d. Address 4215 Will Clayton Pkwy., Houston, TX 77032

11. Contact Information for the TRACON:
   a. Facility Manager Bob Morris
   b. Email Address bob.morris@faa.gov
   c. 24/7 Facility Telephone 281-443-5841
   d. Address 4005 Greens Rd., Houston, TX 77032

Attachment 3. Facility-Contact Information – Addendum

The OMM does not need to be re-signed/re-approved when the facility-contact information changes. The purpose of this addendum is to allow the OMM to be updated whenever the facility's contact information changes. When it does, you (the Sponsor) must notify the FAA Inspector, who must then update the OCC contact list. If you need additional addendums, you must duplicate a blank copy of this one. All addendums must be attached to this OMM and any copies of it. Finally, if there is more than one Sponsor's representative, verified maintenance non-Federal technician, etc., you may modify this addendum to include additional points of contact.

1. Sponsor's Representative:
   a. Entity Name _____
   b. Name / Title _____
   c. Telephone Work / Home _____
   d. Address _____

2. Verified Maintenance Non-Federal Technician:
   a. Name / Title _____
   b. Telephone Work / Home _____
   c. Address _____
   d. Email Address _____
   e. FCC License Number _____

3. Contact Information for Monitoring Location:
   a. Location Manager _____
   b. Email Address _____
   c. 24/7 Telephone _____
   d. Location Address _____
   _____
   e. Monitoring Hours: 24/7

4. Associated OCC Telephone Number _____

5. Service Area Point Of Contact For Submitting Required Forms, Logs, and Reports:
   a. Point of Contact _____
   b. Name _____
   c. Address _____
   _____
   d. Email Address _____

6. FAA Telephone Numbers To Call If There's An Aircraft Accident:
   a. _____
   b. _____
   c. _____

7. Contact Information for the ATCT:
   a. Facility Manager _____
   b. Email Address _____
   c. 24/7 Facility Telephone _____
   d. Address _____
   _____

8. Contact Information for the TRACON:
   a. Facility Manager _____
   b. Email Address _____
   c. 24/7 Facility Telephone _____
   d. Address _____
   _____

EXHIBIT "D"

Parts List

Part Description	SMARTPATH GBAS PARTS LIST Part Number	Lead Time
DCP Processor, CCA	68000110-101	24 Wks
RSMU Assembly	10164965-102	31 Wks
VDB Transmitter	10165825-101	22 Wks
VDB Receiver	10165879-101	22 Wks
RPDP Robust Bus, CCA	68000108-101	26 Wks
Maintenance Data Terminal Assy	10164970-101	22 Wks
Fan Tray	10164546-101	26 Wks
RF Coax Switch (Part of VDBI)	10164569-101	16 Wks
Surge Arrestor (Blitzductor)	10165809-102	20 Wks
Surge Protection (Dehnrail)	10165811-101	20 Wks
GBAS Cabinet - Complete P/N	10164959-103	N/A
GBAS Cabinet - Partial	10164959-103 *PARTIAL*	N/A
Circuit Breaker Panel, Assembly	10164984-101	20 Weeks
Local Status Panel, Assembly	10164561-101	20 Weeks
Power Supply, 24VDC	10164533-101	24 Weeks
Master Interconnect Board, CCA + chassis	10165285-101	27 Weeks
RPDP Battery Charger, CCA	68000138-101	28 Weeks
Battery Charger	10165858-101	28 Weeks
Fan Bank	10165140-102	16 Weeks
Data Recorder	68000196-101	21 Weeks
Ethernet Series Switch	68000582-103	17 Weeks
Ethernet Series Switch	68000582-104	17 Weeks

EXHIBIT "E"

Title VI List of Pertinent Nondiscrimination Acts and Authorities

During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "Contractor") agrees to comply with the following nondiscrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 USC § 2000d *et seq*., 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin);
- 49 CFR part 21 (Non-discrimination in Federally-assisted programs of the Department of Transportation—Effectuation of Title VI of the Civil Rights Act of 1964);
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 USC § 4601) (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Section 504 of the Rehabilitation Act of 1973 (29 USC § 794 *et seq*.), as amended (prohibits discrimination on the basis of disability); and 49 CFR part 27;
- The Age Discrimination Act of 1975, as amended (42 USC § 6101 *et seq*.) (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982 (49 USC § 471, Section 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987 (PL 100-209) (broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, the Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act of 1990, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 USC §§ 12131 – 12189) as implemented by U.S. Department of Transportation regulations at 49 CFR parts 37 and 38;
- The Federal Aviation Administration's Nondiscrimination statute (49 USC § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 USC 1681 et seq).