FAP Overview (EWR):

Checklists, Site Evaluation, Training, Documentation, Installed System Inspection and Performance.

Federal Aviation Administration

Presented to: Chinese Delegation Participants

By: Carmen Tedeschi FAA, , AJP-652

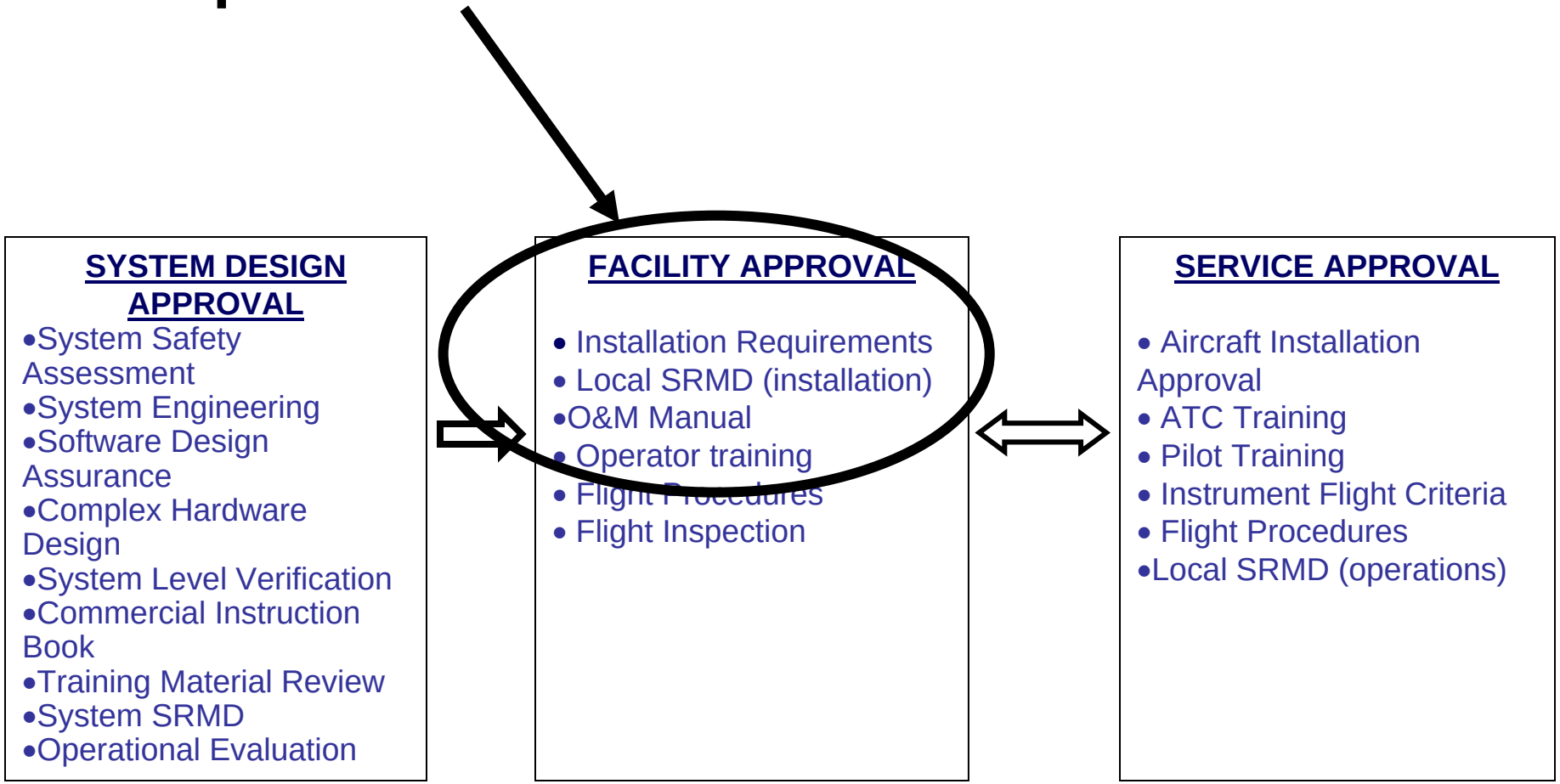
Date: October 19th, 2010

Presentation Overview

- **Checklists**
  - Part of FAP, includes detail breakout (Inspection…)
- **Site Survey – Pre-Construction Evaluation**
  - Map and Paper Study, and Field Data Collection
- **Training AND Testing**
  - Training Requirement for certified Operators/Maintainers
- **Documentation**
  - Commercial Instruction Book (CIB)
  - Field Reference Data File (FRDF)
- **Installed System Inspection**
- **Installed System Performance**
  - Verification of as-advertised user-level performance.

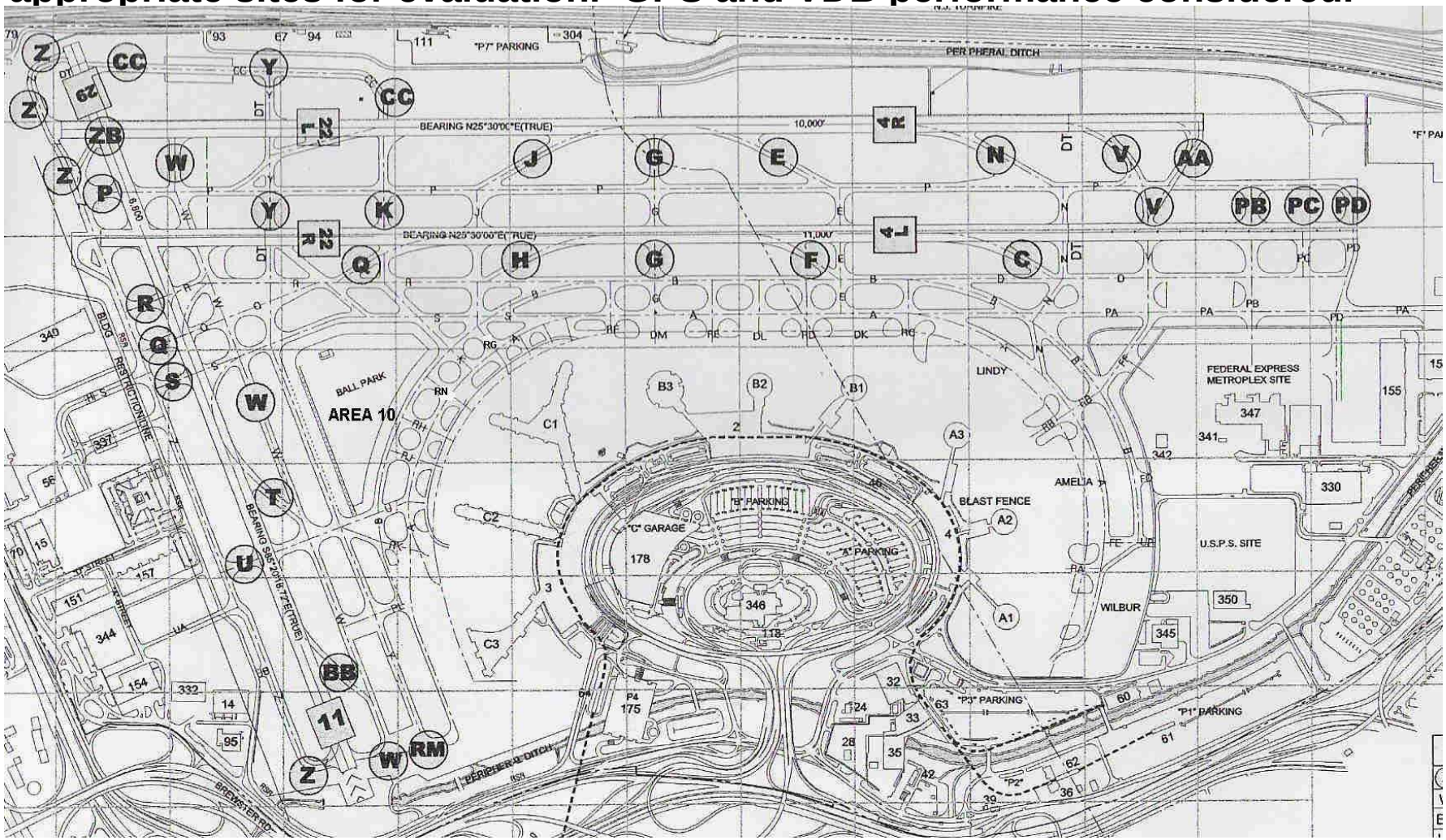
GBAS CAT I Approval Overview

- **Scope of this Presentation**

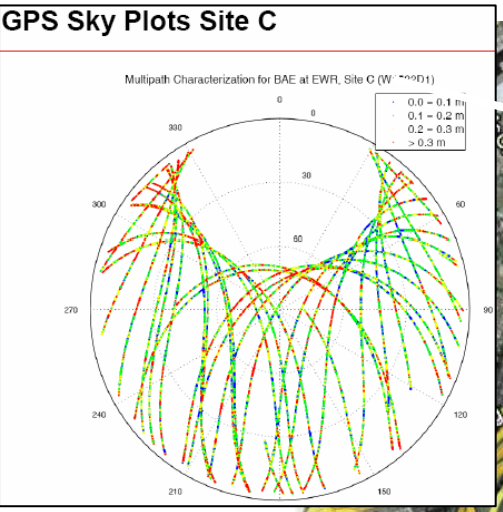


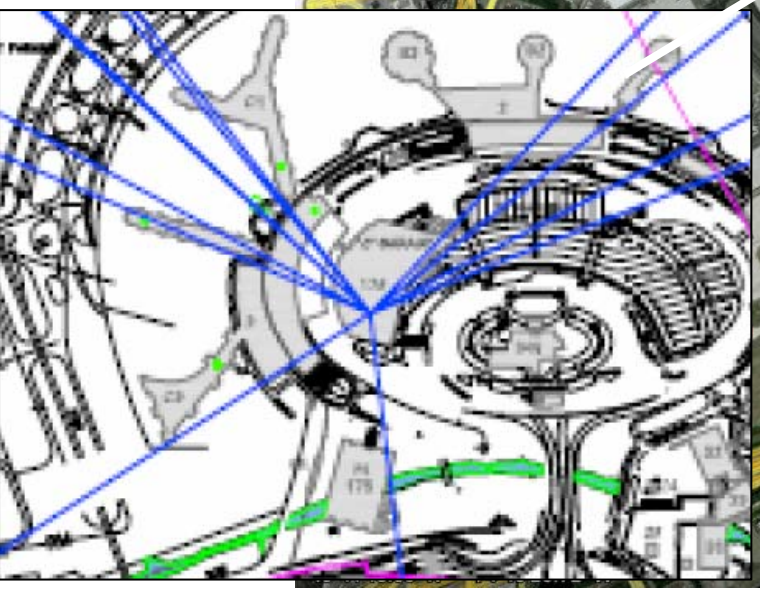
Site Survey – Pre- Construction Evaluation

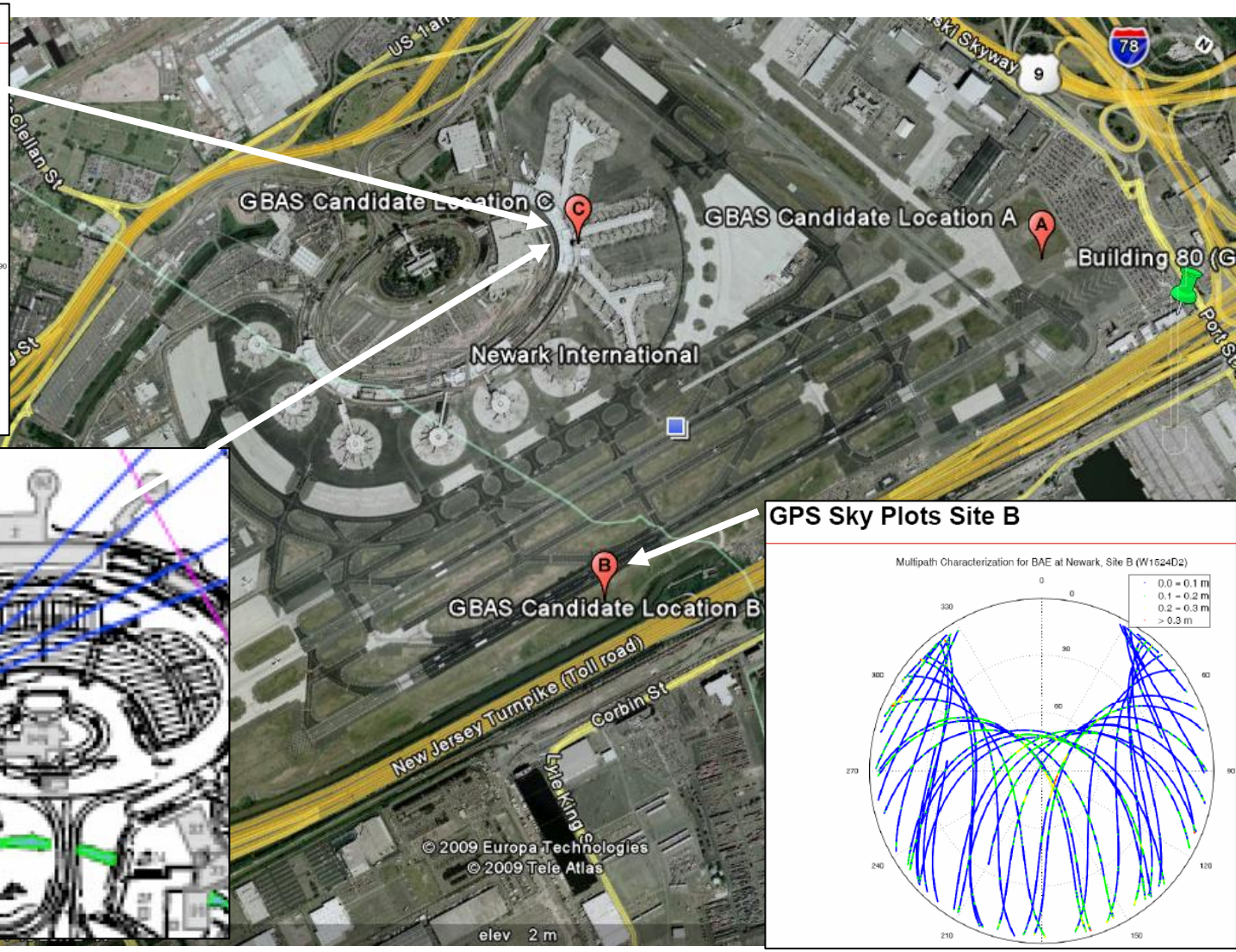
- **Utilize the Siting Documentation, and ALP (Map and Paper) to aid in choosing appropriate sites for evaluation. GPS and VDB performance considered.**



Site Survey Continued – Identify Several Sites and perform GPS data collection, and VDB Line Of Site (LOS) study.







Training AND Testing Requirement for certified Operators/Maintainers

Course Completion Certificate

This certificate affirms that:

has successfully completed the course entitled:

SLS-4000 GBAS Maintenance Training

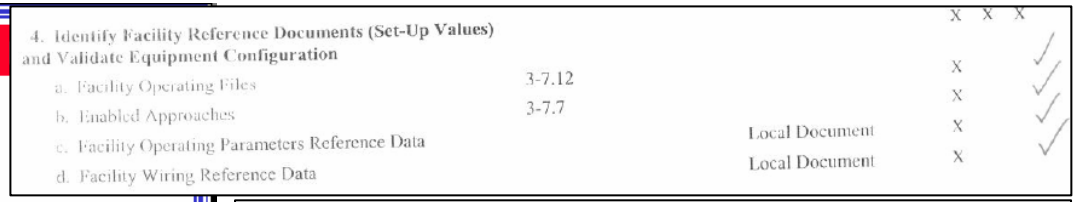
And is Factory Approved to Operate and Maintain the HG4031 GBAS Ground Facility

Course Completed: May 11 to May 15, 2009

Mark Cady - Instructor
Honeywell Aerospace

Patrick Shannon - Instructor
Honeywell Aerospace

Brian Koosmann – Technical Manager
Honeywell Aerospace



4. Identify Facility Reference Documents (Set-Up Values) and Validate Equipment Configuration			X X X	
a. Facility Operating Files	3-7.12		X	✓
b. Enabled Approaches	3-7.7		X	✓
c. Facility Operating Parameters Reference Data		Local Document	X	✓
d. Facility Wiring Reference Data		Local Document	X	✓

AIRWAY FACILITIES MAINTENANCE PERSONNEL CERTIFICATION PROGRAM

PMIS # 89836001

1) GBAS TYPE HONEYWELL SLS-4000 (NP136)

ESTIMATED TIME: 3 Hours

REVISION DATE:

INATION TO REPLACE: New Exam (05/29/09)

FORWARD RECOMMENDED CHANGES/CORRECTIONS TO:

FAA NATIONAL HEADQUARTERS
Air Traffic Organization, Workforce Development
Technical Operations Training Division
800 Independence Avenue, SW
Washington, D. C. 20591
Telephone: [202] 267-8280

- In addition to vendor maintainer course completion, the FAA also tests trained maintainers.

Commercial Instruction Book (CIB) – Site Neutral

Honeywell

Honeywell International Inc.
Aerospace Minneapolis
2600 Ridgway Parkway
Minneapolis, Minnesota 55413
U.S.A.
CAGE: 84680

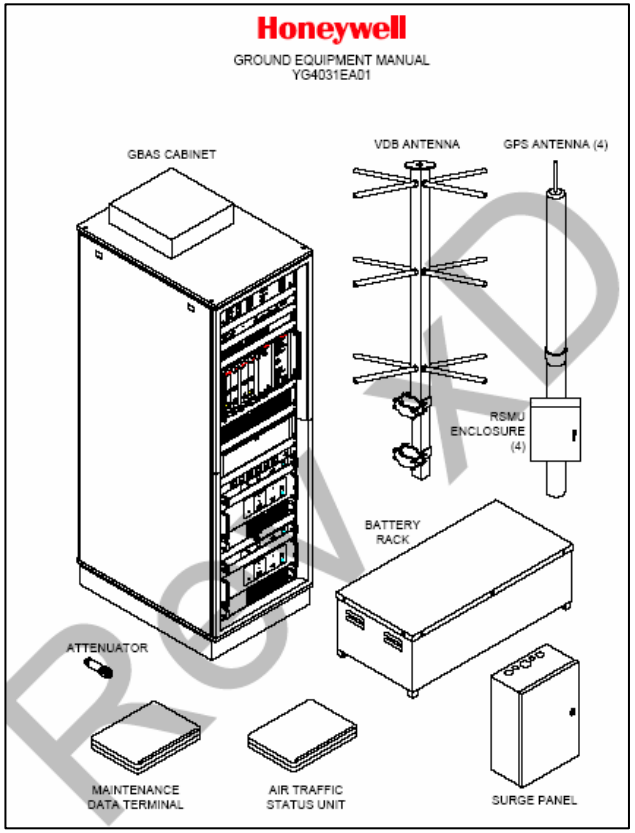
Satellite Landing System

Ground Based Augmentation System

Model SLS-4000
Part Number YG4031EA01
(Includes GBAS Ground Facility
Part Number HG4031EA01)

Ground Equipment Manual

- **Content and Format verified as part of SDA.**
- **Facility Approval Item – Documentation Only**



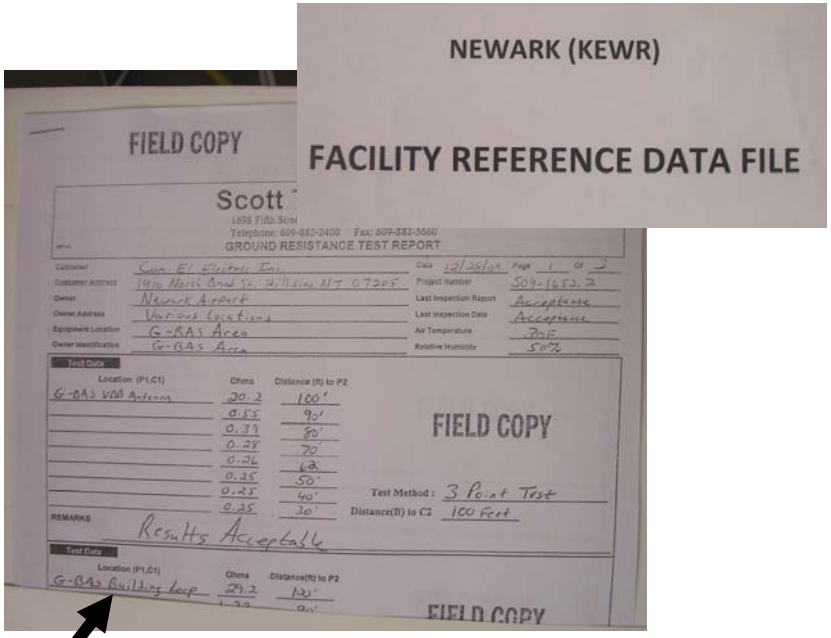
Required Approval Steps and Documents:

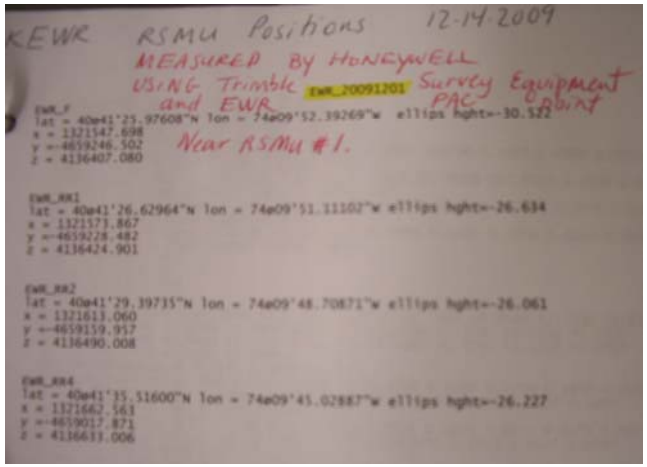
- **Checklists and associated field Inspection/Measurements:**
  - System (extensive and includes SLS-4000 Rack, CIB, etc.)
  - Shelter
  - RSMUs
  - VDB Antenna
  - Battery Rack
  - MDT/ATSU
- **Field Reference Data File (FRDF):**
  - Physical/Local site specific data, artifacts, FCC, and backup software.
- **Site Acceptance Test Report Content (Summary):**
  - MSD, Adaptation Data, FAS data, DCP software, Survey
  - 14-day Test
  - Formal Flight Inspection Report
  - Summarizes the above and provides sign-off by Installer, Non-Fed Coordinator, and Service Provider.

FRDF Checklist, and FRDF Site Specifics

The table shows the items that are required to be resident in the Field Reference Facility Data File **(FRDF)** for the EWR GBAS (SLS-4000). The **Site Inspection conducted @ EWR on 12/30/09** (This is the third revision) is reflected here.
See also Site Acceptance Checklists and Site Acceptance Checklist (Summary).

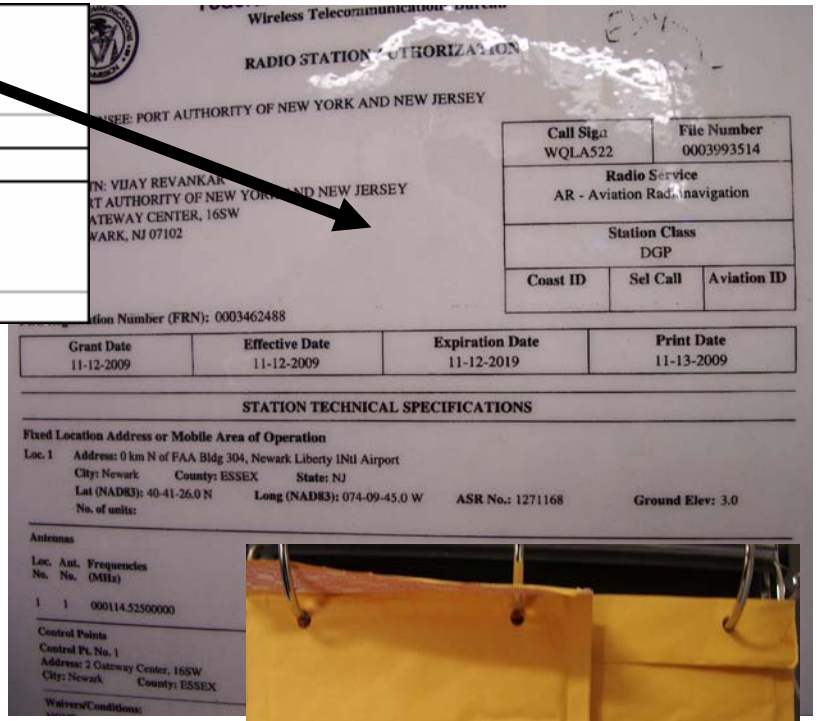
Field Reference Data File - Content			
Item	Data Content	Comment	Status
Facility Locations:	Country, City, State, Province, etc. of facility	None	OK
GBAS	Latitude, Longitude, Altitude of facility	None	OK
Air Traffic Control	Location and contact information	None	OK
Maintenance Control	Location of the Maintenance Control Facility when remote maintenance is initiated	None	OK
ANSP or Owner	Address of the applicable ANSP or owner of the system and contact information	None	OK
Honeywell Repair Center	Address of and contact information	None	OK
Equipment:			
Serial numbers	List of GBAS equipment serial numbers	None	OK
Operating frequency and time slot allocation	Identification of transmit license parameters	None	OK
Operating RF output power level	Identification of authorized RF output power levels	None	OK
AC input power specification	AC input power specified values	None	OK
AC input power as measured	AC input power as measured values	None	OK
VDB Transmission line signal loss	Measured signal loss	None	OK
Transmission line VSWR	Measured VSWR	None	OK
Loaded Binary CRC values	Identified Binary File CRC's	None	OK
Earth resistance measurements	Measured resistance to Earth for equipment and lightning ground	All Segments (Shelter, Signal, VDB, RSMUs, etc.)	OK
Site acceptance documents	All site testing results completed as part of system acceptance	FAA / FAATC in process.	In Work
RSMU surveyed positions	X-Y-Z coordinates of the installed RSMU's	None	OK
VDB Antenna surveyed	Latitude, longitude, altitude of	None	OK





FRDF Checklist, and FRDF Site Specifics Continued

License to transmit	Official authorization to transmit from the regulatory authority. Normally, this document is posted in clear view with the shelter	None	OK
Security Issues:			
Local Security Procedures	Local procedures to be followed in case of a security issue, such as a shelter intrusion or other unauthorized access.	None	OK



Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: PORT AUTHORITY OF NEW YORK AND NEW JERSEY

ATTN: VIJAY REVANKAR
PORT AUTHORITY OF NEW YORK AND NEW JERSEY
ONE GATEWAY CENTER, 16SW
NEWARK, NJ 07102

Call Sign	File Number
WQLA522	0003993514

Radio Service: AR - Aviation Radionavigation

Station Class: DGP

Coast ID	Sel Call	Aviation ID

Federal Registration Number (FRN): 0003462488

Grant Date	Effective Date	Expiration Date	Print Date
11-12-2009	11-12-2009	11-12-2019	11-13-2009

STATION TECHNICAL SPECIFICATIONS

Fixed Location Address or Mobile Area of Operation

Loc. 1 Address: 0 km N of FAA Bldg 304, Newark Liberty INtl Airport
City: Newark County: ESSEX State: NJ
Lat (NAD83): 40-41-26.0 N Long (NAD83): 074-09-45.0 W ASR No.: 1271168 Ground Elev: 3.0
No. of units:

Antennas

Loc. No.	Ant. No.	Frequencies (MHz)
1	1	000114.52500000

Control Points
Control Pt. No. 1
Address: 2 Gateway Center, 16SW
City: Newark County: ESSEX

Waivers/Conditions:

EWR OMM Last updated: 1/26/2010 3:03 PM

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Ground Equipment Manual (GEM) Honeywell Doc 10165326-101	Provides approved operation and maintenance procedures for the system	None	OK
Operation and Maintenance Manual (OMM)	Provides site specific procedures and general procedures for the operation and maintenance of the system	None	OK
Record of calibration for site support equipment	Lists last calibrated dates and dates due for future calibration	TBD to provide	In Work
Site drawings	If available, provides maintenance data for commercial items	None	OK

Installed GBAS System Inspection

(This activity can go through several cycles before completion)

- **Primary Areas For inspection:**
  - **<u>Shelter and Infrastructure</u>**
    - HVAC. Power, Grounding, Lighting, etc.
  - **<u>Indoor GBAS Equipment</u>**
    - Equipment Rack/Tower (CPUs, VDB, etc.)
    - Battery Rack
  - **<u>Outdoor GBAS Equipment and Lightning Protections</u>**
    - RSMU (Remote Satellite Measuring Unit)
      - Enclosure and Connections
      - RRA (Reference Receiver Antennas)
    - VDBA (VHF Data Broadcast Antenna)

Installed System Inspection Shelter/General

This table is presented to document the results of the EWR SLS-4000 **GBAS Site Inspection conducted @ EWR on 12/30/09** (this is the 3rd revision). The level of detail contained here will reflect any discrepancies determined during inspection. See also FRDF, and Site Acceptance Checklist (Summary).

System Installation Checklist – General/Shelter

#	Item	Requirement/Criteria	Results/ OK/Fail/TBF (To Be Finalized) In Work	Initials	Comments and/or Actions (HI, PA, PACMD, FAA/TC)
1	Test Equipment	Calibration stickers - calibration is current	OK	CT/CK	N/A
2	Bandpass Filter	Tuned to the licensed output frequency			
3	Adaptation Data File	Loaded into GBAS			
4	GBAS DCP software	Loaded into GBAS			
5					
6		ata has ta ell, and d Site een	In Work/TBF		

Installed System Inspection RSMU

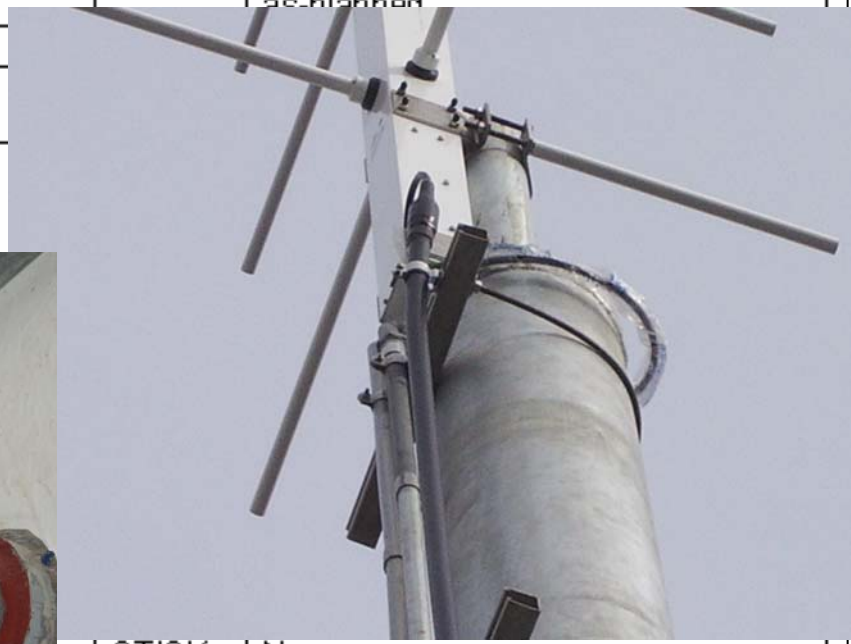
RSMU Installation Checklist

#	Item √	Requirement/Criteria	Results/ OK/Fail/TBF (To Be Finalized) or In Work	Initials	Comments
24	GPS Antennas	Surveyed position is known. Refer to paragraph 9-7.4 for specific requirements	OK	CT/CK	None
25	GPS Antennas	GPS antennas are plumb to 0.5°	OK	CT/CK	None
26	Time mark signals	Time mark output pulses from each of the installed RSMU's at the Surge Panel are present. See Figure 6-4	OK	CT/CK	N
27	RSMU separation	>100 m to <30 984')			N
28	RSMU connection	Verify cables a properly and s RSMU			H S f t c
29	Wiring	Correct wiring Panel per Figu			N
30	RSMU obstructions	Verify no obstr penetrating the (reference GB Doc. 6800117			H M c p p a

Installed System Inspection VDBA

VDB Antenna Installation Checklist

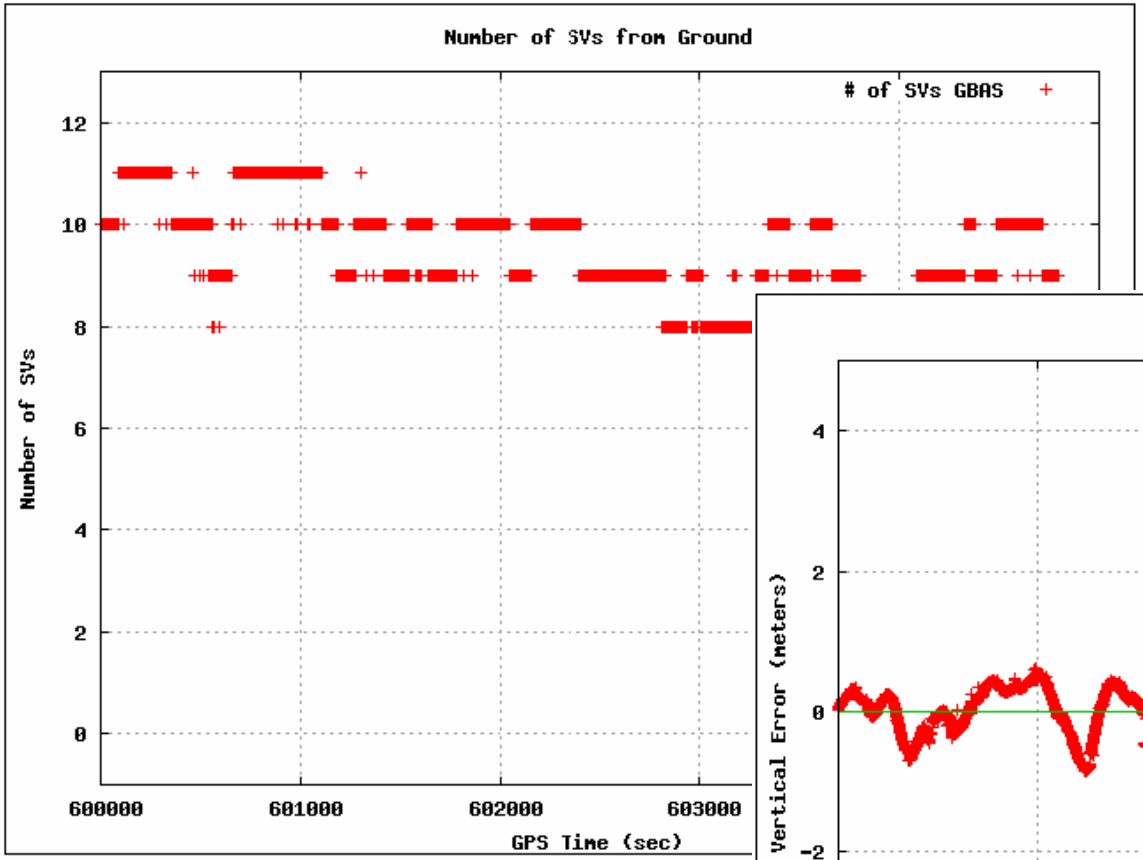
#	Item	Requirement/Criteria	Results/ OK/Fail/TBF (To Be Finalized) or In Work	Initials	Comments
38	Surveyed position	VDB antenna surveyed position is known and recorded in the Maintenance Log	OK	CT/CK	Lat/Lon and AGL on FCC License to TX on wall, and in FRDF. Lat/Lon in as-planned
39	Mounting	Mounting bolts/nuts are secure	OK		
40	Position	Line of sight exists to all supported runway ends	OK		
41	Transmission line	Length is within specifications for cable type used	OK		
42	Feed line connector weatherproof material	Ens mat con tran line			
43	Lightning protection	Ver gro ohm			
44	Rigidity	VDE sec			
45	Obstruction lights	Pre ope		CT/CK	None

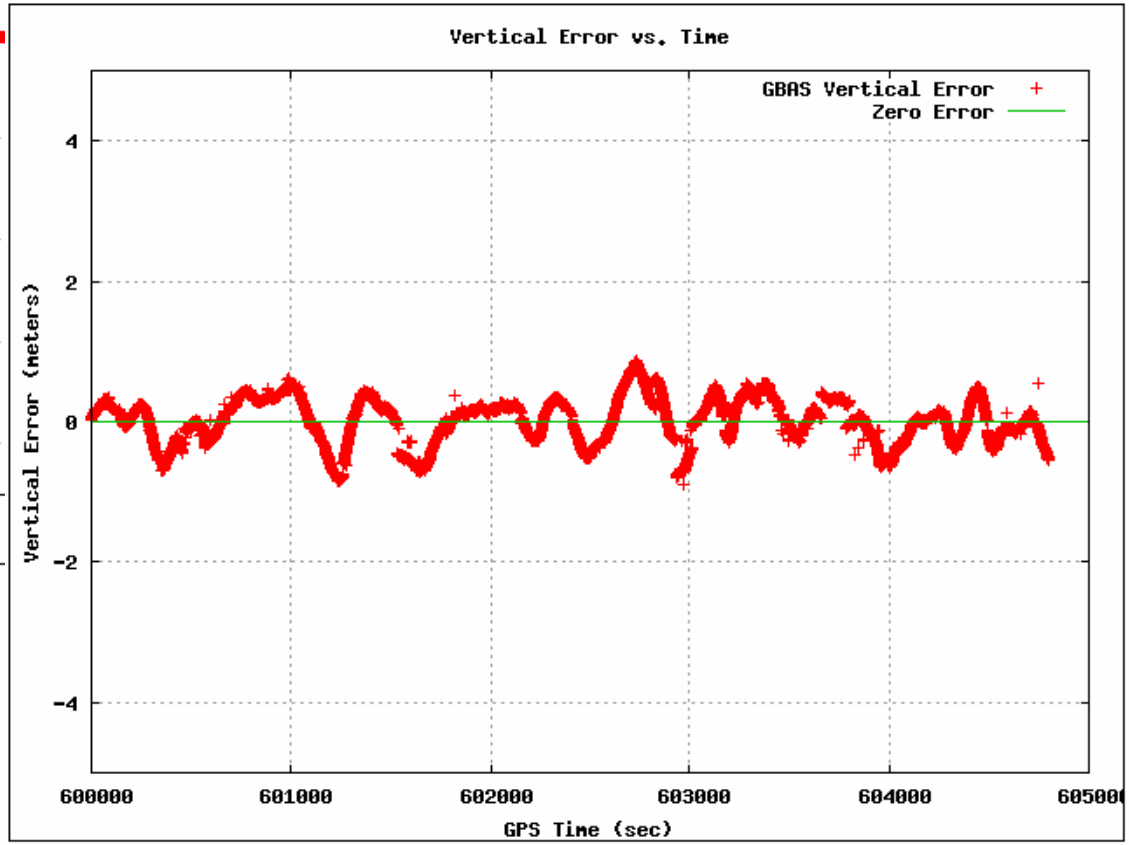


EWR Installed System Performance Verification
(in advance of Flight Inspection – Approval Requirement)

- **Ground Based Performance Monitor System (GBPM) can be employed.**

EWR GBPM Performance Data Plots





Questions or Comments

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  AJP-652 Navigation Team
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  609-485-7165