

Extract From
Independent Verification and Validation
on
Airspec Ltd
Ground Marker.

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APPENDIX A. CONSOLIDATED EVALUATION WORKSHEET.

TECHNOLOGY: Digital Voice Messages/Ground Marker. The focus area for this technology is situational awareness. The concept for the Ground Marker[®] is to advise taxiing pilots, automatically and through clear voice, and via systems already aboard aircraft, of their precise location on the airport taxiways. From this, it is predicted that the majority of current Runway Incursion/Ground Taxi Incidents will be prevented by the traffic discipline already planned by the controller. This technology makes use of aircraft Marker Receivers, a system installed aboard all IFR equipped aircraft, both civil and military, and which is redundant when on the ground. Aircraft of all weights require no change or modification. The proposed system is also applicable to vehicles and ground transport through the inexpensive addition of a 75MHz receiver. All evaluation criteria were scored based on a **High, Medium or Low** rating. The basic definition follows:

High. The technology exceeds the fullest expectations of the FAA and the demonstration plan. The contractor has convincingly demonstrated that the technology as demonstrated meets or exceeds the assessment criteria. An assigned rating of "High" indicates that the technology essentially contains no weaknesses.

Medium. The technology meets the expectations of the FAA and the demonstration plan. The contractor has demonstrated that the technology as demonstrated meets the assessment criteria. An assigned rating of "Medium" indicates that there are no substantial weaknesses noted from the demonstrations and with further development the technology could produce results, which should prove to be substantially beneficial to the FAA.

Low. The technology failed to meet the expectations of the FAA and the demonstration plan. The demonstration results failed to meet a sufficient number of the assessment criteria to receive a rating of medium. The technology contains major weaknesses in areas that are not offset by strengths in other areas. An assigned rating of "Low" indicates that there is at least a moderate risk that with further development the technology still will not be successful and the benefit to the FAA would be marginal at best.

N/A. The criteria is not applicable to the technology.

CRITERIA	TOTAL HIGH	TOTAL MEDIUM	TOTAL LOW	TOTAL N/A
1. Potential for reduction of runway incursion caused by pilot deviation.	1	1	0	0
2. Potential for reduction of runway incursion caused by operator error.	0	0	0	2
3. Potential for reduction of runway incursion caused by pedestrian or vehicle traffic.	0	2	0	0
4. Adaptability to the National Airspace System (interface requirements with other NAS subsystems, Spectrum or communication requirements, performance in inclement weather or day/night, etc.)	1	1	0	0
5. Technology maturity; how much additional time would likely be required to mature the technology?	1	1	0	0
6. Order-of-Magnitude, Life Cycle Cost.	2	0	0	0
7. Human factor deficiencies	1	1	0	0
8. Maintainability	2	0	0	0
TOTAL. (sum of all adjectival ratings received for each rating category from each evaluator)	8	6	0	2

Explanation of Ratings.

Items 1 and 3: Ground Marker can advise pilots and vehicle operators of their exact location in the Surface Movement Area and potentially reduce deviations that lead to runway incursions.

Item 4: Ground Marker uses the existing Marker Receiver and does not require special aircraft equipage. The FAA regional offices maintain frequency authorization and ensure non-interference.

Item 5: The concept has been demonstrated successfully. It is a matter of refining the input power and transmitter antenna.

Item 6 and 8: The embedded lead-in cable and antenna are easy to install. The components are inexpensive and partly COTS, Commercial Off The Shelf.

Item 7: Pilots can turn off the received audio if desired.