SATELLITE SURVEYING FOR A LORAN-C NONPRECISION APPROACH

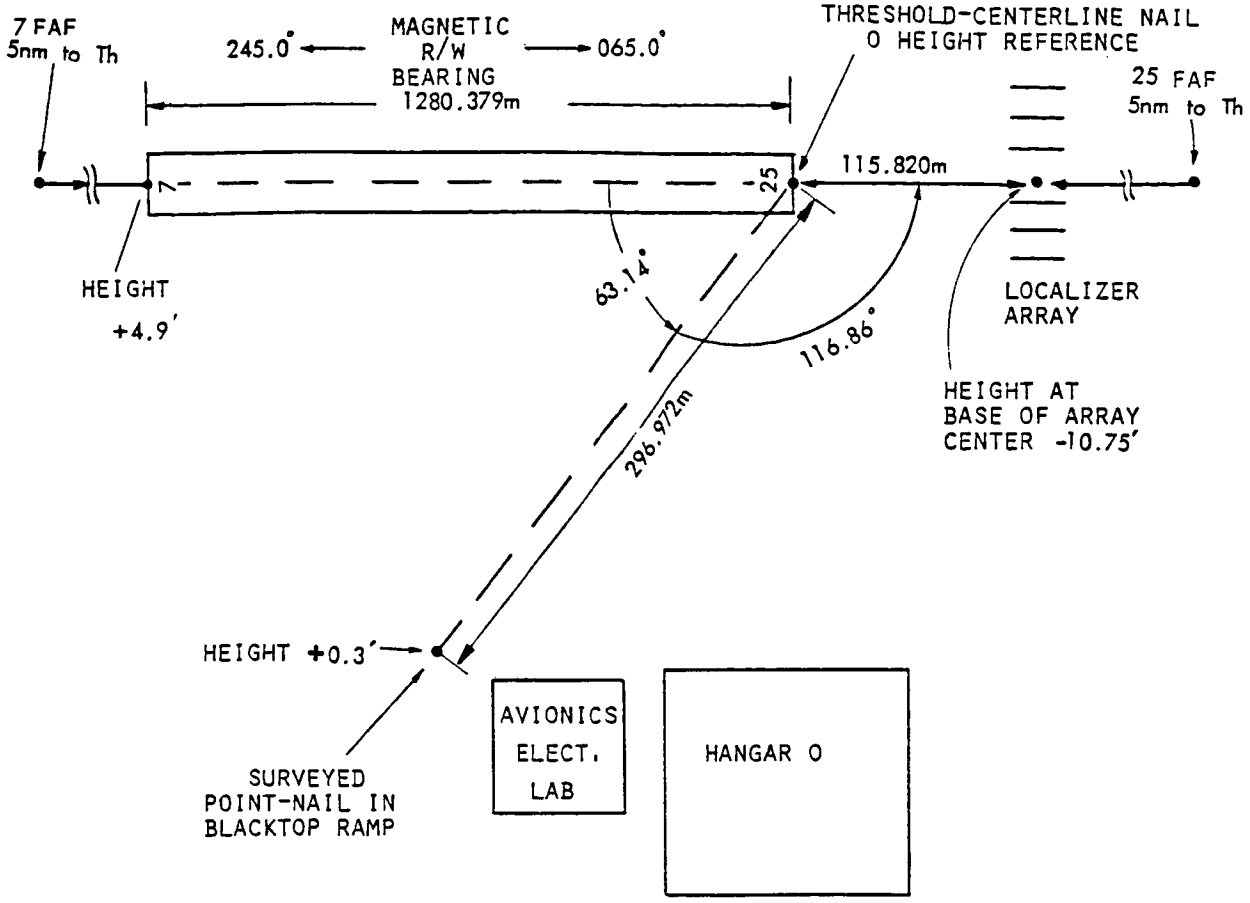
Daryl L. McCall
Ohio University
Athens, Ohio

Work is continuing to site-in a Loran-C nonprecision approach at the Ohio University Gordon K. Bush Airport located in Albany, Ohio. A point has been surveyed just west of the Avionics Engineering Center's airport laboratory, in WGS-72 coordinates to within approximately 2 meters of latitude and longitude and 1.5 meters in altitude.

This survey was performed using the Motorola Mini-Ranger Satellite Surveying System, which uses the Navy's TRANSIT satellites. This position was obtained using the point-position method only, that is the position was calculated from sequential Doppler measurements as the TRANSIT satellite's passed within view of the receiver's antenna. Another method, called translocation, can use differential techniques which provide better results. However, this method requires two receiver's and a precisely known location. This method was not used earlier for lack of the second receiver.

The accuracies obtained, using the single receiver, are sufficient to site-in a Loran-C nonprecision approach. The end-points of the pavement of runways seven and two-five will be surveyed by extrapolating from the known point adjacent to the airport laboratory. Using a calibrated compass, theodolite, and laser ranger, the necessary angles and ranges were obtained to be used in the calculation of the location of the endpoints and final approach fix points of both runways.

Ohio University may be using the Motorola system again, using two receivers to use the translocation method to site-in the localizer antenna array at the airport to meet FAA certification requirements. This may result in a new benchmark located on the field at the airport, known to submeter accuracy. In this case, this accuracy will be transferred to the runway endpoints and the Loran-C FAF.



OHIO UNIVERSITY AIRPORT SURVEY POINTS

FOR LORAN-C NONPRECISION APPROACHES