

# NASA Range Safety Program 2006 Annual Report

## EMERGING TECHNOLOGY GPS METRIC TRACKING FOR THE ARES LAUNCH VEHICLES

On December 21, 2004, the President of the United States authorized a new national policy that established guidelines and implementation actions for United States space transportation programs and activities to ensure the nation's ability to maintain access to and use space for U.S. national and homeland security and for civil, scientific, and commercial purposes. That policy states:

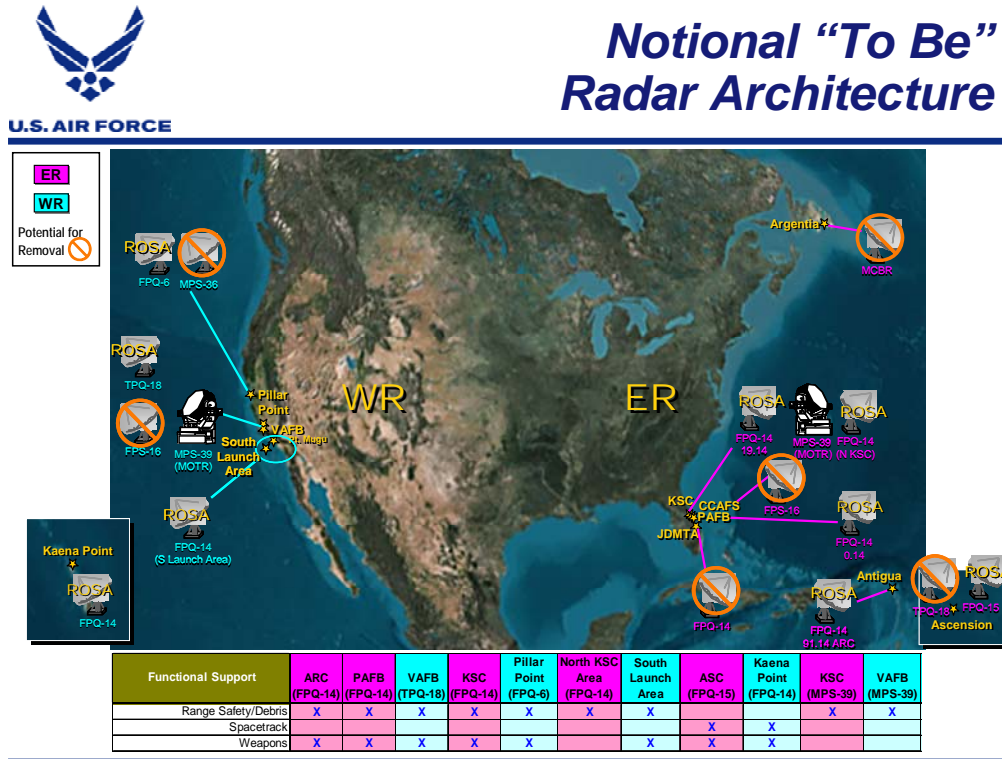
*The Federal space launch bases and ranges are vital components of the U.S. space transportation infrastructure and are national assets upon which access to space depends for national security, civil, and commercial purposes. The Secretary of Defense and the Administrator of the National Aeronautics and Space Administration shall operate the Federal launch bases and ranges in a manner so as to accommodate users from all sectors and shall transfer these capabilities to a predominantly space-based range architecture to accommodate, among others, operationally responsive space launch systems and new users.*

As a logical first step toward a space-based range architecture, the United States Air Force Space Command will require the use of GPS metric tracking for all vehicles launched at the Eastern and Western ranges by January 1, 2011. This new requirement has been planned and discussed by the Air Force Space Command since December of 1997 and was communicated to NASA again during the May 2006 meeting of the Department of Defense/NASA Space Partnership Council.

The key driver for the change is to reduce life cycle costs associated with the launch ranges while enhancing range capabilities to support operationally responsive space missions by transitioning to a space-based approach. As can be seen in the slide presented during the Partnership Council meeting, one way of achieving the needed cost savings is to reduce the number of operational radars by relying on GPS metric tracking data from the launch vehicles to provide one source of the required surveillance information.

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The GPS metric tracking requirement was formally communicated to NASA via a policy memorandum from Dr. Ronald M. Sega, Under Secretary of the Air Force. The memo states: "In order to comply with national space transportation policy on space-based launch ranges, AFSPC will require the use of GPS metric tracking for all vehicles launched at the Eastern and Western ranges by January 1, 2011."

The GPS metric tracking requirement was accepted on behalf of the Agency by Michael F. O'Brien, Assistant Administrator for External Relations, in a September 8, 2006 memorandum to Dr. Sega. The memo states:

As the Administrator mentioned at the May 25, 2006, Partnership Council, NASA believes that your approach takes us in the right direction. As we define the implementation approach for GPS metric tracking, NASA plans to include GPS metric tracking capability as a part of the launch vehicle acquisition process for vehicles that will launch after 2010, with the understanding that the Air Force will make GPS metric tracking a standard part of the range infrastructure with which those NASA vehicles will interface."

Therefore, the Constellation Program's ARES launch vehicles will use GPS metric tracking for ascent flight operations.