

Defense Matters

A Time to Reflect and Look Forward

As we transition from one calendar year to the next, we often find ourselves reflecting on prior year events to gain insights into what the future may hold.

Noting that the year 2023 will mark the 50th anniversary of the Air Force gaining approval to proceed with Global Positioning System (GPS), what follows are a number of events that have impacted how the GPS has evolved over the last 50 years.

50 years ago – April 17, 1973: The Deputy Secretary of Defense, William P. Clements, Jr., signed a memorandum initiating the Defense Navigation Satellite Development Program (DNSDP) as a joint service enterprise. Later that year, on December 17, 1973, the Defense System Acquisition and Review Council (DSARC) formally approved the DNSDP, which restructured the Air Force's 621B program and, by then, had become known as NAVSTAR GPS. The first phase of the program included four satellites, the launch vehicles, three varieties of user equipment, a satellite control facility, and an extensive test program.

45 years ago – February 22, 1978: The first GPS Block I satellite was launched from Vandenberg Air Force Base in California. The final Block I satellite (there were a total of 11 built, 10 of which were successfully placed in orbit) was launched on October 9, 1985.

43 years ago – July 1, 1980: The first edition of the Federal Radionavigation Plan (FRP) was released as part of a Presidential Report to Congress, prepared in response to the International Maritime Satellite (INMARSAT) Act of 1978. It marked the first time that a joint Department of Transportation (DOT) and Department of Defense (DoD) plan for common-use (both civil and military) systems had been developed. The plan noted that the DOT was responsible “for public safety and transportation economy,” while the DoD was responsible “for national security in normal and stressed situations.”¹

40 years ago – September 1, 1983: The intentional shoot-down of Korean Air Flight KAL007 by a Soviet interceptor aircraft following a navigation error resulted in the airliner straying into Soviet airspace. Following the incident, the White House released a statement that included an announcement by President Reagan that the DoD's future GPS system would be made available for civilian and commercial use around the globe.

28 years ago – April 27, 1995: GPS reached full operational capability after completing its original design goals.

27 years ago – March 28, 1996: Presidential Decision Directive NSTC-6 established the national policy for the management and use of the US Global Positioning System and related US government augmentations. The policy addressed the dual-use functionality of GPS and provided a strategic vision for the future management and use of GPS for military, civil, commercial, and scientific interests—both national and international.

26 years ago – March 28, 1997: The first interagency GPS Executive Board meeting was held at the Pentagon. The meeting was co-chaired by Dr. Paul Kaminski (Under Secretary of Defense, Acquisition and Technology) and Mr. Frank Kruesi (Assistant Secretary for Transportation Policy). Notable topics on the agenda included: the Gore Commission Recommendations regarding a second and third civil GPS frequency; status on international consultations with Japan, Europe, and Russia on space-based PNT; the DoD's GPS CAPSTONE Requirements Document (CRD) review to include the size of the baseline GPS constellation; and the expansion of the Coast Guard's DGPS system beyond the maritime community.

23 years ago – May 2, 2000: The White House announced that GPS Selective Availability (S/A), the intentional degradation of the accuracy available from civil GPS signals, would be discontinued immediately. The decision to end the practice was based on a recommendation by the Secretary of Defense in coordination with the Departments of State, Transportation, Commerce, the Director of Central Intelligence, and other executive branch departments and agencies.

22 years ago – September 11, 2001: The Department of Transportation released the study, *Vulnerability Assessment*



Doug Taggart
President
Overlook
Systems
Technologies, Inc.

¹ DOT-DoD. (1980). *Federal Radionavigation Plan: Volume II Requirements [Technical Report]*. <https://rosap.nsl.bts.gov/view/dot/12021>

of the Transportation Infrastructure Relying on the Global Positioning System. The report recommended creating awareness among the aviation, maritime, and surface user communities of the vulnerability of GPS and the need to reduce degradation or loss of the GPS signal by implementing systems to monitor, report, and locate unintentional interference to GPS and assessing the applicability of military GPS anti-jamming technology. The report also recommended working with the DoD and industry to make appropriate technologies available for civilian uses, identifying appropriate backup systems, integrity warnings, and operational procedures for each safety-critical application, encouraging the development of low-cost systems as backups to GPS, and continuing the ongoing GPS modernization program involving higher GPS broadcast power and the eventual availability of three civil frequencies.

18 years ago – September 26, 2005: The first GPS Block IIR-M satellite with the second civilian signal (L2C) was launched.

15 years ago – September 1, 2008: The *National PNT Architecture Study Final Report* was issued by the Director of the National Security Space Office on behalf of the Departments of Defense and Transportation, who co-chaired the study effort. The report summarized the results of a national study conducted between May 2006 and August 2007. The PNT architecture was national in scope and included the DoD, intelligence community, and civil, commercial, and international users and systems supporting global US interests. It addressed all sources of PNT information and served as the basis for the current national PNT Enterprise as it exists today.

14 years ago – April 10, 2009: The first GPS IIR-M satellite with the L5 signal began to transmit.

5 years ago – December 23, 2018: The first GPS III satellite was launched. The design life of the Block III series is 15 years. A total block of 10 GPS III satellites and 22 GPS IIIIF satellites was

planned.

4 years ago – April 15, 2019: The DoD released its *Strategy for the Department of Defense Positioning, Navigation, and Timing (PNT) Enterprise (Unclassified Version)*. The strategy was founded on the premise that having assured PNT access for the warfighter would be paramount. To maximize the probability of maintaining a military PNT advantage, a layered PNT enterprise architecture was envisioned, with military user equipment built to integrate multiple diverse sources of PNT leveraging a modular, open system architecture design.

3 years ago – December 8, 2020: The US Space Force issued an operational acceptance certification for GPS Military-Code Early Use following tests at the master control stations located at the Vandenberg and Schriever Air Force bases.

2 years ago – April 8, 2021: The DoD established the PNT Oversight Council to provide oversight of the DoD portion of the PNT Enterprise in coordination with various DoD components and organizations that provide or support the functions of the PNT Enterprise.

Looking ahead to 2023 in a soundbite, the Space Force plans to launch the 6th GPS-III satellite. The DoD PNT Oversight Council will continue to wrestle

with the timing of when M-Code user equipment will be available, and, in a sad and somber reflection, the GNSS community will no longer have the thoughtful insights and thoroughly researched journalistic articles prepared and made available to us by Dee Ann Divis. ✨

In Memory of Dee Ann Divis December 19, 1960 – November 22, 2022

In our lives, the one commodity that we can never get back is time. From the moment we take our first breath to the moment we take our last, time ticks on.

When you are born, that is the date they put on the left side of your headstone; when you die, they put another on the right; but the dash in the middle is the time you were able to make your mark, leave your legacy, and make a contribution. I have known Dee Ann Divis for over 25 years. In her gathering of information about the world of PNT, she would sometimes call to confirm a lead, verify a fact, or gain some insights. I trusted her in my disclosures and was proud to call her my friend. Hearing of her passing stunned me, saddened me, and reminded me that our time here is short—we should all strive to make our dash meaningful. Rest in peace, Dee Ann.

SAVE THE DATE

Pacific
PNT
2024



April 15-18, 2024
Hilton Waikiki Beach,
Honolulu, Hawaii

Where East Meets West in the Global Cooperative Development
of Positioning, Navigation and Timing Technology

ion.org/pnt