

DOCA Los Angeles & Santa Barbara Conference Notes

March 27-30, 2022

by DOCA Member Lynn M. Boughey ('94)

Now there is nothing so deep as the ocean,
And there is nothing so high as the sky.
Lyle Lovett, *She's Already Made Up Her Mind*

To some, Los Angeles is a concrete jungle; to others it is a City of Angels where dreams come true, a Tinseltown imbued with the "shiny, bright, and unreal" nature of the film industry; to the younger crowd it is La-La Land, which originally meant "a dreamlike mental state detached from reality." Resting not so far from the ubiquitous Hollywood sign rests one of our nation's deepest seaports, allowing Los Angeles to truly reflect the highest and lowest dimensions of not only the earth, but the depths of all that which is possible.

On our March 2022 DOCA trip, we observed first-hand a combination of engineering marvels derived from long-ago dreams of entering a different world upon "shiny, bright, and unreal" spacecraft of scientific engineering, creating in many ways "a dreamlike mental state" – no longer bounded within the books of Jules Verne or the early movies of Hollywood, but taking flight into a modern reality where the battlefield now stands high above as our modern military enters into the unworldly bounds of space. Nearby in Ventura, we observed how the Navy tests its newest weapons, applies its newest scientific achievements, and applies science not only to the art of war but to a seemingly mundane act of refueling a ship with fuel and supplies.



Attendees and Focus of Conference

Forty-six (46) DOCA members attended the conference from **Sunday, March 27 through Wednesday, March 30, 2020**. The focus of this conference was the present and future use of space (Day 1 and Day 2) and modern naval warfare at the Navy's premiere weapons testing facility.

DAY 1 – March 28, 2022

LA Garrison and Space Systems Command Overview



Speaker 1 – Lt. Col. Brian Vance

Space Systems Command Enduring Priorities:

- **Acquisitions:** develop and acquire space systems
- **Capability Development:** drive innovation through superior research capabilities
- **Space System Talent:** build and maintain a diverse pool of space systems talent
- **Launch:** provide assured access to space, for commercial and military
- **Systems Architecture:** provide sustainment activities to support space system development and launch capabilities

Space Systems Command Footprint – Headquarters Los Angeles AFB, CA

Has grown from **6,000 to over 10,000 strong**, and has a presence at

- Vandenburg Space Base, CA
- Oahu, Hawaii
- Patrick Space Force Base, FL
- Cape Canaveral, FL
- Fort Meade, MD
- Hanscom AFB MA
- Ascensions Island
- Additional locations at Buckley SFB CO, Boulder CO, Schriever SFB CO, Peterson SFB CO, Colorado Springs CO, Kirtland AFB NM, NASA Johnson Space Center TX, Dahlgren VA

Speaker 2 – Lt. Col. Nic Longo

Launch Enterprise and Assured Access to Space

- The Atlas V engines were from Russia; we are now developing and using our own
- Priorities: 1. space access 2. rapid delivery 3. orbital resiliency
- 2 USAF ranges, 2 armed services, 2 islands, 3 organizations, 7 locations
- 100+ mission partners
- 20,000 personnel, 5 areas set aside for the future

Space Launch Facilities – Western and Eastern Range

- Space Launch Delta 30 Vandenberg SFB CA (polar orbit option)
- Launch Delta 45 Patrick SFB FL (traditional orbit)

Speaker 3 – Maj. Eric Lum, Military Communications and PNT

Mission – rapidly deliver military communications and PNT capabilities [GPS] for war fighter needs and acquisition excellence. The communication system provides point-to-point communications, system presently being updated. They have 1800+ active duty.

Speaker 4 – Maj. McKay Williams, Branch Chief, Space Sensing Directorate.

This directorate is in charge of missile warning, tracking and defense, along with following the weather. They have been working on increased performance and increased resilience, and also creating further redundancy by moving to smaller satellites.

By the numbers: 22.38 billion 2021-2027, 1800+ active-duty, civilian, and contractor employees. 15 total programs, 13 satellites in production. Presently have 37 GPS satellites, 16 wideband CENTCOM satellites, 11 protected satcom satellites, five narrowband satcom satellites. Employ 29 SATCOM ground antennas.

Speaker 5 – Capt. Austin Nash, Program Manager, Space Domain Awareness and Combat Power

Space domain awareness involves rapidly detecting warning characterizing and attributing the nature of the threats. In other words, the launch of weapons against us, including Intercontinental ballistic missiles. Combat power includes national security deterrence capabilities countering threats and aggression. Focus includes innovation and prototyping, developing and testing the next generation technology.

Speaker 6 – Maj. Christian Lewis, Staff Director, Battle Management Command, Control, Communications

The three major areas are 1) space grounded communications, 2) operational command-and-control, and 3) tactical command and control. They have locations worldwide. There are over 10,000 items in orbit, or 500 of which are satellites.

Low Earth Orbit (LEO): 0 - 1,200 miles – optimal for earth sensing

Medium Earth Orbit (MEO): 1,200 miles – 22,000 miles – optimal for global positioning, navigation, and timing

Geostationary Earth Orbit (GEO): 22,000 miles – optimal for persistent earth coverage

Speaker 7 – Dr. Steven Pluntze, Deputy Director International Affairs

They have 58 cooperative partnerships. Their focus is on coordination of all the various systems and activities in space. Located at El Segundo +3 operating locations: The Pentagon, Brussels, and Ramstein.



DOCA members participate in STEM program launch of missiles

Speaker 8 – Jonathon Stroud, Atlas Corp. – The Space STEM Outreach Program

Serves pre-K to 5th grade, hands-on activities, such as shooting a rocket pressurized by air. As 1000+ students. In the Spring of 2022, they are providing presentations at 12 schools. Objective to inspire and increase STEM while students are young. Focus on underserved communities. They want to expand the program.

Speaker 9 – Randy Kendle – corporate overview – Aerospace Corp.

Aerospace Corporation consists of 40 federally funded research centers, 10 of which are defense research and development centers. The vision is one of solving the hardest problems, working as integrated program teams. Has a nationwide scope, including California, Colorado, Florida, Nebraska, Texas, Virginia, Alabama, Maryland, New Mexico, Ohio, Utah and Washington DC. By the numbers: 4200 employees, 819 PhD's, 77% technical staff. \$1.16 billion revenue in 2021.

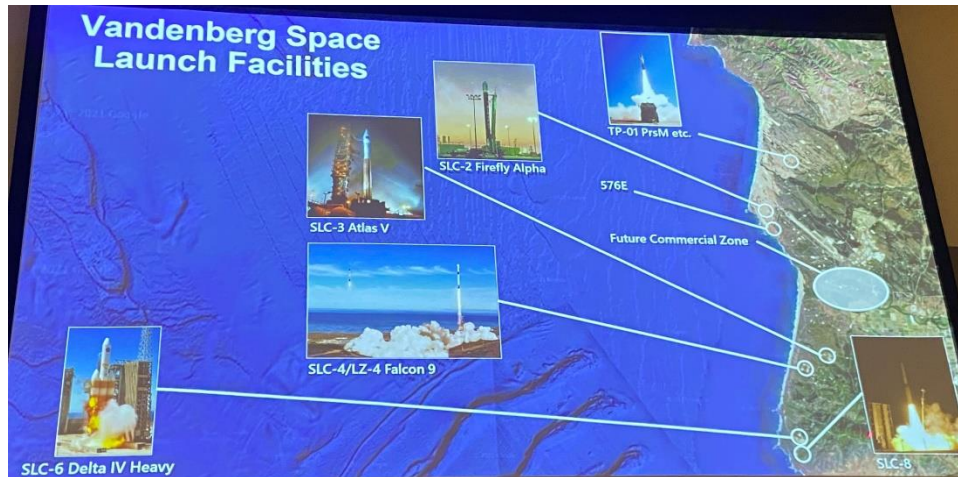
Day 2 – March 29, 2022

Los Angeles Air Force Base/Space Systems Command

Speaker 10 – Col. Robert Long, Commander, Space Launch Delta 30

Vandenberg can place satellites in polar orbits; it can also launch over the ocean for safety reasons. First missile launch was in 1958. Just pass over 2000 launches. The Western Range shoots out over the Pacific Ocean 4190 miles to the west, including test launches of Minutemen III missiles. They have also been testing hypersonic platforms.

By the numbers: Vandenberg has 118,000 acres, 2600 military personnel, 1500 civilians, 2800 contractors, 46 miles of coastline, 621 miles of road, 16 federally protected species, 1500 archaeological sites. Estimated economic impact \$4.5 billion. Has their own wildland hotshot teams for putting out wildland fires.



The Vandenberg launch facility includes seven launch centers capable of launching Delta IV Heavy, Falcon 9, Atlas V, Firefly Alpha, among others.

Speaker 11 – Capt. Michael Harris, 576th Flight Test Squadron

Performs testing and validation missile launches, focusing on performance and reliability. They launch the missiles unarmed; they also simulate electronic launch of the Minuteman missile. The focus is on operational test launch, safety, and data collection. 2021 launches included 4 ballistic and 7 space launches.

Speaker 12 – Alan Tulsa, Deputy Director Delta 1

Delta one conducts training of all guardians for Space Force. Motto: “Train on Earth, Dominate in Space.” Space forces using Lackland Air Force Base for basic training, then Delta 1 training. They are receiving 200 officers and 200 enlisted personnel year.



Speaker 13 – Donald Prichard, Vandenberg Museum historian

One of the highlights of our trip, Donald Prichard provided a tour of the Vandenberg Museum with substantial humor. Quick-witted, filled with significant information, and an ability to employ humor throughout the process, Mr. Prichard was an absolute joy. We observed original launch counsels, very large rockets boosters, inert warheads, and other space equipment at the Museum.

Speakers 14 & 15 – Vandenberg Space Launch Facility briefing



Day 3 – March 30, 2022 Naval Surface Warfare Center, Naval Base Ventura



Speaker 16 – Tom Dowd, Naval Surface Warfare Center, Senior executive
Naval Surface Warfare Center by the numbers: workforce 8169, civilian 5743 (71%), contractors 2236 (27%), military 19 (2%). Mission: delivering war fighting capabilities, weapons platforms and mission integration. Their focus is integration, and now unmanned systems, which are the wave of the future. Provide direct fleet support 24/7. For testing purposes, they have a sea range of 36,000 square miles. They do a lot of hypersonic testing. They have a large ship that is taken out to sea by remote control and they shoot missiles and other weapons at it, testing the countermeasures systems. They

also use China Lake Range that has 1829 square miles of land (which includes Edwards AFB) and 20,000 square miles of air space.



Speakers 17 & 18 – Mr. Kail Macias, Technical Director, Naval Facilities Engineering and Expeditionary Warfare Center, and Capt. Scott Raymond, commanding officer

Mr. Marcuis and Capt. Raymond described how the Naval Facilities Engineering and Expeditionary Warfare Center provide in-service engineering for over 3300 pieces of expeditionary equipment. They also conduct saltwater desalination research. By the numbers: 916 civilians, 134 military, 94 contractors, average age 47 years old, 16% could retire today. Primary function includes laying cables and protecting cables that have been laid. Also deal with servicing underwater sensors. Presently working on development of drone refueling platforms (unmanned tankers). Provide national disaster support, for example Haiti. They also provide STEM collaboration and outreach.

Speaker 19 – Commander Michael Risik, Deputy Cmdr., Naval Base Ventura

Main functions are to provide 1) operational fleet support, 2) test and evaluation, and 3) research and development. They are the equivalent of the pros from Dover, answering any questions from the war fighters anywhere in the world, allowing if necessary direct access to the manufacturers and experts on the system deployed. Total personnel 3633, all over the world.



Speaker 20 – Capt. Robert “Barr” Kinnach, Commanding Officer

Equivalent to the mayor of the base, runs both bases (airport and port). By the numbers: 20,000 people work at the base, \$2 billion dollar contribution to community, has over 1500 facilities, including unmanned ships, Coast Guard as well as air station Ventura. In 2021 they had 15 warships that had port-of-call. Allowed civilian international ships to use the port when there was the COVID supply chain problems.

Speaker 21 – Ken Guinto, Underway Replenishment Test Site

DOCA members observed the training site where they designed a whole new system for refueling ships while at sea. Has multi-configuration so that every single ship in the Navy can be refueled through the system. Much is now done by computers.

Speaker 22 – Matt Bogue, Self-Defense Test Ship

Unmanned ship is taken out to sea by remote control, when the crew is on board is 40-50 people, all civilians except him. It is a CVN-78 old Spruance Class destroyer, largest unmanned ship. Purpose is to be shot at, with hopefully the countermeasures working. When asked how well it does, several briefers stated, “it hasn’t been sunk yet.”