

About the Author

John D. Bennett is a retired law enforcement officer with the City of Honolulu residing in Kaneohe, Oahu, Hawaii. He is married with one child and two grandchildren.

Bennett served in the Air Force from 1957 to 1961 as a radar operator in Washington State and British Columbia, Canada.

He has been a member of the Coast Defense Study Group for twelve years and authored forty-one articles published in the quarterly journal, mainly reporting on Hawaii's coast artillery history, and World War Two garrisons of U.S. Pacific Island possessions, which included airfields.

Hawai'i was first in the nation to receive the solid fuel powered, nuclear-capable Nike-Hercules missiles. The 298th ADA Gp Command Post was situated deep underground in the Kunia Facility known as the "underground," a three story, 51,000 square foot "cut and cover" facility built in the Kunia pineapple fields of O'ahu during World War Two.

The 298th ADA Gp was made up of two battalions (1st and 2nd). The 1st Bn consisted of A Battery, a training unit located at Fort Ruger at Diamond Head Crater in the Kapahulu District of Honolulu. B Battery was at Kahuku, C and D Batteries formed a dual site at Bellows Air Force Station (AFS) at Waimanalo, with its Integrated Fire Control (IFC) radar located atop the Ko'olau Mountain Range southwest of Bellows AFS. The 2nd Battalion consisted A and D batteries, which formed a dual site at Palehua, B Battery, a training battery located at Pearl City, and C Battery at Mokuleia. The unit designators changed continuously, both dual-sites (Bellows and Palehua) merged sometime in 1963.²

There were four missile launch sites located on the Island of O'ahu; Pālehua, in the southwestern portion of the Wai'anae Range; Bellows Air Force Station at Waimanalo; Mokulē'ia at Dillingham Air Force Base, and at the Kahuku Army Training Area near Mt. Kawela. The four launch sites were armed as follows:

Bellows:	twenty-four missiles.
Pālehua:	ditto
Kahuku:	twelve missiles
Mokulē'ia:	ditto



Nike-Hercules on launcher located at Dillingham Air Force Base, Mokulē'ia, O'ahu.
U.S. Army Redstone Arsenal Photograph

² RCP, e-mail to author on March 31, 2005.

Typical HIARNG Nike-Hercules Missile Battery

Each missile battery included an Integrated Fire Control (IFC) Platoon and a Launcher Platoon that was divided about 1/3 to 2/3 with the greater portion of guardsmen assigned to the Launcher Platoon. The IFC Platoon was located in a separate location away from the launching sites, and included their own barracks and emergency power units. The Battery Commander was located with the IFC Platoon.

Each Launcher Platoon consisted of three sections, manned by a crew chief plus eight to ten crewmembers. Each section was responsible for maintaining and preparing four missiles for launch. The Launcher Platoon also included an assembly section, whose duties were to unpack the missile; it was partially assembled in the assembly building, where they were also tested.³

After the missile was checked out, it was transported to the warhead building for installation of the motor and warhead. All transportation between buildings was done on a special dolly. All lifting was done on a manually operated A Frame. The warhead building included an overhead manually operated hoist (none of the handling equipment was powered by motors). Each section of the missile had its own lifting beam, engineered for balance and strength. Special bolts were screwed onto the part of the missile to be lifted, and torqued to specifications. Routinely, all torque wrenches were sent to a depot for calibration.⁴

The fully assembled missile with its attached warhead was then transported to a launch pad towed by a, specially tested and inspected, all-terrain forklift. The solid-propellant booster had been previously placed on the launcher, where it was mated to the missile body. At times, a 5-ton wrecker was used to tow the missile from the warhead building to the launcher site. All transport vehicles were equipped with spark arresters, and their brakes had to be mechanically good. Of prime importance was protection from static electricity.⁵

A High-Power Acquisition Radar (HIPAR), L-band radar, was utilized to first acquire a potential target, then TTR tracked the target; the intercept point was calculated by a computer using data obtained from the HIPAR and TTR. The Battery Commander made the decision as to when it was suitable to detonate the armed missile. After firing, the solid-propellant booster rocket fell back to earth/ocean after "burn out."⁶

Launcher emergency power at each single site was provided by two diesel-powered Cummins V-12s (double sites had three), each about 6-feet high, rated at 150KW each. These were 60 cycle generators with a motor winding on one end of the shaft that was fed 208/416 volts at 400 cycles.

One 45KW motor generator powered each launch pad and a 30KW motor generator powered the Launcher Controller Trailer. The mess Hall, administration building and

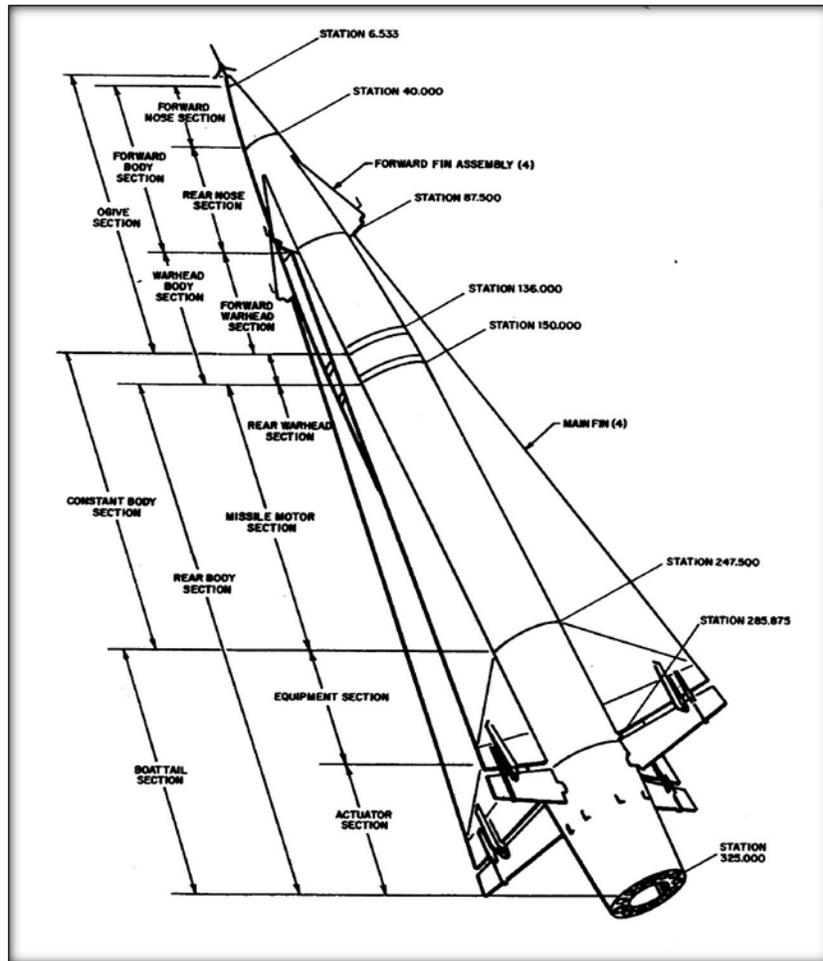
³ RCP, e-mail to author on April 1, 2005.

⁴ Ibid.

⁵ Ibid.

⁶ Ibid. Parsch, MIM-14

barracks were powered by 60-cycle commercial power supplied by the Hawaiian Electric Company or stand-by emergency power.



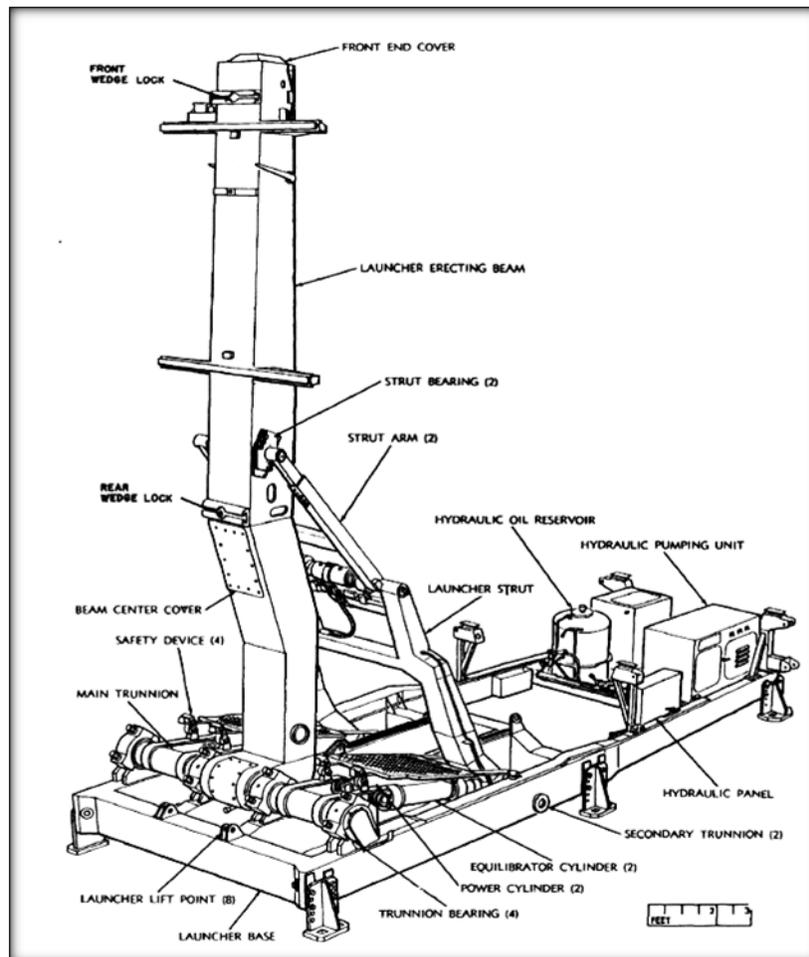
Nike-Hercules guided missile. *Internet*

Specifications for the Nike-Hercules Guided Missile⁷

Length (w/o booster):	26 ft 10 in, (booster: 14 ft 3 in)
Wingspan:	6 ft. 2 in, (booster: 11 ft 6 in)
Diameter:	21 in, (booster: 31.5 in)
Weight (w/o booster):	5530 lb, (booster: 5180 lb)
Speed:	Mach 3.65

⁷ Parsch, MIM-14.

Ceiling:	150,000 ft.
Range:	88 mi
Propulsion:	Booster: Hercules M-42 solid-fueled rocket cluster
total)	(4x M5E1 <i>Nike</i> boosters), 978 kN (220,000 lb.)
	Sustainer: Thiokol M30 solid-fuel rocket; 44.4 kN (10000 lb.)
Warhead:	M17 blast fragmentation or W-31 nuclear (2 kT, 40 kT)



Nike-Hercules monorail launcher. *Internet*

The Nike-Hercules missile launchers on O'ahu were located on the surface and were a monorail type elevated by hydraulics. Each missile was covered with a protective

cocoon to protect it from the elements, and inflated by a huge blower. The pressure was just enough to keep it away from the missile. Each launcher was equipped with rails and supports on its side in case the missile needed checking; it would be rolled to the side off the launcher.

Of the six Nike-Hercules missile units deployed on the Island of O'ahu, two were on "Hot Status" at any one time, two were down for maintenance, and two were on "standby." If for any reason, a hot unit went down for equipment failure, one of the standby units would pick up the mission.⁸

In an alert, a crewmember would pull a ripcord and the cocoon would deflate and fall away from the missile. The missile would then be elevated in the firing position. The hydraulic system on the missiles was initially powered by a small gas turbine engine, which was later replaced by a battery-powered electric motor.⁹

Target tracking was conducted by Integrated Fire Control (IFC) radars located above Pālehua (southwestern portion of the Wai'anae Range), above Dillingham Air Force Base at Mokulē'ia, at the Kahuku Training Area, and atop the Ko'olau Range southwest of Bellows Air Force Station.

The Nike-Hercules also had the capability of firing at surface targets, like ships, as long as the Target Tracking Radar was able to zero in on the target.¹⁰

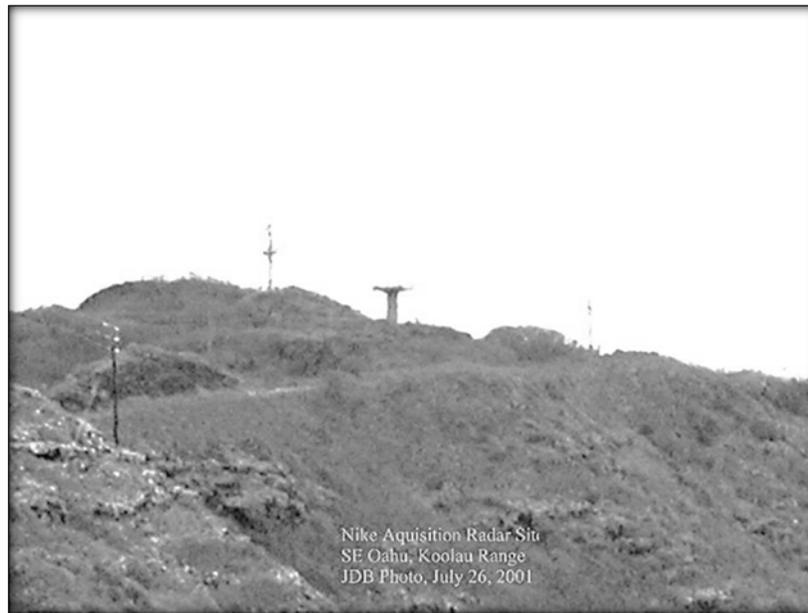


Site OA-84, former IFC Radar site above ex-Dillingham A.F.B., Mokulē'ia. *Internet Photo*

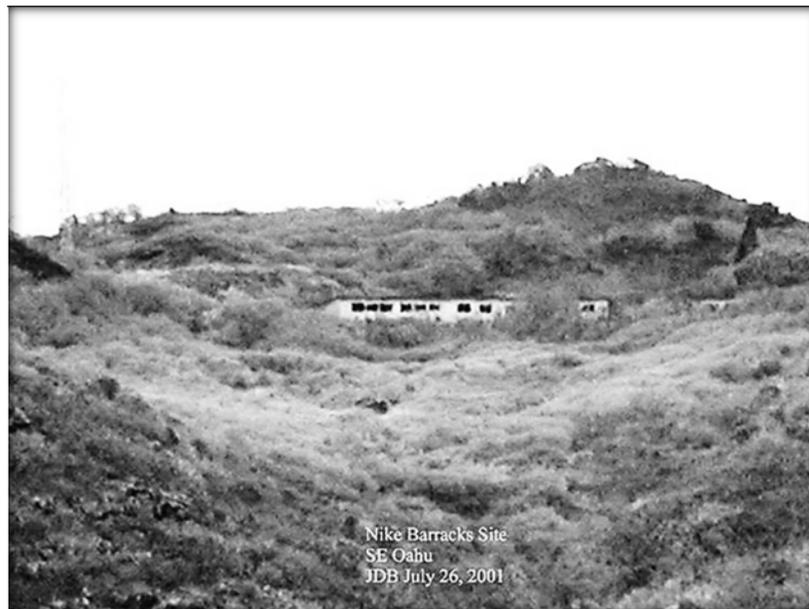
⁸ RCP, e-mail to author on April 1, 2005.

⁹ RCP, e-mail to author on March 30, 2005.

¹⁰ RCP, e-mail to author on April 1, 2005.

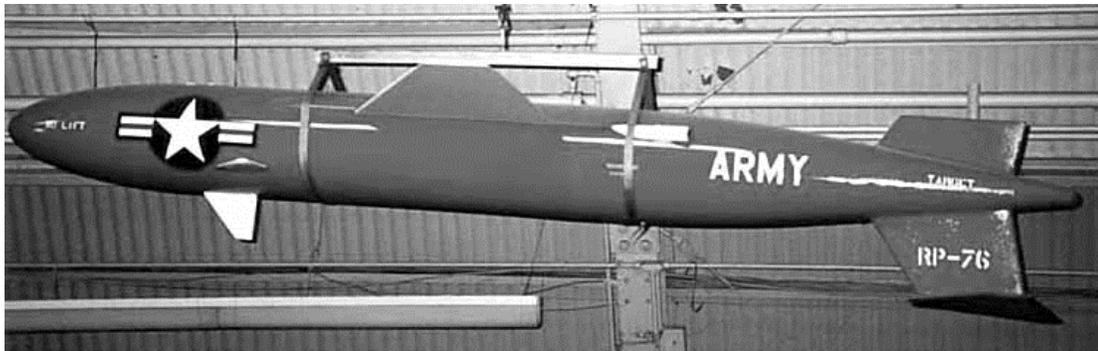


Site OA-32, IFC Site atop Ko'olau Mountain Range above Waimanalo, O'ahu. *Author, 2001*



Site OA-32, Barracks site atop Ko'olau Mountain Range. *Author, 2001*

Radio-controlled pilot-less aircraft were launched from the Island of Kaua'i (probably Bonham Air Force Base, now the site of the Navy's Pacific Missile Range support base) were used as targets for the missiles. The Northrup RP-76 was a remote-controlled rocket powered pilot-less target vehicle, usually painted overall bright red.



Northrup RP-76 Target Vehicle. *Internet*

Site Designators

O'ahu's Nike Hercules Battery Sites were designated as follows¹¹:

- OA-17 (single site, 12 missiles), Kahuku Army Training Area near Puu Kawela. Dates of active service: Jan. 1961 – March 1970.
- OA-32 (double site, 24 missiles), Bellows A.F.S., southeast corner near main gate. Dates of active service: Mar. 1961 - Mar. 1970.
- OA-63 (double site, 24 missiles), Palehua. Dates of active service: Jan. 1961 – Mar. 1970.
- OA-84 (single site, 12 missiles), Dillingham A.F.B., Mokuleia. Dates of active service: Jan. 1961 – Mar. 1970.

Concluding Remarks

The Nike-Hercules missile program manned by the HIARNG was short lived, but provided the Island of O'ahu's military and civilian complex with a deterrent against any attacks by Soviet Long-Range bombers along with the Hawaii Air National Guardsmen who manned the 199th Fighter-Interceptor Squadron based at Hickam Air Force Base, and both the 150th Aircraft Control & Warning Squadron, based at Kōke'e, Kaua'i. in addition, the 109th Aircraft Control & Warning Squadron based at Koko Crater, then Mt. Ka'ala on O'ahu.

¹¹ Ed Thelen, "Locations of Former Nike Missile Sites." <<http://ed-thielen.org/loc-h.htm>>, March 31, 2005. Redstone Arsenal.,

Acknowledgement

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