"TRANSISTOR MUSEUM™

"THE FIRST TRANSISTORS IN SPACE"

PRESERVING HISTORIC 1950S/60S/70s TRANSISTORS USED IN EARLY SPACECRAFT AND MISSILES

NIKE ZEUS MISSILE

SILICON TRANSISTOR
WECO TYPE "2N1072"

HISTORIC TRANSISTOR PRESERVATION COLLECTION

HISTORIC PHOTO ARCHIVE

Nike Zeus "Anti-Missile" Missile: Developed in the mid-late 1950s, Nike Zeus was the first missile developed in the U.S. to defend against intercontinental ballistic missiles (ICBM). This timeframe coincided with the availability of the first high performance WECO silicon transistors.
Photo Credit: Copyright © 2013 by Sven Stork. Photo taken at the NPS Golden Gate Park restored Nike Base SF-88 in the Marin Headlands.

THE NIKE ZEUS ABM MISSILE PROGRAM

In the 1950s Cold War tensions were heightened by the development of Soviet ICBM technology. Based on early successes with the Nike system, the Army was given responsibility for the ballistic missile defense mission, to include interceptor missiles, launch sites, tracking radars and computer equipment. In March 1955, the Army commissioned Bell Telephone Laboratories to examine the prospects for developing a strategic ABM system, to be known as Nike Zeus. Bell Labs had developed the first-generation nonnuclear Nike I (Ajax) antiaircraft surface-to-air missile (SAM) and was developing a second generation nuclear-armed Nike B (Hercules) SAM at this time. In addition to BTL's expertise with these earlier Zeus systems, the Bell System was also the world-wide "technology-center" for transistor technology and would have access to the latest semiconductor developments needed to support the critical Nike Zeus performance requirements. Testing for the Nike Zeus system began in 1959 and demonstrated increasing success in its ability to intercept ICBM warheads and satellites. In 1963, due to costs and changing defense requirements, it was decided not to deploy the system.

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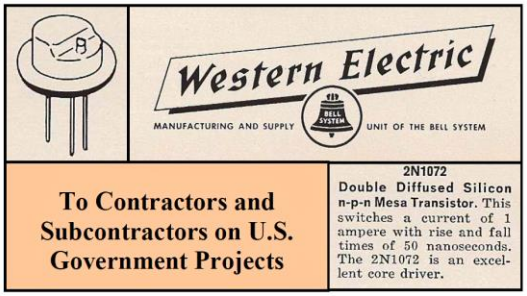
NIKE ZEUS MISSILE – 2N1072 TRANSISTOR

HISTORIC SEMICONDUCTOR DATA

Device ID: WECO 2N1072
Type: Silicon NPN double diffused mesa transistor
Case Color/Style: Black painted metal TO-38
Vintage/Date Code: Late 1950s-1960s
Use: Nike Zeus Missile high-reliability power switch
Notes: The 2N1072 devices shown at left represent the best in high speed silicon power transistor technology in 1961, and were used in the Nike Zeus.



THE HIGH PERFORMANCE WECO 2N1072 TRANSISTOR
EARLY PROTOTYPE TO LARGE SCALE PRODUCTION FOR NIKE

Experimental work on diffused semiconductor technology began at Bell Labs in the early 1950s - an example of a diffused transistor early prototype developed at BTL is shown above right. Substantial progress was made and by the late 1950s both germanium and silicon high performance diffused transistors were in production at the Western Electric Laureldale plant. The 2N1072 was selected for use in the Nike Zeus and Army contracts were established with WECO Laureldale for the development of mechanized production lines to ensure that sufficient quantities of the 2N1072 and other Nike transistors could be provided. The insert above middle is from a 1961 industry ad promoting the use of the 2N1072 by U.S. government contractors. Other diffused transistor types (or "codes") available from WECO Laureldale at this time included the 2N509, 2N559, 2N560, 2N1051, 2N1072, 2N1094, 2N1195, and 2N1645. The photo at lower left from 1959 shows Bell Labs engineers working on a partially assembled Nike Zeus missile. BTL Nike system testing was extensive with 79 developmental and 68 system tests for a total of 147 launches over a seven year period. Full scale production of the 2N1072 to support the Nike Zeus system was in place by the early 1960s as illustrated by the two production caliber devices from 1961 week 44 shown at upper left.

