

Integrated NATO Air Defense System - The NIKE Years

1. Introduction

(The article will only cover the period that involves the participation of the NIKE surface to air missile system, from about 1960 to 1984.)

2. Brief History of the Integrated Air Defense System

2.1 Inception

From its inception in 1949, NATO's primary mission has been to deter aggression and, if deterrence fails, to restore the integrity of NATO's territory. Credible deterrence was understood to arise from the combined capability of its offensive and defensive forces to destroy the enemy's attacking forces, including early warning and intercept capabilities that provided sufficient time to warn of attack, identify and intercept the enemy air threat.

In the early 1950s however, NATO became increasingly concerned about the potential for large-scale bomber attacks with the introduction by the Soviet Union of jet-powered long range bombers (BADGER, BEAR, BISON) and the resulting decreased effectiveness of NATO's limited air defense assets as flight times for enemy jet-powered bombers to reach priority NATO targets were reduced to minutes. NATO recognized that it needed a more credible air defense (AD) system to protect its vital assets from the Warsaw Pact bomber fleets. It was determined that this could only be achieved by coordinating the capabilities of the individual member nations into a single comprehensive network. A proposal for the integration of the air defense capabilities of the Alliance was formalized in 1954. Designated as MC 54/1, the concept was approved by the Military Committee (the highest military authority within NATO) in December 1955, and was based upon four air defense regions (ADRs) with coordinating authority given to SACEUR¹.

The first tangible co-operative effort in establishing the integrated air defense system was the formation, starting in 1957, of an early warning system to cover the approaches to Western Europe. Consisting initially of 18 radar stations, the system became operational in 1962 and improved NATO's ability to react in a more timely manner by providing information on air activity in the area adjacent to Allied Central Europe territory².

Another step towards full integration of NATO air defense capabilities took effect in 1960 when the allied countries placed their air defense forces under the operational command of SACEUR during peacetime, thus allowing for his immediate use of these forces should the need arise. These AD assets consisted of command and control systems (operations centers and communications networks), early warning and ground control intercept radar installations, interceptor fighters and the newly formed Surface-to-Air (SAM) missile units.

2.2 Improvements to the Integrated Air Defense System

An important element in improving reaction times of the integrated air defense system was the introduction of the General Electric 412L Air Warning and Control System. During 1963, the air defense radar warning and control system in Central Europe was modernized by converting the GCI radar sites from manual plotting and tracking equipment to the 412L System equipped with data link. Under this system, all missions were directed by data link rather than by voice transmission. Final turnover to the new system took place during the Spring of 1965.

Analysis of the initial early warning system recognized the need to for additional improvements and for linking this early warning system to the "air defense ground environment" of the individual national components. The resulting NATO Air Defense Ground Environment (NADGE)

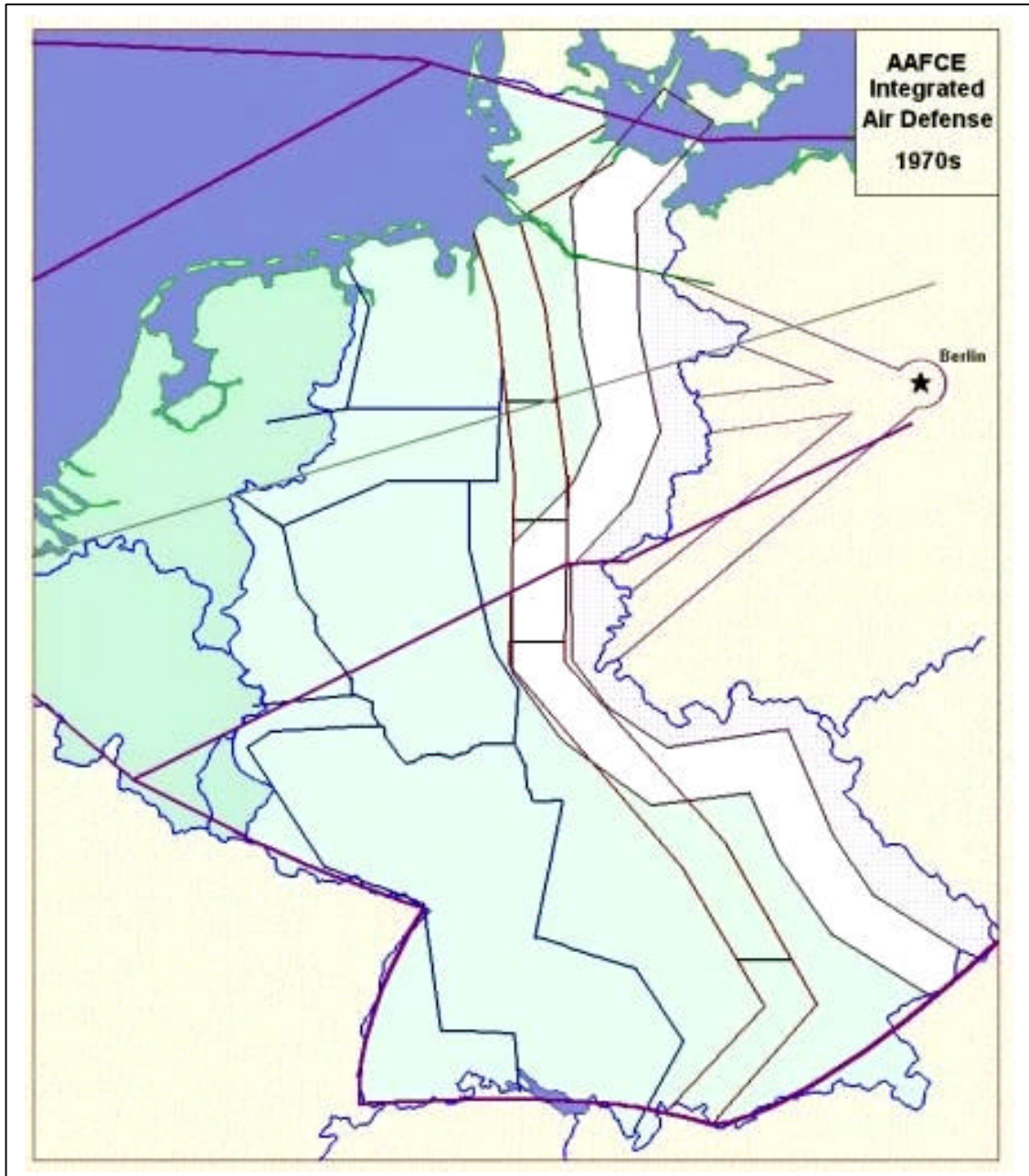
Improvement Plan³⁾ called for improvements to existing hardware, filling gaps in the coverage areas of existing systems, and adding equipment to improve the performance of the existing network. NADGE, completed in 1972, resulted in a network of 84 radar stations and associated control and reporting centers (CRC) that stretched from North Norway to the mountains of Eastern Turkey. The CRCs were data processing complexes that contained computers for real-time processing, analysis and distribution of target information from collocated radar equipment or other stations networked to it via data links.

The NADGE system has been modernized since it was initially completed, including additional radar sites added in the Mediterranean, 3D radar replacing 2D radar, improved computer and display systems for many locations, the addition of a UK ADGE and a German ADGE, extensions to cover Portugal and Iceland, and the addition of AWACS in the mid-1980s to provide very low altitude coverage.

¹⁾ The Supreme Allied Commander Europe (SACEUR) was the commander in chief of SHAPE (located at Mons, Belgium), one of three major NATO commands reporting to the NATO Military Committee. Jane's NATO Handbook, 1990-91.

²⁾ One of NATO's primary peacetime missions during the Cold War was the constant surveillance of NATO airspace. To accomplish this mission, NATO monitored round the clock the approaches to its territory, searching for airborne intruders and analyzing enemy air activity to detect any significant changes that might warn of an impending attack. To counter these threats NATO interceptors and SAM units were kept at a continuous high state of readiness.

³⁾ Hughes Aircraft (US), Marconi Radar (UK), Thomson-CSF (France), Selenia (Italy), Hollandse Signaal (Holland) and Telefunken (West Germany) formed a consortium and ultimately won the contract (worth between £80 and £90 million) for the Improvement Plan in 1966. (The two competing consortia were led by Westinghouse and ITT respectively.)



3. AAFCE Air Defense Organization and Area of Responsibility

4. Air Defense Assets

5. The Role of the NIKE Surface to Air Missile System