DEFENSE LOGISTICS AGENCY
GEM & AME PROGRAMS

F-15 Eagle
Generalized Emulation of Microcircuits

System

F-15 Eagle (WSDC 19F)

Role: Air superiority multi-role combat aircraft

Produced: 1972 – present

Deployed: July 1976

Number in Service:

- U.S. Air Force: 249
- Foreign Military: 508

Emulation Support

DLA's Emulation Programs created and manufactured a single ASIC Form-Fit-Function-Interface (F3I) replacement for the obsolete MDC281 three chip module critical to the F-15 flight controller.

Prevented costly, time consuming hardware and software redesign with cost savings greater than $10M.

The DLA GEM Program provides a permanent on-demand manufacturing source.

GEM Part Number: 36401QXC

Application	F-15 Eagle airborne computer - Flight Control Module
Obsolete Device	Custom MIL-STD-1750 microprocessor module (MDC 281).
Emulation Solution	In this application the Emulation Programs, in joint development with Boeing, utilized the Emulation technology to reverse engineer three obsolete microcircuits to one ASIC on the same daughter card, maintaining a Form-Fit-Function-Interface (F3I) equivalent solution.
Customer	DLA, F-15 Systems Program Office (SPO), Boeing, BAE Systems and all sub contractors.
Benefit to Program	Eliminated hardware and software redesign due to part obsolescence, and provide long term production support.
Manufacturing Support	Manufacturing capability is maintained and parts are built on demand to support delivery requirements.

Our Story

In the late 1980s, DLA recognized that microcircuit obsolescence threatened the readiness of many American defense systems. Numerous systems in the armed forces were designed and developed in the 1960s and 1970s. For example, the U.S. Air Force began flying the F-15 Eagle tactical fighter in 1972, and the U.S. Navy first tested the AEGIS phased-array radar at sea in 1973. Because of continued advancements in semiconductor technology, the original suppliers stopped manufacturing the microelectronic components used in these and other systems. In 1987, DLA contracted with SRI to begin research and development on how to best replace obsolete microcircuits with standardized, modern integrated circuits (IC). DLA and SRI collaborated to develop the GEM Program. Using its on-site Trusted semiconductor foundry and deep knowledge of IC design/development, SRI produces on-demand, Class Q microcircuits matching the Form-Fit-Function-Interface (F3I) criteria of the required microcircuit. DLA is developing the next generation of F3I microcircuit Emulation capability through the AME Program to further alleviate growing IC obsolescence issues caused by the continued rapid advancements in technology. The new capabilities developed by AME are utilized by the GEM Program to ensure the Emulation Programs continue to meet weapons systems wide-ranging requirements. SRI's semiconductor foundry is accredited as a Department of War (DOW) Trusted Foundry supplier, and our manufacturing processes are qualified to MIL-PRF-38535.