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

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**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.
DLA Emulation Example

<table>
<thead>
<tr>
<th>Application</th>
<th>F-15 Eagle airborne computer - Flight Control Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obsolete Device</td>
<td>Custom MIL-STD-1750 microprocessor module (MDC 281)</td>
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<tr>
<td>Emulation Solution</td>
<td>In this application SRI, 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.</td>
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<tr>
<td>Customer</td>
<td>DLA, F-15 Systems Program Office (SPO), Boeing, BAE Systems and all sub contractors.</td>
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<td>Benefit to Program</td>
<td>Eliminated hardware and software redesign due to part obsolescence, and provides long term production support.</td>
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<td>Manufacturing Support</td>
<td>Manufacturing capability is maintained and parts are built on demand to support delivery requirements.</td>
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</table>

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 Defense (DoD) Trusted Foundry supplier, and our manufacturing processes are qualified to MIL-PRF-38535.

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