This document contains excerpts from the X-34 Independent Assessment Report (title page shown below). Only those sections which relate to the PBMA element **Manufacturing** are displayed.

The complete report is available through the PBMA web site, Program Profile tab.

X-34

Safety & Mission Assurance Review

NASA
Office of Safety & Mission Assurance

June 17, 1998

3.3 Manufacturing and Production-Related SMA Processes

3.3.1 Parts Alert System and Government Industry Data Exchange Program (GIDEP)

OSC is a participating member of the GIDEP. This includes representation from the Dulles, Virginia; Germantown, Maryland; Chandler, Arizona; and Pomona, California facilities. In general, the OSC participation encompasses all aspects that could have impact or potential impact on OSC flight hardware i.e. review alerts, problem advisories, product change notices, manufacturing sources, and safe alerts.

OSC uses a cross-business-unit team (of three or four people) to examine GIDEP alerts for impact on ongoing programs. This matrixed functional process is consistent with the "Better/Faster/Cheaper" paradigm. Vendor surveys are conducted as required on parts providers.

The GIDEP review process includes a search of the manufacturing databases and traceability databases to determine if there is any match between the suspect parts covered in the GIDEP document and parts used in flight hardware. If a match does exist, then the Flight Assurance Manager (FAM) of the impacted program is immediately notified, along with the parts engineer, and appropriate actions are taken. These actions may include, but are not necessarily limited to, the following:

- remove suspect parts from stockroom stores and/or kits and assemblies in process, or remove from flight hardware.
- parts removed may then be either scrapped, re-screened or re-tested depending on the nature of the alert. Lot sample tests or additional destructive tests may also be performed.
- suspect parts may be replaced with alternative parts or parts from a different manufacturer.
- originator of the GIDEP Alert or the manufacturer of the suspect parts may be contacted for additional information
- other OSC Divisions and OSC subcontractors may be notified for possible impact on their flight hardware.

In addition to acting on information received through the GIDEP system, OSC also reports through the GIDEP system any significant parts problems experienced at OSC or any of its subcontractors. The requirement to establish and implement a GIDEP review is also flowed down to OSC's subcontractors. This flow down requirement derives primarily from the technical directive document TD-0211 "Standard EEE Parts Plan for Flight Hardware" which requires all subcontractors to have a GIDEP review system in place, and to report any impact on flight hardware to OSC and to take appropriate corrective action as required.

3.3.2 Quality Assurance & Supply Chain Management Process

Performance Assurance Implementation Plan (PAIP)

The PAIP describes the flight assurance functions to be accomplished by OSC for the X-34 test-bed vehicle system. The X-34 test-bed vehicle system comprises the X-34 test-bed vehicle and the carrier aircraft. The objective of the flight assurance function is to assure a high probability of mission success by applying proven techniques to each of the flight assurance tasks. The PAIP specifies the application and implementation of OSC in-house policies and procedures associated with safety, reliability, maintainability, parts, materials and processes, quality assurance, metrology, configuration management, and software assurance.

Quality Assurance

OSC Quality Assurance (QA) provides production support by resolving issues with contractual quality requirements. QA monitors the prime contractors' manufacturing workmanship standards to verify that selected fabrication processes such as welding, soldering, bonding, etc., meet specification. At the receiving and inspection point OSC QA reviews documentation, inspects and tests items, identifies and controls non-conforming items, and protects accepted items. QA provides support to other contract administration functions including:

- production support
- design review support
- assessment of design review processes
- engineering design changes review
- contract waiver and deviation review
- verification that documentation updates are accurate

Supply Chain Management

Increased emphasis is being placed on process verification and evaluating and measuring products to determine conformance to specifications. OSC is conducting pre and post award reviews to determine if suppliers are capable of satisfying quality requirements. As such OSC's supplier quality assurance program is a major contributor to the contractor procurement source review. All OSC prime suppliers are required to meet either Mil-Q 9858 (in the case of parts providers Mil-I 45208) or ISO 9001standards. Each contractor or parts supplier must operate under a Quality Assurance plan approved by OSC. OSC conducts an audit and spot checks on all hardware vendors. OSC provides each supplier with a specification, a statement of work and drawings. OSC relies on their prime contractors to conduct audits on sub-contractors and third tier vendors. If a subcontractor requires a deviation or waiver, the concern is submitted to the Configuration Control Board for review and disposition

ISO-Certification

The current contract with NASA does not require OSC to be ISO 9000-certified. However, the Advanced Projects Group, which manages the X-34 program, receives considerable matrix support from two other OSC organizations; 1) the Space Systems Group (SSG), headquartered in Germantown, Maryland, currently in the ISO-certification process, and 2) the ISO-certified Launch Systems Group (LSG), headquartered in Chandler, Arizona. The SSG also provides all of the calibration services which include documented and controlled measurement standards and a recall system to ensure that all standards and measurement equipment are re-calibrated at periodic intervals which directly supports assembly of the X-34 vehicle at the APG assembly facility in Dulles, Virginia.