Super Starfighter...

receives electrical analogues of pitot and static pressure, air temperature, and angle of attack from remotely located transducers. It transforms this information into the various functions of altitude, airspeed, Mach number, rates of change, and angle of attack required by other computers in the aircraft.

Navigation is assisted by a lightweight Litton inertial system, which measures actual ground distance and track, and is in no way dependent upon forecast or computed winds. It has a high degree of accuracy, and continuously presents to the pilot position by latitude and longitude. Presentation is made through the PHI (Position and Homing Indicator), a miniature automatic navigator which works on the principle of dead-reckoning. Developed by Computing Devices of Canada, the PHI computes by remembering where it started and keeping track of all course changes and speeds. The pilot has a choice of five pushbuttons, each marked with the name of a target or destination. Pushing any button causes the pilot's indicator to show him the heading to fly to reach that destination, and the distance to go in nautical miles.

The F-104G's bombing computer, which ties in with the inertial navigator, air-data computer and NASARR systems, mechanizes the relationship between the bomb trajectory and the aircraft in space. As a result of this mechanization, bomb release takes place at the proper point in space to impact on the target. There are four basic bomb delivery modes: dive-toss, LABS (low-altitude bombing system), over-the-shoulder and level release.

Complete provisions are made for installation of a data line-time division set. This equipment provides a means of receiving course direction (automatically computed at the ground environment) towards an enemy aircraft until acquisition is made by airborne radar. It has many advantages; it provides back-up voice service to the primary u.h.f. command set; can be used in either an air-defence or ground-support environment; gives the pilot a visual display of the intercept situation; allows full utilization of the autopilot; provides for a "return to base" operation; eliminates language barriers which normally accompany voice operation; provides for memory of the latest received information; permits selective addressing; is nearly invulnerable to jamming; and pinpoints target information on the NASARR indicator.

TACAN is standard in the F-104G. This is a radio air-navigation system of the polar coordinate type, which provides the aircraft with instantaneous and continuous information on direction (in n.m.) and distance (in degrees of bearing) from a ground station.

The European F-104G has a director-type gunsight. This presents to the pilot an optical indication of the line of sight with the proper lead angle for firing the M61 gun. When caged, the sight is used as an aiming reference for firing Sidewinders in a pursuit attack. When used with an infra-red sight these capabilities may be accomplished at night, as well as during daylight hours. Additionally, the cage sight reticle may be used as an aiming reference for visual dive-bombing.

Advantages of the director sight (over the disturbed-reticle sight fitted to USAF F-104s) include: smaller sight head, resulting in better pilot visibility through the windshield; improved tracking; lighter weight; no separate computer required in electronics compartment, whereby permitting installation of other necessary equipment; and easier installation and maintenance. For compatibility with the director-type sight, the new infra-red sight will offer daytime capability and improved detection range. It will be integrated with the director sight, and utilizes a common optical system.