



Fullscale mock-ups of the three sections of NASA's Apollo spacecraft, on view recently at the North American Aviation plant at Downey, California. From the left, the command module, lunar excursion module and service module

Despite the reference to "fighter aircraft," it is believed that the chief carriers of the weapon will be the TSR.2 and Mirage IVA. Nevertheless, it is clear that the device will be small enough to be carried by such machines as the P.1154 or Phantom, and the suggestion (made by the British Labour Party spokesman on aviation, and reported in our September 10 issue) that it will have a nuclear warhead appears to be erroneous. Range of AS.37 has been officially given as "tens of miles." According to a statement by MATRA, "development is already at an advanced stage, and simulated firings and mock-up releases have already been made."

MRRBM HALTED

The US Department of Defense has finally announced that it is "halting active development" of the mobile medium-range ballistic missile. Despite its technical interest, and the fact that it promised largely to fill the gap between the 400-mile Pershing of the US Army and the 15,000-mile Polaris A-1 of the US Navy, this US Air Force weapon system has always suffered from the fact that there was never a firm military requirement for it. It might have been valuable in several parts of the world, and it was supported by the US Joint Chiefs of Staff and SACEUR, but it is doubtful if any of America's military partners would have wished to have such a weapon on their territory.

During the programme-definition phase careful attention was paid to the possibility of producing a weapon of this character by employing the two upper stages of the Minuteman ICBM, or by improving the existing Pershing; but in 1962 it was decided to go ahead with the development phase of a completely new weapon system with the following characteristics:—

Integration, assembly and checkout by Hughes Aircraft; missile to weigh approximately 11,000lb and be carried singly on a Good-year transporter/erector/launcher land vehicle in ready-to-fire condition; two stages of solid propulsion by Thiokol Chemical Corp; guidance by General Precision Inc, of stellar/inertial ("Stings") type, contained in a single vehicle; command/control system by Martin Marietta Corp; re-entry vehicle, slender and pointed

ablative nosecone by Ford Philco/Aeronutronic; nuclear warhead.

Expenditure on the system amounted to at least \$120m (£43m) since the development phase started. The request for FY65 was \$110m, but the US Congress reduced this to only \$40m. The Stings guidance system and the command/control system are considered to merit continued support, and the teams working on them will be financed by a separate vote for possible application to a future weapon system.

APOLLO CONTRACT EXTENDED

NASA has signed a nine-month extension of its Apollo spacecraft contract with North American Aviation's Space and Information Systems Division of Downey, California. The \$496m extension covers five additional Apollo command and service modules, three additional flight boilerplate spacecraft, and one more full-scale mock-up to be built at Downey. It also covers the building by NAA at Tulsa of nine adapter sections to house the Apollo lunar excursion modules aboard Saturn V launch vehicles.

North American's overall contract now totals \$1,436m and extends to February 15, 1966. It will provide NASA's Manned Spacecraft Center at Houston with 16 spacecraft, 18 boilerplate spacecraft, 11 full-scale mock-ups, five engineering simulators and evaluators and two mission simulators, plus testing and ground-support equipment.

Blue Streak F2 completed a static firing at Woomera on October 1 in preparation for its flight test, now scheduled for October 19.

The Interim Communications Satellite Committee, comprising representatives of 15 nations, held its first meeting in Washington during September 29-October 2. The committee approved rules of procedure, appointed a committee chairman, and heard progress reports on the development of the forthcoming global commercial comsat system.