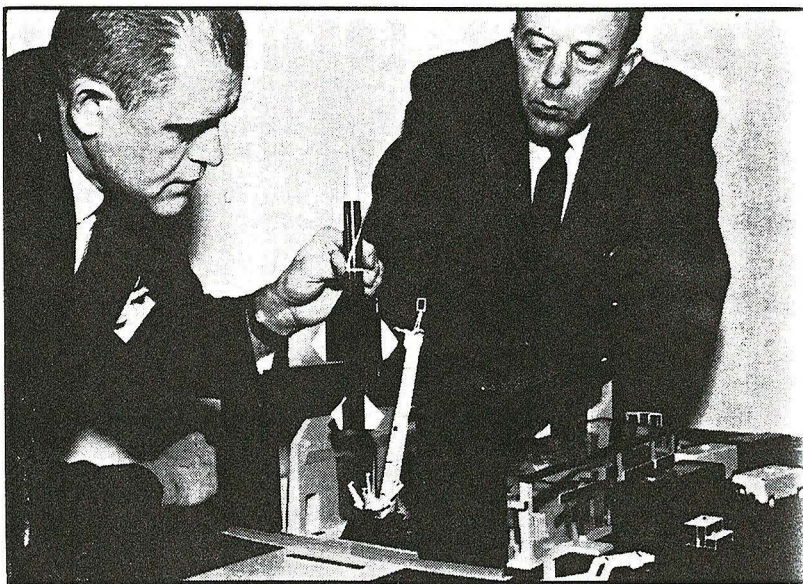


A Bomarc A was recently fired from a Florida site by a signal from a New York SAGE installation, which also directed the missile to a target flying miles out over the Atlantic.

Operational Status Nears for Bomarc

Boeing officials look over miniature of a Model 1 Bomarc launcher-shelter. Model may be compared with full-scale layout at top of page.



CANADAIR LTD. last month reported that a contract has been received from the Boeing Airplane Co. for engineering services in connection with the Bomarc missile program. Under the terms of this contract, Canadair will supply approximately 150 missile engineers and technicians to the Boeing main production facility at Seattle, Washington, and in other parts of the United States. The Canadian missile workers will be south of the border for the next twelve months.

The move, suggestive as it might seem, does not necessarily imply that Canadair has, or is about to get, a contract to build Bomarcs in this country under licence to Boeing. It is quite possible that Canadair has simply found a means of keeping its missile team together by "farming them out". The team will be active in missile work while in the States, but available if the Canadian government gives a "go-

ahead" order to the Montreal company. Meanwhile, however, there has been a great deal of interested speculation in Canada as to the capabilities of the missile which Prime Minister Diefenbaker has already named as a defender of the northern forests.

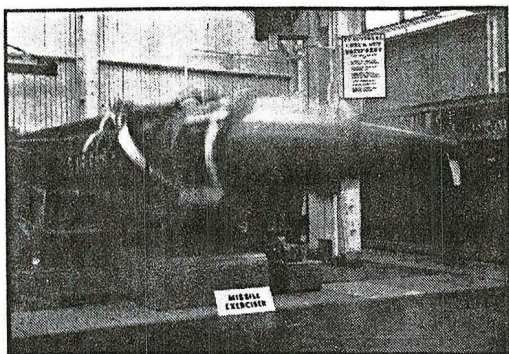
Under Test: At the present time the USAF is testing the Bomarc IM-99A at the Air Proving Ground Center missile range, Eglin AFB, Fla. This initial version of Bomarc has a range of about 200 miles, and is controlled by the electronic wizardry known as SAGE (Semi-Automatic Ground Environment), until the missile's homing radar locks-on a target. From there on the missile ignores any ground instructions and tracks the target with its own equipment. When the Bomarc is at its closest proximity to the target, it detonates.

The Bomarc IM-99A is closer in

appearance to the latest family of supersonic fighters than to missiles. It is 47 ft. 4 in., long, and has a wing span of 18 ft. 2 in. The Bomarc's delta wing which is swept back at 55°, has cropped tips. It is possible that these tips are cut back at the Mach angle which would suggest that the missile cruises in the neighborhood of Mach 1.5 or slightly better. (This fact does not necessarily give the lie to the Boeing company's claim to a top speed of Mach 2.5).

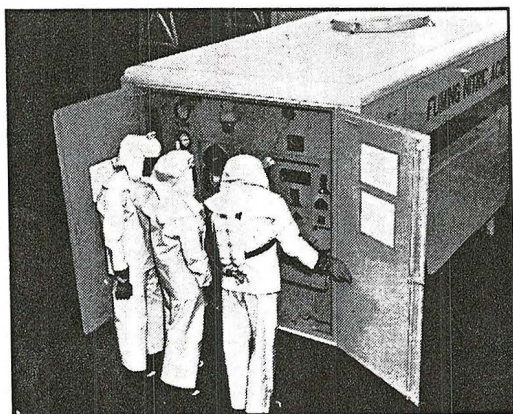
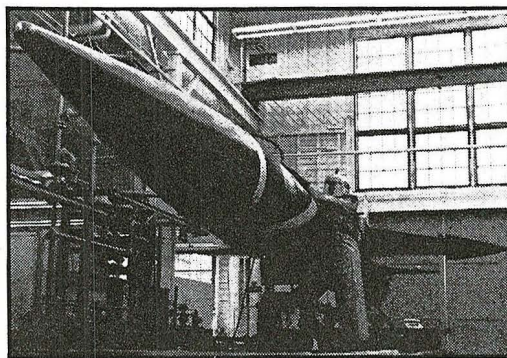
The nose section of the Bomarc fuselage is a glass-fibre radome which contains the target-seeking radar equipment and the guidance system. Immediately behind this is the warhead compartment. The remainder of the cylindrical fuselage is devoted to integral fuel tanks for the ramjet and rocket-engine.

(Continued on page 28)

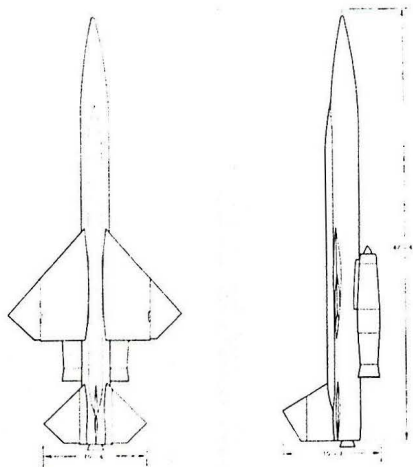
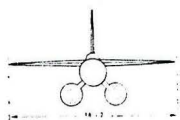


This Bomarc "exerciser" automatically puts the Boeing missile through a captive "flight test".

At Bomarc training centre in Seattle, technician wearing protective clothing prepares to defuel an IM-99.



Shower decontaminates rubber suits of fueling crew in unlikely event of dousing by fuming nitric acid fuel.



The IM-99A is a 15,000 lb. missile which looks like, and is controlled like, an unmanned interceptor. It is launched vertically by a single Aerojet-General liquid propellant rocket engine; two Marquardt RJ43-MA-3 ram jet engines slung on pylons below the fuselage act as sustainers once the missile is on its way. This version of the Bomarc is designed for Mach 2.5 at an operational altitude of 60,000 feet.

Recently, an IM-99A successfully intercepted and figuratively "destroyed" the fastest target drone ever used. This was a Lockheed X-10 guided missile travelling at supersonic speed. The Bomarc was launched from a point 1500 miles from the actual intercept area off the Florida coast.

Super for Canada: However, it is not this model of Bomarc that is being considered for use in Canada. The Bomarc IM-99B, or Super Bomarc, is now under development by Boeing. Although similar to the first version in appearance, a jettisonable Thiokol solid-propellant rocket will replace the present liquid fuel engine for launch and acceleration. The change will allow the tankage space now used for rocket fuel in the "A" version to be used for additional fuel for the ramjet sustainer motors. This in turn boosts the Bomarc's effective range to 400 miles.

The IM-99B is made more efficient too by the fact that the Marquardt ramjet engines have undergone improvement. The new version of this engine has been flight-tested at 100,000 feet and up to a speed of Mach 4. Refinements have also been made to the target-seeking system of the Bomarc giving it a greater sensitivity and permitting a greater precision of interception. This target-seeker plots the enemy's course, speed and range and transmits internal signals to the flight controls which guide it into a collision course. Normally an actual collision with the target is unnecessary, since the missile is armed with an acutely sensitive proximity fuse.

Boeing's IM-99 program was authorized by the USAF in 1949. Two months later, announcement was made that the University of Michigan would participate in the early studies of this defence weapon system and later would build research models of ground-based equipment for Boeing. It was from this combined effort that the name Bomarc was evolved: "BO" from Boeing, "MARC" from Michigan Aeronautical Research Center.

Test launchings of Bomarcs began in 1952 with a prototype vehicle. Between that time and April 1958, 39 launches were made. Since then, testing has been continued with squadron-type operational missiles.

The U.S. has already gone a long way toward integrating the Bomarc missile into its over-all defence of North America plan. Fourteen Bomarc sites have already been named, centering the long-range Bomarc missile defence areas around the Great Lakes chain, the Atlantic sea board, and the Pacific Coast. And in Canada last September, Mr. Diefenbaker announced that two Bomarc sites will be established in northern Ontario and Quebec.