AERONAUTICS

TFX Plane Controversy

Investigations into the TFX fighter contract, recently resumed by the Senate, have nearly lost sight of the operational requirements of the plane itself.

➤ THE TFX FIGHTER PLANE is designed to go sometimes very fast and sometimes very slow and spend a lot of time up in the air—much like the way the controversy over its contract has progressed.

Senate hearings, begun last February, are aimed at finding out why General Dynamics Corporation was allowed to build TFX instead of the Boeing Company.

Nearly lost in the long, intricate debate is a conception of just what it is that is being built.

TFX stands for Tactical Fighter Experimental, but the plane in question is not called that officially any more. To the Air Force it is the F-111, and to the Navy it's the F-111B.

Whatever they call it, both services will get the same plane and it is supposed to please them both.

But the Navy is not as pleased as the Air Force. The TFX is heavier than the Navy wanted. The Navy, however, expected only a subsonic fighter, and they are getting one that can fly faster than sound.

The plane does satisfy the combined need for a low-altitude fighter-bomber that can travel to far-off spots without refueling and hop on and off aircraft carriers or tiny, hastily built jungle strips. The problem of how to get a vehicle to fly both fast and slowly, as a bird can do, has perplexed aeronautical engineers since Leonardo da Vinci.

Short, stubby wings are needed to lower the drag in supersonic flights. But large wings are required for slow flights and short runways.

The TFX pilot would lick the problem by pushing his wings backward when he wants to go fast and pushing them forward when he wants to slow down.

The TFX has another new feature, turbofans. A big fan in front of each of its two jets is turned on at low altitudes and spins freely at high altitudes. Engineers say you get much more out of engines with turbofans. The Navy TFX version will have certain special attachments such as a catapult launching device, altered landing gear and extended wingtips.

Both TFX models are a "very substantial improvement" over the F-4H and F-105, the 10-year-old planes they will replace, said Dr. Harold Brown, Defense Department head of research and engineering.

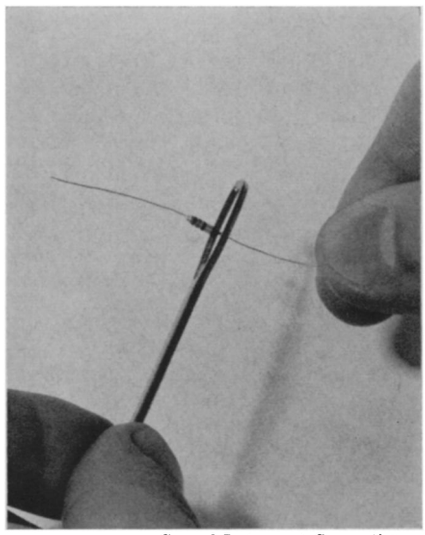
He said it will cost $7.2 billion to produce 1,700 TFX's, but that will be a billion dollars less than what taxpayers would have shelled out for two types of planes.

Dr. Brown said "there is no reason to believe that the Soviet Union will have anything better" than the TFX by the time the TFX's roll off the assembly line, estimated to be some four years from now.

The Defense Department is not releasing details of the TFX's capabilities, but Dr. Brown said TFX is "certainly superior" to Russian planes in range, payload, avionics and electronic equipment. It is also as fast as you would want such a plane to go, he said.

Maj. Gen. W. W. Momyer, Air Force director of operations requirements, said the TFX will do all the tasks performed by the old B-17, B-24, B-25, B-26, P-51 and P-47.

• Science News Letter, 84:7 July 6, 1963



General Instrument Corporation

TINY CAPACITOR—This miniature capacitor, small enough to pass through the eye of a darning needle, takes up 600 one-millionths of a cubic inch, but it can match the performance of capacitors 10 times its size and six times its weight. The capacitor, which stores an electrical charge, is one of the three basic components in virtually every electronic circuit. It was designed by General Instrument Corporation, New York.

SPACE

Unlocking Sky Secrets

➤ MEN, from the dawn of history, have looked to the heavens in hopes of getting a better view of their earth. They have studied the skies as mythologists, astrologers, navigators, astronomers and, as the moderns like to be called, space scientists.

But for all their star-gazing, only twice have they clustered great numbers of new, astounding observations into short periods of time. In the 17th century Galileo and Huygens pointed their telescopes skyward and for the first time saw mountains on the moon, rings around Saturn, spots on the sun and the moons of Jupiter.

The second period began dramatically on Oct. 4, 1957, when the Soviet Union launched the first artificial satellite. We are, of course, still in that period.

Scores of additional satellites, probes and sounding rockets, combined with advances in optical and radio astronomy, are providing a flood of new facts.

Scientists must rely on computers to help collect, sort and analyze the flood.

Their findings do not seem as glamorous as those of the earlier astronomers. The space scientist deals with things even he cannot see—magnetic fields, cosmic rays, solar winds and ultraviolet light. But his findings have a closer relation to man.

For example, satellites have given us a better idea of how our own planet looks both outside and inside. Scientists say the earth, judging from the way it pulls on satellites, is slightly pear-shaped and has an interior strength much higher than previously thought.

Tiros satellites have enabled us to extend and improve our weather predictions. We can now in one swoop get a picture of meteorological conditions all around the globe. We can spot Caribbean hurricanes building up over inaccessible spots off the African coast.

We know more, also, about the structure of strange clouds, such as those associated with tornadoes. Devices scan the atmosphere, measuring the intensity of infrared radiation, which meteorologists think may be a key to the weather.

The Explorer I satellite revealed that lying beyond the atmosphere, but traveling along through space with the earth, are zones of trapped radiation—the much-heralded Van Allen belts.

Scientists think these belts are related to the way energy is sent from sun to earth during solar flares.

They have noted that when such a disturbance occurs, a tongue of relatively slow-moving charged particles, called plasma, erupts from the solar surface. The tongue, dragging with it lines of magnetic force rooted in the sun, takes about a day to reach the Van Allen belts.

New developments are coming also in the exploration of other stars. Rocket-borne equipment has indicated that the ultraviolet light of very hot stars is much weaker than was thought before.

This second period of intensive observation of the sky has only begun. The most exciting part is still to come. Space scientists say we are on the threshold of answering the one big question men have asked since they started looking upward—Is there life out there, too?

• Science News Letter, 84:7 July 6, 1963