

PDR



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

JAN 5 1979

The Honorable John J. Duncan  
United States House of Representatives  
Washington, D. C. 20515

Dear Congressman Duncan:

I am replying to your letter of December 7, 1978 with the attached letter that Mr. Brock received from Mr. Erich Helbig. In his letter, Mr. Helbig expressed several concerns related to the use of nuclear power plants to generate electrical power. By means of this letter and attachments I shall attempt to address those concerns of Mr. Helbig that are covered by the mandated responsibilities of the Nuclear Regulatory Commission.

Mr. Helbig's first concern related to the potential danger to the health and safety of the public, especially in the southeastern part of the United States, that might result from release, through sabotage, of radioactive material from spent fuel that is stored at the Brown's Ferry Nuclear Station.

The spent fuel elements at all nuclear power plants are stored in spent fuel pools that are designed to withstand the effects of violent natural phenomena such as earthquakes or tornadoes without loss of capability to perform their safety functions. The massiveness of these structures also provides substantial protection against acts of sabotage by penetration of the walls. Furthermore, destruction of enough fuel elements to release a significant amount of gaseous radionuclides could be achieved only through use of a very substantial explosive charge that is detonated within the spent fuel pool during a very limited period of time (approximately 30 days) after the fuel elements have been removed from the reactor. In addition to the construction requirements, the entire facility is provided with a comprehensive physical protection system that is required by NRC regulations. A copy of this regulation (Part 73.55 of Title 10 of the Code of Federal Regulations) is enclosed (Enclosure 1). By providing a security plan that meets all the requirements of this regulation, the Brown's Ferry Nuclear Station has provided high assurance that successful industrial sabotage cannot occur through destruction of spent fuel elements.

The next major concern raised by Mr. Helbig related to the potential hazards involved with transport of the spent fuel elements offsite. An acceptable level of safeguards is maintained during transit through the use of shipping containers that have been designed to retain their integrity under all normal eventualities as well as hypothetical accidents (see Appendix B 10 CFR 71, Enclosure 2). I am forwarding under separate cover NUREG 170, Volumes 1 and 2, regarding transportation of radioactive material. Although attempts

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to sabotage shipments of spent fuel cannot be discounted, the protection provided the public described in these documents will also be applicable to minimizing the impact on the public.

Mr. Helbig's third major concern related to the wisdom of using nuclear power to generate electricity. This subject does not fall within the mandated responsibilities of this regulatory agency. The Commission, however, has studied the relative value of nuclear power plants as a source of energy versus a source of adverse impacts on the environment in comparison with other sources of energy. To date all proposals for construction and operating nuclear power plants have been found to have an acceptable power cost/benefit ratio both on an absolute scale and relative to all other practical methods for generating electricity. In addition, the staff has prepared a report on the "Health Effects Attributable to Coal and Nuclear Fuel Cycle Alternatives," (NUREG-0332). A copy of that report is enclosed for your information.

It is obvious that I have not been able to respond to Mr. Helbig's concerns in the detail that he might desire, but I hope this information will be of value. If additional information is required we would be pleased to provide further assistance.

Sincerely,

*(Signed) T. A. Helbig*

*Lee V. Gosick*  
Executive Director  
for Operations

Enclosures:

1. Part 73.55, Title 10,  
Code of Federal Regulation
2. Appendix B, 10 CFR 71
3. NUREG 0332

Separate Cover: NUREG 170,  
Volumes 1 and 2

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JOHN J. DUNCAN  
2D DISTRICT, TENNESSEE

2458 RAYBURN HOUSE OFFICE BUILDING  
PHONE: (AREA CODE 202) 225-5435

COUNTIES:

BLOUNT  
CAMPBELL  
CLAIBORNE  
KNOX  
LOUDON  
MCMINN  
MONROE  
SCOTT  
UNION

Congress of the United States  
House of Representatives  
Washington, D.C. 20515

COMMITTEES:  
WAYS AND MEANS  
BUDGET  
JOINT COMMITTEE ON  
INTERNAL REVENUE  
TAXATION

December 7, 1978

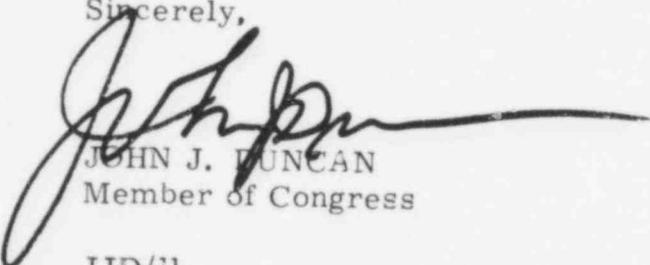
Congressional Liaison  
Nuclear Regulatory Commission  
1717 H Street, N.W.  
Washington, D. C. 20555

Dear Sir:

Attached hereto is a self-explanatory letter I have received from my constituent, Mr. Erich Helbig, of Knoxville.

I shall appreciate your forwarding to me any available information concerning his inquiry.

Sincerely,

  
JOHN J. DUNCAN  
Member of Congress

JJD/ll

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Enclosure

COPY: V. DUNCAN

ACKNOWLEDGE RECEIPT!

2520 Holbrook Drive  
Knoxville, Tennessee  
37918  
November 24, 1978

Mr. William Brock, Chairman  
Republican National Committee  
310 First Street S.W.  
Washington D.C. 20003

POOR ORIGINAL

Dear Mr. Brock:

Your Friday-Saturday, Nov. 17-18, nationally broadcast comments concerning the Mig-23's in Cuba, and your concern that they not be equipped with nuclear weapons/missiles, rings with an unaware, or false, sincerity for our security in the South Central part of the Nation, for many knowledgeable and more aware citizens, of which I am only one.

Let me try to enlighten you with some detail, for your knowledge and greater awareness, of far more insidious threat to us in the Tennessee Valley, and the South in general. Please make the effort to carefully check these matters so that you have honestly satisfied yourself, with the detail firmly confirmed in your mind.

At the site of the TVA's Browns Ferry nuclear fuelled electric power plant the spent fuel elements (in fuel bundles like the Boy Scouts looked on on Exxon TV commercials, BEFORE they were used in a nuclear reactor), from at least one refuelling of each of the three reactors, are stored on site in the relatively unhardened spent fuel cooling pools. This is a quantity that approximates 300 tons of the nuclear fission process waste products, --- the remains of the splitting of Uranium-235 atoms, along with some materials that have captured neutrons and in turn have become radioactive wastes. You can confirm the quantity of waste materials stored in the present waste inventory. There is no need to believe my words alone.

Recall now that it was only some 2-20 pounds of fission product materials that "fellout" from the first offensive use of the Uranium Bomb, with such vicious long term results for large number of individuals. There is a difference, pound for pound, between the Bomb's fallout and the reactor's waste product materials. The latter are even more vicious, biologically, when dispersed to men's living space, --- as you can confirm for yourself.

Of course the nuclear spent fuel wastes stored at Brown's Ferry are not supposed to be dispersed to the living space of men, and children. But as such are a "target of opportunity", in their well designated storage site, there are many unsavory scenarios in which dispersal occurs.

One is the direct attack with conventional arms by Cuban Mig-23's, or the private Cessna-182, for the matter of aerial delivery of a dispersing explosive to the storage racks of the spent fuel elements.

Another is the use of a single, widely distributed, one-man, anti-tank weapon with several rounds, accomplishing the same result. I enclose some copied pages on modern weapons for some small, better, understanding of the numbers and range, penetration capability, weights, sizes, etc. of "eyes-on-the-fries" guided, one-man, anti-tank weapons.

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The point is that a determined individual, or very small group, desiring to do heinous damage has many options open, when there has been such "laid-on" hazard made accessible, by such as the Browns Ferry nuclear wastes, in storage

on site, or in transit, or elsewhere stored in the Tennessee Valley.

Dispersion of some 50 pounds of the on site wastes in spent fuel bundles, only 50/600,000 ths or 0.0083% of 300 tons, to the low flying clouds that move water to the upper Tennessee Valley could "disembowel" the South Central states of the Nation. That is, "popped" as particles, and entrained gasses which are soluble in water (Kr-85 and various Xe isotopes), to the cloud cover at an appropriate time for the natural winds to carry such upvalley. There is the realistic chance to disable four arsenals (Holston in Tn., Radford in S.W. Va., Redstone in Ala., and Milan in Tn. indirectly) Carried by the clouds that regularly bring the second highest rainfall annually in the continental U.S. to the upper Tennessee Valley, the rainout of dispersed nuclear wastes can stop production in the rich coalfields of Tenn., S.E. Kentucky, and S.W. Virginia, it must be noted to you. Also recognize the damage to lives in the short and long term, and note the later "Flushing" of such fallout through New Orleans, (and even Mobile, with the Tom-Bigbee Waterway completed in the future).

Ah yes, just move these wastes to a more secure site, we can say while dribbling words onto paper or into ear. Surely it can be done safely, for the TVA, NRC, EPA, DOT, and the industry have told us so, along with Oak Ridge spokesmen.

Of course, it is a fact that the railroads have refused the DOT's request to include such materials shipments in regular freight trains. And New York City has won its battle in the courts to not have such shipments moved within the city's limits. And Conn.'s Governor has imposed costly police escorts for such shipments, which did not prevent the wedging of one load under an underpass. And some Tennesseans have promised some "lessons" for government scientists and administrators, etc., should they or members of their family be passed on the road by any DOT allowed Radioactive Class III load, which shoots Gamma Photons as a radiating load to dose others on the road. All ignoring very possible accidents enroute to where?

Then too there is the moving target situation presented, with transport of spent fuel elements, rods, or bundles. Does the situation change if only a small hole, instead of a large hole, is made in the 400 PSI pressurized transport container by some "accident prone" hunter, or intent heavier weapon wielding "radical", or cult member, or T-group member?

It may be wise to recognize that there is no simple transport "spill" of such spent fuel material. That is, where it is "cleaned up" and life goes on, even minus a few lives. Perhaps the matter can be made meaningful for you at the personal level by a question.

Would you accept some soil particles, from the site of the non-leaking upset of another type of nuclear wastes in less hazardous form, which occurred in August near Chattanooga, Tenn., --- particles sifted into your family automobile's passenger ventilation ducts? Please answer, "Yes" or "No" forthrightly, as a proper Tennessee gentleman directly answers when asked a direct question.

If your answer is "Yes", we can proceed to set a mutually agreeable date and time to visit the site.

POOR ORIGINAL

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POOR ORIGINAL

Brock

Page 3.)

November 24, 1978

Isn't it time to realistically examine the inefficiency of the process that leads to such attractive targets for "dissent" by many individuals throughout the world who have a genuine hatred for the area that gave a home to the Bomb and fallout which has damaged their lives, whether we reject their ideas of the matter or not?

It is a process that is less than 20% efficient for the purpose intended, and such has long been known by all sides of the nuclear-electric power issue. Starting with the energy unlocked by splitting, or fissioning, Uranium-235 atoms in a steam generating nuclear reactor, as 100%, there is 5% which is "prompt radiation" (neutrons and gamma photons). Then 11% remains in the waste pieces for slow release as radioactivity of the wastes and does no useful heating of water to steam. That leaves 84% as thermal (heat) energy which is regularly put into a steam cycle that dumps 70% of the thermal energy as waste heat to the local air and water. Thus only 30% of 84% is converted to electric energy at the pick-off connections of the generator. But now more than 10% of the electric energy is lost before any customer pays for some at his meter. Such loss exists because of in-plant useage, line losses, and local service/distributor useage.

So only 21-22% of the unlocked energy gets to the paying user, as you can verify for yourself elsewhere, and need not accept only my figures here. But you can confirm, also, for yourself that it takes 5-15% of the net electric energy obtained, by the fissioning of Uranium-235 in a nuclear reactor, in order to have mined, refined, and enriched, and prepared for use, the Uranium fuel. And please don't forget to get some realistic estimate for the energy consumption necessary to store, transport, process, and store or maintain the nuclear wastes.

Even the Republican Party could not continue to operate if such total percentage of funds were subtracted from each 100 dollars collected, before you could have some to spend, you may agree.

Perhaps you, and your East Tennessee Republican legislators to whom copies of this letter are sent, will change the absurd pro-nuclear chorus, heard more in the past than the present. Perhaps you and your associates will inquire intelligently about the 60% efficient Char-Using Fuel Cell, which uses a natural carbon cycle fuel supply that is realistic and practical, especially in the fundamentally energy rich South. And perhaps there will be recognition of an oncoming drive for the private, versus the central, electric power supply, --- that is, such that the political convictions of a Knoxville Mayor cannot turn out the lights that celebrate the birth of Christ, as was done to Knoxville citizens by a Republican mayor. Do you and yours have the capacity, intellectual and practical capacity, to fathom the technical details of constructive alternate, safe, Tennessee Valley enriching, TVA disposing, private electric supply system? We shall see by your actions.

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Perhaps there will be recognition of the economic, or other disaster, being imposed on the Tennessee Valley by attempting to use an insidiously damaging imported-into-the-valley fuel. Perhaps there will be the presence-of-mind to start efforts to prevent dis-employment or damage to craftsmen who can and do produce well in the valley area, by civil actions against central nuclear fuelled electric generation and for private, local fuelled electric generation.

Most sincerely,

*Erich M. Helbig*  
Erich M. Helbig

## MILAN

Infantry anti-tank missile. In production.

**Prime contractors:** Aérospatiale, Division Engins Tactiques, Messerschmitt-Bölkow-Blohm GmbH.

**Powered by:** Dual-thrust solid-propellant rocket motor.

**Airframe:** Basically cylindrical body, with fore and aft sections of larger diameter than centre portion. Four flip-out tail-fins.

**Guidance and Control:** Wire guidance, using TCA optical aiming/infra-red tracking system. Spin-stabilised by tail-fins. Control by jet-deflection.

**Warhead:** Shaped charge.

**Length:** 2ft 5.5in (0.75m).

**Body diameter:** 4.6in (11.6cm).

**Fin span:** 10.5in (0.27m).

**Launch weight:** 13.9lb (6.3kg).

**Max speed:** 400mph (640km/h).

**Range limits:** 83-6,560ft (25-2,000m).

### Development and Service

MILAN (Missile d'Infanterie Léger ANticnar) is one of three modern-generation battlefield weapon systems being developed jointly by Aérospatiale and MBB, the others being HOT and Roland. It is typical of many

## France/Germany

current missiles in being fired from its transport container, which is simply placed on a lightweight launch and guidance unit when required for use. The latter unit embodies the firing mechanism, an optical sight with 4x magnification, an infra-red goniometer and the guidance electronics; it weighs 35lb (16kg), compared with 24.2lb (11kg) for the missile in its container. One man can carry the complete weapon system, accompanied by a colleague carrying two spare missiles.

Compared with the missiles it will replace, MILAN is a high-speed weapon, reducing the opportunity for effective counter-fire from the target. Its initial acceleration is 750g, compared with 15g for first-generation wire-guided missiles. Guidance is by the TCA system, as described for Roland (see page 104). Over short ranges, MILAN can be used as a recoilless rifle, and claims have been made for its effectiveness as a surface-to-air weapon to protect ground targets against head-on attack by helicopters and low-flying fixed-wing aircraft. Development testing of the basic weapon system had been completed by 1971.

## Cobra 2000 (BO 810)

Lightweight anti-tank missile. In production and service.

**Prime contractor:** Messerschmitt-Bölkow-Blohm GmbH.

**Powered by:** Solid-propellant rocket motor. Non-jettisonable solid-propellant booster rocket.

**Airframe:** Cylindrical fibre-paper body, with pointed conical nose. Large plastic cruciform wings, each with spoiler. Booster mounted under body.

**Warhead:** Hollow charge, weighing 5.5lb (2.5kg) and able to penetrate more than 18.7in (475mm) of steel armour.

**Length:** 3ft 1.1in (0.95m).

**Body diameter:** 3.9in (10cm).

**Wing span:** 1ft 7in (0.48m).

**Launch weight:** 22.5lb (10.2kg).

**Max speed:** 190mph (306km/h).

**Range limits:** 1,310-6,560ft (400-2,000m).

## Germany

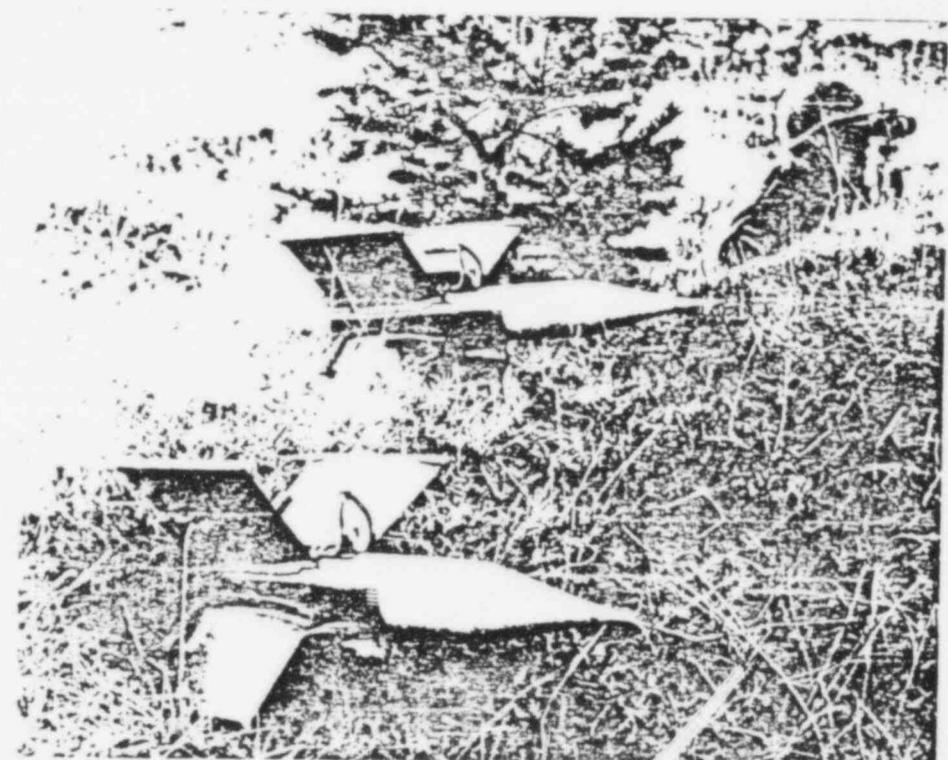
### Development and Service

This typical one-man anti-tank weapon system comprises the Cobra missile, a control box and cable links; up to eight rounds can be fired selectively from a single control box. No launcher is required, as the missile is supported on the ground by the lid which covers its rear end during transport. The control box is completely self-contained and carries the firing button and control stick.

More than 120,000 Cobras have been delivered to the Danish, German, Italian, Pakistani and Turkish armies, the current version being known as the Cobra 2000 to indicate the extension of its maximum range to 2,000m.



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## Mosquito

Lightweight anti-tank missile. In service.

**Prime contractor:** Contraves Italiana SpA.  
**Powered by:** Two-stage solid-propellant rocket motor.

**Airframe:** Cylindrical glass-fibre body with pointed conical nose. Folding cruciform wings of sandwich construction, each with trailing-edge vibrating spoiler.

**Guidance and Control:** Wire guidance, with roll-stabilisation by powder-driven gyro. Control by vibrating spoilers on wings.

**Warhead:** Hollow charge, weighing 9lb (4kg) and able to penetrate more than 26in (660mm) of armour, or fragmentation type.

**Length:** 3ft 7.7in (1.11m).

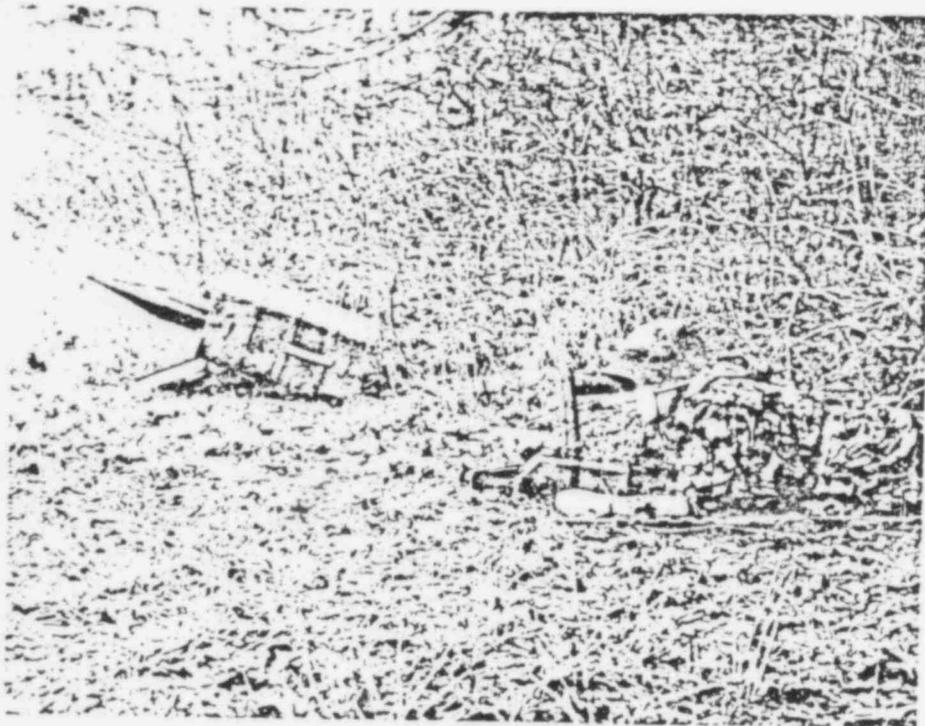
**Body diameter:** 4.72in (12cm).

**Wing span:** 1ft 11.6in (0.60m).

**Launch weight:** 31lb (14.1kg).

**Cruising speed:** 205mph (330km/h).

**Range limits:** 1,200-7,800ft (360-2,375m).



POOR ORIGINAL

## Switzerland/Italy

### Development and Service

This simple, one-man, infantry anti-tank weapon was developed by Contraves-Oerlikon of Switzerland but manufactured until 1971 by Contraves Italiana. It is standard equipment in the Swiss and Italian Armies, who use also a version fitted with a parachute recovery system, instead of a warhead, for training. Six Mosquitos can be carried in their container-launchers, ready for firing, by the Puch-Haflinger light cross-country vehicle. Mosquitos have also been fired successfully from Agusta-Bell 47 helicopters.

In conventional infantry use, the Mosquito is controlled and fired by means of a small control box carrying a joystick and optical sight. The container-launcher houses the missile with its warhead detached, and weighs 48.5lb (22.0kg).

## SS.10 (Nord 5203)

Anti-tank missile. In service.

**Prime contractor:** Nord-Aviation.

**Powered by:** Two-stage solid-propellant rocket motor.

**Airframe:** Cylindrical body with rounded ogival nose. Rear-mounted cruciform wings, each with a small control surface at the trailing-edge root.

**Guidance and Control:** Wire-guided. Control by wing-root spoilers.

**Warhead:** High-explosive, weighing 11lb (5kg).

**Length:** 2ft 9.2in (0.86m).

**Body diameter:** 6.5in (16.5cm).

**Wing span:** 2ft 5.7in (0.75m).

**Launch weight:** 32.6lb (14.8kg).

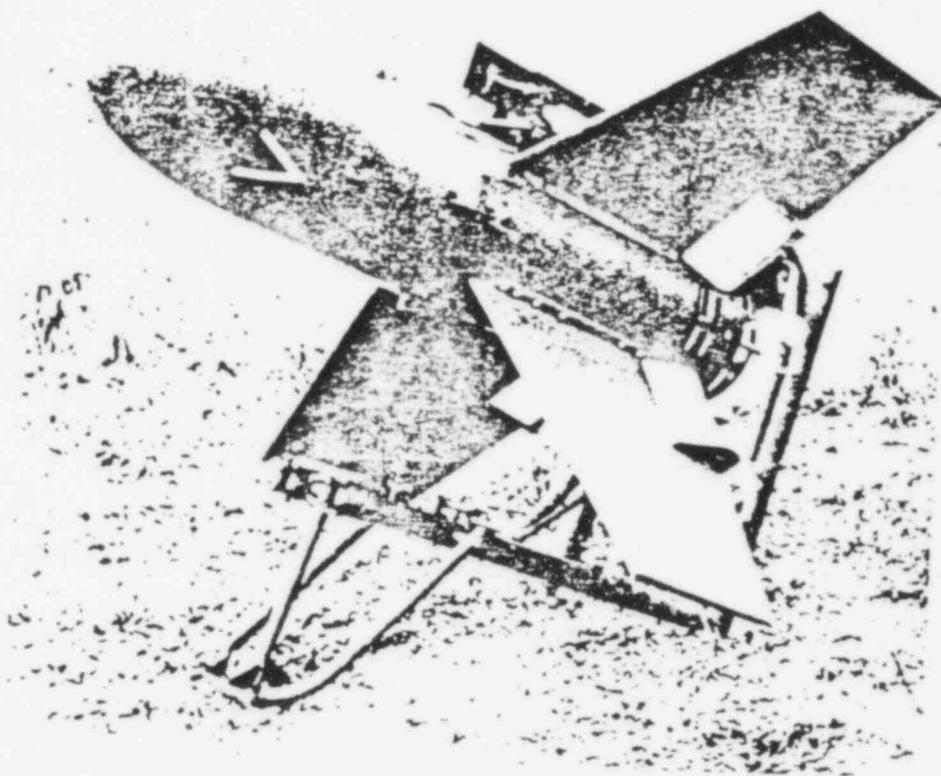
**Max speed:** 177mph (285km/h).

**Range limits:** 990-4,920ft (300-1,500m).

## France

### Development and Service

Contemporary with Entac (page 31), and similar in configuration and size, the SS.10 was one of the first guided missiles to be used in action. The Israeli Army employed it successfully against Egyptian armoured fighting vehicles during the Suez campaign of 1956. Many other countries adopted it as a standard infantry weapon, including France, Sweden and West Germany, and production was at the rate of 450,500 per month for a long period. At least nine countries still included SS.10s in their combat inventory at the start of the 'seventies, although the weapon has long been superseded by newer types. It was designed to be fired normally from the ground, using its boxlike container as launcher. It was also fired effectively from jeeps, light aircraft and helicopters.



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