

APPROVED FOR RELEASE: 2007/02/08: CIA-RDP82-00850R000300020049-3

28

37

1 OF 1

FOR OFFICIAL USE ONLY

JPRS L/9277

28 August 1980

West Europe Report

(FOUO 37/80)

FBIS FOREIGN BROADCAST INFORMATION SERVICE

FOR OFFICIAL USE ONLY

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

For further information on report content call (703) 351-2811 or 351-2501 (Greece, Cyprus, Turkey).

COPYRIGHT LAWS AND REGULATIONS GOVERNING OWNERSHIP OF MATERIALS REPRODUCED HEREIN REQUIRE THAT DISSEMINATION OF THIS PUBLICATION BE RESTRICTED FOR OFFICIAL USE ONLY.

FOR OFFICIAL USE ONLY

JPRS L/9277

28 August 1980

WEST EUROPE REPORT

(FOUO 37/80)

CONTENTS

THEATER NUCLEAR FORCES

FRANCE

Nuclear Defense, Deterrence Study Concluded (Pierre Hautefeuille; STRATEGIQUE, Apr-Jun 80)	1
'Strategic Cruise Missile' Under Consideration (Pierre Langereux; AIR & COSMOS, 12 Jul 80)	21
M-4 Missile Readied for Use by 1985 (Pierre Langereux; AIR & COSMOS, 12 Jul 80)	26
SSBS-S3 Missiles Now Operational on Albion Plateau (Pierre Langereux; AIR & COSMOS, 12 Jul 80)	38
Use of SX Mobile Missile Outlined (Pierre Langereux; AIR & COSMOS, 12 Jul 80)	42

COUNTRY SECTION

BELGIUM

Belgian Attitude Toward Arms Sales Considered Hypocritical (POURQUOI PAS?, 12 Jun 80)	44
--	----

- a -

[III - WE - 150 FOUO]

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

THEATER NUCLEAR FORCES

FRANCE

NUCLEAR DEFENSE, DETERRENCE STUDY CONCLUDED

Paris STRATEGIQUE in French Apr-Jun 80 No 6 pp 23-44

[Article by Gen Pierre Hautefeuille: "Nuclear Defense and Deterrence Study (Conclusion)"; passages enclosed in slantlines are printed in italics]

[Text] The first part of this article appeared in STRATEGIQUE No 5.

Chapter II: Nuclear Defense and Deterrence for a Medium Power

Having reached this stage of our remarks, perhaps it would be well to sum up what has gone before.

We started with several too commonly accepted mythic notions, pitted them against reasoned arguments, and concluded that:

--There is neither incompatibility nor antithesis, but on the contrary a direct and close complementarity, between deterrence and defense, in that every deterrence is of necessity based on a defense (or a vengeance) capable of being carried out with a reasonable chance of success,¹⁵ and in that, inversely, every system of effective defense can serve as the basic structure in the quest for a deterrent capability;

--There is no reason whatever to limit nuclear defense/deterrence coverage to the nation's mainland. Recourse to such coverage is justified a priori wherever important ("major") interests are involved that cannot be protected adequately by other means (conventional weapons, economic pressures ...).

Now then, France, like the other Western European countries, has for many decades had interests that are outside "the Hexagon" [French colloquialism meaning French mainland] but nonetheless genuinely vital to it--since an enemy, by bearing down upon those interests, could cause the death of millions of Frenchmen--and that it cannot be sure of being able to defend by conventional means against all potential threats; the most obvious case is that of its energy sources.

FOR OFFICIAL USE ONLY

--There is no such thing as an absolute, all-purpose "Deterrence"; it is only in the most abstract sense that one can speak of deterrence, or of defense, without relating them to the highly specific threats they are meant to counter.

It is of course possible that the same defensive or deterrent weapon will be valid against several different threats; but it will never be valid against all. To deal with different potential threats, it is therefore necessary, as a general rule, to provide several "defense/deterrent" capabilities, and to base them on separate and distinct weapons to the extent that the different threats could materialize simultaneously or successively.

Referring again to the case of France opposed by a big power, the threats to be anticipated would be, on the one hand, that of a massive nuclear strike against our country and, on the other hand, those of the conventional attacks that could be directed against our territory, or against one or another of our "vital" or simply "major" interests abroad, as for example our energy supply sources.

Against the first of these, we have accepted the fact that for us there is no conceivable "defense" (in the strict sense of the term), but only a highly credible potential for "vengeance," on which, provided it is backed by nuclear weapons in sufficient numbers and of suitable quality, a sound deterrence can be built.

This vengeance would consist of massive reprisals using the totality of our second strike arsenal.

This is the only case in which the "all or nothing" doctrine could be justified by a medium power.

Against conventional threats, a defense/deterrent capability, to avoid passing as an absurdity, must be based on other means, which clearly cannot be other than:

--also conventional, or

--tactical nuclear ("counterforce"), or

--strategic nuclear (counter-city), but in the form of limited and progressive strikes.

The conventional solution is applicable to all cases of aggression in which the stakes for the enemy would be small enough to justify on his part no more than the engagement (and potential loss) of "pinpoint strike" forces against our conventional forces.

FOR OFFICIAL USE ONLY

Beyond this threshold, the conventional solution would be foredoomed to failure; no choice other than that between the tactical nuclear and the graduated counter-city response would remain open.

We have categorically ruled out the tactical nuclear choice in case of a defensive war in Western Europe; we do not recognize it as a valid choice except at sea, possibly in space or possibly even in sparsely populated zones.

We have on the other hand concluded that the graduated counter-city option need not represent the danger of extreme escalation that is all too often associated with it, but that /in certain cases/ it could represent an effective defense/deterrent means, the only one left to a medium power to resort to if its conventional forces prove insufficient to repulse an aggression.

It now remains to define what these cases might be.

We set forth the rudimentary elements of the answer to this question when we wrote that a medium power's graduated nuclear initiative, intervening under general conditions that had been clearly stipulated, could induce a big power to desist from its aggression on one condition: that the medium power's residual second strike capability following its initial strike be sufficient to offset the /global/ value the big power attributes /at that point/ to the stakes in the conflict, in other words, the sum of the initial political value of this stakes and its agitable supplements.

One way (the most current one) of approaching our problem consists of asking: At what point could this be so? What are the /chances/ of this condition being fulfilled?

To a question phrased in these terms, only a fortune-teller has the answer.

What must in fact be determined is how one must set about it--to what means, to what procedures he must resort--to ensure that it will be so?

To proceed with the solution to this problem, let us examine the expression of this inequality, which brings together most of its givens:

Residual nuclear capability of the medium power	>	Big power's political evaluation of stakes + Vengeance + Prestige
	[greater than]	

Can deterrence succeed if this inequality is satisfied? How can it be satisfied?

3
FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

It leaps to the eye that, of the four terms comprising this inequality, there is one on which the medium power can exert no control action whatever: the "big power's political evaluation of the stakes." We will therefore say nothing here in that regard except that the medium power must nevertheless not fail to take it constantly into account in its analysis of the situation, and must therefore strive to assess and constantly update its estimate of this factor as accurately as possible.

The medium power can, on the other hand, bring action to bear upon the other three factors in ways that we will now analyze.

1. Residual Nuclear Capability of the Medium Power

Mathematically speaking, the greater this capability the more easily this inequality will be satisfied.

It must therefore be augmented.

A priori, there are two ways to do this:

--First of all, the medium power can enhance its initial nuclear capability, meaning the capability with which it would enter the conflict.

--Secondly, it can reduce the scale of its initial strikes to reduce the demands made by these on its starting capability.

We will not expand upon the second of these ways for the moment, except to say that our examination of the "vengeance" and "prestige" factors will lead to fully convergent conclusions.

Let us however examine the first way, on which one might at first glance be tempted to rely entirely, but whose practical limitations one rapidly perceives from three different viewpoints.

The first of these is financial: Nuclear weapons, their delivery systems and their "environment" are costly, and the resources that must be allocated to them are necessarily a tradeoff at the expense of the national economy.

The second is humanitarian: An increase in strike capability must be commensurate with its assumed eventual use: It stands to reason that it must produce greater damage to the enemy. Now then, while it is a precept of war that sufficient violence must be inflicted upon the enemy to ensure the imposition of one's will, it is also proper that this violence be limited strictly to the indispensable...

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

The third viewpoint is still humanitarian but, this time, centered on self-interest, in that it is based on the friendly losses and damages that could result from an eventual nuclear battle involving an escalation of weapons.

These (potential or real) friendly damages would be a function of those inflictable or inflicted upon the enemy, with a coefficient of proportionality between one and the other that would depend on the adroitness with which the medium power conducted its operations and the extent to which it succeeded (or could expect to succeed) in moderating the enemy's "agitatable" reactions; under the best of circumstances, one should not anticipate this coefficient to be less than 1.5.

Whatever may be the value of that coefficient, "friendly" damage, if the defense is not to be stripped of all political significance, must not exceed the value assigned by the medium power to the stakes in the conflict; under these conditions, it would be useless for the medium power to have an assured strike capability greater than two-thirds this value of the stakes.

It is this limit, calculated assuming the most dangerous threat and embodying a substantial margin of security, that must be used by the medium power to determine, in peacetime, the strike capability required by its strategic forces.

Once the crisis or the conflict had begun, the medium power could no longer expect to increase its strike capability; it could only seek to exploit its existing capability to the utmost; the only possibilities remaining to it then for short-term maneuvering to maintain or restore the basic inequality would be:

--on the one hand, as we have already said and as we will subsequently discuss further, to limit to the bare minimum its initial strikes;

--on the other hand and above all (and when, of course, the strike capabilities available to it are superabundant), to moderate to the maximum the enemy's "vengeance" and "prestige" reactions.

It is this particular aspect of the short-term deterrence maneuver that we must now examine.

2. Vengeance

Clearly, a diminution of the "vengeance" factor would contribute to the resolution of our inequality.

We will assume this "vengeance" factor to be proportional to the losses and damages inflicted on the big power by the medium power's nuclear initiative and will therefore take as an axiom the need to reduce these losses and damages to a minimum.

FOR OFFICIAL USE ONLY

These two terms will of course include their physical and material dimensions, but also a larger one: the destruction of a city of artistic interest, even though sparsely populated, that of a national shrine being as deeply resented as would be that of a densely populated urban center.

But here also there is a limit: that beyond which this reduction would compromise the assigned object of the nuclear initiative.

Let us try then to define this object precisely, and for this purpose let us refer to the situation study undertaken earlier in this discussion; under the terms of this study, the medium power should not resort to its nuclear defense capability except in the case that:

--Its strategic nuclear capability surpasses the "value of the stakes for the big power";

--The big power has been completely informed of the medium power's intentions but has deemed it incapable of resorting to /this particular/ form of defense, basing this conclusion on an awareness of real problems, no doubt, the magnitude of which it has misjudged to the point of attributing to them a "blocking" effect on the medium power's freedom of nuclear action; and the latter has tried in vain until then to persuade the big power of its error through warnings, notifications, then preparations and concrete alert measures carried out successfully despite the latter's "difficulties."

The medium power's nuclear initiative under these conditions would have as its sole reason for being to bring before the big power, which the foregoing warnings have failed to convince, hard evidence this time of the medium power's freedom of nuclear action; the combining of the threat of the "intolerable," which is kept hanging over the head of the big power, and the evidence that the medium power could effectively strike the latter should produce the deterrent effect being sought.

What must be carefully noted, however, is that the convincing value of this sequence would derive essentially from the initial launch as such (or its repetition); from the mere fact, that is, of its having been carried out despite the problems, and not from the damage it may have inflicted.

The essential thing at this stage would be to launch, and there is no reason whatever, from the strict viewpoint of the purpose of this initial launch, why its material effects should not be kept minimal: on the contrary, such minimization would respond at one and the same time to the desire to limit the "vengeance" effect and to the desire to keep the initial demands on the medium power's nuclear capability as small as possible.

This systematic reduction must be adhered to as a cardinal rule.

FOR OFFICIAL USE ONLY

As actually carried out, therefore, the medium power's nuclear initiative could take the form of a single, low-destructive-powered launch, a "blank" launching of sorts, in other words, one intended to produce very reduced damage or none: for example, over a little- or non-inhabited region, or a virtually deserted coastal waters zone.

Could the damage to be inflicted on the enemy by the initial launch be still further reduced?

The idea has in fact been around for some time that a medium power could take its initiative in the form of a strike over its own territory or that of an ally.

This would certainly be satisfactory from the viewpoint of the "vengeance effect," in that it would inflict neither losses nor civilian damage on the enemy, and would avoid violating his national space. It has thus, from this standpoint, attracted several analysts, giving rise among them to theories on the "deterrent" value of more or less systematic and more or less massive use of tactical nuclear weapons.

It is much less attractive from the standpoint of the ultimate purpose of the initial launch, which is, we repeat, to furnish proof of the medium power's determination to escalate, if necessary, to the strategic nuclear level; a "tactical" launch would in itself actually not constitute such proof. It would at best lend itself to uncertainties, since it could be interpreted either as a step toward the strategic level, and thereby as a signal (and not as evidence) of the medium power's determination to escalate to that level, or as the start of a tactical nuclear battle/, which, as we have seen, the big power need not fear, since it is in a position to sustain such a battle for a much longer time than the medium power.

The latter interpretation would tend to prevail as long as certain opinions on the "deterrent" value of a conventional engagement with massive tactical nuclear support remained current--opinions that are in fact based more often than not on a lack of sufficient thought, on an exaggerated evaluation of the risks of a strategic initiative, and on the fear of facing up to them.

We therefore will not discard a priori the solution of a "tactical" nuclear initiative,¹⁶ but on the express condition that it incorporate appropriate measures to ensure correct "readability" of the "message" it intends to convey: the verbal communications (by telephone hotline or otherwise) that would precede or accompany the launch must be absolutely clear and precise; but it is the formalities of the initiative that must leave no room for any possible misunderstanding; to this effect, the following two rules, among others, should be observed:

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

--A tactical nuclear initiative should involve a launch of not more than one weapon and should avoid destructive or neutralizing effects upon the enemy forces, so as to minimize the chances of being interpreted as the "start of a counterforces battle."

--In the event that the big power, despite this precaution, committed such an interpretative error, in no case should the launch be repeated in the same form; the second strike must be in the enemy's national space.

3. Prestige

Let us now consider the prestige factor.

Here again, the resolution of our basic inequality requires that attacks on the prestige of the big power be minimized, so as to minimize the "supplementary stakes" they would generate.

Proceeding in the manner just described in respect to the vengeance factor would clearly contribute to the accomplishment of this aim; it is self-evident that limiting the "losses and damage" inflicted on the big power as a means of reducing the "vengeance" effect would at the same time reduce attacks on the big power's prestige; in sum, two birds would be killed with one stone.

Another possibility is also open to the medium power: that of choosing wittingly the timing of its nuclear initiative, considering that the less the big power had advanced in its aggression, and the less substantial the gains it had achieved by then and would have to give up (at least in part), the less the big power's prestige would be threatened by the latter's being constrained to desist from its aggression before having fully achieved its aims.

For the medium power seeking to reduce the "prestige" factor, this consideration provides an opening argument in favor of a "preemptive" strategy--a "preemptive nuclear strategy" to be precise, in other words, a nuclear initiative taken at the earliest inceptive stage of an aggression.

But the inherent limitations on the effectiveness of these two categories of measures are rapidly reached: valid though they are to a certain point, they become impotent beyond it. In effect, all of the precautions and carefully worked out steps taken by the medium power, together, could not change the essential fact that what would be involved for the big power would be the abandonment of a plan, a necessarily important one since it had justified on its part a resort to war, and, what is worse, having to do it under pressure from a weaker power than itself. In the fact alone, in the very principle, of this abandonment, there would be, for the big power, a lowering of its prestige, a loss of face that, despite all efforts to "reduce" and "compress" this effect, could not be minimized below the threshold of the unacceptable.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

Those who doubt the chances of success of a graduated nuclear initiative by a medium power find in this a strong argument, strong enough to have led some analysts to conclude that the big power could never bow to such conditions, and that any strategic nuclear initiative by the medium power, however "graduated," would ineluctably bring about, by way of reaction, the latter's complete destruction. And this, in turn, has led some to advocate an "all or nothing" initiative (If lose we must, no matter what we do, why not choose the most frightening outcome? Perhaps it will frighten the enemy as well...), and others to reject categorically a defense mode that could, under these conditions, be nothing other than suicidal.

This brings us to the heart of the problem. If a big power could indeed never agree to give in to a medium power, then no other position is possible, and the argument for the concept of a medium power's nuclear "defense/deterrent" capability against a big power crumbles in its entirety. At this point then, as we have said above, the method of "compressions" and "reductions" becomes impotent...

Then what?

Then, however, a way out is open... or rather could be opened in certain cases and under certain conditions: specifically and paradoxically, in circumstances wherein the "prestige" obstacle had resisted all efforts to whittle it down and had proven impenetrable frontally, but wherein it would be possible to duck the issue, to get around it, by simply faking the significance of the facts in regard to whether or not they conform to the big power's intentions; in other words, by giving to the latter's failure the appearances of a success.

Things would certainly not just happen this way on their own; the game, especially for the medium power, would be incredibly difficult to play out; but it would provide the sole chance of success, a real and bona fide chance (and we insist on this point), as long as the big power maintained for its part an adequate semblance of rationality in its behavior.

This would require that the two antagonists remain lucidly aware enough of the dangers of an escalation and of their common interest in avoiding it to feel compelled to seize and not relinquish again their opportunity in this respect: They would in this case have to agree to adopt and play out a scenario that, starting with the medium power's nuclear initiative, would lead to a cease of hostilities that would be made to appear to public opinion as if it had been decided by the big power after having won a victory.

By the very nature of things, this scenario would not seek to alter the facts, which are in any case hard to hide or disguise, especially in a free society, but rather their interpretation; in fact, it would be, above all, the big power's initial intentions and its war objectives that would have to be disguised in such a way as to be able to affirm that the first were carried out and the second achieved.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

But the margin available for lying would not be very large; to fulfill its assigned role, in other words, to be believed, the scenario must be verisimilar and must therefore display at least a minimum of interior and exterior logic.

First, the interior logic: To be seen as the winner, the big power must come out of it with gains, the inevitable counterpart of which are equivalent sacrifices by the medium power.

The medium power must make concessions, lesser ones of course than those its aggressor had originally planned to impose on it, but nevertheless enough to clothe the scenario's "war aims" in consistency and plausibility.¹⁷

The medium power must, in particular, resign itself to letting the big power have the "last word" of the operations: "conventional" military operations, of course, where the latter has preferred or had to refuse altogether to do battle at that level; /but, above all, nuclear operations: the medium power must, to remove all doubt, agree to suffer the last strike in the conflict;/ it must moreover agree that this last strike (the only one if things have gone well, but perhaps also the second, third...) will be more destructive than its own to which the latter is responding.

/More generally, the medium power could not succeed in winning the war unless it agreed to appear to have lost it/.

Not, however, in any manner whatever: The medium power would, at the same time that it effected its initial strike and made its initial offer of a scenario to the big power, stipulate the maximum limits it was prepared to accept in the latter's reprisal, beyond which it would escalate one step (and only one step at a time).

This outline provides some idea of how delicate the negotiation of such an agreement would be.

Then, the exterior logic: The scenario must "hang together" as consistently as possible with the events that have preceded it, or at least with those known to the general public: the policy that was being followed by the enemy, the preliminaries to the conflict, the unfolding of prior operations...

Besides, it must not contain too blatant contradictions with the ideologies and doctrines of the antagonists, nor with their previous statements of intentions, especially those of the big power...

For those who must create the scenario, the task, as can be seen, would be a difficult one.

FOR OFFICIAL USE ONLY

It would be made all the more difficult by the fact that each hour, each day that passed would add to its complications, in that they would be opening further opportunities for new declarations and intentions by the big power that would correspondingly and progressively reduce the medium power's margin for maneuver.

The facts themselves, for their part, would also be giveaways: military operations, the weapons used in them, their objectives, their development, the political measures that accompanied them--these would all be, even in the absence of accompanying statements, so many indications of the real objectives and would render the camouflaging of the latter all the more difficult.

There is in this, for the medium power, a second argument, much more pressing than the first one we have cited, for a "preemptive" nuclear strategy.

Discreetness would be the remaining condition for the success of the operation: the smallest "leak" revealing the artificial character of the scenario would ruin its credibility in one fell swoop and, by sealing off to the adversaries the escape route they thought they had found, could force them to resume their nuclear escalation to the catastrophic summits that are well known to all.

We do not claim to have exhausted the subject through these few comments; we feel, however, that we now have at our disposal a sufficiency, in number and substantiveness, of mooring points on which to advance, basing our approach on them, our concepts of the main outlines that could serve to shape "concretely" a medium power's defense/deterrent capability against a big power.

The first thing to be said in this regard is that this defense/deterrent capability would include /two distinct facets/, the first of which would be designed to address the threat of a //massive strategic strike [printed in boldface]//, in which the big power would take the initiative either at the start of the conflict or at any moment thereafter, and the second of which would address the forms of aggression that could be anticipated under the assumed situational conditions we have been considering, namely, a //conventional aggression that would outclass the capabilities of our conventional defenses [printed in boldface]//, or a //tactical nuclear aggression [printed in boldface]//. These two facets of defence/deterrence, which we will label A and B respectively in the part of our discussion that follows below, would involve recourses to different modes of action, and necessarily, therefore, to weapons that would also differ in one facet from the other.

FOR OFFICIAL USE ONLY

Defense/Deterrence Against a Crushing Strategic Strike: Defense/Deterrent 'A'

This would consist of a massive strategic strike using all the weapons at our disposal in retaliation against the enemy's crushing strike.

It would be a vengeance, as we have heretofore said, and not a defense strictly speaking. It nevertheless remains possible, however, and even relatively easy by reason of the credibility of such a reaction, to build upon it a viable deterrent. But, unlike defense/deterrent B, it would be merely a preventive deterrent.

This vengeance/deterrent capability rests on the permanent availability of a second strike capability at least equal to the maximum value the big power could attach to the stakes in all the foreseeable hypotheses of conflict, augmented by its possible "vengeance" and "prestige" supplements.

This strike capability would be dedicated to this one and only mission of reprisals, and would in no case be used for defense B, even if the latter must be committed in full; defense/deterrent A must conserve its deterrent effectiveness to the last instant of conflict and even beyond it, and must, in particular, prevent the big power from "wrapping up" /at any time/ nuclear exchange B, which the medium power had initiated.

Defense/deterrent A, in fact, besides the protection it provides against a big power massive nuclear initiative, would act also as a /protective umbrella over defense/deterrent B, enabling the medium power to place the latter in operation without excessive risk, conferring on it at the same time a certain credibility and thereby ensuring its deterrent effect.

Its essential role in the medium power's overall defense/deterrent system, of which it is the backbone, justifies its being called the "principal defense/deterrent."

Defense/Deterrence Against a Conventional (or Tactical Nuclear) Aggression: Defense/Deterrent 'B'

Carried out, to the end if need be, under the protection of the principal defense/deterrent, defense/deterrent B is built on strategic strike weapons of the same capacity as the preceding ones but necessarily distinct from them for two reasons.

First, precisely because defense B should be able to be put and kept in operation to the very end without ever having to do without the protection of the principal defense/deterrent system and therefore without tapping the latter's firing capacity.

And secondly, because nuclear fire direction and control would be different in the two cases, involving different technical characteristics and performances for their respective weapons and delivery systems: whereas for

FOR OFFICIAL USE ONLY

the massive strike by the principal defense/deterrent, in the main, a saturation strike over the enemy defenses may be counted on to pierce them and reach its objectives, it is not the same for defense/deterrent B, which launches an initial "blank" (or "tactical") strike, followed if necessary by other progressively "heavier" strikes, but with constant attention to limiting damage to the indispensable minimum needed to establish the credibility of the threat.¹⁸ Under these conditions, it would definitely not be a matter of launching 3, 4 or 5 strikes to ensure that at least one reaches the target; the risk of having them all arrive and multiply by such factor the retaliation that must be absorbed in return would be unacceptable. Only the most modern and most sophisticated weapons would be assigned to defense/deterrent B.¹⁹

We will not go into extensive detail on the total "environment" required by the nuclear portion of the defense/deterrent apparatus to enable it to carry out its function: information, communications, security, etc...

There is a point, however, that appears to need stressing, because its importance is too frequently underestimated and because its aspects under one facet of defense/deterrence are not the same as under the other. It concerns civil defense, particularly as regards measures for protecting civilian populations and property from the effects of nuclear explosions, and for rendering first aid and help thereafter.

Ordinarily, it is considered that such measures, at least on the scale on which they could reasonably be undertaken, would at best be ridiculously ineffective.

Unfortunately, it must be agreed that this would be true, or nearly so, in the event nuclear war took the "all or nothing" form all too frequently ascribed to it. This is the form in which the principal defense would have to intervene. And as long as the resources dedicated to defense remain of the same order of magnitude as they are today it appears impossible to provide effective measures against such an eventuality, and useless therefore to take them into account in determining the missions and equipping of civil defense.

But it is an entirely different matter under defense/deterrent B, where the limited character of nuclear strikes would, on the contrary, permit an assured effectiveness without prohibitive expenditures: Action in this domain should involve essentially the provision of anti-fallout shelters (much less costly than anti-blast shelters) and the organization of numerous and well-equipped first-aid columns.²⁰

Very wrongly, an anti-deterrent effect is sometimes ascribed to such measures, arguing that they would reflect a lack of confidence in the chances of success of deterrence.

This viewpoint is illogical and dangerous.

13
FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

How can we expect to make the enemy believe we are determined to resort, if need be, to nuclear defense, if we do not at the same time prepare to receive the retaliating response that is sure to follow? How better, on the contrary, to demonstrate the serious intent and the gravity of our deterrent threat, and ensure its credibility, than by openly preparing ourselves to suffer all the consequences of putting it into operation?

No. Civil defense, to the extent that it is reasonably possible to provide it with a minimum effectiveness, as is the case under defense/deterrent B, is the indispensable complement of the strike force.

If only because of its nuclear weapons and their sophisticated delivery systems, together with its obligatory civil defense support, defense/deterrent B is far more cumbersome and complex on the whole than the principal defense/deterrent.²¹

Is this to say that, strictly speaking, defense/deterrent B can be done without?

Certainly not, and the term "principal" we have used to label the one does not in any way signify that the other is but an accessory; both are in fact equally indispensable and indissociable one from the other: Providing defense/deterrent A alone will of course counter the threat of sudden mass destruction, but it leaves the door wide open to conventional aggression. Disregarding the principal deterrent, on the other hand, and settling for defense B, deprives the latter of its "protective umbrella" without which it loses all its effectiveness.

France cannot afford to do without one or the other.

Chapter III: How to Ensure the Rationality of the Aggressor's Behavior

Our final chapter presents some general considerations that we deem essential to the conceiving and conducting of defense/deterrence. The importance of these two aspects will be easier to grasp now that the concrete bases underlying them are known. They have an important bearing on the rationality of the big power's behavior and on the means of ensuring that rationality.

Rationality of Big Power's Behavior

The maintenance of a sufficient degree of rationality in the behavior of the big power would, as we have said, be one of the requisites for the success of a limited nuclear initiative by the medium power; we have therefore insisted on the care with which the latter should avoid not only provoking the big power to the point of irrationality but also giving rise to any but the least possible "emotional supplements to the stakes" from the latter's viewpoint.

FOR OFFICIAL USE ONLY

Our readers will agree without our further arguing the point, we hope, that this concern should manifest itself well before the nuclear initiative is actually undertaken, even before the start of the hostilities, and in fact from the opening of the crisis: From that moment onward, the talks with the enemy, and the military operations that follow, conventional or nuclear and assuming they do, should be conducted, as regards form as well as content, in a "style" combining extreme firmness with a respect for the other's dignity that will not stop short of courtesy.²²

The proper balance between these two, necessarily a precarious one, cannot be found and maintained without an "in-depth" knowledge of the enemy: of its people, of course, but also of its leaders, and of the inner moving forces to which the behavior of one and the other of these will respond.²³

It is to be noted in passing that, within these terms of reference, the military operations involved, conventional and nuclear, as well as the alert measures and military warnings that would have preceded them, could be considered, together with the concomitant steps taken in the diplomatic, economic and other domains, as elements of a genuine 'dialog' between the two antagonist countries--a dialog the conduct of which would be on both sides an undissociable whole under a single and consequently politically responsible head.²⁴

But let us get back to the problem of the rationality of the big power's behavior to state that all the precautions taken in a crisis situation, and subsequently in a state of war, to preserve rationality, could be in vain if they are not preceded by action of a totally different nature but convergent on the same objective. Going from the conditional to the indicative, we assert that it is in time of peace, before the start of any crisis--now, in sum--that this action can and must be taken: We refer to the intellectual work of analyzing our defense problems that is needed to work out and periodically revise our own doctrines and concepts in this realm, but that also cannot fail to influence those of the potential enemy and to thus determine, in advance and to a certain extent at the very least, the more or less rational manner in which, should the moment arrive, he would conduct his own operations.

Let us take a closer look at how this influence can in fact be brought to bear, first on the friendly, then on the enemy, viewpoints.

The necessary theoretical analysis must take as basic data, on the one hand the conceivable threats and the objectives assigned to the defense to counter them, and on the other hand the means in terms of men, weapons and materiel of all kinds, and the effects that can be expected to result from putting them into operation; it must rely as much as possible on past experience, but where this is lacking it must substitute a logical and patient effort of the imagination; the latter is very largely the case in nuclear defense/deterrence today, the study of which cannot benefit from any valid precedent whatever.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

On the "conduct of war" level (as on all the others), the responsibility for this analysis devolves upon those who would also bear the responsibility for the action, namely, the political leadership at the highest echelon.

They cannot be expected, however, to accomplish the task all by themselves, compelled as they are to divide their attention among many responsibilities. They must therefore fall back, for a portion of it, on specialists and theoreticians, who may either be advisers within their own organization or independent researchers, and, through critical analysis, selection and synthesis of the results of the work done by such specialists and theoreticians, form their own personal opinions. Official positions must ensue from the latter.

The influence of the specialists and the theoreticians is therefore not necessarily determinant of the content of the concepts and doctrines of their respective countries, but it is nonetheless of consequence. Generally speaking, it may be said that the newer and more complex the problems, as is the case today of those posed by nuclear defense/deterrence, the greater is the specialists' and theoreticians' influence.

These concepts and doctrines of defense, its intellectual bases, determine in turn the material and human resources that must be allocated to it, but also the practical use that will be made of them in a potential conflict, at least in its early stages.

As regards resources, there can be no question of this: The armed forces, the civil defense bodies, their weapons and equipment, their organization, their modes of action, their training... are all strictly a function of the concepts governing their use.

At the opening stage of the conflict, the conduct of initial operations is also governed by these concepts, for two reasons at least:

--Firstly, because the armed forces and civilian bodies, equipped, trained, and supplied as they are for a specified type of action, can only be fitted for operations of another type at the cost of a conversion for which events do not allow enough time.

--Secondly, it is no longer the time for working out or improving concepts, but rather for applying them. The problems of defense/deterrence are complex; in time of peace, in the quiet of the studies environment, it takes months, years, indeed decades, to grasp them in their entirety. In a time of crisis or during the early stages of a conflict, the effects of fatigue and the weight of the responsibilities involved add to the nervous tension, timeframes shorten dramatically, and it can hardly be expected of leadership to do other than implement the schemes worked out in time of

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

peace.²⁵ It is only after several days, more often weeks or months, if there is still time, that it becomes possible to pause for thinking, taking stock, and refining doctrine and concepts by way of minor retouchings or major revisions that experience, finally acquired and no doubt dearly paid for, has shown to be necessary.

The importance of doctrinal thought in time of peace--for the country, for the preparation of its defense and of the putting into action of that defense, for its success or its defeat... --is clear. Our doctrinal thought proved faulty in 1870, in 1914, in 1940... ; it would be disastrous were it to prove so once again.

What is less clear, and what we wish to come to now, is that the influence of theoretical thought makes itself felt not only in its own country but also among that country's allies and potential enemies. In this domain, as in all fields of scientific thought, there is a far-reaching extent of osmotic phenomena that is first of all inherent, of course, in the density of the modern international relations system, but that is especially marked where problems are concerned that are as new and complex as those being posed by nuclear defense/deterrence, to which, 30 years after their initial appearance, truly satisfactory responses have not yet been found. Big and medium alike, the member powers of the atomic club are therefore all eyes and ears for any thoughts arising on the subject abroad as well as at home.

Theoretical thought therefore determines, to a certain extent we repeat, not only the concepts and behavior of a nation's own leaders but also those of their potential adversaries.

Theories and doctrines in this domain constitute to a certain extent what are called "self-fulfilling theses," in that they find confirmation in history wherever men who "create" events, on one grounds or another, and who, rightly or wrongly, render them creditable, behave in accordance with what those theories and doctrines present as norms, rules, laws, or... a sense of history.

This is the case of, among others, the theory of the ineluctable "escalation to extremes," and of the "all or nothing" concept that derives from the latter. We have referred to these as absurd irrational myths under the conditions we have set forth; this does not mean, however, that these myths could not be transposed into the realm of facts if political leaders were to consider them norms of history and accept them, in the moment of decision, as their rule of action.

Should this be our case the day we find ourselves in the position of having to resort to our current nuclear defense/deterrent system against a big power, our chances of doing so without unleashing a cataclysm would be virtually nil.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

In a more moderate manner of speaking, the probability that the big power would react to a graduated initiative by the medium power by crushing the latter would be proportional to the measure of faith the latter's leaders had placed in the myth.

Inversely, the chances for a medium power to "retrieve" at an acceptable price the monumental error a big power that, not having believed in the medium power's determination to defend itself by nuclear means, had launched a conventional aggression against the latter, would be all the more favorable the more the rational manner of countering it (the manner we have discussed or others yet to be proposed...) had been widely debated, analyzed, assimilated beginning in peacetime by the leaders of the co-interested countries.²⁶

The conclusions to be drawn are clear.

The validity of a defense/deterrent system depends upon the sacrifices the citizens will undergo for it: sacrifices in money, time, discomforts and sufferings, and perhaps some day in blood. It depends also upon the amount of work put into the thinking in depth that alone can bring these sacrifices to fruition and deflect efforts leading to sterile dead ends. Doctrinal research on defense must be encouraged; it must be especially encouraged among the medium powers, whose problems are the more arduous, since they would be in the position of the weaker confronting the stronger, and since they therefore could not expect to succeed unless they can compensate their inferiorities by a surplus of resolve, certainly, but also by an appropriate measure of intelligence.

But it must be encouraged with discernment: This means unveiling and dispelling the myths that, were their audience to be further enlarged, would whittle down dangerously the chances that, to us medium powers confronting bigger ones, have been opened up by nuclear weapons and their delivery systems.

It is to this that we are trying hard now to contribute.

FOOTNOTES

15. ... and considered to be so by the enemy. Theoretically, this second condition is moreover the sole indispensable one...
16. We use this term "tactical" only because the launch would be effected using a weapon that is today being called "tactical." In fact, however, the operation would be 100 percent strategic.
17. These concessions could be made immediately operative. They could also be deferred in time, and so lend themselves to further discreet manipulations that would reduce their effects.

FOR OFFICIAL USE ONLY

18. The likeness of this sequence to the longstanding conventional mechanism of warning shots is self-evident.
19. This would not preclude planning for their participation in the principal vengeance if unfortunately it became necessary to resort to it...
20. Natural catastrophes would render these columns productive in peacetime while providing training for them.
21. The psychological and morale problems that bringing it into action would pose would also be much more difficult to resolve, above all since it would devolve upon the medium power to take the nuclear initiative.
22. This is neither Utopian nor an idle dream: True soldiers know the meaning of respect for the enemy.
23. Motivations that cannot be adequately understood by way of official ideology alone, not by a long way...
24. More generally speaking, the conduct of a launch (or of an operation) must be entrusted to those who are in a position to observe its results and make the necessary adjustments to strike the target or produce the assigned effect.

//If the desired effect is to be on the enemy's armed forces, it is to the military [printed in boldface]// that the mission of conducting the launch or the operation must be entrusted.

In the case in point, it would obviously be a political responsibility, since it is the political leaders who, situated as they are at the point of convergence of the political and military information flows, would be in the best position to judge whether or not the "message" delivered by the nuclear launch had been understood, and hence whether it would be necessary to amplify on it or to repeat it. Thus, the political leadership must bear the responsibility not only for the /initiative/ but also for the /conduct/ of nuclear fire.

25. Any more than one can expect of a young officer, or of a young soldier, in their first combat action, other than the entry into action of the mechanisms they acquired in training.
26. It could be argued that the nuclear defense/deterrent we are advocating here is itself but a self-fulfilling thesis. And with good reason.

FOR OFFICIAL USE ONLY

It offers nonetheless, over the myths we have been denouncing, the twofold advantage of, on the one hand, being logically coherent and of, on the other hand, preserving the concept of the medium power's defense against the big power.

COPYRIGHT: 1980, Strategique

9399
CSO: 3100

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

THEATER NUCLEAR FORCES

FRANCE

'STRATEGIC CRUISE MISSILE' UNDER CONSIDERATION

Paris AIR & COSMOS in French 12 Jul 80 pp 79-80

[Article by Pierre Langereux: "France Is Studying a Strategic 'Cruise Missile'"]

[Text] The cruise missile is presently a possibility--one that has been examined in parallel with the SX strategic ballistic missile--for the mobile "new component" of the FNE [Strategic Nuclear Force]: a component which the president of the republic recently referred to the study of.¹

The idea of the cruise missile is not new in France.² Proposals were conceived, then abandoned, in the past, when a "long-range air-to-ground missile" for the Strategic Nuclear Force was the question.

The cruise missile can be defined as "a long-range missile flying at very low altitude and propelled by a turbojet."

Since the German V-1--propelled by a pulsejet--of the last World War, various missiles can be likened to the cruise missile--in particular, the Otomat (Franco-Italian), Harpoon (American) and Kangaroo (Soviet) missiles; their range is in the hundreds of kilometers at most.

The new fact about the American cruise missiles in recent years is the use of them as a strategic weapon, with nuclear payload and with ranges of several thousand kilometers.

The interest of the strategic cruise missile lies in the fact that its trajectory is very different from that of the conventional strategic missiles, which have essentially a ballistic trajectory, peaking at very high altitude in space, whereas the cruise missile flies at very low altitude, hugging the relief of the terrain in order to conceal itself.

-
1. Press conference of 26 June.
 2. REVUE DE DEFENSE NATIONALE.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

The United States has thus viewed the cruise missile as an attractive choice for complementing a panoply of armaments in the strategic ballistic missiles category. Today, thanks to the progress achieved in the last 20 years in the technologies of computers, guidance and propulsion, the long-range aerobic missiles can be "light, precise missiles with low vulnerability," according to the technicians.

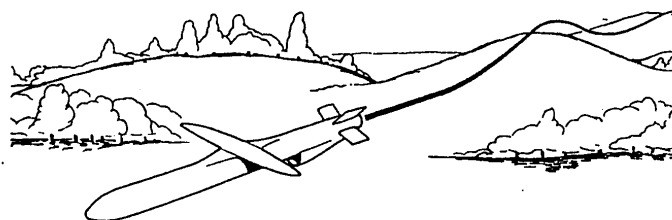
The launching of strategic cruise missile programs in the United States is doubtlessly related to political considerations, but also to the fact that use could be made of two especially decisive established techniques: on the one hand, the process of adjustment of an inertial system by a terrain-correlation device that compares the topography recognized by the missile as it flies over certain characteristic zones with the topography furnished to it at the start; and on the other hand, the perfecting of small double-flux turbojets, of low specific consumption, with appropriate fuels (fuels of high density and of the same mass heating power as kerosene).

This being the case, the point that remains most controversial is that of the vulnerability of the cruise missile or its penetration of conventional or specialized antiaircraft defenses.

Last year, the United States carried out a vast full-scale war game, with its own defenses, to test the penetration capacity of its cruise missiles against various antiaircraft defenses. The results of the experiment have obviously remained secret.

But even if these results were known, they would not be directly transposable to the case of the French cruise missile.

The proposed French cruise missile fits into a different context: the French missile is a strategic anticity missile, while the American missile, with its antiforces objective, requires greater precision of impact. Furthermore, the United States--it has the means for this--can deploy several thousand cruise missiles, fired from B-52 bombers, submarines, surface vessels or ground batteries, in an omnidirectional attack against the USSR.

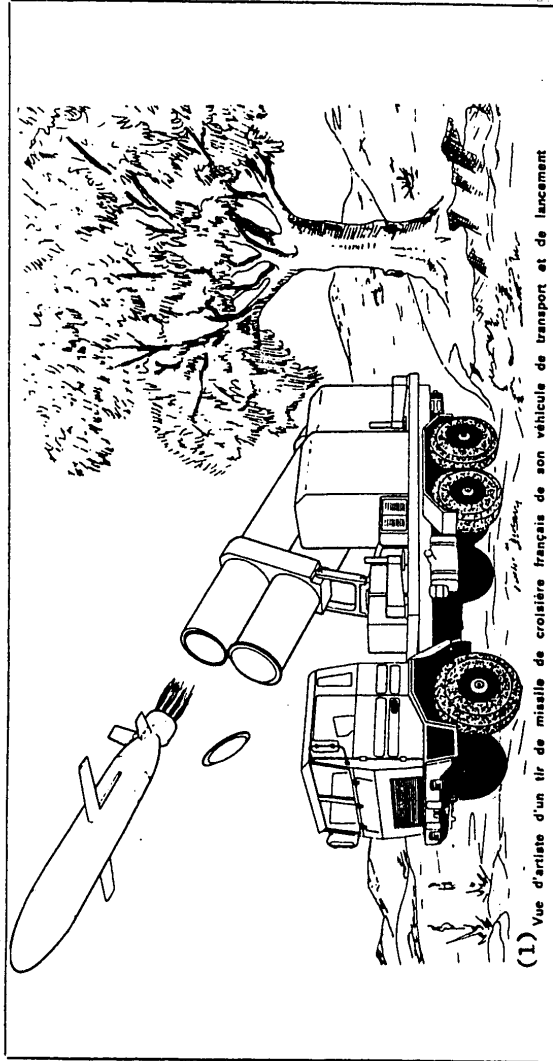


Very-low-altitude flight of a French cruise missile

France cannot commit itself to such quantities; rather, it can consider several hundred cruise missiles. These missiles should be very well-protected

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY



Key:

1. Artist's conception of the firing of a French cruise missile from its transport and launching vehicle

by a full panoply of measures that facilitate penetration (electronic and infrared countermeasures, great maneuverability, flight at the lowest possible altitude).

Like the American cruise missile, the French missile, will, of course, be built so as to reduce its "radar signature" (design and form of the structure, nonchoicing materials, etc) and its "infrared signature" (mixture of hot and cold flux of the motor, propelling-nozzle shields, etc).

It could also be launched in group flight.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

The French Cruise Missile

The cruise-missile studies presently being carried out by Aerospatiale (DSBS [expansion unknown]) and MATRA [General Mechanics-Aviation-Traction Co], for the DTE [Missiles Technology Directorate], concern a strategic missile capable of traveling several thousand kilometers at low altitude and carrying a thermonuclear charge.

The precision of impact required of the French cruise missile would be of the same order of magnitude as that of the ballistic missiles, since both of these strategic weapons contribute to the strategy of deterrence in an anti-cities perspective; but the cruise missile's navigation system is by nature capable of greater precision of impact.

Because of its low mass, the cruise missile could be adapted to many types of deployment: trucks, surface vessels and--why not?--submarines, etc.

Subsonic Missile

The French cruise missile would be, like its American counterpart, a subsonic missile designed to fly at Mach 0.7-0.8, which represents several hours of flight to reach a target that a ballistic missile would reach in a fraction of an hour.

This aerobic missile would be propelled in cruising flight by a small turbojet with low specific consumption. The French cruise missile would use an altimetric-correlation and terrain-tracking navigation device that would provide for both periodic adjustment of the inertial plant and flight at very low altitude.

The architecture of the cruise missiles being considered by Aerospatiale and MATRA resembles that of the U.S. cruise missiles: fusiform body of small diameter and long length housing the equipment, the payload, the turbojet and the fuel, with wings and with aerodynamic control surfaces deployable in flight.

The French projects are conceived to have low drag and high maneuverability (very high load factor). The ground-to-ground versions are equipped with a solid-fuel booster, which is eliminated on the air-to-ground versions. The two builders propose the same cruising motor (turbojet) furnishing heavy fuel. They both equip their missile with an inertial navigation system with in-flight adjustment by terrain correlation.

The precise configuration of the cruise missiles depends on the mission and the range required, and it is also a function of the mode of deployment. To give a few orders of magnitude, we can cite, by way of example, the following figures for a missile fired from the ground.

Depending on the version, the missile measures 6 to 7 meters long, 0.6 to 0.7 meter in diameter, and 3 to 4 meters of wing span. Its wings are de-

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

= ployable in flight after launching, and it is stored with its fuel, in "full shot" form, in a transport and launching container. The total unit weighs on the order of 2 tons, including about 250 kilos for the container and 200 kilos for the acceleration motor (booster); this accelerator provides for the initial launching phase. Cruising flight uses a turbojet that consumes about 1 ton of kerosene-type chemical fuel that may later be replaced by a "heavy" fuel.

COPYRIGHT: A. & C. 1980

11267
CSO: 3100

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

THEATER NUCLEAR FORCES

FRANCE

M-4 MISSILE READIED FOR USE BY 1985

Paris AIR & COSMOS in French 12 Jul 80 pp 69, 71-75

[Article by Pierre Langereux: "First French Multiple-Warhead Missile, the 'M-4,' Will Go Into Service in 1985 on the New SNLE (Missile-Launching Nuclear Submarine) the 'Inflexible'"]

[Text] The M-4 multiple-warhead MSBS [Sea-to-Ground Strategic Ballistic Missile] marks the advent of a new generation of MSBS's and strategic ballistic weapons which the French government had decided, in December 1972, to build.

The M-4 will improve our nuclear armament considerably when it goes into service in 1985, on the sixth SNLE, the "Inflexible," the first SNLE of the second generation of the FOST [Strategic Naval Force], presently under construction.

The M-4, development of which was launched in 1975 by the DTEN [Technical Department for Missiles] of the General Delegation for Armament of the Ministry of Defense, will in effect be a fourth-generation MSBS with performance characteristics distinctly improved in range (more than 4,000 km), in precision, in penetration capacity (six thermonuclear warheads)¹ and in "hardening" against attack from nuclear antimissile missiles.

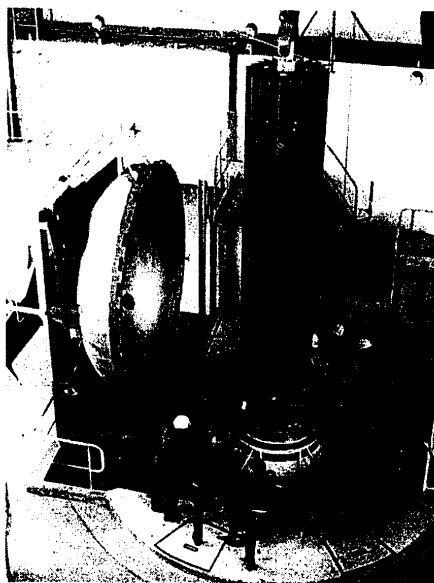
The new French MSBS will thus be at the level of the best American achievements in the field of strategic ballistic missiles fired from submarines, except for the new Trident 1 missile.

To achieve this result, the DTEN, the CEA [Atomic Energy Commission]-DAM [expansion unknown] and the industrial prime contractors--Aerospatiale and G2P (SEP [European Propellant Co]-SNPE [National Powder and Explosives Company])--have had to work technical wonders, both at the level of the vector (propulsion, structures, equipment, computer logic, etc) and at the level of the nuclear warheads (miniaturization).

Six Thermonuclear Warheads

The M-4 is the first French strategic ballistic missile with multiple warheads; the preceding MSBS and SSBS [Ground-to-Ground Strategic Ballistic] missiles had--and still have--a single head.

FOR OFFICIAL USE ONLY



Propellant grain of the 401

The M-4, in fact, has six thermonuclear warheads,¹ with a unit power of about 150 kT,² "hardened" against the effects of nuclear antimissile missiles and installed in nose cones of very high reentry-from-atmosphere speeds. They are multiple warheads with individualized trajectories and are deployed toward the target in clusters.

Penetration by the warheads of the M-4 is ensured both by their number and by the process of nose-cone spacing, as well as by the "hardening" of the nose cones against the effects of nuclear antimissile weapons that may be encountered during the ballistic phase and the final reentry phase.

The M-4 missile itself is likewise hardened against the effects of an explosion during the propulsion phase of flight.

The hardening of the M-4 missile against the effects of nuclear explosions is achieved by specific measures affecting most of the component parts of the vector and of the warheads: structures, wiring, connectors, electronic components and circuits, equipment, computer flight program, etc.

Protection of the SNLE's

The M-4 will also make it possible to increase the launching depth and the rate of fire of the SNLE's, as well as their patrol-zone range, which will strengthen their invulnerability.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

The M-4's will be able to be launched from a greater submerged depth because the missile is designed to be ignited under water, a little after it leaves the SNLE's launching tube, whereas the previous MSBS's were fired only upon reaching the surface.

The launching time for a salvo will be reduced as compared with the M-20, which strengthens the effectiveness of the SNLE-MSBS weapon system.

This improvement is achieved by means of the new "explosive flooding" system, which will thus be used for the first time in France on the SNLE's armed with the M-4. This system essentially produces steam and makes it possible to fill the SNLE's launching tube more rapidly with 35 tons of water to replace the missile, so as to rebalance the submarine before the next firing. This explosive-flooding system, built by the DTCN on the basis of a preliminary study by the LRBA [Ballistic and Aerodynamic Research Laboratory], has already been tested on many occasions, with launchings of dummy M-4's from a submerged caisson in the Toulon roadstead and from the experimental submarine "Gymnote."

Three-Stage Missile

The M-4 is the first French strategic ballistic missile in three stages--and even four if one considers the device for "spacing" the nuclear warheads in flight. All the preceding French missiles--MSBS and SSBS--were, and still are--two-stage only.

The first two stages of the M-4--401 and 402--are arranged in conventional manner, while the motor of the third stage--403--is integrated in a set called "CPE" (case-propulsion-spacing). With the six nuclear warheads under the cover, the CPE set constitutes the "top" of the M-4. This configuration has been dictated by the performance-characteristics conditions required of the M-4 in terms of range and nuclear-charge carrying capacity.

The flight of the M-4's warheads lasts about 20 minutes. the missile's three propulsive stages function in succession: the 401 first stage, ignited under water, burns for about 60 seconds with a thrust of 90 tons; the 402 second stage runs for 75 seconds with thrust of 30 tons, and the 403 third stage delivers a thrust on the order of 10 tons for 45 seconds. This is a total of about 3 minutes of propulsion phase, followed by a ballistic phase during which the warheads reach a peak altitude of about 800 km, for a range of more than 4,000 km.

During propelled flight, firing of the motor is what causes the separation of the stages, after the interstage skirt is first separated by a detonating fuse. This technique permits rapid separation without important angular disturbances, but it is very stressful for the missile--especially for the bottoms of the motors, which are subjected to high thermal fluxes. There is no "thrust-arrest device" (DAP) on the M-4, each stage of which recovers from the previous one's dissipation.

FOR OFFICIAL USE ONLY

During this phase of flight, the M-4's inertial guidance system determines the missile's position and calculates the trajectory variances that will be corrected by the three-axis piloting system, with activation of the principal nozzles (pitch and yaw control) or hot-gas jets (for roll control).

The M-4's guidance system is composed essentially of a three-axis inertial plant (SAGEM [General Electricity and Mechanics Applications Co]) whose data are processed by a digital computer (EMD [Marcel Dassault Electronics]-SAGEM) which sends the piloting orders to a command unit (SFENA [French Air Navigation Equipment Co]) and the ignition orders to the central orders units (Crouzet and MATRA [General Mechanics-Aviation-Traction Co]). The M-4's inertial plant is aligned at the start, on the basis of the data from one of the inertial plants of the SNLE.

Spacing of the Warheads

The essential novelty in the M-4's flight is obviously the terminal phase of the spacing of the nuclear warheads, which occurs after the functioning of the third stage. During this entire spacing phase, the evolutions of the upper part of the M-4 are commanded and monitored by the guidance computer in order to have complete control over the precision of each of the trajectories of the warheads, which are released and dropped by pyrotechnic devices.

The spacing of the warheads thus effected along the CPE's trajectory is calculated carefully so as to give the maximum chance of penetration against an ABM [antiballistic missile] defense system; the M-4's spacing system is designed to position the warheads in such a way that explosion of an antimissile nuclear weapon will not destroy more than one warhead at a time.

The technique was chosen for its simplicity, after a detailed DTEN study of the various possible systems (16 variants were studied).

The deployment of the M-4's warheads was developed by Aerospatiale with tower-drop tests in Aquitaine and by ONERA [National Office for Aerospace Studies and Research] at Palaiseau in a vacuum chamber with simulation of weightlessness. The technique has already been validated in full scale, in 1978, by a program of spacing studies involving launchings done with M-20 engines.

Furthermore, the reentry bodies have been perfected by numerous wind-tunnel tests at ONERA (Mach-10 wind tunnel) and at the LRBA (Mach-16 wind tunnel), as well as with tests in the LRBA's "hyperballistic tunnel" at Vernon (Eure). This tunnel serves in particular for studying the behavior of the nose cones at the time of atmosphere reentry at hypersonic speeds. In addition, M-4 nose cone reentry tests were successfully carried out in 1979 with the aid of M-20 missiles adapted for this mission.

FOR OFFICIAL USE ONLY

35-Ton Missile

The M-4 is a missile of design that is entirely new--in France--and that does not use any of the component parts of the preceding MSBS's.

This entails a complete change of the equipment for servicing the M-4, whereas the M-20 had to some extent used the same manufacturing, testing, control and use equipment and methods as for the preceding MSBS's (M-1 and M-2). The facilities at Ile Longue, the base of the SNLE's, have also had to be entirely remodeled so as to be able to use the M-20 and the M-4 simultaneously in the 1980's.

The general architecture of the M-4 has been conditioned by the various operational innovations that had to be done without extensive modification of the SNLE's (volume of the launching tubes), so as to permit reuse of the existing submarines. This criterion in effect fixed the maximum mass of the missile (for the centering of the SNLE's), its height and its diameter (limited by the launching tube), as well as the staging of the engines.

The principal modification of the submarines' tubes consisted in using the space between the "inside tube" in contact with the missile and the "outside tube" which forms part of the "thick hull" of the SNLE--that is, putting these two tubes closer together. This made it possible to make the M-4's diameter 1.93 m, as against 1.5 m for all the preceding French missiles (MSBS's and SSBS's). For height, the available space was increased downward slightly by modification of the system for suspension of the missiles. The M-4 is thus a little longer than the M-20.

New Engine Structures

These various improvements have thus made it possible to increase the total mass of the M-4 spectacularly; its mass is 35 tons, including 30 tons of solid fuel, or practically double that of the M-20.

The 401 first stage weighs 22.5 tons, including more than 20 tons of solid fuel. Its metal structure is fabricated by SNECMA [National Aircraft Engine Design and Construction Co] at Gennevilliers.

This is the biggest solid-fuel engine used in France to date. The "902" of the SSBS's carries--only--16 tons of solid fuel. But the SNPE had already, in 1965, constructed an experimental charge of 27 tons of solid fuel.

The 402 second stage weighs 8.8 tons. The first experimental missiles will have an engine of fiberglass structure built by Aerospatiale Aquitaine, by the technique previously used for the Rita 1 and 2 engines of the MSBS's and SSBS's, which were the first "roving" structures used in France. The following missiles will have a 402-engine structure of synthetic fibers of the same resistance as the fiberglass structure but lighter.

FOR OFFICIAL USE ONLY

The 403 engine of the third stage also has a structure of spun synthetic fibers; it has been designed by the Societe Fibre et Mica [Fiber and Mica Co] (CEM [Electromechanical Equipment Co] group) in cooperation with the SEP.

The CPE group weighs more than 2 tons with the 403 engine, the spacing devices and the equipment for guidance and piloting and for separation (hydraulic generator, gyrometric unit, inertial plant, guidance computer, command unit, fuel supply, batteries, etc). The aluminum-alloy structure of the CPE group is assembled by Aerospatiale (Cannes), which is responsible for the supplying, integration and testing of the CPE group, including the tests of the M-4's guidance-piloting system, in which the LRBA is also participating.

In addition to all this equipment there are the telemetry, trajectography and remote-control destruction systems necessary for the safety of the launching range (CEL [Landes Testing Center]) during the flight tests.

Butalane Solid Fuel

All of the M-4's engines use Butalane solid fuel, a composite solid propellant with aluminum-charged polybutadiene binder,³ which is being used for the first time in the French ballistic missiles.

The Butalane fuel, developed by the SNPE, is of distinctly higher performance than the Isolane hitherto used on the MSBS and SSBS missiles. It makes it possible to achieve performance characteristics superior to those of Isolane in specific impulse and in density. Butalane also makes it possible to improve the rate of engine charging (which has an effect on performance characteristics), for the mechanical properties of the Butalane charges of the M-4--behavior in storage and in firing, sticking--are superior to those of the fuels used previously. Thus it has been possible to lengthen the lifetime of the M-4's engines (to more than 10 years).

The composition and form of the solid-fuel charges of the M-4 vary from engine to engine. The 401 of the first stage has a bicomposition charge with star-shaped central channel, as was the case with the engines of the M-20 (904) and of the SSBS's (902). The 402 and 403 engines, on the other hand, are monocomposition charges, because of the "roving" structures, with a central channel of milled revolution profile so as to obtain the law of thrust desired.

All the engines of the M-4 also use a new "liner" for the connection between the fuel grain and the engine structure, which is coated with an internal thermal protection of low specific mass.

Flexible Propelling Nozzles

Each of the M-4's engines is equipped with a single "flexible-joint" propelling nozzle developed by the SEP (Bordeaux).

FOR OFFICIAL USE ONLY

Control of the vector thrust in yaw and pitch of the engines [as published] of the M-4 is done by rotation of the "flexible propelling nozzle" around a spherical swivel joint composed of alternating layers of rubber (for flexibility) and of metal armatures (for resistance), in accordance with the principle of the "flexible thrust bearing" developed by the SEP in 1970 and already applied in other fields (helicopter rotor thrust bearings for Aero-spatiale, offshore applications, etc).

This first application of the SEP flexible thrust bearing on the M-4's ballistic-missile propelling nozzles has made it possible to replace the mechanical systems involving four angled propelling nozzles that rotate (on ball bearings) and the fluid systems involving a single propelling nozzle with injection of freon (stored under pressure) of the preceding missiles. This has made it possible to reduce considerably the mass and bulk of the yaw-pitch piloting devices. The flexible propelling nozzle of the three propulsion stages is tightly integrated in the solid-fuel engine so as to reduce the useless volumes between the stages and the masses lost with the interstage skirts.

The M-4's flexible propelling nozzles made by the SEP (Bordeaux) use for the "hot parts" (nozzle necks), which are eroded by the very-high-temperature (3,000° C) combustion gases, mainly multidirectional carbon-carbon composite materials. The mechanical properties and wear resistance of the multidirectional carbon-carbon materials are very superior to those of the polycrystalline graphite materials used previously. For the parts of the propelling nozzles of the 401 and 402 engines that are less hot (divergent nozzles), whose dimensions are impressive, materials of graphite-fabric base are used. The propelling nozzle of the 403, which is smaller, is made of a material that is nondelaminable and that has high resistance to thermal shocks.

Roll control of the missile is effected for the first two stages by hot-gas valves supplied by a gas generator. This system, which has replaced the variable-orientation rockets, is far easier to manage.

The advanced development of the M-4's engines is proceeding normally, under the responsibility of G2P. The first firings of engines 401 and 402 took place, successfully, at the end of 1977 on the test benches of the CAEPE [Missiles and Engines Assembly and Testing Center], near Bordeaux.

The first bench firing of the 403 engine--also at the CAEPE--was carried out in 1978.

The M-4 engines' qualification tests with altitude simulation, which began in 1979, will be completed this year. Generally speaking, the testing of the M-4's engines is more complete (bench tests under severe conditions: operating pressure and temperature in particular) and more detailed (more than 300 measurements) than those to which the engines of the previous programs were subjected.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

Key:	No	Description
1.	27.	Stage
2.	28.	Name of stage
3.	29.	Mass of stage
4.	30.	Total mass of missile
5.	31.	Diameter of missile
6.	32.	Height of stage
7.	33.	Height of missile
8.	34.	Structural missile
9.	35.	Piloting system
10.	36.	Guidance
11.	37.	Thrust of stage
12.	38.	Running time
13.	39.	Range of missile
14.	40.	Nuclear payload
15.	41.	Penetration aids
16.	42.	Hardening
17.	43.	Current status
18.	44.	Decision on construction
19.	45.	Beginning of development
20.	46.	Entry into operational service
21.	47.	Maraging steel, rolled-welded
22.	48.	Vascojet 1 000, flow-milled
23.		4 movable propelling nozzles
24.		Inertial
25.		More than 3,000 km
26.		1 nuclear, 150 kilotons
		Spun fiberglass
		1 fixed propelling nozzle, freon injection
		More than 3,500 km
		1 thermonuclear of 1 megaton
		Yes
		More than 2,500 km
		1 nuclear
		Withdrawn from service
		In service
		February 1972
		November 1973
		1971 and 1972
		1980 and 1982
		1 flexible propelling nozzle
		Spun composite fiber
		More than 4,000 km
		1 thermonuclear of 1 megaton, hardened
		150-kiloton thermonuclear warheads, hardened
		Yes (very hardened)
		Under development
		December 1970

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

Characteristics and performance of the French SSBS and MSBS Ballistic Missiles (June 1980)

MISSILE	SSBS - S2		SSBS - S3		MSBS - M1		MSBS - M2		MSBS - M20		MSBS - M4	
	1 ^{er} étage	2 ^e étage	1 ^{er} étage	2 ^e étage	1 ^{er} étage	2 ^e étage	1 ^{er} étage	2 ^e étage	1 ^{er} étage	2 ^e étage	1 ^{er} étage	2 ^e étage
Nom de l'étage (2)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Masse de l'étage (3)	100	121	102	121	102	121	102	121	102	121	102	121
Masse totale du missile (4)	115.1	121	115.1	121	115.1	121	115.1	121	115.1	121	115.1	121
Diamètre du missile (5)	30.8	30.8	30.8	30.8	30.8	30.8	30.8	30.8	30.8	30.8	30.8	30.8
Hauteur du missile (6)	1.5 m	1.5 m	1.5 m	1.5 m	1.5 m	1.5 m	1.5 m	1.5 m	1.5 m	1.5 m	1.5 m	1.5 m
Hauteur de structure (7)	1.5 m	1.5 m	1.5 m	1.5 m	1.5 m	1.5 m	1.5 m	1.5 m	1.5 m	1.5 m	1.5 m	1.5 m
Masse de structure (8)	118.8 m	118.8 m	118.8 m	118.8 m	118.8 m	118.8 m	118.8 m	118.8 m	118.8 m	118.8 m	118.8 m	118.8 m
Système de pilotage (9)	(21) Inertiel	(21) Inertiel	(21) Inertiel	(21) Inertiel	(21) Inertiel	(21) Inertiel	(21) Inertiel	(21) Inertiel	(21) Inertiel	(21) Inertiel	(21) Inertiel	(21) Inertiel
Système de guidage (10)	(22) Inertiel	(22) Inertiel	(22) Inertiel	(22) Inertiel	(22) Inertiel	(22) Inertiel	(22) Inertiel	(22) Inertiel	(22) Inertiel	(22) Inertiel	(22) Inertiel	(22) Inertiel
Puissance de l'étage (11)	10	10	10	10	10	10	10	10	10	10	10	10
Poids du missile (12)	74	74	74	74	74	74	74	74	74	74	74	74
Charge maximale (13)	(25) Supérieur à 3 000 km	(25) Supérieur à 3 000 km	(25) Supérieur à 3 000 km	(25) Supérieur à 3 000 km	(25) Supérieur à 3 000 km	(25) Supérieur à 3 000 km	(25) Supérieur à 3 000 km	(25) Supérieur à 3 000 km	(25) Supérieur à 3 000 km	(25) Supérieur à 3 000 km	(25) Supérieur à 3 000 km	(25) Supérieur à 3 000 km
Altitude à la pénétration (14)	(26) 100 km	(26) 100 km	(26) 100 km	(26) 100 km	(26) 100 km	(26) 100 km	(26) 100 km	(26) 100 km	(26) 100 km	(26) 100 km	(26) 100 km	(26) 100 km
Altitude à la pénétration (15)	(27) Non	(27) Non	(27) Non	(27) Non	(27) Non	(27) Non	(27) Non	(27) Non	(27) Non	(27) Non	(27) Non	(27) Non
Durcissement (16)	(27) Non	(27) Non	(27) Non	(27) Non	(27) Non	(27) Non	(27) Non	(27) Non	(27) Non	(27) Non	(27) Non	(27) Non
SITUATION (17)	(35) Hors de service	(35) Hors de service	(35) Hors de service	(35) Hors de service	(35) Hors de service	(35) Hors de service	(35) Hors de service	(35) Hors de service	(35) Hors de service	(35) Hors de service	(35) Hors de service	(35) Hors de service
Déclassement (18)	(36) En service	(36) En service	(36) En service	(36) En service	(36) En service	(36) En service	(36) En service	(36) En service	(36) En service	(36) En service	(36) En service	(36) En service
Début de développement (19)	(37) 1962	(37) 1962	(37) 1962	(37) 1962	(37) 1962	(37) 1962	(37) 1962	(37) 1962	(37) 1962	(37) 1962	(37) 1962	(37) 1962
Début de développement (19)	(38) 1964	(38) 1964	(38) 1964	(38) 1964	(38) 1964	(38) 1964	(38) 1964	(38) 1964	(38) 1964	(38) 1964	(38) 1964	(38) 1964
Mise en service opérationnel (20)	(39) 1971 et 1972	(39) 1971 et 1972	(39) 1971 et 1972	(39) 1971 et 1972	(39) 1971 et 1972	(39) 1971 et 1972	(39) 1971 et 1972	(39) 1971 et 1972	(39) 1971 et 1972	(39) 1971 et 1972	(39) 1971 et 1972	(39) 1971 et 1972
Mise en service opérationnel (20)	(40) 1980 et 1982	(40) 1980 et 1982	(40) 1980 et 1982	(40) 1980 et 1982	(40) 1980 et 1982	(40) 1980 et 1982	(40) 1980 et 1982	(40) 1980 et 1982	(40) 1980 et 1982	(40) 1980 et 1982	(40) 1980 et 1982	(40) 1980 et 1982
Mise en service opérationnel (20)	(41) 1980 et 1982	(41) 1980 et 1982	(41) 1980 et 1982	(41) 1980 et 1982	(41) 1980 et 1982	(41) 1980 et 1982	(41) 1980 et 1982	(41) 1980 et 1982	(41) 1980 et 1982	(41) 1980 et 1982	(41) 1980 et 1982	(41) 1980 et 1982
Mise en service opérationnel (20)	(42) 1980 et 1982	(42) 1980 et 1982	(42) 1980 et 1982	(42) 1980 et 1982	(42) 1980 et 1982	(42) 1980 et 1982	(42) 1980 et 1982	(42) 1980 et 1982	(42) 1980 et 1982	(42) 1980 et 1982	(42) 1980 et 1982	(42) 1980 et 1982
Mise en service opérationnel (20)	(43) 1980 et 1982	(43) 1980 et 1982	(43) 1980 et 1982	(43) 1980 et 1982	(43) 1980 et 1982	(43) 1980 et 1982	(43) 1980 et 1982	(43) 1980 et 1982	(43) 1980 et 1982	(43) 1980 et 1982	(43) 1980 et 1982	(43) 1980 et 1982
Mise en service opérationnel (20)	(44) 1980 et 1982	(44) 1980 et 1982	(44) 1980 et 1982	(44) 1980 et 1982	(44) 1980 et 1982	(44) 1980 et 1982	(44) 1980 et 1982	(44) 1980 et 1982	(44) 1980 et 1982	(44) 1980 et 1982	(44) 1980 et 1982	(44) 1980 et 1982
Mise en service opérationnel (20)	(45) 1980 et 1982	(45) 1980 et 1982	(45) 1980 et 1982	(45) 1980 et 1982	(45) 1980 et 1982	(45) 1980 et 1982	(45) 1980 et 1982	(45) 1980 et 1982	(45) 1980 et 1982	(45) 1980 et 1982	(45) 1980 et 1982	(45) 1980 et 1982
Mise en service opérationnel (20)	(46) 1980 et 1982	(46) 1980 et 1982	(46) 1980 et 1982	(46) 1980 et 1982	(46) 1980 et 1982	(46) 1980 et 1982	(46) 1980 et 1982	(46) 1980 et 1982	(46) 1980 et 1982	(46) 1980 et 1982	(46) 1980 et 1982	(46) 1980 et 1982
Mise en service opérationnel (20)	(47) En développement	(47) En développement	(47) En développement	(47) En développement	(47) En développement	(47) En développement	(47) En développement	(47) En développement	(47) En développement	(47) En développement	(47) En développement	(47) En développement
Mise en service opérationnel (20)	(48) Décembre 1980	(48) Décembre 1980	(48) Décembre 1980	(48) Décembre 1980	(48) Décembre 1980	(48) Décembre 1980	(48) Décembre 1980	(48) Décembre 1980	(48) Décembre 1980	(48) Décembre 1980	(48) Décembre 1980	(48) Décembre 1980
Mise en service opérationnel (20)	(49) 1971	(49) 1971	(49) 1971	(49) 1971	(49) 1971	(49) 1971	(49) 1971	(49) 1971	(49) 1971	(49) 1971	(49) 1971	(49) 1971
Mise en service opérationnel (20)	(50) 1976	(50) 1976	(50) 1976	(50) 1976	(50) 1976	(50) 1976	(50) 1976	(50) 1976	(50) 1976	(50) 1976	(50) 1976	(50) 1976

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

M-4 to Go into Operational Service in 1985

It is planned for the sixth SNLE, the "Inflexible," with its 16 M-4 multiple-warhead missiles, to go on active duty in the FOST in 1985, the date set by the government in 1974.

This first submarine armed with M-4 missiles will then carry by itself more thermonuclear weapons than all five of the present SNLE's.

Subsequently, the M-4's will replace the M-20's on the first-generation SNLE's in service.

The minister of defense, Yvon Bourges, announced recently that three or even four of these SNLE's could be on sea patrol simultaneously.

CIMSA and the Strategic Nuclear Systems

The Military Division of the European Electronic Automation Company (CAE), which subsequently belonged to the International Data-Processing Company, becoming in 1977 the Military, Space and Aeronautics Data-Processing Company (CIMSA), a subsidiary of Thomson-CSF [General Radio Company], has been participating extensively since 1963 in the design and construction of the strategic systems of the Deterrent Force.

Chosen in 1963 to develop the computerized system for monitoring and launching of the MSBS, and then of the SSBS, this unit has devoted several hundred engineers and technicians to these studies, which were unparalleled in France at the time. They led first to automated systems making it possible to test the first missiles at the Landes Testing Center and on board the experimental submarine "Gymnote."

Some operational equipment available from 1970 on was installed on the five missile-launching nuclear submarines and in the Albion Plateau silos.

The role of these systems is to monitor the availability of the missiles and to command their launching at targets automatically.

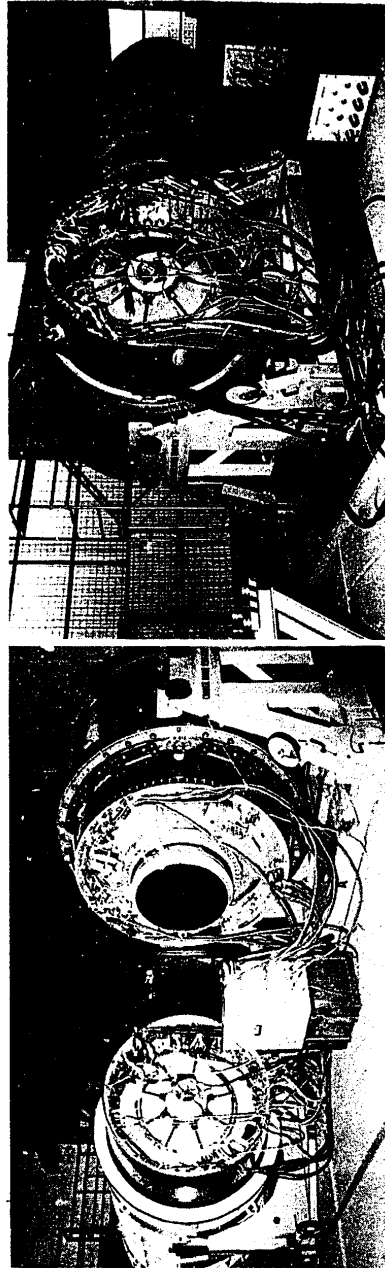
Since 1976, CIMSA has also participated in development of the new generations of strategic missiles by supplying the computer equipment of the SSBS-3 (T 1600 computer) and the data-processing systems for the MSBS-M4 that will be installed on the "Inflexible" and then on the remodeled earlier submarines.

The computer system for monitoring and launching of the Pluton tactical missile has also been built and supplied by CIMSA.

The SMA Is Participating in the M-4

The company SMA [expansion unknown] Val Notre-Dame at Argenteuil designs and builds auxiliary equipment for civilian and military applications (space, aeronautics, naval), such as test benches for motors and jet engines, missile-integration benches, munition-handling installations, etc.

FOR OFFICIAL USE ONLY



Final integration of the first and second stages of the M-4 at the CAEPA

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

The SMA is designing the prototype and is also building small and medium-quantity series. For this purpose, it has studios for design, computation and methods and maintains a materials "quality" plan in liaison with its various clients.

The SMA, which had already participated in the development work for the preceding generations of ballistic missiles M-20, S-2 and S-3, is now cooperating in the development of the new M-4 missile. It has built: the gear for handling the propulsion stages, the hull rig for assembling the propulsion stages on the bench, the alignment equipment for integration of the "top" of the missile, as well as the "shell" for assembly, transport, storage, and loading the missile into the submarines' tubes. This "shell" is a cylindrical casing 8 m long and 2 m in diameter, the two parts of which are assembled by a diametral-plane connection. The casing, which has trunnions for handling, makes it possible, notwithstanding its light weight, to handle the missile with complete safety. For this project, the SMA has developed an original sandwich-assembly procedure. The outside constitutes the resistant element. The inside surface, which is stainless and has a highly finished surface state and very close tolerances, ensures contact with the vector that conforms to the technical specifications.

FOOTNOTES

1. The probable number, not confirmed by the Ministry of Defense.

The number of warheads in the M-4 has been revealed on several occasions recently:

"The M-4...its six nuclear warheads intended to be put into staggered trajectories..." Cf the review PARADOXES, No 39, 31 May 1980, quotation of Roger Chevalier, general manager of SNIAS [expansion unknown], and Pierre Dabezies, professor in the Institute of Political Studies, in the report of the conference on "The Military Policy of France" in Paris on 29 March 1980, in which the number of the M-4's warheads was revealed by these persons.

"The M-4 has six thermonuclear warheads..." Cf Roger Chevalier (SNIAS) in a broadcast on defense on Antenne 2 last May.

2. Cf Jacques Chevalier, director of the CEA-DAM at Apt on 23 May 1980, Col Guy Lewin, assistant director of the CPE, in REVUE DE DEFENSE NATIONALE 1980: "The M-4 missiles (several nose cones of 100 to 150 kilotons)..."; Colonel Lewin, CPE--cf REVUE DE DEFENSE NATIONALE 1980 [as published].
3. There are some 15 components in a modern solid propellant: binder with polymer base and additives (reticulant, plastifier, chemical-reaction catalyst, wetting agent, antioxidant, etc), as well as the oxidant (ammonium perchlorate) and the reducer (aluminum), the combustion accelerator, etc.

COPYRIGHT: A. & C. 1980

11267
CSO: 3100

37

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

THEATER NUCLEAR FORCES

FRANCE

SSBS-S3 MISSILES NOW OPERATIONAL ON ALBION PLATEAU

Paris AIR & COSMOS in French 12 Jul 80 pp 76-77

[Article by Pierre Langereux: "The 'SSBS-S3's' Operational on the Albion Plateau"]

[Text] The first unit of nine SSBS-S3 missiles, with 3,500-kilometer range and 1-megaton nuclear payload, has been on "operational alert" since 1 June 1980 on the Albion Plateau, near Apt in Haute-Provence.

A second unit of nine more S3 missiles will go into service at the end of 1982. The renovation of the SSBS's [ground-to-ground strategic ballistic missiles] will then be complete, within the time-limits planned.

The firepower of the SSBS force will thus be multiplied by eight (18 megatons) over the preceding generation of missiles, the S2's.

But the first nine S3 missiles now in silos already represent firepower much greater than that of the 18 S2 missiles placed in service in the years 1971-1972.

The new S3 missiles will constitute, as the S2's before them did, one of the three components of the Strategic Nuclear Force (FNS).

The DTE [Missile Technology Directorate] is directing the program for the S3 system, and it is assisted by the CEA [Atomic Energy Commission]-DAM [Military Applications Department] for the nuclear warhead and the STTE [Technical Service for Aeronautical Telecommunications and Equipment] for the Aerospatiale is the industrial prime contractor for the weapon system as a whole, except for the nuclear warhead, production of which is under the overall supervision of the CEA-DAM. On this basis, Aerospatiale is delivering the complete weapon system in "turn-key" condition: silos, launching-control stations (PCT), missiles, assembly, maintenance and auxiliary equipment, etc.

Thus the development of the S3 has been carried out on contracts from the DTE to Aerospatiale, for coordination and overall supervision, development of the weapon system and of the missile, experimentation, and Air Force in-

FOR OFFICIAL USE ONLY

struction; the design, fabrication and testing work on the nose cones is being done under CEA-DAM contract.

The modalities for carrying out the S3 program were specified by the Ministry of Defense in January 1975:

- establishment of the budget package for the operation;
- replacement of two S2 firing units by two S3 units also having 18 missiles;
- construction of the S3 on the basis of existing S2 and M20 missile components;
- minimum of infrastructure modifications;
- first firing unit planned to go into operational service in June 1980--a date which has therefore been met.

The operation as a whole was to be designed for the lowest possible subsequent upkeep costs.

The S3 is a two-stage missile 13.8 m in height, diameter 1.5 m, and weighing 25.8 tons. It is therefore a lighter and somewhat smaller missile than the S2, which measured 14.8 m and weighed 32.5 tons.

The S3 is a missile of hybrid architecture, bred from the SSBS and the MSBS [sea-to-ground strategic ballistic missile]. It uses the 902 first stage of the S2, as well as the RITA 2 second stage, which has a spun-fiberglass structure and elements of the upper part of the M20: reinforced cover and the same 1-megaton thermonuclear warhead. The S3 also uses the structure of the M20's equipment box, but with several modifications and some new equipment--notably, a new guidance chain. The precision of the S3 is also improved, thanks to the new guidance computer (EMD [Marcel Dassault Electronics]-SAGEM [General Electrical and Mechanical Applications Company]) and the inertial plant (SAGEM) derived from that of the M20. The S3's motors are built under the responsibility of G2P (a group comprising the SEP [European Propellant Co] and the SNPE [National Powder and Explosives Co], with structures fabricated by Aerospatiale.

By means of better staging of the motors, the missile's range has been considerably increased: more than 3,500 km as against 3,000 km for the S2; the motors' lifetime has also been increased.

The new missile carries a 1-megaton thermonuclear warhead (as against 150 kilotons for the S2); its penetration is greater than that of the S2 because of higher nose-cone reentry speed, possibility of diversification of trajectory, and use of penetration aids.

The SSBS-S3, which is hardened to resist the effects of nuclear explosions, presents still other characteristics of great operational importance:

- reduced reaction time, which makes it possible to fire the salvo of 18 missiles in a very short time;

FOR OFFICIAL USE ONLY

- possibility of "integral lateral support"--that is, the capacity for each of the two PCT's of the 1st GMS [Strategic Missiles Group] to direct and fire all of the 18 missiles;
- very high operational reliability;
- transmission of data to the brigade operations center and that of the FAS [Strategic Air Force] at Taverny via a television network;
- appropriate military protection.

For these purposes, the firing installations have been completely remodeled (silos, PCT's, command center, assembly shops, etc).

The maintenance of the S3 has also been simplified, both at the level of the equipment (power, electronics, air-conditioning) and at the level of the maintenance and operational teams.

It has been improved and slimmed down, both at the level of preventive maintenance:

- lengthening of the maintenance intervals;
- technical monitoring from outside the silo (which remains operational), by means of a "Mobile Monitoring Group" (EMC) in a shelter, mounted on a Berliet truck and equipped with a T 1600 computer (from Telemecanique);

and at the level of curative maintenance:

- more precise and quicker localization of breakdowns through an increase in the amount of continual remote signalling;
- uniformization of the S3 checkout benches in the shops (with a single type of computer instead of three);
- and computerized direction by means of a system of "computer tracking of equipment" (SIMAT).

The adoption of digital techniques--bus line connecting the missile's equipment with that of the silo and with the EMC--has made it possible to replace the silo's computer with a microprocessor and an auxiliary memory, while at the same time quadrupling the monitoring capacity.

The placing of the first unit on alert was preceded by development firings followed by a qualification firing that confirmed the operational validity of the S3 weapon system, its equipment (firing installation and missile), and the monitoring, activation and firing procedures (including the computer systems).

The July 1979 firing was carried out with operational equipment and procedures; in effect, it involved an operational S3 missile equipped also with a telemetry and trajectography chain, as well as a remote-destruction chain, both necessary for firing safety at the CEL [Landes Testing Center].

The missile was identical to the "operational evaluation missiles" that will be fired by the Air Force regularly at the CEL for training purposes.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

The installations of the CEL's preoperational base--comprising a launching zone, a PCT and a vector assembly shop--are identical, on the functional level, to the Albion Plateau installations.

The setting-up for the S3 at the 1st GMS began in 1976 with the installation, at the Saint-Christol base, of the important experimentation and instruction group, comprising two test silos--one for completing the development and the other for training the Air Force personnel.

Moreover, the Air Force teams were brought into the S3 programs very early and very closely, with the "top team" installed at Mureaux, where Aerospatiale built a "test platform" for the ground part of the S3--that is, a veritable S3 silo with, inside, a full-size missile (mockup) and all the associated activation equipment, including a model PCT, though obviously without the concrete shelter.

The "top team" then returned to APT [expansion unknown] to be changed into a "test squadron" and to train the training personnel of the 1st GMS assigned responsibility for the S3.

The Air Force has also cooperated with Aerospatiale in developing the documentation, which was furnished at the same time as the operational missiles. Furthermore, this documentation (30,000 pages and 5,000 drawing) will have cost only half what the S2's documentation cost.

Withdrawal of the first unit of nine S2 missiles began in 1978 so as to permit the changeover of the infrastructure that was to receive the S3.

"Demonstration of proper functioning" (DBF) of the first S3 firing unit on the Albion Plateau was announced in February 1980 by Aerospatiale in the presence of the government officials responsible for the program: the DTE, the STTE, the CEA-DAM and the FAS.

This operation constituted the overall reception of the S3 firing unit, composed of nine silos and a PCT, as well as of the command and activation installations.

The arming of the silos of the first firing unit with nine operational S3 missiles, each fitted with a 1-megaton thermonuclear warhead, was completed on 23 May 1980 by the installation of the thermonuclear warhead of the ninth S3 in its silo, in the presence of the minister of defense, Yvon Bourges (cf AIR & COSMOS, No 815).

The first unit of nine Sc missiles in silos, controlled by the PCT of Rustrel, has become an operational element of the FAS with the placing on alert effective since 1 June 1980.

The Albion Plateau's second S3 firing unit will go into service in 1982.

COPYRIGHT: A. & C. 1980

11267
CSO: 3100

41

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

THEATER NUCLEAR FORCES

FRANCE

USE OF SX MOBILE MISSILE OUTLINED

Paris AIR & COSMOS in French 12 Jul 80 pp 78-79

[Article by Pierre Langereux: "SX Mobile Missile"]

[Text] The SX mobile strategic ballistic missile may constitute an answer to the question of the "new component" of the FNS [Strategic Nuclear Force] planned for the beginning of the next decade, to replace the Mirage IV strategic bombers.

The first studies for SX missiles began in 1977 with quite a wide range of various concepts of weapons systems that could be produced within time limits and costs compatible with our means and our defense policy.

Aerospatiale has been assigned by the DTE [Missile Technology Directorate] to carry out the general study for the SX weapon system.

Various modes of deployment have been considered, from more or less random deployment among a large number of fixed silos to semipermanent mobile deployment on land vehicles (wheeled semitrailer trucks). In the latter case, several types of movement can be conceived of, combining changes of firing-points within large-size military grounds to back-and-forth movements between more or less large military grounds some tens of kilometers apart from one another.

The SX mobile missiles could be deployed in France on commonplace firing vehicles, such as the Berliet-Trailor semitrailer, more than a thousand of which are already in service in the French Army. Under this concept, mobility is provided on and between military grounds by this land-carrier vehicle.

The force would be, for example, distributed among several "regional units" that have protected shelters available to shelter the missile-carrying vehicles outside their alert periods.

All the links of the system are connected with one another and with the command organs by armored and hardened transmission networks.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

On alert, the SX could be fired from the entire national territory, on which many firing points would be available.

Various SX-missile concepts have been studied, in function of the operational desiderata as regards penetration aids and with the corresponding available technology taken into account.

This has led to several variants. Of course, at a given range the variants that penetrate best are also the heaviest. Nevertheless it can be counted on that by comparison with the preceding generations of ground-to-ground ballistic missiles, and with ranges that are also longer, the missile masses will be divided by a factor of two to three. This comes from the improvement in the performance characteristics of the missiles, and especially the motors, but also the lightening of the loads.

For this nuclear-warhead missile, a two-stage configuration has been decided on for reasons of hardness, reliability and range.

The SX would be equipped with an inertial guidance system derived from that of the M-4.

This missile's motors must meet certain "all-weather" use specifications as well as specifications for its use on a vehicle.

COPYRIGHT: A. & C. 1980

11267
CSO: 3100

FOR OFFICIAL USE ONLY

COUNTRY SECTION

BELGIUM

BELGIAN ATTITUDE TOWARD ARMS SALES CONSIDERED HYPOCRITICAL

Brussels POURQUOI PAS? in French 12 Jun 80 pp 4-11

[Article--passages between slantlines originally published in boldface]

[Text] This affair of arms sales to Uruguay has at last succeeded in shaking up a few delicate consciences. Horrors: Could it be that Belgium is now one of those "traveling salesmen of sudden death" that Galtier-Boissiere brutally satirized in the heyday of the "Trench-mortar?"

Naturally, from time to time, decent souls still denounce this very specialized traffic, but all too often, alas, with motives which have but very little to do with morality or the welfare of humanity. It has all been sanitized now, duly certified, and the arms trade has become one of the finest ornaments of our national export trade. Is it not true that sales of sudden death represent 1 percent of our foreign trade, or close to 150 billion Belgian Fr. per year? Inasmuch, on the other hand, as the experts figure that in this domain we must quickly double those numbers, we should think that Belgium would have no reason to be embarrassed by the USSR's competition (702 billion) or the competition of the United States (810 billion), while it easily surpasses the Czech humanists (60 billion multiplied by 2). To remain in the realm of the reasonable, let us say that Belgium is thrusting itself into the vanguard and leave it at that. We are, in fact, among the five biggest arms sellers in the world.

Now that is an honor we would willingly pass up, but what can one say? There is so much money at stake. So how can we be astonished if everyone here basks in a climate of hypocrisy and pseudorespectability which can only make one vomit?

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

But will the veil be torn? The political class suddenly seems concerned about this discreet and so lucrative activity. Some are proposing a parliamentary commission of inquiry, others are pondering putting a question [to a minister]. Once again on Monday, the Socialist Party bureau was disturbed by the commission's study of the file on an arms sale for Morocco. We were able to learn that it concerns an order for light arms passed to the FN [expansion unknown] and blocked for 2 months, along with 65 other applications, on the request of the minister of foreign affairs. At the time, this was still Henri Simonet. Could it be we are moving toward a modification of our policy? While waiting [for the answer], a POURQUOI PAS? team, sweeping inside all the taboos, has pursued its investigation. Oh! Belgians, if you knew!

Everything will begin at the highest level: that of the state. This is the logic of a system where, by definition, power loves to blend things together. The prime concern, absolute and total discretion. It would not be a question of showing at what point the good souls who lead us balk at making their lucrative deeds match their humanistic words. Thus, unlike other exports, nothing will leak out. Instead try to get information from the License Officer or the National Institute of Statistics. We have tried. They are still laughing at our innocence....

Everything is thus going to depend solely on [the Ministry of] Foreign Affairs, which, at first glance, may appear surprising. In truth, it is the License Office which, with the concurrence--theoretical, moreover--of [the Ministry of] Economic Affairs, must send export requests to Foreign Affairs. This department--and it is this which somewhat disturbed Henri Simonet--is the sole judge of the advisability of this kind of operation. Its opinion will thus be based mainly on political considerations and, if it wishes, it is the only one in a position to approve or halt exports of arms. This procedure, established at the time of the Spanish war, was at the time aimed at preserving our neutrality in a conflict which in no way concerned us. At least, at the national level....

The other ministerial departments are, however, sometimes consulted. If, to ice the cake, the export must be guaranteed by the Commission (a kind of insurance the state provides to exporters), Foreign Trade, Development Cooperation, and Economic Affairs will have a voice. If not, everything, in a word, will depend on the decision of one man. Thus, whatever happens, it will be easy for our leaders to assert that everything was done in perfect legality. When we mentioned hypocrisy....

From time to time a member of parliament, whether sincere or otherwise, denounces some arms deal. In vain! With complete serenity, the minister of foreign affairs, exchanging a conspiratorial wink with his governmental partners, will serenely lie, convinced he is thereby protecting a policy which has always enjoyed a large consensus.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

/Dear Mr Harmel!/
-

In 1968 the pious Harmel swore on his sacred honor that Belgium would sell no further military equipment of any kind to Nigeria: this was at the height of the Biafran war. Bad luck! Shortly after this, a Sabena cargo plane crashed near Lagos airport, in the Nigerian capital, with 40 tons of arms. Questioned by FDF [Democratic Front of Brussels French Speakers] deputy Lucien Outers, Mr Harmel will take refuge in embarrassed explanations. However, apart from the aforesaid Outers, NO member of parliament will pursue his curiosity further. The members of parliament, however, able to demand, at least in committee (but alas! after the fact) the figures for our arms exports. Alas, we have the painful duty to inform you that the honorable members make practically no use of this possibility. There again, no one wants to make waves in a world where hypocrisy reigns supreme. And then, a piece of bad luck is so quickly forgotten....

Certainly, some are courageous. The innocents, as the cynics call them. In April 1979 Glinne, the socialist deputy, submitted a bill regulating arms sales. It has not even been discussed in committee. So much money is at stake. Can one ask everyone to be heroes?

However, from time to time, a scandal breaks out which, quickly, very quickly--as at the time of Harmel and Biafra--will be smothered. And, quite often, the interloper who comes in as a spoiler of this murderous sport is motivated by something quite different from morality. It is above all a question of damaging a political adversary, but without really wishing to jeopardize the whole system. Or again, deaths are "distinguished." As Henri Jeanson used to say, "Some cadavers have cleaner feet than others." Some wax indignant about Belgium's position, and pretend to forget that the USSR, with its 702 billion in exports, provides no specifics. For the USSR, everything is fine. Regimes of assassins supported by Libya, republics led by demented black kings, not to omit these military dictatorships led by bloody torturers in the mold of Videla of Argentina. Everything is grist for the mill. Better yet, while small leftist groups become indignant--with good reason, moreover--at seeing us sell arms to Uruguay, we scarcely hear a protest at our deliveries to Colonel Qadhdhafi, who supplies all the assassins of the Baader-type pseudo-revolutionary groups. More, we have no recollection of having ever heard the delivery of Belgian arms to Fidel Castro condemned, the same Castro who is transforming his island into a huge concentration camp. What's that you were saying? Hypocrisy? Certainly!

Finally, when the trade unions, wiping the dust from their sweet souls on the ramparts of pacifism, come to condemn this murderous traffic, how then can they accept it when their adherents from the [munitions] sectors concerned press the minister of foreign affairs to authorize these exports?

Hypocrisy! Hypocrisy! Hypocrisy! On the left, in the center, on the right, among the capitalists, the trade unionists, and the politicians.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

And in the general public, too, which more and more proclaims: "If we don't do it, other countries will sell the arms." If this is the case, then why don't we do like certain communist countries and sell drugs? It follows that the honest man can adopt only one position: opposition to any commerce in arms coming from Belgium, whatever their destination.

Each of us, on seeing the innumerable photographs of massacres displayed in the press, should know that this child, this woman, this old man, have perhaps been killed by a weapon "made in Belgium." Don't talk to us of higher interests! All the money in the world will never be worth the life of one single person.

Color It Bloody

Though hidden under a bushel [so to speak], the facts about our arms exports can be approached, but only through the most laborious investigation. They will show, in any case, that for us partisan spirit is dead and buried. Our traveling merchants of sudden death perform their office indiscriminately. You want examples? May your stomach be strong enough to master your nausea. You know about the Macchi deal? Several years ago the Belgian Air Force acquired, for training purposes, an airplane of Italian origin, the SF 260M, a nice single-engine plane built by the Siai-Marchetti firm, formerly Savoia-Marchetti. For the occasion, and by virtue of the protection and facilities offered by the Belgian state, this firm establishes a subsidiary at Gosselies. After several years, the Air Force abandons the SF 260M in favor of the French Alpha jet. What happens now to these planes? Mum's the word and lips sealed! Now in 1978 it appears that a contract is signed between Belgium and Italy on the one side, and Zimbabwe-Rhodesia on the other. The Italo-Belgian firm promises to deliver 17 SF 260W Siai-Marchetti "Warriors," at an unspecified price, with deliveries (from Belgium) in stages between 1978 and 1979.

Now this piece of machinery is in reality an "improved" version of the SF 260M. It is, in fact, a piece of antiguerrilla weaponry. The plane can carry 300 kg of various weapons: rockets, 120-kg bombs, cans of napalm. It is equipped with machineguns and, with adjustment, has a radius of action of 1,500 km.

We note in passing that this aircraft is also in service in the Philippines (Ahoy! Guerilla.), in Dubai, in Ireland, and in Tunisia.

Well now, here we have already found something troubling. At the time when the contract was signed, the government in London had decreed an embargo on the furnishing of arms destined for white Rhodesia. Could it be that the [ministry of] foreign affairs (under] Mr Simonet at the time) closed its eyes to the deal? Or could it have been that the SF 260W "Warrior" was listed on export licenses as the SF 260M? A simple training aircraft and therefore not affected by the embargo? You see, when

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

one scratches [beneath the surface] a little on these famous licenses... In reality, changes in the arms market have brought still more gratifications to Belgium. For several years, the appearance of guerrillas in many Third World countries, and the firm resolve of strong regimes to suppress them, have created a boom in what could appropriately be called COIN weapons (Counter Insurgency weapons), that is, light, easy to handle antiguerrilla weapons such as rifles, machineguns, grenades, mines, and other explosives. We will also find special counterdemonstration items (tear-gas, rubber bullets), light armored vehicles (thank you, Mr Beherman), etc. Or just look at the catalog! There are specialized items which, to be quite precise, enter into the gamut of our industry specialized in light weaponry [sic]. Our national genius is resolutely adapting itself to all situations....

Thus we will find, and in abundance, 9 mm FN Browning HP's and 7.62 mm FAL's in Honduras, Nicaragua, Guatemala, San Salvador [sic] or even in the Dominican Republic, which the present SDF senator Roland Gillet, now the holder of an honorary doctoral degree from the University of Seoul, served, under Trujillo, as consul in Belgium.

Has FN of Herstal sold arms to all these countries, paragons of democracy, by direct transfer, or does it rather content itself with going through an intermediary, without in any way worrying about future destruction? An example: in Monaco, a 52-year-old American, Sam Cummings, is officially an arms merchant. His company, Interarms, has a dozen subsidiaries around the world and has devoted itself specially to light weaponry, preferably "second-hand." Is this why the countries of Latin America are presently inundated by FN products?

A National Industry

Along with PRB (Belgian United Powder Factories), FN Herstal dominates Belgian production. Controlled by a Societe Generale abundantly represented on the board of directors,* it is showing great dynamism, even having abandoned its old name, judged to be too bellicose: National War Armaments Manufacture. Today, one speaks modestly of sport, of the hunt, and...of defense.

PRB, also controlled by Societe Generale, is showing just as much dynamism. This company gets into difficulty only when it strays from its primary aim. A payee in the Eurosystem deal, it ran into misfortunes which have remained vivid in the memory of all. Beside these giants, we will find smaller but just as dynamic firms such as Beherman-Demoen, which caused Mr Simonet so many headaches, Boas, which embarrassed VDB [expansion unknown] or even the Mecar firm, discreetly headquartered in Petit-Roeulx.

* We also find here the celebrated Italian machinegun manufacturer Beretta, a name made famous in detective stories.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

So we must say yes, despite the discretion and genuine modesty of our industrials, we have reason to be proud. Naturally, this whole little world is one of rare discretion, to such an extent that perforce we worked by cross-checking, notably by the help of publications as specialized as the famous "Jane's World Catalog of Infantry Arms," credited to Colonel John Weeks. It is from that starting point that we will be able to sing the los [translation unknown] of FN Herstal.

Thus, its FN Browning 9 mm revolver is a world-class star. It is even manufactured under license in Argentina by Fabrica Militar de Armas Portatiles Rosario. Better yet, it is already being utilized in some 50 countries including Indonesia and Taiwan.

The most marvelous thing is that even the FN's antiquated, obsolete arms still fetch a premium price on the accessories market. Thus, in Egypt and in Southeast Asia, one still finds 1924/30 rifles, M.1930's and the famous Model D. The 7.92 mm M49 rifle, abandoned before World War II, is still used in Argentina, Brazil, Colombia, Egypt, Indonesia, Turkey, Venezuela... and in Zaire.

Finally, the famous light machinegun, the M2 SMG Vigneron (of French conception), produced in its time by the "Precision Liegeoise" joint-stock company, another company under Generale's control, is all the rage in central Africa, as much for its ease of handling and light weight as for the ease with which one can find adequate supplies of munitions. Talk about Belgian genius! Could one also pass in silence the FAL, another celebrity, a 7.62-mm caliber automatic rifle available in several versions, with sniperscope, with or without a stand, etc.

Adopted by NATO and 70 countries, the FAL is the joy of a multitude of musclebound countries, including Argentina, Barbados, Brazil, Burundi, Pinochet's Chile, the Dominican Republic, Ecuador, the Gambia, Ghana, Guyana, India, Kuwait, Liberia, Malawi, Malaysia, Morocco, Mozambique, Paraguay, Peru, Singapore, and all the countries of the Persian Gulf.

Thank God that FN is nonsectarian and makes a multitude of sales that to our recollection the little leftist comics have never condemned. Examples? The happy hirsute Fidel Castro, who has thereby armed a large number of communist guerrillas established in Latin America; the fanatic and bloody Qadhdhafi, the dictator of Libya, arms supplier for all the leftist terrorists and purveyor of provender for the nourishment of a certain subversive press specializing in the destabilization of Western democracies. Meanwhile, Qadhdhafi has indirectly armed, thanks to FN, the tatterdemalion rebels in Chad or Amin Dada's crazed brutes. Finally, even Kampuchea, the Cambodia of the exterminator Pol Pot (dear to Catholic University professor Francois Rigaux), has been armed, at least in part, through our tender care. It is Lenin who used to say: "Capitalists are so stupid they will sell us the rope to hang them with."

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

Supplies of All Kinds

We are not going to stop here with our first success. The FN has also built the MAG 7.62 mm FN, a machinegun which has already been tested in Sierra Leone, Uganda, Tanzania, and Qatar. Similarly, we find this interesting device in South Africa where it is as successful as the dearly beloved FAL. This may perhaps provide cause for reflection on the great fuss made over the famous embargo on arms destined for Johannesburg. In the flush of our success, we shall take care not to forget the next marvel produced by FN: a lighter automatic weapon, of 5.56-mm caliber but capable, like the FAL, of firing a wonderful panoply of grenades and antitank explosives.

In fact, and as we explain above, our crowning achievement is still anti-guerrilla armament. Let us therefore take PRB, the incontestable leader in the field of mortars, and above all celebrate its 60 and 81-mm devices, particularly appreciated in Brazil. Even if the majority of PRB's sales are in mines and explosives, it can pride itself, as its mortar advertisements indicate, on 87 satisfied clients around the world. The Mecar firm, of Petit-Roeulx; we daresay, is also not doing badly. It produces an impressive variety of grenades and antitank weapons which it seems are highly esteemed by amateurs. Thus, the Mecar RL-83, better known as tank-killer, albeit fallen out of use domestically, is much sought after in Africa, just as elsewhere our Engesa grenade is also highly regarded in Asia. But the Mecar company refuses to lock itself into the past. It has now tackled production of the MPA 75, a thin double-barrelled launcher of 950-gr rockets, effective at 100 m against armored vehicles and at 300 m against personnel. At least these are the specifications cordially provided in its advertisements....

It is the same with another top item, the Mecar 90 mm light cannon, available in the CAN 90H and the CAN 90L (still lighter) adaptable to light armored vehicles and capable of pinpoint accuracy at 4,500 m. Despite its secret but, it seems, reasonable price, it has already been sold to some 20 countries including Brazil, which equips its Engesa vehicles with this pretty cannon. Finally, the efficient Beherman-Demoen will continue to produce its light armored vehicle, intended for troop transport. As the famous study by Colonel Weeks says, "this vehicle is especially produced for Belgium, but also for an unnamed South American country." One might bet it is Uruguay....

But this is not all, and we can once again be proud of our little Belgium. We are the leading expert in the field of anti-riot weapons, so dear to the Third World and Latin America. Our great national inspiration is the fabrication of munitions adaptable to diverse automatic rifles or machineguns. Thus, even if the poor, disadvantaged buyer does not (yet) have the FAL, he will be able to use sophisticated projectiles on a common Mauser 7-mm caliber. Belgium is truly a jack-of-all-trades. In this field of essentially repressive weaponry, FN will again offer us the

50

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

R40/01, munition whose useful charge is a semirigid rubber bullet of 40 mm in diameter, with a weight of 150 gr and capable of traveling a distance of 125 m. Ask the unemployed chap in Buenos Aires. It doesn't feel too good when you get it full in the face. But we can do better still: there is also the R40/02, a small cylinder attached to the end of the weapon. When it is fired, 5 rubber discs (each 29 gr) fly out at 60 m per second. But despite everything, the R40/03 remains the most marvelous. It is the most effective device. The cartridge has a charge of 20 bullets (weight 2.8 gr) which spin out in a fan-shaped pattern to a distance of 50 m. As stated in the technical specifications written up by FN, the crowning virtue of these latter models is that the weapon does not produce injuries. (Editor's Note: at least visible ones) to the demonstrators who are hit. Also, as the dispersion is wide on the R40/02 and R40/03, even at short range, the weapon will be very effective in close confrontations. Is it not enough to make one gape in awe? Instead of a Videla, a Pol Pot, a Mobutu, or a Castro, [sic], we send them several dozen right away. Gift-wrapped....

Starting this week, at least according to the scheduled agenda, the Chambers will perhaps turn their attention to this profoundly immoral business which has prospered in our regions thanks to the hypocritical "consensus" which, with us, protects everything related to money and in such a way as to make more. We said it above: when someone, by chance, tries to make waves in this private preserve, it is always motivated by obscure partisan reasons, by a settling of scores between political or financial gangs. However, at the risk of sounding like innocents, we refuse to believe that only the law of money can sway a country like ours and make of Belgium, even indirectly, a purveyor of charnel-houses.

But what representative of the political class will have the courage to go all the way and demand a commission of inquiry in which, for once, the conclusions will not be killed in the bud like other scandals of this type*? The gilded legend of the West has it that Wild Bill Hickok, the old bounty hunter, was killed by a silver bullet. Is there enough silver to cast the bullet that will prevent the truth from exploding over these cannon merchants who have contributed to building for us such a nice reputation abroad? While remaining profoundly skeptical, we nevertheless allow ourselves to hope. Hope keeps one alive, it seems. In such a domain, this [proverb] sounds more like the ironic and mocking salute of skepticism....

* Look, where is the parliamentary commission of inquiry that was supposed to shed light on the strange activities of Van Mechelen, the ex-CVP [expansion unknown] minister who had to resign from parliament following our revelations?

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

The Merchants of Death

/"How can one fail to see the senselessness of the arms race when one sees every country in the world buying at greater and greater cost more and more insecurity?" Alva Myrdal./

On the corners of Beirut's broken streets, large posters with the names and photographs of children and adolescents killed proclaimed that the war in Lebanon was a war of cowards: 90 percent of the victims belonged to no combat unit.

This second-order war, limited to light arms and artillery, has nevertheless caused more than 60,000 deaths, that is to say more than the 4 Israelo-Arab conflicts together. Right in the middle of this carnage, one of the principal arms buyers for the Christian camp, Dany Chamoun, commander of the Phalangist "Tigers" militia, was explaining to journalists gathered at the Montemar Hotel:

"We do not have the slightest difficulty getting the arms we want: all you need is the necessary money. In the beginning, we bought arms from the Palestinians which they had obtained from the Syrians. Later we acquired Russian arms through the intermediation of the Bulgarians.* Without difficulty we have bought German G3 rifles, Israeli arms, mortars, tanks.

"Naturally, our suppliers were governmental organizations. The idea that private traffickers would be able to supply the means to sustain a war dates back to the time of Queen Victoria."

Private arms merchants, however, have not failed to pounce on Lebanon like vultures on their prey.

The German Gunther Leinhauser, old suppliers to the Congolese, the Biafrans, and the Kurds, has delivered 300 tons of arms, from Spanish machineguns to Russian and American mortars.

The Armenian Sarkis Soghanalian went to Beirut to negotiate the sale of 3,000 chrome-handled Colt revolvers, highly prized by the Lebanese and Syrians.

Hubert Julian (age 80), nicknamed "the black eagle of Harlem," ex-purveyor to Emperor Haile Selassie and Moise Tshombe, has gone to the Lebanese capital. Officially to negotiate sugar sales. More plausibly to look at the possibilities of arms deliveries.

Of legendary discretion, Sam Cummings (age 51), president and director general of the Interarms firm, has not paraded either his somber suit

* 6 months after the beginning of the civil war, a cargo ship with a Turkish crew discharged in the port of Junieh crates from Kalashnikov sold by the official Bulgarian commercial agency, TAXIM.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

or his white tie in the ruins of Beirut. But one can be sure that his firm has been asked to furnish arms to the belligerents. For Cummings, with his warehouses in Alexandria (Washington), Midland (Virginia), Singapore, and above all Manchester, has the biggest stock of private arms in the world. His company by itself accounts for 90 percent of the light arms trade, with annual sales close to \$100 million.

The Garand rifles of American manufacture, bought in Great Britain and sold in Guatemala were handled by Interarms.

The Vampire jet fighters bought second-hand in Sweden and delivered to the dictator Trujillo in Santo Domingo were another transaction handled by Interarms. The arms delivered to the Castroites before the Cuban revolution, and later to the anti-Castroites who ventured into the lamentable Bay of Pigs affair, were also supplied by Interarms. And finally it is Sam Cummings who bought rifles in Jordan which, later, went to equip Muslim rebels in the Philippines who were financed by Libya's Qadhdhafi.

In his warehouses are stored arms--800,000 in Manchester alone--which in their sinister way have written the histories of dozens of local wars since World War II which have broken out in Africa, Asia, and South America. Sam Cummings, like his fellow arms traffickers, speaks of his profession and his deadly wares with cool detachment. He sells rifles, mortars, machineguns, like others do ballbearings and breath mints. He is concerned with profits, not mortality.

He says:

"All arms are defensive. Their separate parts cannot be lethal. Some speak of peace and disarmament but we, the businessmen, we know that human nature is composed of violence and aggression. Beneath the human visage, there lurk the fangs of the beast. The arms trade is based on human folly, that is why its [many] channels are unfathomable and it will never be possible to put an end to it."

Bad conscience, scruples, remorse, Cummings and his like leave to Alfred Nobel, the inventor of dynamite and the founder of the annual peace prize, who felt himself "pursued by the ghosts of Niflheim, the dark kingdom of the dead in Nordic mythology." They leave [such reflections] to a Carnegie, who made a fortune selling armor-plating to the American war fleet but devoted \$25 million to the Foundation for Peace....

In our time, the arms traffic is no longer synonymous with heavy crates transported by exhausted tramp steamers, unloaded furtively on a small piece of deserted coast. The deliveries of Sam Cummings and his brotherhood rather strictly respect government licensing regulations and the "certificates of final destination." But can one ever be certain of the final user?

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

On the Lebanese battlefield, arms have been seen which transitted through Morocco, Ghana, Libya, Spain and Greece.

Dany Chamoun's explanation:

"It is easy, with money, to get a certificate of "guarantee of destination." We go to a friendly government which buys the arms, then turns it back to us, despite the certificate of final destination which forbids reexport.

"In the port of Aquamarina, we have seen big barges and old RAF lifeboats bringing, for example, Belgian FAL rifles, heavy Dushka machineguns, even Super Shermans. In the Greek port of Halkida, 1,800 Mausers were discovered on board the cargo ship "Destiny." At Piree, 60 boxes of Belgian machineguns were loaded on board a Lebanese ship.

When we bring up the question of controls and guarantees, Sam Cummings pulls out his favorite proverb:

"The clearest text becomes invisible with a piece of gold on the eye."....

The private sector accounts for barely 5 percent of the total volume of arms exports. The big arms merchants, nowadays, are the states. Official transactions have replaced shady bargaining. The decisions are made at the level of presidents, ministers, high officials. The contracts are clothed in respectability. The buyers even get the red carpet and honor guard....

The time is long gone when John Stonehouse, a delegate of the British government, should urge on the ardor of London functionaries [by saying]: "Of what use is this attitude of the gentleman who does not want to dirty his hands in face of the urgent need to keep the British factories going."

Most Western nations presently have an organization for sales of war materiel-ILN (organ for negotiations on international logistics) in the United States; DMA (ministerial delegation for armament) and DIA (director-ate of international affairs) in France. These offices, almost dispensaries really, aim less at regulating than at stimulating arms exports. Already, the private companies are furiously battling head to head with the competition. They do not hesitate to pour out bribes, to grease handsomely the palms of intermediaries, to corrupt, to weave intrigues (remember the Lockheed and Northrop scandals in the Netherlands, Italy, Japan, Iran, and Indonesia) in order to cinch a sale of their infernal products. Here we see them stabbed in the back by their own governments.

The journalist Anthony Sampson, who has broken down the complex mechanisms of the frenetic bazaar of contemporary arms, says in "The Arms Bazaar"*:

* Hodder and Stoughton-London.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

"Henceforth, the incentives to export arms were much greater, and the governments were no less preoccupied with providing for full employment of manpower and equilibrium in the balance of payments than the directors of any private enterprise. Trade union pressures pulled in the same direction, and just as effectively on members of Congress, as the concerns of captains of industry. The governments found themselves hard pressed to increase the volume and value of exports, taking into account three factors: the concern of the Treasury to have foreign currency, the concern to provide for full employment throughout the territory, and the concern to lower the retail price of armaments by increasing the volume of production."

This cynical willingness to consider arms like any other kind of export product is a reality in the industrialized nations of the West, in the communist bloc countries with a fondness for convertible currency, but also in the neutral governments (Switzerland and Sweden): which balance the scales of their trade ledgers and their humanitarian ideals by financing, respectively, the Red Cross and the Stockholm International Peace Research Institute (SIPRI).

The developed countries and the newly rich oil states are not the only ones to "fill up" with armaments that are more and more sophisticated, more and more costly. The Third World too is rushing into the arms race. Arms expenses for developing countries surpass the total of budget allocations to education and health. This immoderate hunger for steel is tragic when it strikes regimes whose people lack food, hospitals, schools. One single Tomcat costs \$20 million. That is the same cost as 1,000 tractors....

The arms merchant no longer has anything in common with wayward adventurers like Rimbaud or cynical capitalists like Basil Zakaroff. These are high officials, zealously selling their countries' weapons. They are decorated and recompensed for services rendered to the export business. They find other arguments to justify their filthy deals. For example: "French arms exports cause 20 times less deaths than automobile exports." They are merchants of death with clean consciences.

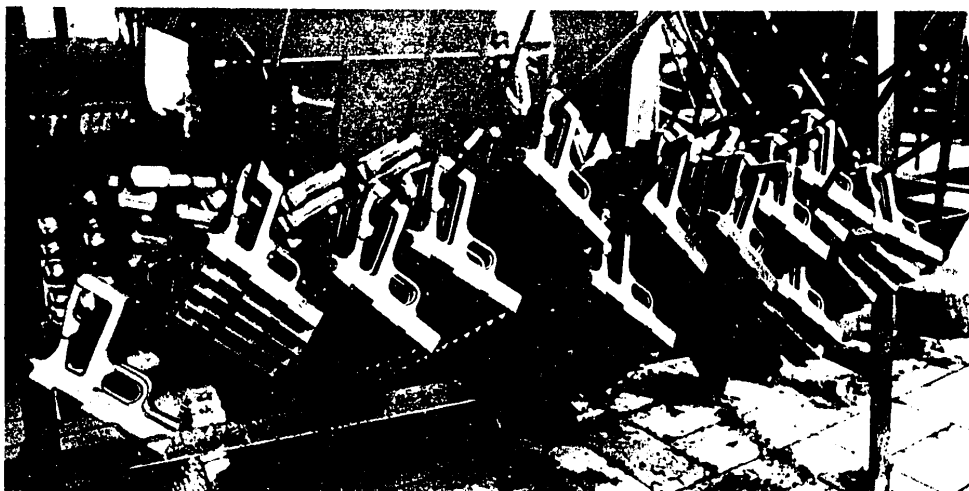
"I am a practicing Catholic," said Hugues de l'Estoile, former director of the French DIA. "I never had any qualms of conscience. In the Bible, the centurion is never shown in an unfavorable light."

The worthy disciple did not hesitate to reply to criticism from the French protestant federation about arms sales:

"In Lebanon, France has lost an order of helicopters... It went to Bell, the American firm, because its agent in Beirut was the papal nuncio...."

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY



FN's production lines: everything is perfectly legal....



[Cartoon caption:] "People are crazy."

On the Cover: Arms Sales: Hypocritical Belgium p 4--64 arms export cases blocked by the foreign affairs ministry. After decades of hypocrisy, it would seem that the political class is feeling some remorse. High time! In recent and quite painful affairs, would the anesthetized public react? Breaking all the taboos, Andre Lemoine, Jacques Schepmans, and Jacques Wiame conducted the investigation of our cannon merchants. The result is rather stupefying.

FOR OFFICIAL USE ONLY



The Sandinista revolution in Nicaragua: Oh! See the pretty FAL....



The dynamic advertising for PRB, the leader in the mortar domain, in "Jane's," the worldwide catalog of infantry arms....

57
FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY



The French arms "supermarket" at Satory: some kind of export product....



The war in Lebanon: 60,000 dead from light arms and artillery provided by private and state merchants....

58
FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY



"Trench-Mortar" by Galtier-Boissiere in 1938: nothing has changed....
[Magazine cover story: "The Cannon Merchants: Against the Nation"]

COPYRIGHT: 1980 Pourquoi Pas?

9516

CSO: 8119/1560

END

FOR OFFICIAL USE ONLY