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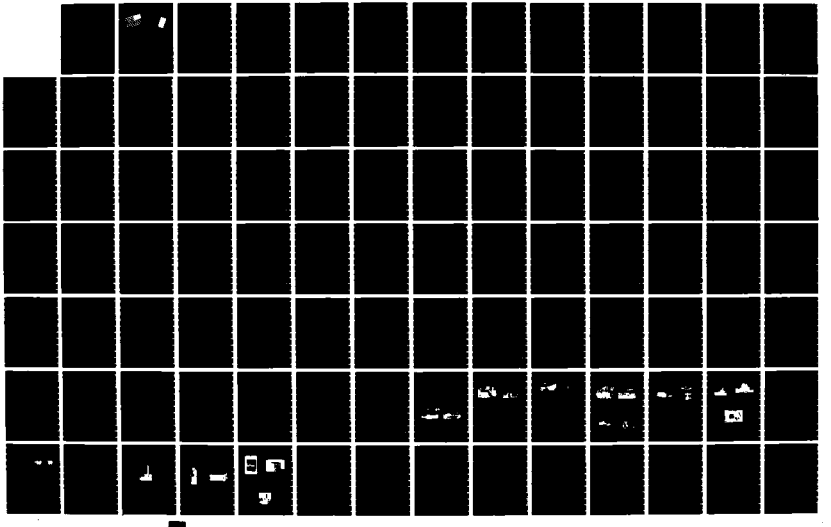

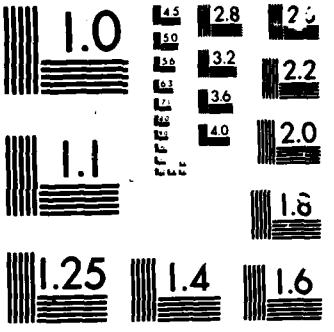
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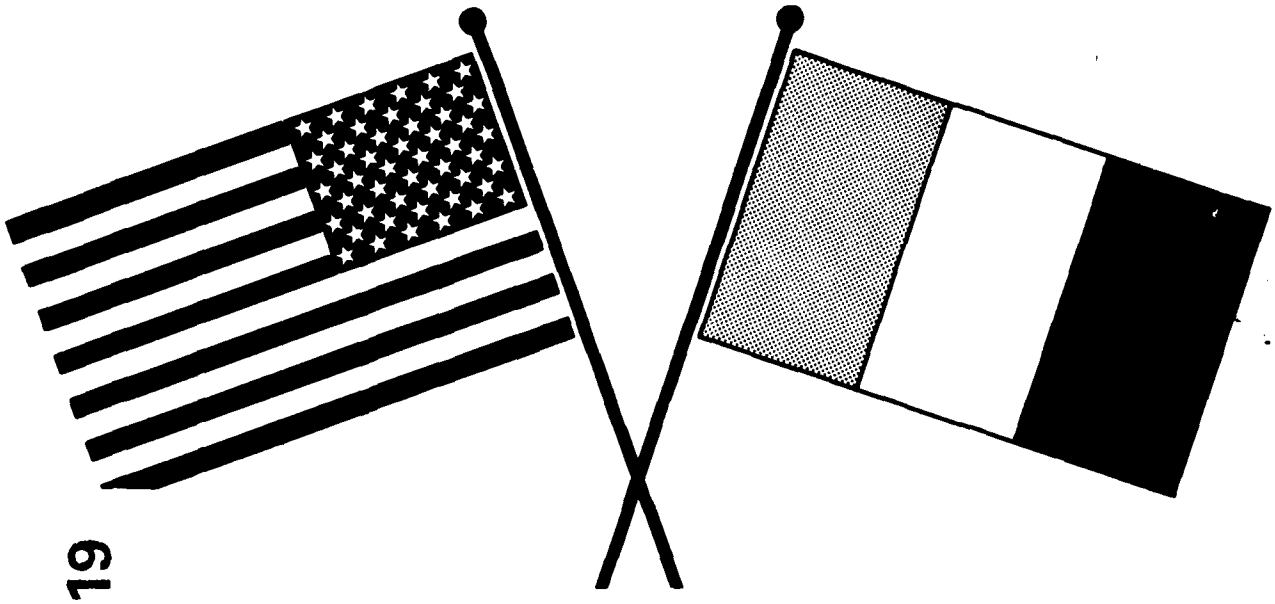

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PROCEEDINGS OF THE SEMINAR ON U.S.-ITALIAN ARMAMENTS COOPERATION

WASHINGTON, D.C.

25-27 JUNE 1979

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SEMINAR ON U.S. - ITALIAN
ARMAMENTS COOPERATION

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Preface

On 25-27 June 1979, a Seminar on US-Italian Armaments Cooperation was conducted in Washington, DC, to inform industry of Government policies and procedures and to facilitate direct contact between Italian and US industry. The seminar was attended by approximately 100 executives from industry from the two countries, plus key officials from both governments including National Armaments Directors General Fabio Moizo and Dr. William J. Perry.

On 11 September 1978 Italian Minister of Defense Attilio Ruffini and US Secretary of Defense Harold Brown signed the Memorandum of Understanding between the Government of Italy and the United States of America concerning the Principles Governing Mutual Cooperation in the Research, Development Production and Procurement of Defense Equipment. The preamble of this MOU states that both parties agree to seek increased combat effectiveness for its military forces and reduced redundancy of research and development resources. In pursuit of those goals both parties agreed to waive, on a reciprocal basis, "buy national" penalties tariff duties and other obstacles to cooperation. The MOU further states that it is the responsibility of Government to inform industry of its policies and procedures and the responsibility of industry to pursue business opportunities.

The key Italian officials responsible for planning and organizing the seminar were MGEN Giorgio Santucci, Sig Marcello Serafini, Sig Luigi Costa Sanseverino and LTC Pietro Moja of the Embassy in Washington, DC.

Principal US officials who planned and organized the seminar were Colonels Charles W. Richardson, Jr. and Norman Walker, LtCol A. Lee Tessmer, Mr. William Levitt, and Mr. Marvin Stearn. These Proceedings were prepared by Colonel Richardson and Lieutenant Michael Foley, USMC.

CHAPTER 1

U.S.-ITALIAN ARMAMENTS COOPERATION

GENERAL FABIO MOIZO

Gentlemen, in taking the floor at this seminar on the Italian and U.S. defense industry I wish to thank the American authorities for their initiative.

The considerable number of representatives of the Italian industry present here indicates the great interest attached to this meeting. This proves, if necessary, that dialogue and direct contact are the most suitable tools to concretely proceed in the implementation of the U.S.-Italian MOU.

The rationale leading to the signature of the MOU can be briefly summarized. It stems from the twofold requirement for harmonizing the armaments of the various NATO countries by applying the principles of standardization and interoperability as well as balancing the exchanges between our two countries by utilizing the triad of tools identified in the MOU, dual production and weapon families.

The requirement for harmonizing armaments within NATO derives from tightly interconnected concepts:

Firstly, the defense budgets of western countries, as Dr. Perry has often pointed out, are insufficient to keep up with the qualitative and quantitative improvement of the conventional armaments of the Warsaw Pact; nor is it possible to fill this gap through considerable increments in defense budgets;

Secondly, the defense cannot disregard its institutional task, which consists of playing an adequate role in the maintenance of detente and peace.

Therefore, to achieve this aim the Defense needs an integrated posture enabling it to operate in an effective manner.

The evident opposition between the insufficiency of defense budgets and the adjustment of operational capability can be reduced at acceptable levels by sharing the philosophy of rationalization which, in practice, means a better utilization of common resources available and the acquisition of interoperable, and, as far as convenient, standardized equipment.

To strengthen this last concept, whose positive implications on the field of employment of forces are evident, suffice it to think of the waste of resources for duplication in the sector of research, development, production and procurement of a huge amount of differentiated spare parts which cannot be used for similar equipment; this waste can be approximately estimated at $12 billion a year. However, it should be added that the practical acceptance of the principles of S&I without adequate compensatory plans could increase the dependence of those countries whose economy is particularly weak.

The implementation of the proposed triad entails the passage from a theoretical plane to a practical plane, from the formulation of NATO operational requirements to the availability of concrete means on the part of various partners to suitably meet them.

We believe that no Alliance can maintain its strength and its credibility for a long time unless a substantial balance of principles, organization and means is pursued and attained among the various partners.

Moreover, it is not possible to conceive an operationally efficient and effective defense within each member country in the absence of a corresponding participation of the relevant armament industry on a conceptual and practical plane; this arises common problems which must be solved at the same time. Therefore, the Italian defense needs to rely on an armament industry which, being informed about medium and long term plans, can devote a greater part of its activities to gradual technological improvements.

Italy is open to the dialogue with all member countries and today government and industrial delegates are here to discuss with U.S. representatives who are most qualified to understand the situation and give their collaboration to tackle it in the best possible way.

As for the well known triad, "dual production" and the "weapon families" are still in the consolidation phase while the MOU is already well defined and we want to identify all the possibilities for cooperation it can offer to us.

We believe that under the aegis of the Department of Defense and its influence within the appropriate U.S. forums, some concrete actions can be carried out in order to stabilize and stimulate the Italian armament industry.

I am referring to the conceptual opening which jointly with the DoD we are trying to carry on, each in one's own country, to allow the Italian industry the benefit of any propitious circumstance: from subcontractor activities in the U.S. defense programs to the models of production in the joint U.S. and Italian defense programs, to the sale to the third countries of products built under U.S. licence.

Referring to the subcontractor activities, undoubtedly, the principle of competition shall always be taken into consideration as the essential machinery for controlling costs and improving performances. We share this principle and much more because there are many fields in which national industry is already competitive either in Europe or in other countries. Our worst deficiency is perhaps the lack of a more widespread knowledge of our present possibilities and of our potential.

In Italy an advertising activity has been started in this field utilizing the existing offices which will be enlarged and establishing new offices in Washington so that the interest of the national armament industry can be enhanced through a more adequate acknowledgement of its capabilities.

However, it is easy to understand that no dialogue is possible without an interlocutor: i.e. if the U.S. industry is not willing to collaborate and to realize the mutual interest of a constructive dialogue.

Within the framework of this work sharing which is possible and profitable for both parties, some R&D programs enabling the growth and the harmonic strengthening of the national industry are of particular importance.

As concerns this collaborative phase, I cannot leave out the fact that the technological transfer is the most significant part of this subject, being associated with the acquisition of know how.

We are fully aware of the motivations stemming from security reasons and industrial exclusiveness which objectively do not encourage the transfer of advanced technology. We would only hope that the analysis and re-evaluation of such transfers were recurrent in order to facilitate in time a gradual increase in the qualification of Italian industry.

These actions, however, would not be sufficient by themselves, i.e. if they were not accompanied by a broader liberalization in granting authorizations to export to third countries, weapon systems produced in Italy under U.S. licence or with U.S. components.

However, setting aside the preclusions of political nature that are common to NATO countries or specifically pertaining to the U.S., we believe that the authorizations to export to third countries of Italian products having U.S. components could be released leaving a pure commercial nature evaluation out of major consideration.

U.S. vetoes to export materials produced under licence, in fact allow the limited production for domestic needs and that is not sufficient to repay the non-recurrent costs. If European programs will not be attained, this situation can be corrected only by U.S. identification of a suitable tool that allows a greater liberalization of third country markets.

Without an opening that proceeds beyond the exceptional cases in which the soul source or urgency clauses were adopted, it is easy to difine the alternative: the less favoured countries would be led into autarkical temptations instead of collaborative inclinations, therefore in contrast with S&I concepts even if these are accepted on the principal plan.

If we could promote the initiatives within this wide collaborative context, we would in the meantime achieve those compensations which, having not been equitably fulfilled hitherto, have been the reason for the well known difference in the U.S.-Italy exchange.

In discussing compensations, Italy is fully aware that it will not be possible to come to a complete removal of the accounting difference now existing between the two countries in the specific weapon systems area, nor has she the aim in view of achieving such a parity.

From this aspect, therefore, it is not important to assume as a reference point the accounting situation in some year or another. We might even start right now, given that at the end of this seminar we achieved a significant ratio in terms of contracts for our industry. We feel, however, that an accounting reference date should be identified: first of all because the committee contemplated in draft Annex 3 should periodically assess the situation and this cannot

remain an abstract evaluation. Secondly, this will enable to appreciate in the years to come the activity the various partners were able to carry out thanks to the existence of the MOU.

In thanking you for your attention, I should like to conclude by summarizing what I have deemed advisable to point out under the present circumstances:

As generally admitted and many times stressed by Dr. Perry, the Alliance remains an irreplaceable reference point for the maintenance of detente and peace in the world;

In order to keep the Alliance integral and credible it is necessary to pursue a political, social and economic balance among the various partners: as far as we are concerned, we are interested in the military aspect;

Since the conventional disparity between NATO and the WP cannot be corrected by conspicuous budget increases, we fully agree that rationalization represents a valid alternative;

The aspect of operational effectiveness of the forces attainable through the application of the standardization and interoperability principles cannot stand without an operational capability of the armament industry which can be improved by the correct interpretation of the possibilities offered by the MOU;

I have identified certain areas where the DoD and the Italian Defense, under the aegis of the MOU, can cooperate to reach an effective integration of the guiding principles.

These are:

The participation of the Italian industry, as subcontractor or licensee of the U.S. industry, in U.S. Defense programs, independently from the interest of Italian Defense in said programs;

The recurrent evaluation by the U.S. of the technology which objectively can be transferred to permit an increment in time of the acquisition of the know how indispensable for the technological progress of the national armament industry;

The consequent expansion of the area of penetration into third country markets, for the systems or subsystems with U.S. components or produced in Italy under U.S. license.

We are confident that we have found the right way to follow based on a new relationship with the U.S. whose premises are contained in the MOU. However, since the political will in this case must be shared by the industrial will, and I refer mainly to the U.S. industry, the need will be in the years to come for verifying the road covered together in order to assess the actions still possible to proceed along this trend. We are fully aware of the difficulties we will encounter on the American market. We are ready to face them. We only wish to meet you with much frankness and loyalty.

CHAPTER 2

MILITARY NEED FOR ARMAMENTS COOPERATION

MGEN RICHARD BOWMAN

I am the Director, European and NATO Affairs. Three or four years ago, noone in my job would have thought about defense equipment. Dr. Perry and his people would have been working exclusively on defense equipment to meet U.S. requirements. There has been a significant change. Those of us on the policy and strategy side have become aware that we cannot maintain an adequate defense in the Alliance without greater cooperation in armaments.

Maintaining an adequate Alliance strategy was easy as long as the U.S. had dominance in the strategic area. Alliance troops served as a tripwire. During that period, it made little difference whether we had standardized ammunition or weapons. It didn't make any difference whether we could communicate with one another's military forces. It didn't make any difference whether Italian divisions could cooperate, for example, with German divisions or American divisions. It didn't matter because the use of nuclear weapons would end the fighting.

As the Soviets built up their own missile strength we moved into a period of equivalence. From 1967 to 1973, we talked about a strategy of flexible response that relied on the 7,000 tactical nuclear warheads that could be used to stop an attack. If these were employed it would be such a serious war that the strategic weapons would undoubtedly also be involved. The Soviets continued to improve both their strategic and tactical nuclear forces at a very rapid rate. In addition, we found them putting more and more money into conventional forces.

If you read Soviet writings, you find that they were moving to a new strategy to take advantage of their great military strength. They began to plan for a surprise attack using forces in place along the Central Region, driving so rapidly into Allied territory that the Alliance would be unable to even establish a defense line. The Soviet units would move quickly, spread out, and there would be no good targets for Allied tactical nuclear weapons. They would try to bypass Allied units, make double envelopments, and move quickly to the Rhine River.

The ratio between numbers of tanks in the center region, meaning East Germany, Poland, Czechoslovakia; and on our side, West Germany, Belgium, and the Netherlands; has gone from 2:1 to 2.7:1.

Now, consider the quality of eqiupment. In 1965 the Western Alliance was better in every single category. By 1978 that had completely changed. In the late sixties and early seventies the Alliance had four different types of tanks (U.S., British, German, and French tanks), all of which were probably better than the Soviet tanks. To invest money to develop four different tanks is quite costly, as General Moizo pointed out. Today, the Soviets have gone through several generations and now the T-72 is better than anything we have in the field. The Alliance will soon have the Leopard II and the XM-1, but it will be quite a few years before these tanks are fully deployed

We have moved from a situation in which the Alliance clearly was superior in quality, which made up for our inferiority in quantity, to a situation in which we are sometimes inferior to the Soviets in quality of equipment. We may have better tanks three or four years from now, but the Soviets may have better tanks a few years after that. The same thing is true in artillery, armored personnel vehicles, and anti-aircraft. The U.S. still has superiority in tactical aircraft because our new airplanes are already coming in. Still, it is again turning into a "now we lead, now they lead" situation, which is very dangerous. In a desperate situation, we might discover that we cannot make our strategy work; that the Soviets can penetrate quickly and be on the Rhine in a week. Even if we use nuclear weapons, we might not stop their movement. The West might use nuclear weapons and still lose the war. We have to consider what the Alliance is trying to do to prevent this sort of disaster.

Let's discuss first the deployment of our forces. In the center region, the Soviets have 20 good, first quality, ready divisions in East Germany and approximately six East German divisions which are also good. That is a large mass of armor. The Alliance has a good-sized force in West Germany, but Allied units are more spread out and are not on the line. Thus, we must be able to start with no warning and be able to move quickly on-line in order to have a workable strategy. We must be able to meet the attack wherever it occurs. We must be able to stop it close to the border. We must convince the Soviets that they will have to concentrate their forces and that tactical nuclear weapons could then destroy their units.

If Allied national units are going to meet attacks wherever they occur, clearly we are going to have to work with one another. The odds are slim that we will be fighting right on our own supply line. We are going to have to be able to get ammunition and equipment from NATO's forward storage sites, wherever they are.

In order to deter a Soviet attack and make our strategy work, we must have better equipment cooperation than we have had in the past. The Alliance Summit meeting in Washington last year adopted a NATO Long-Term Defense Program. That program includes readiness (uploading ammunition, getting units up to strength so they can move in less than 24 hours), reinforcement (U.S. will pre-position three more divisions of heavy equipment), reserve forces, air defense, communications and control, electronic warfare, logistics, and finally the rationalization of R&D and procurement.

Throughout the Long-Term Defense Program there are many standardization and interoperability programs. The Periodic Armaments Planning Systems (PAPS) will also provide a framework for improved cooperation. PAPS looks at the life cycle of weapons systems. Our military officers describe the mission need. Those countries which are interested in that system will meet in Brussels and work on the technical requirement, weigh the resources and decide what is attainable. The countries that are not participating in that system may be working on another system. There will be many opportunities to participate.

Italy has participated in coproduction of the F-104 aircraft, M-60 tank, M-113 personnel carrier, and most of our helicopters. Italian industry represented in this seminar have a lot of experience. From our point of view, I would say that we have had extensive cooperation with Italy. If you talk to our companies who have been involved in that cooperation, not one has been displeased. It has been a great success.

We know armaments cooperation has to be a two-way street. The U.S. cannot do its own thing, paying no attention to what is happening in Europe and expect cooperation to go on. We must study European ideas and recognize that Europe must carry the ball on a reasonable number of new development efforts. We have looked at European systems and have selected some, and we will gradually learn how to make these selections more efficiently.

Of course there are some difficulties. In the case of the ROLAND II, U.S. industry could not read the European drawings. They did not understand the specifications. They went to the shelf to get parts and could not find what the drawings called for. The Alliance committees that are standardizing parts need to move faster if we are to have economical licensed production. One positive aspect of the ROLAND is that we have tested our missiles on European launchers and European missiles on our launchers.

A program that we think is moving well is the F-16, in which five countries are engaged: Belgium, Denmark, The Netherlands, Norway, and the U.S. The program probably has less cost growth than any other airplane you can think of. The growth in the cost of this airplane is due in part to the five countries deciding they wanted a new weapon on it. You cannot make many changes without increasing the price.

The AIM-9L is a system which the U.S. developed that will be produced in both the U.S. and Europe. Italy is in this production effort. We believe that it is a very outstanding missile. If we can standardize this missile, which is absolutely critical to our air forces throughout the Alliance, then we will be able to get a key piece of armament wherever U.S. or allied aircraft land.

The AWACS, another U.S. system, was considered by the Alliance for coproduction in Europe. But with only 18 airplanes, that turned out to be extremely difficult. There was no economical way to do it. Thus we ended up with only Germany and Canada participating, each picking up a larger share of the Alliance procurement cost.

The Vertical Takeoff British HARRIER worked the other way. We set out to produce in the United States for the U.S. Marine Corps. But it did not make sense to produce a small number of airplanes in the U.S., so we purchased them from the United Kingdom. There are many cases where this is the sensible thing to do.

The Belgium MAG-58 tank machine gun is another example. We were having trouble with our tank mounted machine guns. The Army found what they were looking for in the Belgian inventory. It was a considerably more expensive gun but well worth it. The life of a tank can depend upon keeping the enemy infantry away. If the machine gun is jammed, you can't do that. We made the selection and purchased our first 10,000 guns from Belgium.

In the case of the new tank, a competition was held between the U.S. and Germany. U.S. companies came up with a tank that was just as good or better than the LEOPARD II. If one of them had had the edge, I think we could have had a standardized tank between the U.S. and Germany, but that was not to be. However, we did agree on the German gun, which is a major breakthrough.

We think licensing is beneficial and we are going to succeed with it. The families of weapons which you will hear about are also very important. Europe can specialize in one system and the U.S. in another.

The MOUs that we have with individual Allied countries are the basis for all armaments cooperation. With the MOU encouraging efforts to cooperate on a broad front, it is going to be a lot easier to proceed with families of weapons and licensing.

We are going to have to be satisfied with a lot of small steps. The key is to make more steps forward than backward. That is why the MOU is extremely important. Unless we succeed we are not goint to be able to maintain an adequate defense in the face of what the Soviets are doing.

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CHAPTER 3

U.S. POLICIES FOR IMPROVING ARMAMENTS COOPERATION

HONORABLE WILLIAM J. PERRY

I'd like to start off by welcoming the Italian colleagues to this meeting, and a particularly warm welcome to General Moizo, who is my colleague in the Conference of National Armament Directors.

General Moizo has been consistently one of the most constructive influences in armament cooperations in NATO, both in his role in the IEPG and in his role in CNAD, The Council of the National Armament Directors. It gives me very great pleasure to welcome you, General Moizo.

I'd like to talk about armament cooperations with this group in general and the role that Italian industry can play in particular. That will be the subject of much of the rest of this day and a good bit of the discussion tomorrow.

I'd first like to put this all in a context by describing why it is the United States is working hard to promote armaments cooperation in NATO and why, in particular, I support this and have been devoting my energies to trying to make it happen.

There has been a cliche term that has been used to describe armament cooperation, which is called a two-way street, and I should start out by telling you that I support the two-way street and that this seminar is an important vehicle for facilitating increased traffic on the two-way street.

I do, however, want to emphasize that the two-way street is only a means to an end and we very often lose sight of what that end is. The end is improved efficiency in the procurement of equipment for NATO, so that we can have more and better equipment in the field.

If we realize that that is the objective to which we are striving, then we can have a better way of judging which programs are promoting the two-way street, which can be supported, and which cannot.

In particular, I will not support and I do not support any programs, no matter how much they enhance the two-way street, if they really lead ultimately to the Allies being able to buy less equipment, or less effective equipment.

The two-way street cannot be a rationalization for inefficiency in procurement or for the procurement of less effective military equipment. There are many, many opportunities for increasing the two-way street which promote efficiency, and which lead us to better weapons systems and those are the ones which we should be focusing on.

The reason this is so important, I believe, has to do with the threat which we all face, the threat indeed for which the Alliance was formed. We

see today that the Soviet Union has deployed more equipment in Europe by about a factor of two than has the Alliance. Tanks, guns, even of late they are gaining an edge in tactical aircraft.

This is a fact which is of concern to us, but I think of even greater concern is that it is clear that this situation is going to get worse before it gets better.

We have good evidence on the production rates of Soviet military equipment, and it is those production rates which are a greater concern to us than the deployed equipment in the field. We see that they are producing more than 2,000 tanks each year, and producing more than a thousand fighter aircraft each year.

They are producing more than 300 warheads in the medium range ballistic missiles each year, and more than 1,000 warheads for the ICBM force each year.

This is a very, very substantial military production rate, and it is a problem with which we are confronted. In a sense it sets the pace for the competition, and it sets a very stiff pace.

We have some consolation in observing that the quality of our equipment is better than the quality of the equipment in the Soviet Union, but we are not confident that that will continue to be true in the future, because we see a very major thrust in the Soviet R&D program today.

Example number one is the T-80 tank. We see at present the T-72 tank, which is deployed in Europe today, of about comparable quality to the best tank which the Alliance can deploy, and a new tank in the Soviet Union, the T-80, coming along a few years behind it. The T-80, quite conceivably, will give the Soviet Union the world's best deployed tank. We are greatly concerned about that. In the fighter aircraft field we see four new fighters in advanced test today that will be available for deployment within a few years.

These new fighter aircraft will have for the first time in deployed Soviet equipment, look-down, shoot-down radars and look-down, shoot-down missiles with them. Therefore, one of the very great advantages which the Alliance has enjoyed in the past, namely the advantage of being able to gain a santuary in tactical air by flying low, will be lost in the future as this new generation of fighter aircraft is deployed.

Finally, I would observe that we see a research and development program in the Soviet Union in high energy lasers of very impressive scope and complexity. We see the Soviets experimenting with high-energy lasers as weapons for shooting down tactical aircraft.

We see them experimenting with high-energy lasers for ship defense to shoot down missiles that are approaching ships, and we see them experimenting with them as space weapons. In aggregation, a high-energy laser program in the Soviet Union amounts to an effort of about $1 billion a year.

To put that in context for you, this is a single R&D program that is more than the Federal Republic of Germany spends for their entire defense research and development. It is more than the United Kingdom spends in their entire defense R&D budget.

This is a single program in R&D in the Soviet Union, and that's the nature of the competition. The Soviets are intense, not only in the quantity and the momentum of the production program, but also in their research and development as well.

I think it is one of the supreme ironies of history that we are being, in a sense, out competed by the Soviet Union in fields in which the West has typically excelled. In a sense, the Soviet Union is trying to beat us at our own game, and that is the game of mass production and technology.

The irony in mass production is that the nations which produce the Chevrolet, Volkswagen, the Fiat, are being outproduced by the Soviet Union in military equipment, where they can't hold a candle to us in the production of cars and trucks. We don't seem to be able to compete with them in defense equipment.

The nations that are producing the 747 and the Airbus, and can easily outcompete the Soviet Union in commercial aircraft, are being outcompeted in military aircraft. The reason for this, I believe, is twofold. First is that the Soviet Union is putting a very significant emphasis on military development and production. This is obviously their top priority. It is equally obvious that that is not true for the Western nations.

That is the first issue we face. The second one, however, is what we should be addressing ourselves to here. That is the gross inefficiency that occurs in the Alliance development and production of military equipment, because of the redundancy and the lack of cooperation we have as an Alliance.

The NATO defense budget, aggregated, is about equal to the Pact, the Warsaw Pact defense budget. In spite of that, they are able to outproduce us and are able to invest more in R&D.

Therefore, the challenge to us is to use our resources better. In order to do that, we have to work together more effectively. We have to cooperate if we are to deal with this competition which we face.

The test of whether we succeed will not be whether we have more traffic on the two-way street. That should happen as a byproduct of what we do, but the test is whether we can provide more equipment and better equipment for our armed forces.

That is the challenge that I feel and that is the challenge which I would like you to associate with, because if we are all working to meet the same objective, then we have a far better chance of working in harmony to achieve that objective.

How are we going to do this? We have, as you are all painfully aware, more than a 30-year history of demonstrating that we don't know how to work

together, in the Alliance, in arms cooperation. We have one failure after another in our attempts for cooperation in arms development and procurement.

Some how we have to turn around that history of failure. We cannot turn it around just by making speeches saying it's important to turn it around. We have to recognize why there have been failures and try to deal with those root causes.

The failures, I believe, are attributable to two very obvious factors. The first is that we are a confederation of independent nations. We are not under the domination of any one nation in the Alliance, therefore we act independently.

Our independent actions are not, by nature, in harmony with each other. We have to work to make these independent actions harmonize.

Our second problem is that when we try to work together and try to cooperate for common objectives, we find that our national economic interests get in the way. Our problem then and the outstanding problem which General Moizo and I face in the Armaments Directors Conference and which he faces in the IEPG, is how to deal somehow with those conflicting economic problems, conflicts in national economic interest, and conflicts in industrial economic interest.

The programs which we have jointly conceived, programs which we will be talking about in the next few days, the programs which General Moizo discussed with you yesterday, are devised to improve cooperation in armaments, but with a full recognition of the national and industrial economic interests that exist and an attempt to accommodate those to the extent it can be done.

As I told you to begin with, I will not attempt to accommodate them to the extent of promoting programs which are inefficient or which lead to less effective military equipment. However, I have found many other ways which I can support improved cooperation, stil' taking full recognition of those economic constraints.

The first one is a program which was mentioned briefly yesterday, which we call the family of weapons. I don't want to discuss that in any detail today, but suffice it to say that it is pointed to the problem of how to get better use of our R&D expenditures. In the United States, we spend about $12 billion a year for defense R&D. The other NATO nations, in aggregate spend $4 to $5 billion a year. And it would be desirable if we could get the effect of a $17 to $18 billion program. In fact, we don't do that, because the $4 or $5 billion that the NATO nations spend are largely redundant of what we spend in the U.S.

That's as seen from our side of the Atlantic. As seen from your side of the Atlantic, the money we spend is largely redundant with your programs.

Whichever way you look at it, it adds up to a duplication and a waste of resources. What we have proposed in the Council of National Armaments Directors is that we identify new developments that all nations are interested in pursuing.

The next generation of air-to-air missiles and the next generation of anti-tank missiles are two examples. We decide, before we begin those developments, which nation or which group of nations will have responsibility for sponsoring a given development.

Then that nation or group of nations undertakes that development, and the others agree to refrain from that development. When the development is completed, all nations will have access to that system for production.

That is one proposal. It's a proposal in which we are at an advanced stage of negotiation and discussion in two fields, one being air-to-air missiles, where what is being proposed is that the United States develop the next generation of medium range, radar-guided air-to-air missiles. In a sense, the follow-on to the Sparrow missile in our terminology. When we complete that development, we make it available for production, not only in the United States but in Europe, and that availability will be without license fees, without royalties, without any transfer charges.

When the development is completed, a European consortium will be formed to produce the system in Europe.

The other half of that proposal is that the European nations agree to form a consortium to develop the next generation of heat-seeking missile, the follow-on to the Sidewinder, the follow-on to the AIM-9L missile.

Furthermore, the United States will agree to refrain from competing with that development. Then when that development is completed, not only will Europe produce it, but they will make the data package available in the United States for production.

I envision these two programs, one of which would be developed in the United States, one would be developed in the European consortium. When the development is completed, for each of the systems, the production line will be set up, one in the United States, and one in Europe.

We'll end up with two production lines in NATO for each of those systems. It would have been better, we would have gotten more production efficiencies, to have ended up with a single production line. Having two production lines is a recognition of the economic interests that I described to you earlier. A plan for just one production line seemed to be pushing too hard, and though efficient seemed to be asking more than the nations could agree to.

However, two production lines are far better than the three or four or the five which might very well happen without any attempt at cooperation and, in fact, which is happening in these fields today.

This is our proposal in the family of weapons. It will save R&D money. It will lead to state of the art equipment available for the entire Alliance, but it is a relatively long-term effort. It will be five or six years before equipment which is developed in that program is available for deployment by forces.

Let me go from there to more immediate programs, in fact the program which I would call the principle thrust of the cooperative efforts. The

thrust by which our efforts will be measured, at least in the short term is the dual production program. I'll pick just one example of the dual production with which many of you are familiar.

The United States completed the development of the AIM-9L and began production of it last year. This is the latest generation of heat-seeking, short-range, air-to-air missile.

In previous time we would have offered to sell that missile to European countries and some European countries would have bought it, other European companies would have developed a competitive system and produced it themselves. What we have done instead with the AIM-9L is to offer a transfer of the data package so that a European consortium could produce it.

The Federal Republic of Germany, as most of you know, has agreed to take the lead on that program, has put together a consortium which includes Italy among the four countries represented in that consortium, and are now beginning the production of the A-9L in Europe, so we will have a production line in Europe and a production line in the United States for that missile. When those missiles are completed in Europe, they will be undoubtedly sold to the countries participating in the production.

They will also be candidates for sale to other NATO countries, to some Third World countries, and it's even entirely possible that some of those missiles will be sold in the United States. From the United States' point of view, even though we have a production line, we like the idea of maintaining competition in equipments which are into production.

In a sense the European production line will be a second source potential for the United States, and that competition will work to keep the prices down and to keep the efficiency up in production, which is one of the very desirable side products of this program.

We will, as we complete the development of other systems in the United States that have application to NATO, make them available under the same arrangements. In the Modular FLIR System, the night-vision device is a second example, The STINGER man-portable, air defense missile will be made available under this system. When the COPPERHEAD Program is completed, (the COPPERHEAD is a laser-guided projectile), we will make it available for production in Europe.

This is a distinct change in U.S. policy in handling the armament cooperation in NATO. It is more than rhetoric. It is a program which is started. Two programs are already underway in production in Europe, and many more are being proposed, and in advanced stages of negotiation.

We also will expect, in a reciprocal way, that advanced systems that are developed in Europe be made available for production in the United States, with the availability under the same terms, which is on a no-exchange of costs, no transfer of funds basis.

Finally, there has been created through the Memorandum of Understanding, which was signed between the United States and Italy, and between the United

States and many other NATO countries, a legal environment and more than that, a procedural and an attitude environment, which will allow American industry and Italian industry to cooperate in defense programs on an industry-to-industry basis.

It will, in its broadest sense, allow Italian industry to compete directly for U.S. defense programs and I think that will happen with increasing frequency in the years to come, and will happen successfully. It will, perhaps more immediately, and more realistically, create a situation where Italian industry can team with American industry to compete for U.S. defense programs.

The U.S. defense programs, as I'm sure all of you know, are conducted in a very competitive manner; also everything we buy, we buy in competition, or we always try to make it a competition where the rules for competition are understood and advertised.

Sometimes the price is a principal factor of competition, sometimes technical performance, sometimes it's schedule. In all cases we try to describe at the beginning of the competition what the ground rules are so that all competitors have a basis for understanding this.

The success in business, as you know and as I know from my years in industry, depend, among other things, on your skill in marketing. You require for success aggressive marketing. You require understanding your customer. Many of the Italian companies are beginning to make an effort to do that where the U.S. defense market is regarded as the customer.

I encourage you to do that. In order to succeed you require long and persistent contact with the customers in the United States to understand what they are trying to accomplish, to anticipate their needs, and to gear your R&D programs so that they anticipate needs, not just respond to needs as they are advertised.

It will take you a while to achieve that. Many U.S. companies have already achieved that level of marketing skill. Therefore, certainly on an interim basis, you would be probably better off, have much better chance of achieving near-term success, by teaming with those companies that already have learned how to market to the U.S. Defense industry.

Let me summarize my comments very briefly now. I support and will put the full weight of my office behind improved cooperation in development and production of armaments for NATO.

My reason for supporting them is not any political notion that it will improve relations between countries, but rather on the belief that we can develop and produce more and better equipment for the Alliance by maintaining this emphasis.

The family of weapons represents our best long-term approach to the problem. Our dual production programs, such as the AIM-9L represent an immediate action which we can take and which you can take, that will get the state of the art equipment with the minimum cost deployed to our forces in the field.

The Memorandum of Understanding that is signed between our countries will greatly facilitate the cooperation between Italian defense industry and U.S. defense industry. This can lead to near-term business for Italian industry, from which you will benefit by the increased business, and we will benefit by getting the skills and the talents of Italian industry available to the U.S. defense programs.

DR PERRY: Now, General Moizo, I think at this stage, I will stop my prepared comments and take about five or ten minutes for questions that may come from my Italian colleagues here. Do you want to moderate the questions?

QUESTION: The thrust of your remarks are a good bit different from the thrust of a lot of previous remarks. They speak largely of interoperability, standardization, and those things as being the real objective of what we're trying to do.

Your thrust has more to do with efficiency in procurement, getting more and better equipment for the dollar, or whatever it would be.

Would you discuss the difference in approach on that?

DR. PERRY: That is a very perceptive question. I think the differences are more apparent than they are real. In the area of interoperability and standardization, these are very important objectives which I wholeheartedly support. There are two different ways of achieving them, fundamentally.

First of all, if we can achieve the kind of cooperation and rationalization of our procurement efforts that I described, then the standardization and interoperability benefits come as a bonus. Also, in some fields, like in the fields of air-to-air missiles, it is not clear that the benefits can be achieved any other way. That is, it is not clear that you truly get the standardization benefits any other way.

On the other hand, there exist programs, and I would cite the tank development as an example, where we have failed to achieve standardization. The United States is building one, the Germans are building one, the British are about to build one, the French are considering building one.

Maybe that is one of the inevitable consequences of these national economic pressures that I described to you, but even if that happens, or even as it happens, we should look to those subsystems of the tank for which interoperability is important.

Fuel and ammunition and tank treads are clear examples of that. Even though we have failed to rationalize the tank production, even though we failed in this objective, which I've described to you, we are still making progress in that area.

We will have, at least in the American and German and possibly in the French tank, a gun which uses common ammunition. We are even rationalizing the ammunition development program with the Germans and so it will be a single program to develop the ammunition for that. We may have that kind of success in the tank treads as well, and we're still discussing and negotiating the engine; whether or not we have the same engines, we will have engines that can use the same fuel.

Sometimes when we fail to achieve the objective that I'm describing, we can fall back and get some of the benefits, some of the interoperability benefits, by lowering our sights. To me, that is a lowering of sights, that when we fail in the main objective, we should not just give up but we should then go for simply the inter-operability objective.

QUESTION: Dr. Perry, the thrust of your comments on production, etc., has indicated a transfer of data, copyrights, etc., government to government. I think that there is concern on the European side and ours, in industry, that there's a body of intellectual property consisting of technical data, know-how, perhaps patent royalties, that predates any government support. Perhaps private investments made by a U.S. or European firm have allowed them to be the winner in a competition and emerge as a design leader.

How do you propose to handle these kinds of intellectual property rights matters as you proceed with the government to government transfer?

DR. PERRY: I propose to handle it with difficulty and a case at a time. Let me be more specific about the problem. You've put your finger on one of the single most difficult questions in our dual production proposal.

Now, I spent 25 years of my career in industry. I am very familiar with the properties, proprietary rights, intellectual property, and how a company's success depends on being able to protect their intellectual property.

We have, as you probably know, a program in the CNAD now, which is trying to come to an agreement as to how those intellectual property rights will be protected uniformly across NATO. The United States has taken a lead and I, personally, have taken a lead, to listen to industry's statements on that and try to represent them adequately in this initiative, which by the way, is known as AC-94, I believe.

We will protect those rights, because the industry in Italy, the industry in the United States, the industry in Germany, defense industry, is the key to our success in being able to compete with the Russians. That's the one thing we have over them that makes the difference. They can pour more money into it, but they don't have any way of releasing the energy that comes in dealing with the competitive thrust of the Western defense industries.

In the case of these dual production programs, what I have described, and I should have been more explicit, was when I talk about a dollar-free exchange, I'm talking about government to government. In many cases on a program the government will not own all the rights to equipment. A company will own some of them. When that happens, then those company rights are protected and that company is entitled to license and royalty fees, and that would be a subject of negotiation on a case by case basis.

When we undertook to produce the 120-millimeter gun, the German government gave us license and royalty free, the governmental rights to that gun, and then the U.S. had to negotiate with the company to agree on the appropriate royalty fee to pay the company for their rights on the gun.

That will be a continuing case, and the final comment on that is the actual transfer of information. I don't envision the U.S. government tying the technical data package up in a blue ribbon and handing it over to the Italian government or the German government and saying, lots of luck.

The technical problems in the transfer of complicated technical data packages are profound. They will only be solved satisfactorily by industry from both countries working together, and it will involve not only paper being passed from one company to another, but also an exchange of people. Regarding the people in the company who did the original development, there have to be some of them working with the other company, and they have to be paid for their time and effort.

Companies will have a very significant role in this transfer and it is a role which will involve transfer of funds. The company will have to be paid for their intellectual property, they'll have to be paid for their technical support.

QUESTION: Dr. Perry, is the U.S. Government prepared to invest some R&D money in Europe, for instance, on a competitive basis, or in other words, at what level does the participation of European industry in U.S. procurements start?

DR. PERRY: If I understand the question, it is that will the United States Defense Department issue an R&D contract to an Italian company, say, and the answer is yes, but with difficulty. I don't want to mislead you into thinking that that's going to be a simple or an easy thing to do.

It was virtually impossible, until we had the Memorandum of Understanding signed. Now it is possible but it still is difficult and the reason is several-fold, but one of the most important factors is that the marketing of R&D is even more difficult than the marketing of equipment. It involves an intimate contact between the engineer, the technical man, in your company, and the technical man in the government laboratory.

Because you are 4,000 or 5,000 miles away, it is just more difficult for you to succeed in that kind of marketing. The company which I was the president of when I was in industry was an R&D company and I never in my entire years in the industry bothered to submit or solicit a bid on an R&D program.

If my engineers, if my technical people, had not already sold our capability to the technical people in the laboratory we were dealing with, I thought it was too late. It is a difficult marketing problem but to answer your question, yes, you have the right to bid for those, in cases where you have a clear technical advantage.

In cases, particularly in cases where you are willing to invest the time and the resources to send your engineers back to sell not only their idea but themselves to the government engineer, then you can have success.

CHAPTER 4

U. S POLICY ON THIRD COUNTRY SALES

WILLIAM MARSH

Let me recall for you that upon taking office in 1977, President Carter launched what was a new direction in policy towards arms sales, arms transfers, and the like. In his statement on conventional arms transfer policy of May, 1977, he established certain controls, one of them quantitative, five of them qualitative, which were to serve as guidelines for transfers of defense items and weapons-related items and services.

To be sure, NATO members were exempted from these controls, but still the spirit of the directive is worth considering. The President could not ban or restrict artificially the transfers of defense items and services; but, instead, in a very carefully balanced approach, allowed for an equilibrium of a number of important policy objectives of the United States and, indeed, of the entire NATO Alliance.

Thus, while directing a reduction in arms transfers to other than principal allies of the United States, and more specifically, for our purposes, NATO, the President indicated that the United States would continue to utilize arms transfers as an important instrument of national policy.

While ordering a restrictive approach to full production, again for other than principal allies of the United States, most notably NATO, the President affirmed our adherence to NATO and in subsequent policy has affirmed time and again our emphasis upon increased cooperation within the Atlantic Alliance.

What we are discussing, then, is a set of balanced approaches to a more considered arms transfer policy. There are many interpretations of this. There are those who take a restrictive position, those who call for a more liberalized position, but I think that all camps, all sides can agree that the President is aiming toward a more reasonable policy, one in which transfers are well considered, thoroughly thought out, and form some kind of coherent ensemble.

Europeans sometimes criticize the United States because they find our foreign policy too material, lacking in certain conceptual bases, lacking in certain coherence, while in our arms transfer policy we try to respond to those criticisms and develop a coherent conceptual basis within which this all-important matter can take place.

As far as transfers to third countries are concerned, let me remind you that controls upon third-country transfers actually precede the issuance of the Presidential policy directive in 1977; for, in legislation, most notably the Arms Export Control Act of 1976, the Congress has directed that it review all proposed transfers to third countries. In effect, the Executive action taken by the President in 1977 is an affirmation and a furtherance of laws and statutes of the United States and of indications of congressional interest in this very sensitive subject.

Is there some imbalance here, in that on the one hand we affirm the great importance of increased cooperation within NATO and, on the other hand, we emphasize the need to deal with arms in the arms traffic as a very special, very extraordinary kind of transaction, not some simple material passing from hand to hand? I think not. I think that in this lighter context of care and moderation one can attain both these objectives.

In order to carry out this objective of increased cooperation within NATO, we have signed Memoranda of Understanding, MOU's, including that with Italy. In the MOU with Italy, we have set forth a criterion by which to measure the proposed third-country transfer.

It seems to me that there is singular language in Paragraph 12 of the MOU with Italy, wherein that paragraph it is set forth that the basic conditions in criteria shall be policy-related rather than commercially related. What the paragraph intends to do, it seems to us, is to insure a fair competition on both sides in the case of any proposed or potential third-country transaction.

Thus, it is said that each government will base its decisions regarding requests by the other for agreement to third-party transfers on its laws, regulations, and arms transfer policy. Note: arms transfer policy. Each government will use the same criteria for proposed transfers by the other as it uses for itself, and will not reject solely in the pursuit of its own national commercial advantage a request from the other of a third-country transfer of such defense articles and technical data.

This is in rather concrete form an agreement which consolidates the spirit of alliance of the two countries, it seems to me, and is an agreement to fair competition and a fair opportunity for the industries of both sides. What then are these policies by which the respective individual governments will base their judgments on prospective third-country sales?

In the case of the United States, it seems to me that we can state quite simply what standard will be applied by the numerous agencies and offices concerned with the approval of any given arms transfers. That standard is this: if the United States is preparing to authorize a United States company to undertake a given arms transfer, then the United States would not object to a foreign company making a third-party transfer to that effect. Thus, the United States will not reserve to itself for commercial advantage a sale thereby denying it to its Alliance partners.

This means, as well, that if a foreign government or foreign company receives an indication that the United States has no objection to a third-party transfer, then there is an open and fair competition. It would be most difficult, if not impossible, to deny an equivalent opportunity to an American company. So, if we rule out exclusivity for the one side, similarly do we rule out exclusivity for the other.

In American law, this is called a "fairness doctrine," namely, that we will observe due process without fear or favor for either side, but that the cooperation will be expressed in a truly bi-partisan way.

How can one determine, then, what the application of American policy might be as to whether an American company would be authorized to make a sale to country XYZ? I think that the procedure there is, again, rather simple. Ask, and we will be happy to provide an advisory opinion as to very likely the attitude of the United States Government towards a given sale to a given country. We shall try to do so as quick y as we can, mindful that important investment decisions are involved and important business relation is involved. We try to speed up as best we can, but sometimes it is a lengthy process. Of course, it depends upon the nature of the sale and the country of destination.

The simpler sorts of cases clearly we can answer much more promptly. Some of the more complicated kinds of cases will obviously take quite a bit longer.

Further to that, what are some of the criteria which enter into the United States policymaking as to whether a given article or service may be transmitted to a given country? It seems to me that, again, the President's policy statement of May 19, 1977, is very illustrative, and I invite you to look it over sometime if you have not already done so, because some of the very important questions involved are whether a given item will prove destabilizing in a region, what the basic need for the article is in the given country, what the regional situation is, and the like. Thus, there are a number of criteria there which can readily be applied.

Questions will always arise: what about X-company selling Y to country Z? To these specifics we have to take a little time. We find it very difficult, if not impossible, to give a kind of blanket or overall authorization in advance. Obviously, sales within NATO and sale to Japan, Australia, and New Zealand, the other countries specifically designated within the President's arms transfer policy, are of a particular order and quality as far as the arms transfer process is concerned.

I think it is a surprise to no one to have a general idea about the items which are likely to obtain authorization by the United States, and that the recipients likely to be included in any authorization should be few surprises also. So, that is a considerable foreknowledge which is available.

Let me just emphasize, and I shall do so in closing, opening up the floor to questions, that we have a somewhat difficult job of balancing varied policy objectives. We try to exercise a reasonable restraint and, at the same time, to enhance our defense cooperation with our valuable allies.

Since so many cases which come to us for an opinion are sui generis it is very difficult to speak very authoritatively in advance on broad categories or on broad groupings of countries. We all know that the international situation and, for that matter, the state of technology, are so changeable and evolve so rapidly that an opinion may not have a very long period of vigor before it requires revision.

Thus, when we deal on a case-by-case basis, and we give our word, it is authoritative, and it is definite. We think that is helpful.

Thus, the more specifics we can obtain, the more information brought to us about the nature of a third-country transaction, the kinds of material and services involved, the intended use by the recipient and related information, the more quickly we can respond. I think that is what you are interested in, not just in obtaining affirmative responses to the maximum extent possible, but rapid responses. The more we know, the better we do. At least, if we don't, you can blame us on that score.

You should know that we have no shortage of criticism. There are certain voices in the United States -- and I will borrow an analogy from your great literature -- that signing an MOU with an ally is sort of like hiring Gianni Schicchi. He will will everything away to third parties and there will be nothing left for you. We dispute that utterly. At the same time, we are obliged in our Government to exercise moderation upon overall global levels of arms transfers.

I close as I began, trying to give you some sense of the various factors which we seek to reconcile, the various objectives we seek to reconcile. We ask you to be understanding of those and to assist us, because nothing will give us greater pleasure than to be presented a case which will clearly enhance NATO cooperation and, at the same time, accord with the interest we all have in restraining worldwide arms transfers.

QUESTION: From your knowledge of U.S. and Italian policy, would you categorize one or the other as more constrictive or more liberal in their arms transfer policies?

MR. MARSH: You are forcing me to confess that my knowledge of Italian arms transfer policy is not all that it should be. Let's put the responsibility here and say that the United States is probably more restrictive, and with certain reason, because, after all, the share of the United States in the world's arms trade is far greater and, therefore, the United States has a certain exemplary responsibility.

QUESTION: You struck a nerve with me. I have a distinct impression that the impact of the Carter policy over the past two years, as predicted by many people, is not to moderate arms sales in the world but really to shift market share closer to our Allies. Do you have any comment on that, and whether the policy might be reviewed and perhaps changed in the near term?

MR. MARSH: To shift the market shares from the United States?

QUESTION: Yes, to Allied suppliers, yes.

MR MARSH: To my belief, there is no evidence to suggest that that has happened, to a great extent. Mr. Kochanek, would you like to comment on that?

MR. KOCHANEK: As far as the evidence that I have seen, there is no such indication that there has been a shift in market share. I think that it is fair to say that it is not an objective of the President's policy to shift market shares.

QUESTIONER: I am speaking really as an observer on the scene. However, the ELISA has come up with statistics and some specific cases which they quoted on the Hill, which showed a definite trend in that direction indicating there were sales being made by our allies that we have foregone as a result of Carter policy.

MR. KOCHANEK: We are familiar with some of these explanations and, frankly, we accept some, and a good many we do not accept. It is a rather complex subject. It is a sophisticated analysis which is required to do it. I think it is much too soon to undertake any kind of generalizations based upon the last year or a year and a half of experience.

M GEN BOWMAN: As I watch the third-country transfer problem, it seems to me that it is always, as you described, a sort of difficult process of weighing the political factors, which either are good reasons to make transfers or are good reasons not to, weighing those against an occasionally economics argument or an argument from the Defense Department that such and such a sale would assist with the military situation in that location or perhaps also with the production run for the equipment.

The most obvious kind of case is one that no one would dispute, the Middle East situation, in which right now we are trying to create a favorable situation for a long-term peace and, therefore, are working on transfers to both Israel and Egypt. The political scene there causes us to see good reasons for some transfers that we might not have made a year ago.

If we have an Italian proposal for a third-country sale, there might indeed be some good arguments on the political side as to why that particular sale should be considered. However, since that subject is not a current question in the U. S. Government, would there be an adequate mechanism for us to weigh the problem? In other words, here we have a proposal for a sale, and it is not a direct challenge to our broader policy, it does not upset a regional balance, it does not introduce some great step forward in military capability that would affect the balance, and there is no security problem, and, as in many of these cases, it is a marginal question. Will this be more arms sale than we would like to have in holding down sales in the world?

That is the situation. Do we then look at this and just make a judgment, based on our U. S. previous policy considerations and say that we have said no on this kind of a sale in the past, or we have never said yes on it and, therefore, we won't say yes now? Or do we have a mechanism that let's us take a new look and say, "All right. What if the sale were proposed by our Defense Department, and these are the reasons. Now, we will weigh it again and see whether this is a reasonable kind of thing to approve for both our industry and their industry." Do we have that kind of a mechanism or not?

It seems to me that we do, because we do have a case-by-case approach rather than a system of applied preconceptions, if you will.

MR MARSH: There is one criterion that you didn't mention, and I think that would be a very important part of the evidence. That would be the contribution, if there is one, the proposed sale would make to Alliance cooperation. I think that would enter very heavily into the consideration.

As you described it, the proposed sale seems to meet a good many desiderata. But I think we should like to know how cooperation is served by the proposed sale. If a good case can be made for that, I should think that would commend the sale very highly to it. Since we have a case-by-case approach, which can be frustrating, if one has to wait until the case is completed, why, we are approaching matters de novo. And we understand the circumstances surrounding any given case will be that case's own. So, it will not be on the basis of stale precedent that we will be deciding these matters or out of some fear to undertake new ground. At the same time, it would be very helpful to have the rationale to show how it accords with this very important goal of Alliance cooperation.

MR. MARSH: We have many aircraft that are still sitting on the ramp in Marietta, Georgia, that are bought and paid for by the Libyan government. Those aircraft cannot be taken out of this country because the United States has put an embargo on the export of those aircraft.

Under those circumstances, it becomes very difficult, politically, for the United States Government to turn around and say that, yes, Italy or some other country that has an item which has U. S. origin items in it, may

allow that transaction to take place. I think it is important to emphasize that we are talking here only about those defense articles and services that have U. S. components. In items where a foreign government or a foreign company is the manufacturer, that do not contain U. S. origin components, or course, that government is free to make its own political decisions about what it wants to do. We are dealing here only with articles where the U. S. Government has some kind of a connection because of the U. S. origin items or technology.

QUESTION: Just to continue along this same line of thought. That is precisely the point that the General was trying to make. The fact that if U. S. components were included in those aircraft, even if they were of Allied manufacture, would similarly inhibit the sale. What happens in these instances is it has a very chilling effect on NATO standardization, because I have run right smack into this at the last Paris Air Show.

People my company formerly dealt with in Europe told me quite frankly, "We would not consider U. S. equipment in our aircraft because of the inhibition of third country sales." Therefore, they would develop their own components which were more expensive, more time-consuming, destandardizing, as far as data was concerned, purely and simply because they would not accept our third-country sales restrictions. To that extent, there is a direct conflict between our NATO RSI policy and the Carter policy of unilateral restraint. I am viewing it along the fact that no one seems to be putting that in perspective. It may be the suburbs for us, but it is downtown for our Allies.

MR. MARSH: The law is still the law, and we must observe it and, more than that, I believe that we want to.

Now, is a glass of water half full or half empty? The question is too philosophical for me. I can't deal with it. We have approved and will approve third-country sales which meet our political criteria. As I have said, we will do that without attempting to reserve for ourselves a commercial advantage.

Now, there is always an impatience with bureaucratic procedure, and Mr. Kochanek and I share it. You know, it is very easy to say "no" quickly. It takes a while to say "yes" on certain matters. Thus, when industry representatives ask me about a given matter, I say, "What do you want, the short answer or the long answer?" They always take the longer answer. They are willing to wait.

Let someone prove that the so-called restrictiveness of U. S. policy has worked to his detriment --- and I must say that the evidence is not clear -- on the other hand there is the great advantage of cooperation in working together in these markets. It seems to me that that cooperation offsets any possible future difficulties because it is for the long term, whereas some of the more troublesome prospective sales are very short-term propositions indeed. Again, the glass is half full or half empty, shall we say, depending on one's preception. All I can say is that we will remain as open as we can, as objective as we can in looking at the very important consideration you have mentioned.

QUESTION: I would just like to add a comment there. The implication of the statement was that, in effect, because of U. S. restrictions, companies will no longer buy U. S. products. That may be the case in certain instances, but I think you have to go back to fundamentals about why a foreign company decides to buy the U. S. product in the first place.

In most instances they buy it because they need it, because there is a fundamental interest in their having it. Despite comments such as that, every day we process cases where NATO countries are procuring U. S. components because they think those U. S. components are the best items to get the capability that they want out of their particular defense items. Of course, it does also increase their potential for sales within NATO, which is one of the fundamental objectives of the NATO cooperation.

You are talking here about an area that goes beyond NATO. Here again, the countries make their choices based upon what they conceive as their needs; that, in the end, it is best that they get into a transaction with their eyes open. They know what U. S. policy is. Even with that knowledge, they, in fact, are opting for U. S. components because they know that those components are the best components they can get. So, I think that it is not a totally negative reaction but a positive one as well.

ITALIAN REPRESENTATIVE: I think that in this discussion there is a misunderstanding. In this discussion it was assumed that the United States Government is more restrictive than other countries. This is not so. The restrictions are different from one country to another. When we are cooperating with the United States we have some restrictions, the restrictions of our own country, to which the restrictions of the United States Government are added. That is the reason for which we can make a list of countries to which we are allowed to export, and some other European countries are not allowed to export.

For instance, we can speak of Taiwan, or Nationalist China, and many other countries. If we work together, Italy and the United States, the restrictions on our exports are doubled. That is the problem. Not that the United States is more restrictive than the Italian Government. The rates, the political rates of the two countries are different. Therefore, we cannot export to Taiwan, you cannot export, say, to Libya. If we have a plane having an American engine, we can neither export to Libya nor export to Taiwan. That is the problem for cooperation.

MR. MARSH: Let me say just one thing as we close. It seems to me that you have done quite a bit to enlighten us on the policy. The policy appears simple, but it is rather complex in how it is carried out. I believe that the more exchanges like these we have, the better we will understand how it works, and the better we will be able to make it work. Then the positive factors that you mentioned, of more standardization, better equipment, and so on, and saving resources, will have added to them more sound knowledge of what the third-country sales possibilities are likely to become. Then we will have many fewer cases where an Italian company will reject a U. S. component.

I think, right now, in the last few months, we have had a number of approvals for sales in the Middle East, especially in Africa, which we are starting now to make more clear. I am hoping that we will continue to clarify that situation and help us get over this third-country sales difficulty.

QUESTION (MR. SERAFINI): Mr. Marsh, you only spoke to us on the sales to third countries in the domain of policy motivations. I have to suggest another area in which I would like you to go. The question is the following:

Do you think that the MOU has also got a content of commercial cooperation? That's the first question.

Secondly, do you think that it might also be helpful for carrying out certain policies of the United States' export of armaments to third countries which are not very well clearcut?

The first instance is that there are countries such as Italy which are politically and commercially, economically, better placed than the United States. In such cases, do you think that it is possible for a commercial backup with the diplomatic assistance from the United States or the two diplomatic missions going together for the same purpose, to sell products produced in joint venture, for example, Italian armaments with American components?

The second thing is a policy question, and is somewhere between your policy of prohibiting export of armaments to third countries and the policy of allowing it. There might be cases in which the United States does not, would not, might not like to figure in the first person, and we have brought that to the attention of the State Department. Sometimes you don't want to come out as principal in certain transactions in a country in which your policy is not so clearcut. Wouldn't it be possible to let the Italians appear in the third person as exporters to that country?

MR. MARSH: I understand that it is a hypothetical kind of question, and I know that you recognize that some of the details would have to be examined very carefully with respect to it.

I see some of the advantages you see, but also I see some complications, because it seems to me that it is difficult for American diplomatic representatives to fulfill the generalized curtailment of promotional activities which is inserted in the President's policy statement. I also think it is somewhat difficult to assure a free competition on the American side if the embassy were to take up the cause of one or another sale; because, like yours, our diplomatic representatives are there for generalized trade promotion rather than the advancement of a specific selection or specific system.

DoD. REPRESENTATIVE: I would like to comment from the Defense Department point of view. I think there is one case, and that is not just a neutral case, but a case in which the United States Government has adopted a policy that a particular third country needs to be strengthened because of the need to maintain a balance in that particular region. In other words, we are strengthening that country, either giving it military equipment or selling it equipment, or both, because of some defense reason. In that

case, our representatives would be there trying to look at different types of equipment for use there. If there was a particular type of Italian equipment that met the requirements, and especially if it were a one of a kind which perhaps had some U. S. engines, for which there was no parallel U. S. piece of equipment, and we wanted that equipment, we could very well become advocates in that situation or could assist in having a competition if there was a parallel piece, as long as it was our policy that at that time we needed to strengthen that country. That would be a special case, I think, where it could mean that we would assist.

MR. MARSH: Again, I think there is an important element in the relationship between the American diplomatic and military representative aboard, on the one hand, and American corporations, on the other, which has to be taken into account as well as the relationship between American and Italian counterparts.

WOMAN: I understand Mr. Serafini's questions referred to cases where the United States might not want to be in a leading position and where the Italian Government might play a particularly constructive part. The problem I see there is that if the Italian system contains a U. S. component we would be in the position of saying "No" to our own companies desiring to sell and "Yes" to the Italian system containing a U. S. component. That situation invariably arouses the ire of our own Congress and our own industries. While the intentions may be very constructive and very subtle, the effect is to see it to be extremely unclear to our own industries.

MR. MARSH: Of course, the Congress will review all third-country transfers, therefore, our participation in that market would certainly be indirect, not invisible. Our congressmen will certainly be aware of what is going on.

QUESTION: I agree in part with the young lady that just spoke in a previous question asked her. Do you not think, from what you have said, with respect to the MOU and the manner in which it is to be reviewed that it would discourage U. S. industry to go overseas and find counterparts, since the third-party sale then does not become part of the company in this country, and the control becomes yours and/or Congress's? You also brought up the subject of competition.

As I read what you said, I took it to mean that by allowing a third-party sales, or third-country sales, a company in this country would then end up competing in part, but not in total, with its licensee in another country, be it Italy, Germany, etc.

MR. MARSH: As to the second part, I was thinking more of alternative suppliers within the United States and providers of alternative systems more than I was thinking in terms of an intra-familial competition, if you will.

On your first question, as to whether the third-country sales controls have served to discourage or deter American companies from seeking cooperative relations with foreign companies, I am surprised by the question. It seems that there has been no reticence on the part of either side to hear one another out within this architecture of Alliance cooperation.

Mr. Kochanek, what is your view on this?

MR. KOCHANEK: Having spent several years with this kind of operation, I think it is very important to understand the terminology that we use. Unfortunately, this term "co-production," has been put into vogue and it is one term that means all things to all people. The practical proposition, most industrial arrangements, arrangements between firms with either some kind of a government umbrella or not, begin at the first level. There is a discussion between two private concerns about what it is that they, as private concerns, want to do and what it is that they think is in their individual interests. It is after these firms come to a basic agreement about what it is that they think is in their interest, that they will come to the government and ask for a final stamp of approval to be placed upon that agreement.

This concept that has been used for sales territories, in most instances, is the commercial firm that agrees with the other commercial firm what it is that they feel should be each other's territory.

I am a little confused about the question, because the government is not there giving away sales territories to a foreign participant. The individual companies negotiate a company-to-company agreement. It is thought that the companies' agreement must have the eventual approval of the governments concerned in order to be operative. In my experience, that is the way it has worked.

The only case I know of where the kind of situation that you describe could be a problem is in the case where the United States Government owns the technology. The one case that I have heard of in this area, in five years, is the problem of the ribbon bridge, where the United States Government owned the technology to the ribbon bridge and sold that technology under a technical data package, to a foreign government. When we do that we have the third-country sales requirement in the government-to-government agreement. So, even there, the U. S. Government has control.

We have worked with an Italian firm for many, many years, and have found that many of the problems we are discussing are theoretical.

There are many cases where we can both bid, but find it advantageous to have one or the other take the lead. It might be a case of financing in a certain country where our company wouldn't want to take a responsibility, and they may. We have actually led them and helped them into conditions where we wanted to keep their production going. You find companies who establish a good, friendly, working relationship, will quite often overcome these problems which, on the surface, seem so negative in the theoretical way. That is based on fifteen years of experience working with a very fine company. Literally, we try to help each other. That has been beneficial to both of us, because the one that does not bid is the licensor and still gets funds from it. Usually, in that instance, the cost is zero, the profit percentage infinity. So, it is advantageous on both sides.

CHAPTER 5

COOPERATION UNDER THE U.S.-ITALIAN MOU

MR. DALE CHURCH

We were able to work it out that I could come introduce a topic which certainly will be the key to the future of productive work and certainly to the U.S. and Italian industry, which are both represented here this morning.

As General Bowman pointed out earlier this morning, we expect that any kind of action to counter the Warsaw Pact nations would indeed involve another coalition war in which we and the Italians would both have to play a very critical and key role. I will not again repeat the well-presented story that General Bowman gave this morning on what that threat is and how important it is to us to be able to develop a policy whereby we establish the capability of the two countries' armed forces cooperating together on the field of battle.

I will now proceed to discuss some of the more specific aspects of the acquisition world with which I deal and explain why we have put these together.

First of all, when we came to office two years ago we reviewed the progress of the last thirty years of NATO cooperation and found that throughout those thirty years it has been relatively inadequate for various reasons. Then I noticed in the sixties perhaps we had more cooperative programs than we have in the seventies, and one wonders why we have, in some degree, gone backwards somewhat. We conclude that it was because of some lack of significant initiatives on the part of the United States. That is, the role we believe we must take in NATO is to assume the leadership matter. We believe that it is the duty of the United States to strike out with the initiatives which would pull together these cooperative efforts.

In going over both the R&D and production aspects of the various programs that will affect our armaments in the foreseeable future, the necessity is to bring them together, qualitatively that is, so that we can interoperate with the various forces of NATO against the Warsaw Pact nations with at least equal armament. That is, it is very important in a qualitative sense to be able to operate with each other, to talk back and forth, communicate and to be able to fly each other's airplanes.

As we look across the troops up and down the line we must be sure that we don't have any weaknesses. That is, that we do not have the United States Forces better armed and better equipped than those around the northern and southern flanks. I am sure, again, that General Bowman has gone over that.

As we look at that, it is important then, to figure out how we can best combine the resources of the various countries in the NATO alliance.

We developed three basic initiatives out of this analysis, which have been known as the military triad: first, the reciprocal MOU's which were the genesis of this particular meeting; secondly, the dual production; and, thirdly, the formal weapons concept.

We will first deal with the reciprocal MOU's with which you are familiar. You are the seventh, I believe in a series of MOU's that have been signed with our NATO allies, which open up our market to you on the same basis as United States companies. Heretofore, we in the Defense Department have had a balance of payments differential of 50% that was not based on statutory authority which was promulgated back in the sixties. Secondly, you have the "Buy American Act," which is statutory, which provides for a differential of 6 or 12%, depending upon whether a small business is involved, a labor surplus, which gets the 12%. If it is big business, then it is a 6% differential.

The real gist of the MOU is that in it these are waived. We do have the authority in the statute where it is in the interest of national defense, the Secretary of Defense has this authority and we have now provided that authority to our buying officers. So, our buying officers now can buy from the companies of Italy on exactly the same basis that they buy from the companies in the United States. That is, when there is a proposal that involves only price and you are lower you should win outright. If it is a proposal that involves both the qualitative aspects of the proposal, that is, that there are some subjective analysis that can be made, and the price, then at least on the price basis, your price, if it is low, and all other things being equal, in a subjective analysis should win outright.

Thus, there is competition, in the very real sense, that our companies in the United States must deal with. However, it is across the board. It is everything that we put out an RFP on. You would be given no special advantage; you would market in the same fashion that the United States companies must market. When General Moizo made those remarks, I notice that he emphasized that you will be developing a capability in the United States to, in fact, market to our various offices. Let me give you a few statistics that show how overwhelming that marketing job can be if you don't have some focus on it.

We have some 45,000 people from various buying offices around the country. There are probably over 2,000 significant buying offices. There are 20,000 people who are authorized to sign contracts in those buying offices. We have many commands in each of our three services.

The key here is that you cannot market to the Defense Department, you cannot market to the Army, or the Air Force, or the Navy, as such. You must determine where, within those very large organizations, the requirements for your particular products are. That is, we have some duplication, but usually there is one group or two groups that do all the buying for a specific requirement. We will give you another caution, that the people who sign the contracts aren't necessarily those who make the real decision on which source is going to be selected to provide those goods or services. It is very important that you work through the buying office to discover who is the real decisionmaking authority. Likely they are some technically trained people, they may be civilians, or they may be officers in the United States military who in fact do the analysis of the proposals and decide which is the best source, and those are the people to whom you must market in a very focussed fashion.

As you run into patterns relative to security, that is, where the RFP has a military designation and you think that you should be allowed to bid, an ASD will be always available to work those kinds of problems. I can't promise success on each and every example, because there are some legitimate classifications where security is more deeply involved. Some of the obvious ones would involve nuclear armaments or the highly technical data on anti-submarine warfare devices, and the like, that you will not be allowed into because of security reasons. However, they are few and far between relative to the some $40 billion that we will be spending through the United States military offices this year.

If you do identify any kinds of problems relative to an Italian company, where that creates problems for us relative to buying things overseas, we are to serve as the intermediary between you and those offices. I have an office which is headed up by Bill Levitt, who is with us here today and I think will be addressing you at some point. He was also over in Italy and has talked to you over there, and will be the MOU implementer. That is, it will be his primary job to act as the focal point, depending on the circumstances, to clear the way to insure that in fact the competition is fair and square, that it is a true competition on the same basis as U.S. companies.

I might point out that, clearly, the high technology is not limited, that is, that you will be allowed, to the degree that you are able, to compete. The one thing that really impressed me as I traveled about through Europe in the last few months, and has created the atmosphere that provides for full implementation of these MOU's, is that our European countries are indeed qualified on many fronts -- sometimes whole systems, sometimes parts of systems, to serve as an equal partner, in arming those troops with equal armaments. That is the atmosphere that I believe opens this up for the next two alternatives which are parts of the triad, which are dual production and the family of weapons.

Dual production means, simply, that one or another NATO Allies has developed a system for which other countries have the requirement. If that system is the best one that has been developed, then there is no reason to duplicate the idea of the other countries by proceeding to develop like or similar types of systems. I think that the most familiar examples have been in armaments and some of the programs with which you are already familiar.

The key word is that one of the other NATO Allies -- and I see no reason why on some of these programs that there might not be an opportunity for an Italian company as well here -- will take the leadership to develop a consortium of a serious reviewer. Certainly, if you are not in there as the lead of that consortium, Italian industry has many capabilities which can contribute to that consortium and to which they can provide significant portions.

We are providing those data packages at a minimum cost. I say "minimum" because we will protect the proprietary data of the United States companies and compensate them accordingly for its value. Where we, the United States Government owns it, it will be provided at no cost. However, where a United States company has some proprietary information or intellectual property contained in that package, there will be a minimum cost where it is appropriate for licensing that particular intellectual property.

The last, but not least, of this triad is the family-of-weapons concept, the one that is most difficult to draft and the one that runs into, again, the problem that General Moizo pointed out, which is the potential for third-country sales.

Briefly, the family-of-weapons is a program whereby we are trying to avoid the duplication of R&D cost and the cost to the Alliance. To do that, we simply look at various kinds of weapons systems which are related and which could be called a "family," such as anti-tank weapons and anti-aircraft weapons. Then we take one or some part of one of these systems, set it aside and say, "Well, this Allied country will take the leadership on this one, this Allied country will take the leadership on that one". We do it in a trans-Atlantic sense, that is, the United States, on one side, taking the leadership on this system and some European country taking the leadership on that one.

What we will do, then, is agree in the United States to withhold from going beyond basic types of technology development and any other literature that is associated with that particular weapons system and authorize those in Europe to do the same. That is, we will forego the development of a weapons system for a particular application as the European countries would do in one that the United States was devising.

We understand the need and the value of the Allied companies to be able to make sales beyond that for which their own in-country requirements provide. Clearly, we have made it a priority item in those areas that are coming through for licensing, and making available this technology for third-country sales where it involves a NATO ally getting top priorities. That is, if an Allied country is in here and one of its companies is trying to get permission to sell to third countries, they will be processed by law on an individual basis while we give them top priority in weaving through the system.

Secondly, we have made it a policy that if the United States would provide for its companies to sell to a third country, then the Italian or other Allied company can do likewise. In other words, we would never foreclose a market on you that involves U.S.-embodied technology, where if a U.S. company was in there we would go out and undersell. We will continue to work on other cases on a case-by-case basis and continue to review that policy as necessary, to insure that we do effectively put together a good cooperative program.

Many things that we are doing internally may be of interest to you, for instance our major weapon systems review process. This is also of interest to our U.S. companies that are present today, because they are intimately involved in what we call the DSARC, which stands for Defense Systems Acquisition Review Council. This council reviews any of our more than $100 million type of weapon systems, and is under a special directive or policy that is put out of my office, which calls for the specifications these systems must contain in order to be approved.

We have integrated into the new policy the RSI emphasis, the RSI being Rationalization, Standardization and Interoperability.

To get approval of this high-level council, which then forwards its recommendation to the Secretary of Defense, the particular program office coming up for review must have integrated into its plan how it is going to affect the standardization and interoperability. Thus, it will not be approved unless it has an [illegible]

Probably the most key element of that would be to keep matters in order across the Atlantic regarding teaming arrangements, where an Italian company would come to a U.S. company and serve as a subcontractor. We will be emphasizing, in the review of the proposals as they come into us, what the U.S. companies have done with respect to standardization and interoperability while they are getting written into an Italian plan. The plan will continuously be updated as it goes through the various milestones of this policy's process, and as we review these major programs.

Thus, our U.S. companies are alert and aware, and many of them already have made giant strides towards developing dialogue with their European counterparts as to how they may best join together as a team to meet the requirements of the United States military.

We will be putting out a policy brochure on this type of team, but I think I can give it in a short statement. The gist of it is we want the U.S. companies and the European companies -- notice I did not say "countries" -- I said "companies" -- to be able to establish those relationships to the maximum degree possible. I believe certain companies work better with certain companies. And I don't believe governments necessarily either understand that or are capable of making those moves. Each company has its own particular culture and characteristics. I have worked the last eleven years in industry and I think I understand that quite well. They need to team up with those companies with which they work best.

There will be, from time to time, occasions where they will be near bringing an Italian company into a particular weapons system acquisition when Italy only has one company with the capability. However, we may have to carry out a competition in the United States between several companies, which might become difficult if we are insisting that the Italians be a part of that particular acquisition. The reason for this is that the one company that has the capability in Italy is already tied together with a particular American company, in which case we may have to work out some special arrangements because, indeed, we will not throughout this process affect our competitive system. That is, we are not going to get into a sole-source environment because of the RSI process.

Hopefully, what will come of this is that various European companies who have these capabilities can be united with various U.S. companies. Then the two companies together can construct teams which will be competitive between the various countries of Europe, as well as within the United States.

We simply must recognize that in our European Allies where we have had several sources that are at least equal or comparable in ability, oftentimes, because of the limitations of your markets you have not been able to support more than one company. To the degree we understand and recognize that throughout this competitive process, I think we will be able to work it out if there are those kinds of problems.

With respect to a new piece of legislation that we are going through right now, the Arms Export Control Act of 1979, I believe it is called, which appears is going to be passed, we have in it a provision for a reciprocal contract administration. I believe this has a good chance for passage and I think it will greatly facilitate the ability of our two countries to do the contract administration. To put it simply, if you have a company in Italy doing work

which is either under a subcontract or a prime contract for the United States, the Italian government's entity that understands you best will in fact be doing the contract administration for us. Likewise, when the Italian Government is buying something from a comapny in the United States, it will be the United States DoD contract administration entities which will be doing the work for the Italian Government.

The whole process will be an evolutionary one. I think the worst thing we could do is to set up expectations too soon beyond that which the system is able to handle. Although we understand that there is a significant imbalance which we must work hard to correct as quickly as possible, we are not going to correct that defense trade imbalance overnight. But long-term protection is certainly there. I hear nothing but good reports about various Italian industries and the capabilities that they are accorded within the various companies. Because of your political situation, I know that there is sometimes a tendancy on the part of Americans to read our newspapers and not really understand what is happening there.

We realize that within your various companies you are very progressive, very stable and have a significant level of technology which will greatly enhance this NATO cooperative program. We believe the potential is there and commitment is firm. We believe the only way we can ultimately be able to attain a deterrent that we must attain, to be able to ward off any potential Warsaw Pact attack is that we must do it together as a coalition and as an alliance. I, for one, do not want to live in a Western world which has a Europe which is dominated by the Eastern block. Life in the United States would simply not be the same nor would it be desirable.

Thus, our commitment is firm. We believe that we must defend Europe to be able to have a life in the United States that we would like to lead. There are going to be a lot of problems, but we are here to help you and to try through the various cultural and language differences, and I have an office which is specifically set up to do that.

QUESTION: I am a representative of a U.S. contractor. On this subject of not being trapped into a sole-source situation that you referred to, I can understand, philosophically why, in your position, you couldn't accept such a company-to-company arrangement that would upset the normal competitive process in the U.S.

However, I see situations developing where European firms are being inhibited by that particular U.S. policy from accepting company-to-comapny arrangements which in the past, a few years ago, would have been normal and proper and had been done.

Have you any of these instances? And, if so, how do you propose solving those where the actual current policy is inhibiting what had been going on in the past wherein established relationships are being fractured?

MR. CHURCH: I have heard various allegations of this, although I have not been able to track down any actual examples. So, the answer to your first question is: If you happen to have specific cases which would have been brought to my attention where I could have a hard set of facts, I could review them and take a corrective action if such is warranted.

The usual set of justifications do apply, that is, where a U.S. company in the past had been able to develop a unique capability which no other company had. There was no basis then for which competing or the various time urgency or other such examples of sole-source justification apply now, albeit you may have obtained some of your product from an Italian corporation or from a German Corporation, or whatever. The keystone of the acquisition policy of the United States is competition. What I am trying to do is to place the acquisition policy in a direction that says what the people do in the government is to try to manage companies. We do a lousy job, technically, from a business standpoint, and much of our efforts in that regard are very counterproductive.

The only way, then, to manage the acquisition process is through competition. I think it is the only fair way, and the only straight way, and I don't know a better way to mete out the democratic system we have in the United States. It isn't perfect, but I know a lot that are in second place.

Yes, there will be some problems. I don't deny that, but we are not going to put competition down the river to foster our outside foreign sources.

We think the two are compatible. We think there are enough sources in Europe that we will not have to interfere to break up any teams with respect to the sole-source posture that we would create. You will have to be an Italian company teaming with a U.S. company, and a German company teaming with a U.S. company, and so on and so forth, if in fact that is necessary. It is only in a specific case of, for instance, a strictly U.S.-Italian cooperative program, where the Italian Government and the United States Government decide that they were going to do this, notwithstanding lack of participation by the other Allies. Then there would be no need to establish certainly Italian company participation in this. If there is any one company in Italy that can do this, and we are running a competition in the United States, it is quite obvious that we would have to make that Italian company available to all the competitors. If the Italian company gets the advantage, then they can't lose. That is the kind of situation I think will be the exception rather than the rule, for the most part.

After all, we buy hundreds of thousands of items every day where we don't even read about RSI aspects. Certainly there is no reason why U.S. companies couldn't be teaming with their European counterparts.

I know that is not a good answer. There really isn't a good answer on a general basis except that we are not going to forego competition.

QUESTION: Mr. Undersecretary, I have been the economic and commercial man of the Italian Embassy for the last five years. In many, many instances, practical cases, I have seen that there are so many difficulties of cooperation between Italian and American industries in this field. These difficulties, of course, in the past used to go back to three kinds of reasons.

First of all, all the difficulties created by the Buy American Act, the existence of the Buy American Act.

Secondly, the reasons of political character that you have hinted at, because not many Americans work in the political or administration and economic trade, in business.

If we will understand what kind of relationship there is between the Italy which works and the Italy which makes politics, I might say that the difference is very wide; because all these people that you see here, in spite of the terrific news that you read in the newspapers about strikes and instability, have a very thick carnet of orders, and they work very hard.

I must say that all the American industry which have had instances of cooperation with our major military industries have been very satisfactory experiences.

Now, it is true that whatever comes to the competence of the government authorities and of the Embassies, in particular, it is the thing which goes wrong. And very, very seldom it happens the things which go straight come to our knowledge. As a matter of fact, I could cite many examples of things which haven't been able to come to a satisfactory conclusion. Even now we are having some difficulty in some instances.

The third reason was, of course, your policy for export to third countries. That is the reason which may explain why, when we signed this MOU, some of our industry were skeptical about it.

The question that I want to put to you, because you have shown so much readiness and so much cooperation in doing whatever is possible for the United States side to make this document operative is the following:

Does your office, Mr. Church and Mr. Levitt's office, have anything to do with the realization of practical working of this MOU? Is it in a position to overcome all the difficulties, both administrative and at operative levels, meaning business levels, which until now, have not allowed this cooperation to come through? I would say that our industries have started believing in this MOU. I think if it is true that it is not going to work for some of the reasons that I have listed for the incapability of your Department to make this possibility known, this readiness known to your actual contractors, then it may cause frustration on the part of our industries.

So, I take the liberty of talking on behalf of our industries whose principal representatives are sitting here, to ask you to let us know in which way you will be trying to help us in overcoming these kind of difficulties.

MR. CHURCH: As far as our ability to get this done, the person that is most behind this is the President of the United States. Secretary Brown has briefed the President often as to our initiatives in NATO.

As you know, President Carter has attended the meetings involving NATO and has come on very strongly, and we supported very strenuously the need to greater enhance the Alliance. We think it is the only way. Secretary Brown has taken those marching orders from our President, has kept him well informed, and our Secretary believes strongly in what we are going about here. Of course, my boss, Bill Perry, works for that Secretary, Mr. Brown. I might point out also that Mr. Charles Duncan, who is the Deputy Secretary, stands very much as a co-equal in that office, for sometimes you see papers that are signed by Brown and some by Duncan. They really have divided up the office. So, if you see a policy paper signed by Charles Duncan, that's assumed, really, that Secretary Brown would have signed it. It is simply a division of the work.

Right from the President straight down to me, they are insisting that we move forward agressively and dramatically in any way possible to enhance the Alliance. We believe the triad of programs that we have outlined are in fact the most specific and concrete steps we can take at this time, although there will be many more.

As far as aiding Italian industry, of course we have waived the Buy American Act and the balance of payments. In fact, we are on an equal basis.

Represented today in this room I see members from some of the strongest of the United States contractors, such as Martin-Marietta and Westinghouse, GTE, and others. So, you are surrounded by not only officials of the government but the very top executives of our U.S. industries in this room. We are hearing this together with you, and they are here at their own initiative. That is, they are here at their own expense, at our request, to be able to sit here with you and have a chance to have this dialogue with you, so we are able to develop a very strong, aggressive stance within our government and within our industry. They do it not just as representatives of their companies, but in the many meetings that I have had with them they, too, feel as though NATO is the only way to preserve the Western world. They have their economic interests of their companies, but as individuals, they feel even more strongly that we must find ways to work out NATO cooperation.

We are here for this reason, and you are here for this reason. We do have, we believe, the doors open to you now. It will require your efforts, your marketing efforts, to be able to go through that door and to make the sale. We cannot make the sale for you; we can only open the door.

ITALIAN REPRESENTATIVE: I am the U.S. counsel for Oto Melara, Lispeccia, Italy. Oto Melara developed and designed the MK 75 gun standardized by our Navy. They have licensed two U.S. manufacturers to build the gun. One is not in production. Oto Melara has been in continuous production for a number of years on the gun.

In the past ten days, the U.S. Navy let a contract to the U.S. licensee but also had requested prices on the same item from Oto Melara. Oto Melara's price was $1.7 million for 11 guns. We were told by the Navy, the U.S. Navy, that the price to the U.S. company was $2.8 million. We brought up the MOU prior to the award. However, the MOU was apparently ignored based on the fact that we were told that they were keeping defense mobilization for U.S. industry.

MR. CHURCH: I will have to investigate this to see the facts. I don't have them, so I can't very well tell.

SAME ITALIAN REPRESENTATIVE: A week before last. They had asked Oto Melara for eight guns last November for which they entered into a contract. At the time, they asked for an option for seven more guns until the end of April. They asked that the option be extended to the end of May, which we did. Twice again, they asked that the option be extended week by week. We continued to extend it.

The delivery was the same. In fact, we offered better delivery than they wanted.

MR. CHURCH: I invite you to leave your name and address with Bill Levitt, and we will give you a complete accounting of the facts as to why the decision was made, accordingly, and get back to you. I don't have the facts, so I find that difficult to answer at this time.

CHAPTER 6

U.S. INDUSTRY PERSPECTIVES

MR. BOB GROVER, MR. ALEX MARSHALL, MR. BILL TURNER, MR. LARRY ADAMS

MR. GROVER: We have been asked to comment on Italian-American armaments cooperation. I would like to expand on that just a bit. I would like to broaden it to NATO. It is a little greater perspective, but I think the same principles apply as far as industrial cooperation is concerned.

From an ideal point of view, many of us feel that it would be well to equip our NATO forces with the same equipment manufacturered by the various NATO countries on a pro-rata basis as their ability to develop and manufacture this equipment. This is not truly a realistic or practical approach for many reasons.

It doesn't recognize the military needs of the various countries nor the industrial capability of the various countries, nor a myriad of other problems that are faced, certainly not the lesser being political problems that arise between countries, etc. But I would like to concentrate on military needs and industrial capabilities.

These vary greatly between our countries, as evidenced by the military budgets of the individual countries. I read recently, for example, where the U.S. research and development budget was something like three times that of the combined budget of Western Europe. The amount of money that you have available for research determines, to a great extent, the capability of your technology basis. And, if you have a country with minimal research and development funds, it is extremely difficult for that country to compete with a country with a large amount. In addition, the volume of requirements for the military forces varies a great deal between the various countries.

Coming from an aerospace firm, I associate these problems more with aircraft development and procurement than anything else. For example, the latest two fighter programs that this country has developed, the F-16, for the Air Force, is programed for about 1,388 aircraft; the Navy's F-18 program is approximately 1,366. This makes it extremely difficult for smaller countries to compete simply because of the value of the domestic requirements of the United States military forces.

Recognizing that there are major differences in funding, why not establish joint military requirements and let the industries from the various countries cooperate in meeting the design and development requirements for these systems? Really, there is no reason why we can't follow this course of action. But, I must point out that it is very difficult to establish requirements for a military service.

For example, if you were to talk to a dozen officials in the United States Air Forces as to what the requirements for a particular weapons system should be, you would probably get about 12 different answers. The idea of capability and complexity versus simplicity and numbers is one example. It is difficult

to agree on requirements even within a service of the United States military forces. If you try to combine these requirements between two services of one country, for example, the United States Air Force and the United States Navy, you run into even more difficulty.

I think that Mr. NcNamara's development of the TFX is testimony to the difficulty in trying to develop a fighter aircraft that will satisfy the requirements of both services.

More recently, in the F-16/F-18 competition, the Air Force selected the F-16 and the Navy selected the F-18. When you add the problems of trying to agree on the requirements for a weapons system between two or more countries, the problems really are compounded.

I had an opportunity a few years ago to observe the development of what was called the main battle tank between the Governments of Germany and the United States. Now this program, in my opinion, was initiated in an atmosphere that was just about as ideal as could be. There was an agreed upon requirement for the tank, there was generally a concensus as to the requirement of the tank, and certainly there was an adequate technical base within both countries for the development of this tank. I think both countries were convinced, even dedicated, to making this a successful program. They had competent staffs assigned, they coordinated the efforts very effectively. High priorities were established by both countries in support of this program, but the program was eventually discontinued. And, we have to ask ourselves, "Why?"

I do not intend to tell you all of the reasons why because I don't know. I do feel that one of the paramount reasons for the discontinuation of this program was a gradual widening of the understanding of the requirements for this program and how these requirements were supposed to be met.

I think that we have a real problem in terms of establishing requirements for major weapons systems and carrying those requirements to their completion, to their successful completion. But, does this one experience indicate that we should not try to accomplish our standardization as much as possible within the NATO forces? I must say "No." At the same time, however, I think that we should examine these past experiences, try to determine the problems, and try to be realistic and pragmatic in the findings that result from looking at the development of these major weapons systems.

These are some of the problems that I personally see as concerning the development of major weapons systems. I do think that there are many areas in which we can make progress, and that we should examine these areas very carefully.

First of all, very few of us feel that the equipment to be used within our NATO forces should be 100 percent common. I, for one, don't think this is necessarily a good idea. However, I do think that in the development of different types of equipment, industry, as well as the military, can establish standard requirements. By this I mean that the support equipment or the test equipment for a major weapons system should not necessarily be peculiar to that weapons systems. We should look at ways in which all of this type of equipment can serve not only that weapons system but many others. I think it

is important that if you have an Italian soldier equipped with a rifle, that the ammunition that he fires out of that rifle should be the same as that fired from the rifle of the U.S. soldier. Aircraft fuels and other things that have not been standard in the past I think can be standardized, and a lot of progress has been made in this direction. However, I think there is room for a great deal more standardization.

Second is the importance of the research and development budgets of not only the United States but of many countries. Here in the United States, industry follows the progress of research and development budgets very closely. These budgets indicate the direction in which the military, the administration and the Congress believe that the military forces should move. The industry takes this as a guideline and works in this direction, trying to resolve the problems that are created by the equipment identified in these types of budgets. These budgets are not only open to U.S. industry, through congressional records and other means, but they are also open to industries from foreign countries. The Italian industry, for example, can very easily determine the direction in which our military forces are moving and can use their research and development funds to try to meet these requirements. That is an area in which I think the Italian industry can possibly do a little more to be competitive with U.S. industry.

It doesn't do any good to develop an outstanding piece of equipment if it doesn't fit into the overall scheme of the military forces, regardless of how good it is. I think you have to understand the direction in which the military is moving, and I think you have to use your research and development funds to try to achieve these results.

Thirdly, inter-governmental arms cooperation is very difficult for major weapons systems. I have cited the Main Battle Tank as an example of this. I think that the grandiose development of major weapons systems between several countries results in almost insurmountable problems, and I don't think we have to take this approach.

As has been mentioned by other speakers here today, it might be better to start on a smaller scale of cooperation between individual companies, between individual industries within the United States and within Italy. If two companies initiate a cooperative program they can be complementary rather than competitive. Then, the more experience these companies gain in working together the more respect they will have for each other's ability and the more successful they are going to be.

Lastly, when you develop and manufacture a new weapons system, the cost is only about one-third of the cost of that weapons system in the lifetime of its use in the military. Unfortunately, too many countries want to have the self-sufficiency of conceiving, designing, building, testing, and producing a weapons system regardless of what other countries are doing.

There is a great deal that can be done to support a weapons system once it is introduced into the inventory. Two-thirds of the cost of that weapons system is the operation and maintenance of that weapons system after it is in the inventory. This means that manufacturing equipment as replacement parts and establishing depots to overhaul the weapons system or subsystems of the weapons system, result in two-thirds of the expenditures that will be spent in support

of that weapon system in the 15 to 20 years that it will be in the inventory.

Again, we have made some progress in this area, but I think the progress has been somewhat limited and I think it needs to be examined a great deal more closely than we have in the past.

Basically, what I am saying is that it is difficult to have inter-country agreement in the design and the development of major weapons systems. There are so many divergent opinions that will drive the countries apart that is becomes a very difficult situation; and, many times, the result is dissatisfaction on both parts rather than a realization of success.

I think there are other areas that can be pursued which will help toward having a military force that is able to operate in Western Europe with the participation of European industry in support of that military force.

MR. MARSHALL: I am Alex Marshall, of McDonnell Aircraft Company, Division of McDonnell-Douglas Corporation.

I feel silly explaining to Italian industry and its distinguished representatives here how to sell to the United States when, on the DC-9 and the DC-10 programs alone Italian industry has sold our country over $300 million worth of products.

I think we do have to recognize that the MOU--in fact, this whole triad approach on military hardware is new, and it is up to industry on both sides of the Atlantic to help make it work. I will display my naivete by saying that I believe it can, and, if you ask me on what do I base that belief, I give an example that hasn't been discussed very much today. Although General Bowman mentioned a number of countries, he did not mention Canada.

I am sure a number of you are aware that we have had a somewhat similiar relationship with Canada for a number of years. There are a number of differences. Nonetheless, I believe that it is an example of where the United States has had a military hardware arrangement with another country that has worked.

I am obviously not here to defend Lockheed. But since they were mentioned earlier in a negative sense, I would like to point out that, to the best of my understanding on long-range patrol aircraft programming in Canada, the CP-140 Aurora, Lockheed is meeting all their commitments. I believe in a number of other countries they have met commitments. But it is particularly significant because our arrangement with Canada basically is a 100% outside arrangement.

Canada is smaller in their industry than we are, and that is a disadvantage. You have more capability than they do. On the other hand, they are closer; so, perhaps it is "even steven", and that gives me confidence that it can work across the Atlantic also.

Let's examine "Things to Do." First, locate a representative in the United States. Possibly locate him here in Washington, or wherever it is that you see and identify your market here in the U.S. Get to know it. That is the same way that you sell at home.

Secondly, seek out opportunities to team--the same thing Bob was saying--on upcoming competitions, both here and in Europe.

Finally, seek opportunities to build your reputation by subcontracting. Obviously, part of your industry has that reputation with us and with a number of other companies, U.S. companies that I see represented here in this room.

There are a number of things that we need help with in our industry in the United States right now. Lead times are unacceptably long here in the U.S. If you can help us solve that problem you will get a lot of business.

We have a shortage of five-axis D&C machining capability here in the United States. If you can help to solve that problem you will get a lot of business.

In short, if you work the problem with persistence, you will find a way to get started. Your presence here today is evidence that you plan to do that. And I ask only one thing, that is, please invite me to the reciprocal seminar when you have it in Rome.

MR. TURNER: I'm Derek Turner, from Grumman. If any of you are confused by what is obviously not an American accent, please be reassured that I am speaking as, let's say, mid-Atlantic, having been closely associated as an employee of American industry for several years now but obviously having European background.

I don't think I can be forgiven if I am not able to take a sympathetic viewpoint from both sides that we have been hearing today.

When I was asked to speak, rather like my colleague here, I said, "What do you want me to say?" "Keep them optimistic. Give them a success story. Tell them what you have been doing and how it is all working out." Well, I think it is rather difficult to be quite so blunt as that. But I think I can leave this very last picture of the day at least on an optimistic note, based on an experience that we have had at Grumman.

I will have to say, of course, that it is not related to the programs that we have been embarked on in other countries within NATO and Italy. Well, I am pleased to be able to tell you, and I will enlarge a little further later, that we are making considerable headway emerging in that direction now.

Grumman has a policy towards collaboration. There is a good reason for this. We think, on two counts, that it is proper that we should. The first count, and by far the most important, is that we are supporting our national policy. Our masters from Washington are telling us to collaborate so, by golly, we are going to try to collaborate.

Secondly, I think that to stay in business on a profitable basis we have probably got to look abroad. We can't afford to be insular in the United States. We have to get with other people, broaden our markets, broaden our technological bases. And any way we do that I think is setting about the sorts of things that we are trying to do.

Shortly after the U.K. MOU was signed, we invited many British industrialists to come to Grumman, and well over a hundred of them came. We showed them something about our company, our procurement methods and our future programs and where is it they might fit in, in the longer term, towards collaboral and procurement exercises. I think this was successful and I think a good percentage of them followed up. They worked with an air of disenchantment which one gets from most of the NATO countries at the moment. We have to persuade. People are not automatically persuaded that it is a good thing to come and collaborate with us in American here. Nontheless, I think we made good progress in that direction.

The net result was that we have embarked on several different types of cooperative adventures. I will just briefly run through the sorts of things that we have been doing. In the natural course, there is a technological exchange, areas of course which have gained the approval of the two governments and, from our own standpoint, more particularly, the Department of Defense and the State Department. To embark on a program of exchange of technology, looking through to each other's better mouse traps, looking for the better things that are going on elsewhere, is necessary for your protection. And we collaborated specifically with British Aerospace. To put that into effect we generated a Memorandum of Agreement between the two companies which simply said, on a non-exclusive basis, that we agreed to participate jointly in matters pertaining to aerospace. This didn't mean to say that BOE couldn't go out and do business with other people at all. It simply meant a sort of amenable situation developed between the two, and that is being very successful so far.

Then, of course, there are the joint ventures,the sort of programs that we have some of our colleagues in European industry doing very successfully in Europe. Our own effort in that direction has been with Canadian industry.

Still, there are the straight subcontracting arrangements. As my colleague has just said, there are a lot of opportunities I think for American and European countries to get together to assist one another in providing the production capacity, the machining, the machine tool, the castings, the forgings that are required and, indeed, to provide the systems or components that go into major systems.

Finally, there are straight sort of technical assistance agreements between Belgium, quite consistently, with a number of the European companies.

One thing that you should remember, of course, is that the end objective we are in this for is business. And I think we might build up a tendency to get carried away.

As you say, in the end they have to persuade our management that we are going to make a profitable venture out of all of these activities across the Atlantic. Just investing in research and development activities is not sufficient in itself. In the long term we are looking for production on the shop floor of both companies concerned. We have tried to make that point clear, and happily we have entertained no real objection to that from our prospective or our actual colleagues and associates.

I would point our that in my view, a longer term relationship such as the Memorandum of Agreement, which keeps a couple of companies together for a finite time of a five or 10-year period, is desirable.

I think, on several accounts, cultivated, it states the two parties' intent to be seen to be operating together. I think it gives us a valid point when we go to our respective governments looking for approval to go into various endeavors that span out of this broad sort of umbrella agreement.

Another point I would like to make regarding Italian industry trying to get involved in some of the major programs that happen over here, is try to get in at an early stage of the R&D, when research and development processes are underway. That is the time to become seen, to be identified with this sort of capability, rather than waiting for the R&D to come out in the final event. We have had several good examples of that, of European countries who have been prepared to put some of their money and resources on a pilot venture basis to support their weapons activity of this sort, in technology that is contributing to future systems, future airplanes, etc.

MR. ADAMS: My company, Martin-Marietta has not been large in the international scene, primarily because we have not had until recent years a line of products which we felt qualified for that kind of activity. So, we came on the scene at about the same time that the Dr. Perry initiates began. We have been working diligently to try to understand them and to see how we might best cooperate internationally in that environment.

There has been a great deal of dialogue here in the United States, as many in the industry are aware, between our industry and our Department of Defense on the subject of RSI. I believe that we in U.S. industry generally accept the fundamental that a more effective NATO Alliance defense posture will result if we can achieve greater interoperability of our systems and that standardization of equipment can be a very important adjunct to doing so.

I recently returned from the Paris Air Show. One gets impressions there, when you are viewing this problem and one is that proliferation does exist. There is such a variety of missiles, electronic systems, etc., many of which I am sure serve the same purpose, and it does seem like a fertile ground.

Another impression I got--and this was my first air show--was a very positive impression on the capabilities that are represented by the NATO members industries over there. So, I came away feeling the need as well as feeling that the European members certainly did have a good deal to bring to the party.

My company, up until now, has spent most of their effort in the RSI world, concerning ourselves with the co-production activities and with our trying to get ourselves lined up to participate in the family-of-weapons activities when they begin. And we have spent less time on the general and reciprocal MOU's. So, my feeling here today and in this meeting is that it is very timely and beneficial to me.

In our search, we placed a great deal of emphasis in assuring that what we are doing is not only to the benefit of NATO and the United States defense but also to the long-range benefit of our company and of the industry which I represent.

We look at it in terms of there being opportunities there. However, in exercising the opportunities, we must also be careful to assure that we do not do damage to our long-term prospects by some short-term gain.

There are several avenues through which one might approach the MOU activity. Perhaps the most obvious one is the direct purchase of existing hardware by our military services of some of the activities that have come into being in the NATO partners: trucks, helicopters, missiles, electronic equipment, etc. I suspect there will be many instances where satisfactory Italian equipment exists.

I believe that the advantages of potential standardization and interoperability benefits will have to be significant to offset some of the difficulties.

The reference to the number of procurement agencies and offices that exist in this country makes that a tough role. I would hate to go off and try to establish market relationships with each NATO country and each service in each of the NATO countries; and I expect when I got through with that I would be at about the same point where the Italians would be in doing the same thing in our country.

Furthermore, the objections to that sort of thing in the country become fairly obvious when they begin. Labor unions, some industry activities, political activities, etc., are only one element. Our services perceive risks in being tied to a sole foreign source for a piece of equipment, and some kind of solution to that problem must be found. It seems to me that a far more workable solution, at least in the beginning as we start to work, is the one of industrial cooperation.

My own opinion on that is that from the discussions that we have had so far with Italian industry--I know we are novices compared to some of my compatriots in the U.S. industry--that such activity is clearly available.

This kind of activity can start either at the initial development position in a program and continue right on through to production, or through co-production agreements and licensing agreements. I believe that at least initially the U.S. partner on the U.S. system will very likely be the lead,, the prime contractor. Again, I would not foreclose; when we get the family-of-weapons activity going the other way, I suspect that will come about.

But, we are just talking about the MOU's where there is a U.S. system which is not part of the family of weapons and teams are formed to bid on it. Having team members with the peculiar technologies in which the Italian industry is supreme would be the best way to go.

This does several things for you. It simplifies the problems not only for you, in trying to go find markets, but it also simplifies the problem considerably for the U.S. procurement agency that is involved.

Although the problems in assuring long-term logistic support are there, my own personal opinion is that they can be worked very effectively on a single company-to-single company basis rather than the procuring agency trying to establish some kind of common rules in the procurement that apply across the board. I believe that we could work out with our partner a very fine arrangement, which would indeed relieve the procuring agency in the service of some of the concerns which they are having in that activity. So, there are many advantages to this in my mind.

I mentioned the simplified Italian marketing problem. The Italian company could be selected probably on a teaming arrangement, although I would certainly not foreclose a competitive posture. In other words, if there is more than one company in Italy that would aspire to join an American firm, it would seem to me that a competitive approach could be taken effectively.

There is another item which has not been mentioned. There is a concern in U.S. industry in terms of technology transfers of key technologies from us to you. I am sure that there are some concerns in that direction on your part that in this kind of an activity the technology transfer problem, in my opinion, is simplified at least and as we begin it will look to me like a good way to stay out of that quagmire.

A lot of the problems have been mentioned here. Getting acquainted with Italian industry is one and we are actively pursuing that at this point. We have people in fact meeting in Italy with some of the companies. I believe that there are significant problems in standardizing drawings, materials, parts, and components. I think that these can be worked much more effectively on a company-to-company basis.

The concern, in terms of the willingness of our services to put their eggs in a foreign basket is one which has to be resolved; I don't have the solution to that problem. The solution that is frequently proposed is one of co-production. A solution that has been proposed is buying a large backlog of spare parts to protect yourself in the future, etc. I dont feel really comfortable with that although there is probably something workable there.

I think the other problem, which is the concern of the Buy America, U.S. jobs, U.S. labor unions, etc., is minimized especially if we can point to problems in the other direction, if we can point to problems where U.S. firms are participating in Italian programs.

I think co-production of existing designs by you can work in much the same way. In this case, again, I think a U.S. partner is in order even though there is a data package. The business of taking a data package with a U.S. design and putting it into an Italian firm was not all that simple. There is the problem with going through and getting the parts and materials and processes squared away, and I believe that the smooth transition could be made by a team of the developer and whomever is going to bid in Europe.

So, that is a summary of an approach that appears to me the most likely way to increase the participation of the Italian industry in our procurements, that is, through this industrial cooperation.

Now, just a word of caution here. We have been, as I say, pursuing this cooperative activity quite a bit, and we find that even though we have the clear intent and dedication to this activity in the Executive, as was expressed previously, there are an awful lot of bear traps along the way. The advantage to the U.S. and to the NATO alliance have to be demonstrated early in rather straightforward terms if this is going to work because we also have to get the cooperation of the U.S. industry, the U.S. labor unions, and the United States Congress to make the system work. I think we can do that, although we have to make sure that what we end up with is still a two-way street where U.S. cooperation in Italian programs is equal to or somewhat on a plane with Italian participation in our programs.

One of the things that came out in this seminar was a perception on the part of the U.S. firms that there is an attempt not necessarily to shut U.S. industry out, but less than total enthusiasm because of some of these issues that have been raised in terms of third-country participation. I believe this is an important issue even though we had difficulty establishing it as such earlier and I think it is one which we need to work together on vigorously and diligently. Those are my feelings on it. I am enthusiastic and believe that the kind of cooperation which we have evidenced in our initial surveys of what goes on in Italy is very encouraging.

CHAPTER 7

ITALIAN INDUSTRY PERSPECTIVES

PANEL

The Italian industry of defense wants to pursue all possible opportunities set out by the MOU to carry out the cooperation between the United States and Italy in the armaments field. We share the widespread opinion that in order to reach a rationalization in our Alliance between expenditures, a closer international cooperation in armaments development should be achieved. For that reason, we are extremely interested in exploring every possibility for cooperating even more closely than before with American industry.

Therefore, we are very grateful to the U.S. Government authorities for having granted us the opportunity in this conference to meet with both the procurement sectors of the armed forces and with distinguished representatives from the American industrial firms. We hope that you are interested in expanding your understanding of the Italian defense industry's capabilities and that through that understanding will be able to embark on a more ample dialogue in the field of industrial cooperation.

The purpose of my presentation this afternoon is to point out that the several sectors of our defense industry enjoy or endure situations that are different from one another, and to also point out that the purpose of implementing the MOU is not to devise a new special modus operandi but rather to establish an ampler system of cooperation which takes into account all the problems of both Italian and American industry within the framework of their respective armed forces programs.

It is well known in American military and industrial circles that, for several years, the Italian arms industry has often found points of agreement in the United States and occasionally points of disagreement, the latter when our interests did not coincide. A great understanding towards Italy on the part of the U.S. must be brought forth in order to realize the goals and objectives of the MOU.

It is not my task here to indicate which path should be taken to attain success in this effort. Indeed, it would be more useful to allow the Italian firms here to sit once more with their American colleagues to discover the interests which both might consider useful.

The capacity of Italian industry in armaments can be summarized in the following way:

Total volume of sales of the order of $3 billion a year; employment, 150,000. These data are current as of December, 1978.

The Italian defense industry exports nearly 60% of its total production, a percentage which should imply that its products are well received by the international market accessible to it. I used the word "accessible" to indicate that the Italian Government does not grant export licenses for certain countries. It can be understood, then, that the Italian defense industry is competitive with respect to quality as well as to products. But it is also well known that our industry does not produce the complete range of products required by our armed forces. I believe we all know that the industry is not completely independent with respect to components. Therefore, for that reason, it must turn to the American market for certain components assistance. It has not succeeded in balancing imports against an adequate level of exports to the West.

I must add that the volume of purchases of the Italian armed forces is not, of itself, sufficient to keep alive or to keep healthy an armaments industry either in economic or technological terms. The actual capacity of Italian industry for production and for research and development is more than double the requirements strictly necessary to the Italian armed forces, including direct purchase as well as supplies to other NATO countries of Italian products in compensation for purchases carried out there by Italian armed forces.

This state of affairs by and large applies to most of Europe and means that Europe cannot have an economic armaments industry without the foreign export market. With that export market, the national arms industry plays a role in the country's economy which cannot be overlooked. In view of this wellknown situation, the American market for our industry should mean a new outlet, a new market, and not an substitute for markets which have already been acquired. If this becomes a new market, the United States-Italian balance in this field can find a more satisfactory equilibrium from the quantitative as well from the qualitative point of view. The alternative is less reassuring. It would be unhealthy, in the framework of the Atlantic Alliance, if the industry of one member country did not have a research and development as well as a productive capability which permitted it to increase its strength. Any imbalance would represent a weakness for NATO as a whole. It is, therefore, essential that Italy's domestic needs, which are relatively modest but highly sophisticated, must be linked to possibilities and outlets which allow our industry to sustain itself in order to provide an arms industry which is economically efficient and viable.

If ,on the other hand, Italy is not capable of supporting high levels of research and development expenditures, it nevertheless does have the capacity to take part in priority programs when they yield an adequate return and, particularly, when it is able to provide, within the limits of political constraints, entire arms systems and not just parts of certain systems.

It is obvious that Italian industry cannot give to all military projects the emphasis that they deserve. It can concentrate on those military programs which are most important to it, with regard to the technological content.

Italian industry, therefore, would look with great favor on the support of the U.S. Department of Defense for those programs which foresee cooperation between the two countries. The various industries which make up this delegation would meet with their appropriate counterparts and, from those discussions, will be able to form a more or less clear picture of their future possibilities and opportunities. To make this visit easier and more useful, three of my colleagues from Italian industry will give a very brief account of what has been accomplished in our country with respect to land warfare, naval and aerospace systems. The details of specific systems can be left up to the experts interested in these various special fields.

Beyond the sectorial considerations which my colleagues will outline, I would like to stress that, as a whole, the Italian arms industry possesses a complete and basic manufacturing infrastructure with respect to research and development and with respect to production.

Moreover, the advanced technology machine tools manufactured specifically for the armaments sector are almost wholly designed and produced by Italian industry.

Furthermore, the machines use computer programming and numerical control techniques conceived and produced in Italy.

Lastly, with regard to test ranges, Italy also has the equipment necessary to meet the industrial side with regard to missiles. In fact, NATO is using the Salto di Cuira joint missile range as well as coastal firing ranges.

You will notice, from my colleagues' presentations, that the three sectors they will deal with have quite different industrial characteristics, but they do also have a few points in common. Mainly, as I have already stated, they have the need to export.

I do not believe that there is just one solution to this problem. There are several solutions, depending on specific cases or political situations, and we must not forget that with regard to industry interests, both Italian and American.

Some of our industries would like to be able to export their products to countries other than the U.S. Within the framework of supplies, the United States' intention of favoring and promoting what has been called the "two-way street," is something that deserves some attention. They must take into account to favor, as I have said before, and promote this "two-way street."

Let me explain. If everything is left up to industrial initiative, our answer to the MOU will come later on when it is possible to discuss the positive or negative results of discussions and contracts at the industrial level. The fact that from now on the Italian arms industry will be able to participate without any discrimination in bids called for by the U.S. Armed Forces, may be a good thing for some industries, just as it may bring no results at all for other industries.

At this point, we would like to know whether Italian industry will have the opportunity to participate in design and research bids. In such case, it will be useful tc know what our industries' qualifications should be in order to participate on the same terms in those bids. In short, I am happy to say that almost all of the companies that are present here maintain ties with American industry. In some cases, these ties are well established and continuing. In other cases they are only occasional.

I can say that our industry is very well known in the U.S., and if their development we hoped for has not been attained, this is very often due to political reasons or to high costs. With regard to costs, it has often been pointed out that the cost of equipment necessary for certain kinds of production is exceedingly high compared to the size of the production run, and its ammortization therefore affects the final production cost considerably. Due attention should therefore be paid to this problem as well, which can by no means be disregarded. I do not believe that the MOU envisages economic sacrifices, since the disparity between the advantages which the American industry enjoys and Italian industry does not enjoy could make cooperation impossible.

Production can be maintained even on two lines but only if the volume is continual.

I have dwelled only on some points today that have made a better understanding between American industry and Italian industry difficult. But since, as I have already said, almost all of our arms industries have been considerably experienced working with the American associates, other useful facts for deeper appreciation of the problems will be carefully examined.

Good will is often a decisive factor for success and I am sure that neither of the two parties lack good will, except when there are economic factors which cannot be resolved.

This is what I had intended having heard these morning presentations, but certainly many things have to be added now. I like very much the philosophy of Genral Bowman and his approach. Certainly we would have to find out if, within the European community and the American industry, some of the systems that you have mentioned, General, are feasible.

If I may mention this morning, two things have attracted my attention. It is said that the United Sates bought from Belgium a machine gun, or something like it, and this was a splendid idea. Certainly this is in compensation for something else and somebody else would not sell it in Belgium. And there was some uproar in France, just a few days ago, when I heard 28 times on the radio France protesting because Belgium was buying a tank from the United States.

You signed seven agreements, seven Memoranda of Understanding with Europe, and this makes things probably even more difficult because each one would like to have the same piece or approximately something like it, which makes it very hard. Certainly, we are not going to be discouraged. I think that we might tend to be discouraged from what I heard this morning from Mr.

Church; because, in order to participate indirectly we would need a tremendous reorganization here and we will try to find out if we can put it up.

You have 30,000 people dealing with contractis, if my memory is good, 2,000 points, 20,000 signing contracts. It is a tremendous volume which is, shall I say, the thing you need in a large country like yours. However, if we wanted to be in, we would have to live with that situation ourselves, and we shall try to do our best in order to cope with it.

I am trying to remember the end of his presentation. If I understood correctly there are two ways for us to do something here. One, go straight to a great big organization and sell, procure to the forces what they need. The second one is try to get together with American industries to sell together or else sell to the American industry for them to sell to the government.

This is more or less, in synthesis, what we have to keep in mind when we try to have a direct approach with the American industry. Of course, as I did mention, practically all of the companies here have a very long, good, firm understanding with American industry.

The last, but not least, argument, is again directed to Mr. Marsh. On that, there is one thing I would like to add on everything that has been said. At the very beginning you said that we should try to save as much money as possible on research and development and put this money in some other field of research and development.

Certainly, if your industry or ours, in order to avoid limitations, must go and rediscover what the General said, the umbrella, in order to be able to sell a boat, we are going to lose a lot of money and a lot of time. This is one of the arguments among the many others that could be added to the long list that has been presented this afternoon.

US Comment: On the seven MOU's, very briefly, you know that we had one with the U.K. going for some time, which doesn't really change very much, because we have always been close with the U.K. on defense procurement, although I don't believe any closer than with Italy.

The others are rather different from the Italian one. In the first place, there is Norway, which has almost no defense production. It is a country of four million people. What they wanted from their MOU was just a chance to do an occasional piece of cooperation, and they know that they are going to be very occasional. It just opens up a reasonable chance for them to particiapte when they can. That is practically nothing, because of the size of the Norweigian industry.

Now, when we mov to Belgium and the Netherlands, they are a little bi larger than Norway. We are talking about countries here between eight and twelve million people. They have some specialties that they do reasonable well, and they would like to compete in those specialties when they can. I don't believe Belgium feels that they are going to be able to compete excep in the exceptional case. Of course, this case that I pointed out was one where they have actually produced one of the best armored vehicle machine guns in the world. That is why it was selected. It was selected before we had an MOU, and there was no relationship to any other kind of compensation In fact, when you look at the balance with Belgium, it was about as bad as with any country, maybe worse over the years. As a matter of fact, Lockhee had an agreement, and we still have company-to-company agreements to provid some form of compensation. Our policy does not forbid those company-to-company agreements they can do whatever they wish. However, Lockheed had been unable to perform on that agreement in about seven or eight years. Thus, we were just not doing well with Belgium at all, and it will be difficult to do well because it is a very tiny country.

Nevertheless, when we find something, then we should do it. Italy should do it, too, for that matter. If Belgium produces something that is really good, that is better than anything else we have, in the interests of the Alliance, go ahead and buy one. I think that this will help the Belgian

I find Belgium an example of a country that is really torn between its two-language factions and has a lot of political problems. However, they are really interested in effective, efficient defense. Their defense ministry will go out and fight for buying the thing that is most cost-effective, regardless of issues of compensation, et cetera. Therefore, when we are dealing with a country, an ally like that, it behooves us all to take a good hard look; and, when we do find something that they produce and produce well, buy it. That is one course of action.

Now, with a country like Italy, which is much larger and much more capable in defense production, we may also find cases where we can procure directly or you can procure directly from us, and that is fine. However, there will be many more times where license production will make sense, especially if we can put this on an Alliance basis. Furthermore, if we can get into the families of weapons, which Dr. Perry will be addressing, so

that we aren't duplicating what we are doing, we automatically have a bigger market for our production.

Finally, as we try to work out these third-country sales, I think we can make big improvements in that area which would further provide the necessary markets, but it does depend on industry-to-industry cooperation.

The newspapers are saying that the Belgian industry is going to produce a higher percentage of those tanks than the French industry was prepared to give. I have no criticism of that. Why not? This is done all the time, and this is generally a two-way street, in another form.

There were two tanks mentioned this morning, the Leopard, a very good one, and yours, which is an excellent one as well. I wonder how this can fit into the Alliance and how it is going to be solved in the future, considering that every country has a deep interest to be the leader, at least in one line. Of course, if you give one country that particular item -- and you can't give it to any one elese -- then all the others will have to take something else. Then, industrially, there will be an industry that will be without work and another one having a lot of work.

These problems are, shall I say, unconquered, and have been unconquered for many, many years.

I think, in practical terms, the countries that will have leadership roles are the U.K., Germany, Italy, the United States and, if we can get them involved, France. I don't think there will be others that will be in leadership roles unless it is a very special thing where they have some kind of expertise such as the Belgian machine gun factory. Those are not going to happen very often. We are talking about those five countries, however, I don't know how involved we will get the French.

I might add that I didn't mention two MOU's; one was the German MOU and one was the French MOU. Those are different kinds of MOU's. The Germans know that we have very, very high troop costs in Germany, and so they are not pressing us to buy a lot of products from Germany but would like more cooperation in the R&D area. With the French, it would be very specific projects we will try to gradually improve, a little at a time; but that is a very small exchange compared to our exchange with Italy. In the end, I really see the U.K. and the Italian MOU's as being the ones that will have the most action.

Panelist: Thank you very much for having included Italy among the nations. But we are sensitive to something in Europe which is becoming more and more apparent.

France, England and Germany -- forgetting about the MOU or anything England is in--have a foot here and a foot there. More and more they are getting together to have new development, et cetera , et cetera. Italy is somehow neglected, but this is not the place to discuss that particular concern. However, it becomes very evident within what you are saying that at a certain point we will have European armament and American armament.

One of the questions that we will have to ask ourselves is "shall we be here or there?" I believe this is a good question for us Italians, and trouble for General Moizo who has many other problems to solve in addition to choosing which arms to pursue.

US Comment: A quick thought on that. I think you can be in both places. The family-of-weapons idea provides for cross-participation so that in the weapon that the U.S. has a lead on, there will be European developers and producers who will be teamed, in many cases, with the U.S. lead company. The same is true with the European equipment, in which case there will be some participation from the U.S. whenever it is appropriate. This means that Italy might, on some systems, be teamed with Germany, or France, or the U.K., for a particular helicopter or weapon, and would be in the lead, then, in a combination of perhaps two or three countries. I think if we get much beyond three countries we are in trouble.

As you look at some of the projects that have already been conducted, they seem to do better in a two-way arrangement than in a three-way arrangement. However, even in a two-way arrangement, for example the helicopter arrangements between France and the U.K., we did not come out all that well. Thus, what I am suggesting is that bringing Italy into those European cooperative efforts is going to be helpful, not only to Italy but to the other European countries. I believe they will see that as we get going. In fact, I think they see it already, from my personal conversations with them, but it is going to take a while to get it moving smoothly.

CHAPTER 8

ARMY RESEARCH AND DEVELOPMENT PROGRAMS

DR. JOSEPH YANG

It is a pleasure for me to be here to brief you on the United States Army RDT&E Program. I shall first describe briefly the procedures through which a new RDT&E program is initiated within the Army. I shall then describe some representative on-going RDT&E programs that may be of interest to the Italian Government or industry through bilateral or multilateral arrangement with us. In a related presentation from Mrs. Clements, also from the Office of the Assistant Secretary of the Army for Research, Development and Acquisition, will describe to you the Army's acquisition system and how you can obtain opportunities to compete for Army procurements at each stage of the acquisition process, from the identification of the requirement for a system through production and logistic support.

I would first like to say a few words about the procedures through which a requirement for a new capability is developed within the Army and how such a requirement, once validated, leads to a development program. The U.S. Army Training and Doctrine Command, known as TRADOC, located at Fort Monroe, Virginia, is responsible for developing requirements for new or improved materiel. Changes in the threat, technological opportunities, and obsolescence of existing equipment are principal factors which drive materiel requirements. Once a requirement is approved, the Army has three choices to satisfy the requirement: (1) to adopt a new system which has already been developed, (2) to improve an existing system, or (3) to begin a totally new development. Decision authority for a new weapon system may be at Department of Defense level, Department of the Army level, or below Department of the Army level depending upon the associated cost projection of the system, level of interest, development risks and complexity, and international interest.

Once the requirement is approved and a decision is made on a preferred approach for fulfilling that requirement, the development responsibility is assigned to the U.S. Army Materiel Development and Readiness Command, sometimes known as DARCOM, which is located here in the Washington area. Obviously, each new development is reviewed by appropriate authority at various decision points to ensure that the new materiel is, in fact, ready to proceed to the next phase of the development cycle.

With this brief overview of the requirements generation process and the process which leads to the development of new materiel, I would like to turn next to a description of some of our on-going research and development programs that have actual or potential Italian Government involvement or interest. I have selected some representative programs from the following functional areas--aviation, air defense, fire support, electronic, and other support systems.

In the area of aviation, the United States Army is currently initiating a program for a new Advanced Scout Helicopter known as ASH. It will provide intelligence, surveillance, and target acquisition in the tactical commander's area of immediate interest just beyond the forward edge of the battle area. It will perform reconnaissance and surveillance functions. It will assist in the fire support function by providing acquisition and designation for precision guided munitions. The scout will adjust conventional artillery fires and coordinate close air support activities.

Engineering development funds for ASH were provided in fiscal year 1979. A special study group is preparing the program for full-scale development. NATO interest is being addressed through a set of concept formulation studies; the studies cover ASH candidates from FRG, France, and Agusta of Italy. The FY 1980 funding request for the ASH program is thus far being favorably considered by our Congress.

If all goes well, we envision a mid-1980's fielding date for ASH. In the meantime, there is considerable thought being given to the possibility of utilizing the Agusta A-129 "Mongoose" as a candidate to fill the scout requirement for the U.S. Army, though in the Italian Army it serves as an attack helicopter.

A capability related to the scout helicopter is the target acquisition designation system, called TADS, and the pilot night vision system, PNVS.

The TADS and PNVS are being developed for the advanced attack helicopter; they will also be utilized to equip the scout helicopter. The TADS employs infrared, optical and television technology for target acquisition and an automatic tracker and laser system for target designation.

The PNVS employs a wide field of view infrared seeker projecting the imagery on an eye piece attached to the pilot's helmet.

The two systems provide a night and adverse weather operational capability for the helicopter. The technology associated with TADS/PNVS is transferable to the scout.

The hellfire modular missile system is being developed as the main armament for the advanced attack helicopter. The primary seeker developed for hellfire is a laser seeker. The modular concept will permit development of other seekers which will cover other spectrum windows such as infrared and millimeter bands. Hellfire's advanced warhead design ensures defeating future enemy armor threats. The scout helicopter will serve as laser designator platform for hellfire as well as for the Copperhead projectile, which will be discussed later in this briefing.

The advanced scout helicopter, employed in conjunction with the advanced attack helicopter carrying the hellfire missile will give to the U.S. Army a potent, highly mobile anti-tank capability for both daytime and nighttime operation on the future battlefield.

The first system I shall touch upon in the functional area of air defense is the Stinger. Stinger is a shoulder-fired guided missile system developed by General Dynamics. It is employed by company-size units operating near the forward edge of the battle area. This lightweight air defense weapon will provide soldiers with an effective self-defense against enemy low altitude high-performance tactical aircraft and helicopters. The weapon is operable by one man, and it can engage targets regardless of engagement aspect.

Stinger has a new seeker which permits it to engage threat aircraft with a significant capability to perform well in an infrared countermeasures environment. Stinger effectiveness is not limited to the tail chase engagements mode as is the Redeye, the currently deployed system. It will be able to counter the increasingly sophisticated threat anticipated in the 1980's.

Stinger, with improved range and maneuverability, uses a passive infrared seeker that homes on the exhaust plume of the target. The missile employs a proportional navigation system which predicts the point of intercept forward of the jet plume. The missile offsets from the plume to the target aircraft fuselage in the final seconds of flight. The high explosive warhead will then detonate inside the fuselage with an increased destructive power.

Stinger consists of a missile in a disposable launch tube, a reuseable gripstock, a unit to identify friendly aircraft, and supporting equipment, such as trainers. The separable gripstock contains all launch electronics which can be used for multiple firings. The aluminum weapon round container provides shipping and storage protection for a complete weapon. The container can be carried by a variety of military vehicles.

The Stinger is in production and will be deployed to U.S. forces in the near future. The system was briefed to members of the Italian Army in December and is a leading candidate for the NATO Manportable Air Defense System (MANPADS). Stinger was evaluated by the FRG as was the Swedish RB-70 missile. The FRG has chosen Stinger as their MANPAD and they are exploring acquisition options which include the possibility of creating a NATO consortium to coproduce Stinger.

One of the more interesting developments, at least as far as NATO is concerned, is the development of the General Support Rocket System for fire support. This is the first multiple-launch, free-flight, artillery rocket system developed by the United States since the second world war. While we have long felt the need for the shock action of an artillery rocket, the lack of precision associated with free-flight rockets made them unattractive in terms of cost effectiveness. Now, however, the technology is offering the potential for developing relatively accurate rockets. With the addition of improved conventional munitions, the system has become a cost-effective means to engage certain targets. It allows the delivery of large volumes of firepower in a very short period of time against critical, time-sensitive targets without having to resort to nuclear weapons.

Two contractors, Vought Corporation and Boeing Aerospace Company, are competing for the production award of this system.

Each contractor will develop its own rocket. Both are designing rockets approximately 230mm in diameter, weighing approximately 300kg. The rockets are launched from tubes mounted in disposable pods. There are six rockets in each pod. The pods also serve as a storage and shipping container.

Two pods are loaded into a launcher-loader module which in turn is mounted on the self-propelled launcher-loader. Again, each contractor will design its own launcher-loader module. Each has a stabilized reference platform to compensate for any uneven terrain features, an automatic loader to reduce reload time and manpower requirements, and an on-board fire control system to compute the launch azimuth and elevation and to set the electronic fuze time of flight. The approach used by each contractor in designing these systems may be entirely different. You can be sure that the Army will choose a good design at a reasonable cost.

The carrier vehicle is developed by a third contractor, FMC. It uses components common to our infantry fighting vehicle. Each competing contractor is furnished the carrier by the Army. The vehicle has a unique suspension lockout system which provides a stable launch platform. The man-rated cab of the carrier allows the crew to fire the rockets without dismounting from the vehicle.

Development of the general support rocket system began in September 1977. We have an accelerated schedule for this effort, and a production decision is programed for May 1980. To date, more than 60 rockets have been fired, many of them from the self-propelled launcher-loader. There is no technical reason to believe that the accelerated development schedule can not be met.

This system will be used to supplement rather than to replace existing cannon artillery. Its mission is to attack large-area type targets, such as field artillery battery positions or air defense units. For such missions, the Army has developed the dual purpose improved conventional munition (DPICM) warhead. The munition itself is the M42--the same DPICM used in the 155mm and 8-inch cannon rounds. Each rocket carries over 450 of these M42 submunitions. This results in a system that is extremely effective against personnel and lightly armored vehicles.

The rocket also has the growth potential to adapt to other warheads. In fact, FRG is developing a scatterable mine warhead for use with the GSRS. This warhead will be capable of carrying the FRG A. T. II scatterable mine.

Another possible development for GSRS is a terminally guided warhead. This concept calls for a warhead carrying one to six terminally guided submunitions which will be released above the target area. Each of these submunitions will use its own terminal guidance system, such as an infrared seeker to home in on the target point. With these warheads, GSRS can assume the additional mission of antiarmor.

As you can see, this development program has some rather unique features. I have already mentioned the accelerated schedule and the competitive development associated with the GSRS. Another point worth mentioning is the Memorandum of Understanding among the United Kingdom, France, FRG, and the United States.

The MOU is for the cooperative development of a medium-range multiple launch rocket system (MLRS). The basic idea was to avoid the costly duplication that occurs when two or more NATO systems are developed to satisfy the same mission need. As you well know, while the U.S. was embarking upon GSRS, France was developing SYRA, and Italy was working with the UK and FRG on RS-80. The cost of developing all three of these systems would have been a significant drain on NATO's R&D resources.

After the RS-80 and SYRA projects were terminated, FRG, France, and the UK came to an agreement with the U.S. on a common requirement for a multiple launch rocket system. Subsequently, the U.S. changed the design of the GSRS in order to satisfy those requirements which are important to the alliance. Consequently, all four nations signed up; the GSRS program will provide the standard rocket system; FRG scatterable mine serves as a second warhead. The expertise of all signatory countries to the MOU will form the basis of future improvements.

A second developmental program in the area of fire support is the Copperhead Guided Projectile Program.

Copperhead is a cannon launched, semiactive, laser guided projectile that will provide the field artillery with a significant new capability to attack hard point and moving targets such as bunkers and tanks.

The Copperhead projectile has been under development since 1972 when competitive, advanced development contracts were awarded to Martin Marietta and Texas Instruments. In 1975 an engineering development contract was awarded to Martin Marietta in Orlando, Florida.

The Copperhead projectile is 54-inches long and weights 138 pounds. It can be fired to ranges of about 16 kilometers and can penetrate thickly armored vehicles.

The Copperhead projectile is really only one part of the Copperhead system. In the center is the projectile, with wings for lift, and tail fins for control. The projectile has three sections--the seeker (front), warhead (center), and guidance and control (rear). The projectile is compatible with the Army's two principal 155mm howitzers, the self-propelled M109A1 series and the new towed howitzer, the M198. Some compatibility analyses and tests have been conducted with the FH70.

The projectile is fired in a conventional manner and guided to the target in the terminal phase by a laser designator. These lasers consist of an RPV, airborne helicopter designator, and the principal designator, the GLLD. Designation by the RPV and the helicopter was successfully demonstrated early

in the E.D. phase. The GLLD has been used extensively to designate for Copperhead during the development tests as well as the operational tests that were recently completed at Fort Carson, Colorado.

The Copperhead projectile under development will be a wooden round; a round which does not require special handling or unique firing arrangements. The current operational concept indicates Copperhead will be fired using already fielded fire control devices such as FADAC and TACFIRE systems. The forward observer will call for a Copperhead fire mission using existing radio procedures. The gunnery data is computed and sent to the delivery unit. When the projectile is fired, the forward observer tracks the target with the GLLD, and at the appropriate time lases the target. The Copperhead projectile then homes in on the reflected energy and destroys the target. Typical circular errors probably obtained in development firings have been miniscule.

The Copperhead program is essentially on schedule. We are proceeding toward an ASARC/DSARC decision in August/September for its production. If the decision is affirmative, production will be initiated in October 1979 with deliveries beginning in October 1980.

We have completed operational testing II where we fired 71 rounds and are now in the middle of DT II. So far, test results look reasonably good.

I would like to briefly cover some of the international discussions that have taken place. The U.S. signed an MOU with the UK in 1978 which gives the UK the choice of either production in the UK or purchase of Copperhead from the U.S. Additionally, we have briefed several of the NATO allies including Italy, FRG, and Franch on the Copperhead system. Last year we conducted some testing of Copperhead projectiles in the FH70 howitzer and the French GCT howitzer. Those tests were essentially ramming and extraction tests. They were conducted to see if the Copperhead would in fact fit in those howitzers. This summer we are going to conduct slug firing tests in the M109G howitzer.

Earlier this year, after a briefing by the project manager, Italy requested coproduction rights of Copperhead from the U.S. This action is currently being processed with OSD. Other NATO countries have also shown interest in the Copperhead capability, but they have not yet firmed up the requirement for the new system.

As a result of our continuing assessment of the Soviet tank threat, an improvement is being developed for our TOW system. Last September the Army initiated a development program to improve the TOW warhead and its guidance. This development effort is now well underway and we are beginning to gather data on initial warhead firings. Basically, there are three potential improvement development efforts underway.

The first consists of replacing the current TOW (subcaliber 5 inch) warhead--a product of the technology available in the early 1960's--with a warhead of more recent technology. To improve warhead jet penetration against newer armored targets, a 27cm (10 inch) extendable probe is added to the missile nose tip. Recent firings of this new warhead design provided excellent results.

The second improvement is a guidance modification to improve the TOW system performance in the battlefield with obscurants and against electro-optical countermeasures. The current missile beacon-optical tracker link operates in a frequency spectrum that is different from that of the night sight device. A contract to provide this guidance fix and improve performance against electro-optical countermeasures will be awarded in the near future.

Improvement three is a development effort to fly a full-caliber six-inch warhead of 13.5 pounds (versus 8 pounds for the current subcaliber warhead) to provide increased lethality. This design will also require an extendable probe with canards on the forward section of the probe for additional lift. Recent flights of this full-caliber design show promise of success. However, the full-caliber approach will require additional guidance system changes to handle the different flight profile of the heavier missile. The guidance improvement for countering obscurants and electro-optical countermeasures (improvement two) would be applied with a full-caliber warhead retrofit. The full-caliber improvement is expected to require an additional 1-1/2 to 2 years for development. A decision on the choice between warhead improvement one or two is expected this fall.

To summarize, the Army is moving on an accelerated program to upgrade the TOW system to meet the Soviet tank threat. We will be holding our next program review this fall.

The first development in support equipment is the infantry fighting vehicle/ cavalry fighting vehicle. This vehicle has a two-man turret with the commander on the right and the gunner on the left. The vehicle armament includes the 25mm cannon, 7.62mm coax machine gun, a two-tube TOW launcher, and six firing port weapons fired from within the squad compartment. The turret and hull of the IFV/CFV are constructed of aluminum armor.

The Army's development objective in the XM2, infantry fighting vehicle, and XM3, cavalry fighting vehicle, is to field a system to operate in conjunction with the XM1 as part of the Army's future combined arms team. As such, the vehicle must have sufficient fire power, mobility equivalent to the XM1, and armor protection greater than that currently provided in armored personnel carriers. In addition, provisions are required for the squad members to fight from within the vehicle. It is also a firm requirement for this vehicle to have a night fighting capability so that operation will not be restricted by low light levels or inclement weather.

Fully combat loaded the IFV weighs approximately 48,000 pounds and carries a nine-man squad. Its ground mobility is compatible with the XM1. The vehicle can attain top speeds on hard surfaces in excess of 40 MPH and cross-country in excess of 25 MPH. The vehicle can cross inland waterways using a built-in swim barrier at speeds up to 5 MPH and can be air delivered in either the C141 or C5A transport aircrafts. Utilizing a unique spaced laminate armor, the IFV can defeat the 14.5mm armor piercing projectile. It also provides the crew protection against fragments from 155mm artillery air

bursts. The infantry fighting vehicle carries seven TOW missiles and 900 rounds of 25mm ammunition. The cavalry version carries 12 TOW missiles and 1500 rounds of 25mm ammunition.

We have built eight prototype vehicles during the engineering development phase. Three vehicles are used for contractor and Government development test which began June 18 at Aberdeen Proving Ground. Four vehicles, after completion of CADRE training, will be used for operational testing which began in July. The eighth pilot vehicle is dedicated as a facility vehicle for evaluating modifications in response to either contractor or Government test results. When the Army makes its production decision in December, it will be based on data from Government tests of approximately 17,000 miles of road operations, firing of 68,000 25mm rounds, and firing of 70 TOW missiles. Following production decision in January 1980 we will continue the development testing of three pilot vehicles, convert the OT vehicles to a cavalry configuration and run a CFV user test during the January to July 1980 time frame. At the conclusion of this test phase, the Army will review the test data at an in-process review in July 1980 to determine how well the fighting vehicle performs in the cavalry role.

In FY 1979, we awarded a contract for long lead item tooling and advanced procurement. Our first production contract for 208 vehicles is scheduled for awarding in February 1980 with first vehicle delivery in May 1981. The initial production contract will be a sole-source type with Food Machinery Corporation. The competitive procurement procedures will be used after validation of the technical data package during initial production testing.

We are confident that the XM2 will be the world's finest fighting vehicle. Based on previous interest shown by your government, I understand that BG Bolte, the IFV Program Manager, has offered to visit Italy in September 1979 to provide detailed briefings on the U.S. infantry vehicle/cavalry fighting vehicle program.

Target data for our missiles, artillery, and tactical aircraft are obtainable by a "stand-off" target acquisition system, or SOTAS. The system consists of a helicopter-mounted radar, a data link, and primary and secondary ground stations.

The helicopter employed in the early models is the UH-1. However, the Blackhawk will be employed with the production SOTAS systems.

The system operates in a stand-off mode by flying well to the rear of the FEBA. The radar beam, which is narrow in azimuth, scans over a wide angle every few seconds and projects deep into the enemy territory. The reflected radar signals are processed such that only moving targets, that is, moving tanks and vehicles, flying helicopters, etc., are detected. Due to the rapid scan rate a continuous picture can be obtained of enemy's movements as well as that of our front line moving elements.

A data link transmits the radar information from the airborne platform to ground terminals located at division and brigade level. The radar data is displayed at these ground stations. Targeting and intelligence information is

derived from the displayed data and is transmitted to the division and brigade operations centers, the supporting weapons systems, and to various intelligence elements.

An experimental SOTAS was assembled several years ago and has been tested for military operational effectiveness in exercises in the U.S. and in several reforger exercises in Europe. The Army field commanders have found the system to be very useful. Two additional experimental systems have now been fabricated on an expedited basis and are in use by the U.S. Army forces in Europe.

We are now proceeding with the development of the system in its final configuration. It will feature improved counter-ECM capability, and greater radiated power to achieve greater range performance. We expect to accomplish initial fielding of the production systems in the early eighties.

The SOTAS targeting data is sufficiently accurate for artillery engagement of troops, trucks, or other soft targets. However, the engagement of hard targets, such as tanks and armored vehicles, requires still greater accuracy for an effective kill. It is thus planned that the SOTAS will be used to queue mini, remotely piloted vehicles to appropriate target areas where it can laser designate specific hard targets. Our mini-RPV, the Aquila, carries a daylight TV camera to which is slaved a laser designator. The TV picture is transmitted to a ground operation station from which full control of the RPV's flight pattern, the camera, and designator pointing direction is accomplished. The operator, working in close coordination with the artillery fire direction center, provides the laser designation of the targets for the Copperhead round.

The RPV will, of course, also perform other support functions such as target damage assessment, surveillance, target acquisition, and fire correction for conventional artillery fire.

The Aquila RPV is launched from a short hydraulic rail system. The sensor payload which includes the TV camera, laser designator, and stabilized platform weighs about thirty-five pounds and the entire air vehicle weighs about 120 pounds. With speeds of 70 to 100 knots, the RPV can achieve several hours of on-station time. Recovery is accomplished with a combination vertical and horizontal net.

Our RPV program has successfully completed its feasibility evaluation phase. We fabricated some 20 experimental RPV's which were used for military potential testing and concept evaluation. The test results are very encouraging and we are now entering the advanced development phase of the program. We plan to achieve its initial operating capability in the early to mid eighties.

We are also proceeding with the development of a night TV system for the RPV. We feel this night vision capability will significantly enhance the overall military worth of the RPV system.

The final development program I will discuss is the single channel ground and airborne radio and data system, SINCGARS.

The flow of information between the various target acquisition systems, such as SOTAS and the RPV, the command elements and the weapons systems, requires a reliable and interference-free communications system. A tactical single channel ground and airborne radio and data system is being designed to fulfill this need.

This FM field radio operating in the VHF band will cover the 30 to 88 MHz band with 25 KHz rf channel spacing. Electronic countermeasure against jamming is to be achieved by means of frequency hopping. We are examining both approaches: a slow frequency hop rate of under 300 hops per second, and a fast hop rate of over 1,000 hops per second.

The radios will be designed for manpack, vehicular, and airborne use. Modular construction will permit issuance of the basic radio, the basic radio with a small frequency hopping module, and also the addition of a communication security (COMSEC) module to provide encryption for secure communications.

We are currently fabricating advanced development models of both the slow and fast frequency hop models. We plan to conduct a comprehensive test of these techniques before selecting the hopping rate with which we will proceed to final development. We are projecting an operational capability in the early to mid 1980's.

CHAPTER 9

ITALIAN INDUSTRY CAPABILITIES IN LAND WARFARE SYSTEMS

DR. SERGIO RICCI

Basically, the Memorandum of Understanding comprises two fundamental criteria:

1. The stepping-up of US-Italian cooperation in order to achieve a more rational utilization of defense resources in the context of the Atlantic Alliance.

2. The quantitative and qualitative balancing of trade in armaments between Italy and the United States.

In regard to the first of these two objectives, this review of the capabilities of the Italian armaments industry illustrates the products which can now be offered to the U.S. Army, such as the 76/62 compact cannon available to the Navy, and past and present products and activities which qualify the Italian industry to participate in unilateral U.S. or bilateral U.S.-Italy supply and R&D programs already underway or in the future.

The second MOU objective also envisages sales to other countries. Therefore, the review includes products manufactured under U.S. license for which sale to other countries could be authorized, original Italian products not required by the U.S. Army but which could be purchased in the context of U.S. programs for military aid to other countries (in cases which the sale of U.S. armaments appears unappropriate), or for reasons of security or particular operational or technical requirements of the recipient country.

The range of industrial activities has been divided into the following sectors:

- combat and support vehicles;
- field artillery and rockets, antitank weapons;
- anti-aircraft missile and artillery systems;
- ammunition and mines;
- anti-aircraft defense surveillance, command and control (c3); and
- telecommunications.

Combat and support vehicles

Once reconstruction had been completed after the devastation during the Second World War combat vehicle building began with production under license, justified by the immediate need to create defensive formations and by the marked orientation of the Italian Army toward commonality of armaments with the Allies.

Under U.S. license, the local armaments industry thus supplied the Italian Army with several hundred M-60 main battle tanks, a few thousand armored infantry-fighting vehicles of the M-113 type. Some had petrol-driven engines and some had wdiesel engines in the various troop-carrier, command-carrier and 81mm mortar-carrier versions. The Italian armaments industry also supplied the Army with several hundred M-548's, which is the cargo version of the M-113. Some quantities of the M-113 and its derivations were also explored, authorized by the U.S. case-by-case.

Production of the M-113 and the M-548 still continues while main battle tank production has been switched from the M-60 to the Leopard, in this case under license from West Germany. The choice of the Leopard was influenced by the aforementioned desire for commonality of armaments with the Allies. Also under production are Leopard variations for special utilizations, such as bridgelaying, etc. (Figure 1). It is recalled that all the weapons and equipment installed in the aforementioned vehicles are built in Italy: range-finders, I.R. periscopes, gun-elevation controls, I.R. whitelight searchlights, television cameras, lasers, etc. The present production capabity in Italy is 40 Leopards and 100 M-113's per month.

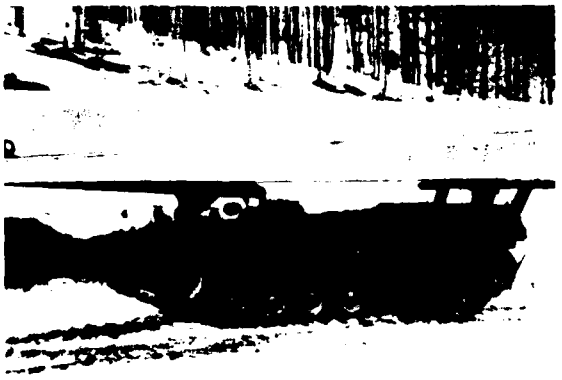


Figure 1

Figure 2

To meet specific Italian operational requirements, the local industry has proceeded on further developments of the vehicles produced under license. Thus, the VCC1 (Figure 2), derived from the M-113, has been developed for the Italian Army with the addition of steel armor-plating, improved broadside profiling, the possibility of firing from within the vehicle and the addition

of a protected cupola for the 12.7 machine gun. Similarly, the M-548's have been adopted for utilization as fire-control stations, launcher-carriers and missile-transporters in the OTOMAT anti-ship coastal batteries and in the mobile MEI short-range field anti-aircraft batteries (Figure 3).

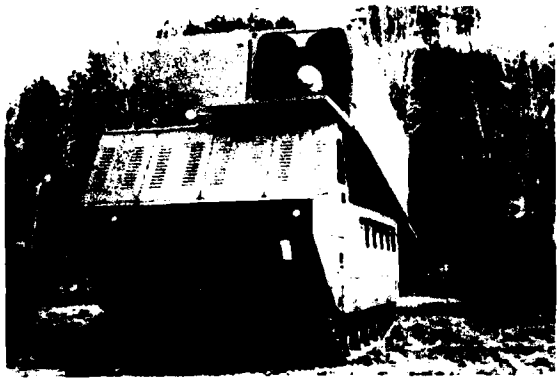


Figure 3

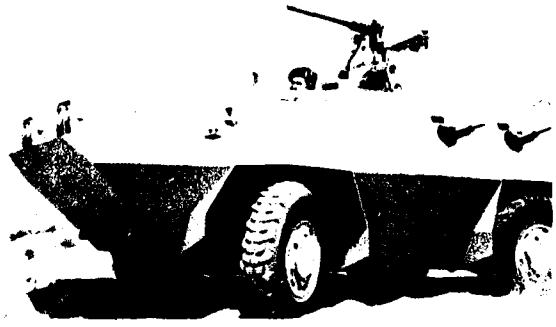


Figure 4

The Italian industry has also designed the upgunning from 90 to 105mm of the M-48 tank in response to demand by a number of countries which, if equipped with the M-47, could not afford the financial burden of total replacement of their tanks.

The Italian armaments industry has also been heavily engaged in the design of tracked vehicles. The VCC 80, needed by and now being evaluated by the Italian Army, is an infantry support tracked combat vehicle, weighing approximately 18 tons, with sophisticated armor-plating (Figure 4). It is designed to carry nine men and to provide fire support for infantry with anti-tank missile and a turret-mounted 25mm cannon, possessing a higher firing rate than the 25mm chain-gun type, and with a 7.62 coaxial machine gun.

As an alternative, the OX12/14 track vehicle, also of original design offers almost identical performances to the VCC 80 but with less ease and less armor-plating, and is not equipped with anti-tank missiles.

There has also been a considerable amount of original design and development. The wheeled armored vehicles 6614, both in the troop-carrier version and in the 81mm mortar version, are currently in mass production (Figure 5). The vehicles 6616 of the same family were conceived for reconnaissance, border patrol and convoy escort roles and are armed with a turret-mounted 20mm cannon. The current production capacity is 100 wheeled armored cars a month.

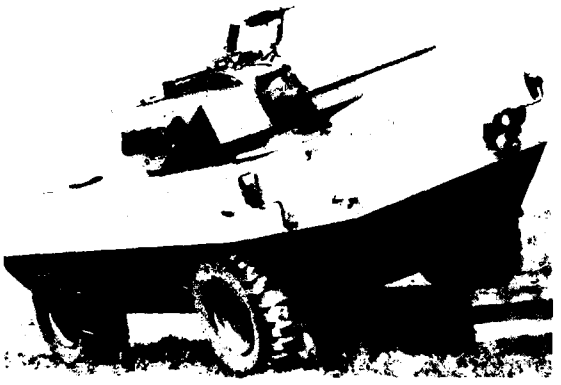


Figure 5

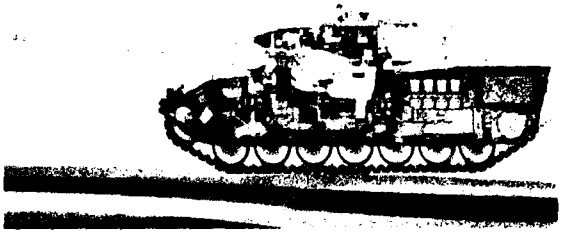


Figure 6

For operational requirements other than those of NATO, but specifically for other countries, the OF-40 battle tank has been developed for export (Figure 6). It weighs approximately 40 tons and is equipped with a 105 cannon of Italian design.

Finally, to provide close anti-aircraft protection for columns of armored or motorized vehicles, an anti-aircraft turret with a 25mm cannon has been developed, both in the quadruple and twin versions, with clear-weather optical fire control (day and night), supported by TV auto-tracking and laser distance-measuring equipment. The turret is installable on the VCC 80's and on the M-113's.

From this brief review it is evident that the Italian industry is well qualified in the combat-vehicle sector, as well as in the related specific technologies, such as the utilization of light alloys in the hulls and in the load bearing structures, to the development of which the Italian industry has made an appreciable contribution. It therefore possesses the capabilities to perform a role, if and when called upon, of subcontractor in U.S. production programs underway, such as the current Armored Infantry Fighting Vehicle, and to cooperate as a partner in similar development programs in the future.

The Italian motor vehicle industry, whose capabilities and technological standards are recognized throughout the world, is able to meet any present and future requirement in the area of military support vehicles. Obviously, original developments have to date been confined to meeting the needs of the Italian market and other countries' markets, in relation to the operational requirements and to their financial capabilities. However, there is no obstacle to extension of the range to more costly developments if requested by existing clients or by a new client.

Among the more indicative developments is the TM-69-6605 FM artillery tractor (Figure 7), suitable for hauling the FH-70 155/30 howitzer and available

also in the shelter-carrier and water (or fuel) tank-carrier versions (Figure 8), and the medium range and medium mobility hinged vehicle 320 PTM-45 for the transportation of battle tanks up to a weight of 50 tons (Figure 9). On economic grounds, it is particularly appreciated in the poorer countries. To provide an idea of the dimensions of the military motorized vehicle industry, annual sales amount to around $300 to $400 million.

Figure 7

Figure 8

Field artillery and rockets, anti-tank weapons

Italy possesses long-standing experience in the design and development of artillery. It was back in 1956 that the Italian Army designed the 105/14 howitzer, mule transportable and capable of dropping by parachute, which has been adopted by some thirty countries, including many NATO members (Figure 10). This howitzer, continuously rejuvenated, is still irreplaceable in particular utilizations and in particular areas.

Figure 9

Figure 10

After a considerable production under U.S. license of the self-propelled 155/23 M-109 howitzer (Figure 11), activity in the field artillery sector is currently concentrated on co-development and coproduction projects in line with the desire to have common armaments with the Allies. The Italian industry is participating in the FH 70 and SP 70 trilateral programs for the development and production of hauled and self-propelled 155/39 howitzers, respectively (Figure 12 and 13).

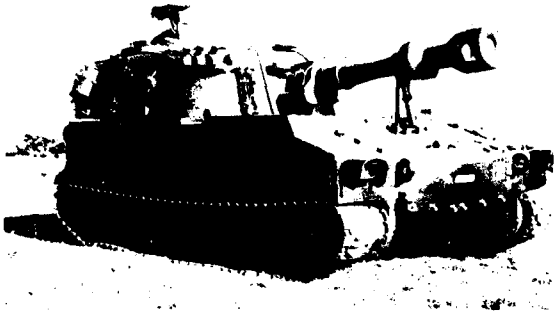


Figure 11

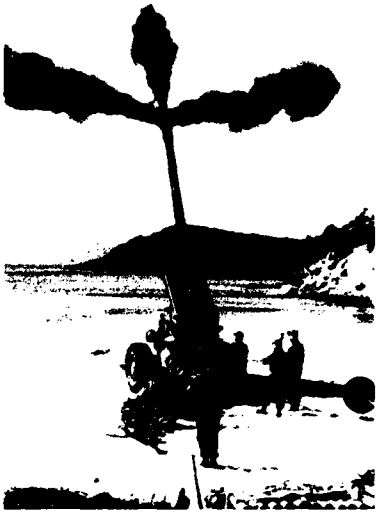


Figure 12

For operational requirements other than those of NATO, the self-propelled and automatic-loading "Palmaria" has been wholly developed in Italy. Italy also produces, for export, the Fieldguard system for the fire-control of field batteries of artillery and of rockets.

In the area of artillery rockets, the BR 51 field-saturation system was developed and evaluated. Based on 158 mm rockets, it was designed for a low dispersion at all ranges and for a very short minimum possible range, in relation to the maximum range. The BR 51 program was abandoned because Italy then participated in the trinational RS 80 program, which was subsequently abandoned on the initiative of the United Kingdom.

The Italian industry is currently engaged in the development of field weapon systems ranging from the FIROS 6 to the FIROS 25. The FIROS 6 (Figure 14) is a highly mobile, jeep-mounted, light multiple rocket launcher system capable of launching up to 48 2-inch diameter rockets carrying different types of warheads and performing an infantry support role within a distance of 6 km from the target.

Figure 13

Figure 14

The FIROS 25 is a highly mobile, multi-rocket launcher field saturation system based on a 6 launch-units battery capable of covering large areas in the 18-27 km zone (Figure 15). The weapon is a 122 mm rocket carrying a variety of different warheads from the HE, PFF types to the sub-ammunition types dispensing ATM, APM, ATB, and APB warheads. The fire control system has been designed to enable selection of the number (from 1 to 40) and type of rockets to be fired as a function of the target.

Figure 15

These experiences could constitute a valid basis for the eventual inclusion of the Italian industry, for example, in the USA General Support

Rocket System program or for Italy's eventual participation in the quadripartite "Multiple Launch Rocket System Program."

In regard to anti-tank weapons, after building Cobra, Maba and Mosquito missiles under license, the Italian industry proceeded to autonomous design and development. Examples under this heading are:

Sparviero program - long-range missile, utilizable both from vehicles and by infantry, equipped with a wireless guidance system. Prototypes have been utilized in validation tests with effective firing.

MAF program - portable, medium-range, wireless guided (laser) missile, carrying a considerable weight of destructive load.

Folgore program - portable, non-guided weapon, effective up to about 1 km; currently undergoing operational evaluation. Adoption by the Italian Army is envisaged.

In the light of the foregoing, the Italian industry would hope to participate in multinational, third-generation, anti-tank weapon developments.

In very few countries is there a very clear decision as to which of the three Armed Forces should be responsible for coastal defense or control of the sea by coastal-based installations; being land-based, responsibility presumably is vested in the Army. In Italy, the coastal OTOMAT anti-ship missile system has been developed and built; it is highly mobile on the M 548, has a range of 100 nautical miles, possesses accurate mid-course guidance beyond the horizon (in addition to normal mid-course inertial guidance and final active radar homing), and has a sea-skimmer flight profile. The missile used is the same as the OTOMAT installed on ships, which is discussed in greater detail in naval systems.

Anti-aircraft missile and artillery systems

Besides the close anti-aircraft protection of armored or motorized columns described earlier, Italy has produced and is producing light artillery for anti-aircraft defense in the field. There are the 20, 25, 35, and 40 mm weapons, the latter equipped with an automatic loader which enables approximately a half minute of rapid fire (144 rounds) without personnel intervention. Also produced in Italy are the related day and night aiming-devices and the fire-control systems, both fine weather and all weather. Some of these are well known, such as the Fledermaus and Superfledermaus, and the Skyguard anti-aircraft defense system for the fire-control of light automatic artillery (such as the 35/90 mm, the 40/70 mm, the 25 mm, etc.) and for the guidance of medium and short range anti-aircraft missiles, such as the Aspide, the Sparrow, etc. Currently, however, in the context of field anti-aircraft defense, greater effort is being devoted to missile systems.

After a sizeable participation in first the Hawk and later the Helip multinational programs, the Italian armaments industry has developed two entirely Italian systems which meet the two requisites of low and medium altitude anti-aircraft defense of both fixed points and mobile targets.

Figure 16

Figure 17

The Spada is an all-weather, medium range, vital area anti-aircraft defense system (Figure 16). It is an integrated system, equipped with aircraft detection radar. The radar's signals are processed by a control station, which leads even a large number of distributed fire sections for the defense of a piece of territory such as an airport, a naval base, a city. Each of the fire sections is, in turn, equipped with a certain number of launchers and with tracking and illuminating radar for the passive radar homing of the missile. The Spada system uses the Aspide missile (shown in a ground-to-air role) (Figure 17 and 18), similar to that used in the sea-to-air and air-to-air roles.

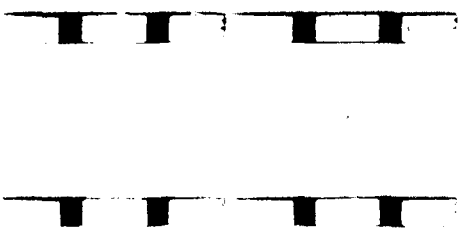


Figure 18

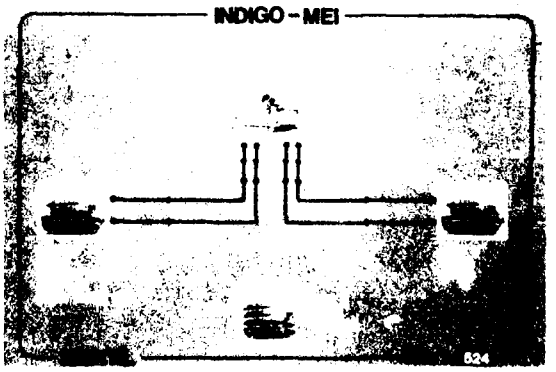


Figure 19

The modular concept of the system enables the deployment of various configurations for adaptation of defense to various possible attack configurations. Its fundamental feature is its extremely high resistance to electronic countermeasures which might be programed in support of the attack. Some purchases by the Italian Armed Forces are underway.

The MEI is a mobile, all-weather, short-range air-defense system consisting of a detection, tracking, and guidance unit with the related radars and optic sensorscontrolling one or more launchers (Figure 19). The missile, denominated INDIGO, has a radar-command-to-the-line-of-sight guidance system. The specific utilization of the MEI is in the defense of a mobile unit on the battle field and it is mounted on an M 548 track-vehicle. Besides the aforementioned radar guidance for clear weather, the system is equipped with dual guidance incorporating optic tracking (T.V.) of the target and I.R. tracking of the missile.

On the basis of this anti-aircraft missile system experience, together with the anti-tank, anti-ship, and anti-missile experiences described in the following speeches, the Italian industry is capable of participating in development programs (or development extension programs) and in production programs of missile systems or guided ammunition, such as the STINGER, NATO PATRIOT, COPPERHEAD, and GBU 15 programs.

Ammunition and mines

In addition to the weapons described so far, the Italian industry is renowned for its production of personal and portable weapons ranging from pistols to machine guns.

For all the weapons of any description produced in Italy and for all the weapons with which the Italian Armed Forces are equipped, the ammunition is manufactured entirely in Italy and is largely of Italian design. It covers the calibre range between 5.65 and 203 mm plus, naturally, the rockets and related warheads, as well as the missile warheads and fuzes (including proximity fuzes) for all the projectiles and warheads.

The ammunition produced also includes the non-conventional types such as rocket-assisted projectiles and sub-ammunition warheads. Research, development, and validation has been carried out in the area of precision-guided ammunition (smart bombs).

In addition, the Italian industry is producing for the Italian Army and for export, infantry area and point target weapons and a variety of mines, such as anti-personnel, anti-tank, and illuminating mines. The two former types are produced in many versions, such as bounding, scatterable, anti-removal, self-sterilizing, pressure, influence, etc.

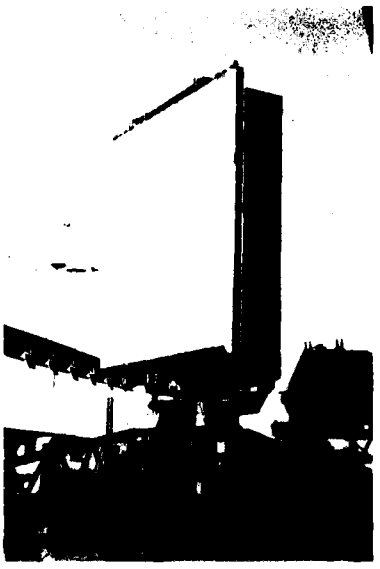
Anti-aircraft defense surveillance, command, and control (c^2)

In the area of air-defense surveillance, command, and control (c^2), Italy has participated in international NATO consortia such as that for the installation of the NADGE air-defense chain, the southern branch of which was built by Italian industry.

Italian production covers the entire range of the necessary equipment; radar for military air-traffic control, radar for the coastal surface and air surveillance systems, data processing systems, etc.

Production has started recently of the advanced ARGOS 12 three-dimensional radar for incorporation in the Italian air-defense system (Figure 20). It is a compact and light phased array radar with mechanical scanning in azimuth and electronic scanning in elevation, with combined technology of multiple beams in elevation and of phase scanning. It transmits a form of codified, phase-and-position-modulated wave.

Figure 20



The ARGOS 12 enables the monopulse extraction of the altitude and possesses the essential characteristics such as high frequency of data updating, impulse-to-impulse frequency agility, low level of lateral lobes, ability to measure altitude compatible with MTI and ECCM performances, constant false alarm rate in narrow and wide interference band environments and reduced peak power despite high performances in heavy clutter and ECCM environments. It is, therefore, an instrument suitable for utilization in the potential attack environments envisaged for the coming decade.

Italian industry is currently producing, for the home market and for export, two surveillance radars and the related command and control systems. The first is the ARGOS 10 long-range early-warning L-band radar, based on a coherent transmitter chain and a sophisticated receiver and digital processor. The ARGOS 10 has been incorporated in the Italian sector of the NATO air-defense system. The second is the PLUTO medium-range low-coverage S-band radar, also using a coherent chain transmitter and digital processor. This radar is suitable for unmanned remote operation in a gap filler role and also for coordination of shorad batteries.

In addition, Italian companies are able to design, build, and maintain complete air defense sites, such as those added to the NADGE chain. Other

Italian firms are producing electronic war systems both for passive surveillance and for active disturbance, as well as electro-optical surveillance systems.

Telecommunications

In regard to tactical and strategic telecommunications, data transmission and countermeasures in support of land forces, Italian industry is able to meet most of the needs of the Italian Armed Forces and is also present in NATO activities.

In this latter connection, Italian industry participated on an appreciable scale in development of the NATO Integrated Communications System (NICS) and of the Communications Improvement Program (CIP 67), with the supply of transmission equipment, radio links, and multiplex equipment totally of Italian origin (Figure 21 and 22, respectively).

Figure 21

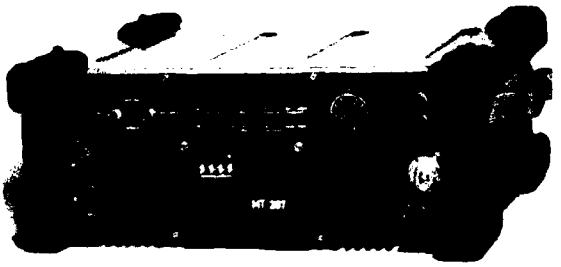


Figure 22

Again, in the NATO context or at the international level, Italian industry is now directing attention to programs such as NICS Stage 2, in which it hopes to actively participate in the satellite communications part, the NATO Multi-functional Information Distribution System (MIDS) program and the Single Channel Ground and Airborne Radio System VHF (SINCGARS-V).

Within Italy, the current operational systems, whether mobile or fixed, utilize HF-V/UHF band equipment to complete Italian production, calling for advanced technological and operational characteristics such as modularity and complete solid state. Much equipment is also of original Italian design.

Also at the national level, studies are at an advanced stage for the integrated field communications system which should meet the requirements of the 1990's and which will possess, as an obvious requisite, interoperability with other military systems of the Alliance. The systems under development will incorporate the most advanced digital and ECCM technologies, such as spread-spectrum and frequency-agility.

In the specific ECCM and ESM fields, Italian industry is producing systems utilized by the Air Force and the Navy of entirely Italian design and development, systems which are also meeting with favorable acceptance abroad (Figure 23).

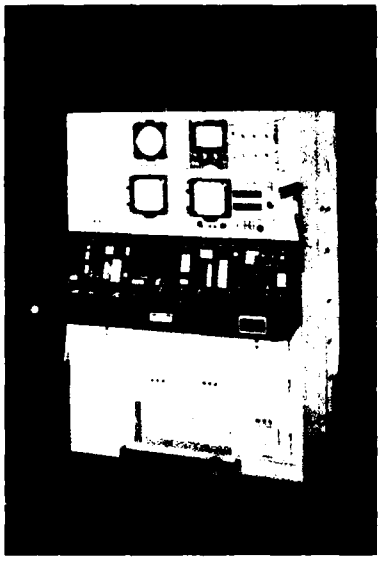


Figure 23

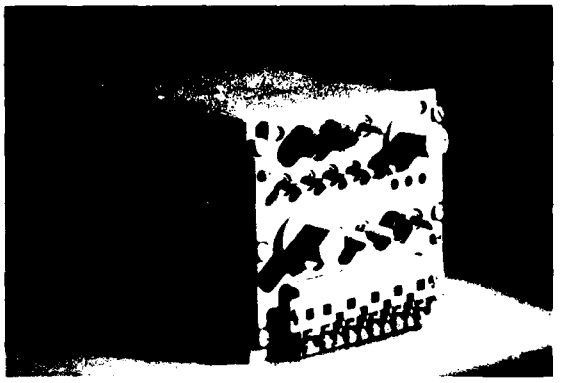


Figure 24

In the area of friend or foe identification (IFF), close cooperation exists with United States firms in the production of the totally solid state IFF Mark XII, for which an interrogator and a transponder are being produced in Italy (Figure 24).

In regard to night sighting and weapon aiming devices, electro-optic and thermal infra-red technologies are being applied.

For communications security, families of secure voice, secure telegraphy, and secure data apparatus have been developed with the utilization of microprocessors.

It is recalled that many of the highly sophisticated components, such as magnetrons, klystrons, and TWT's are of Italian production, sometimes under USA license (Figure 25).

Figure 25

The thick film, thin film, and multi-stratum film technique are widely applied in every sector for the Italian electronics industry; advanced techniques, such as computer assisted manufacturing (CAM) or computer-assisted design (CAD), are adopted in production and design.

CHAPTER 10

NAVY RESEARCH, DEVELOPMENT AND PROCUREMENT PROGRAMS

MR. RICHARD METREY

My presentation will discuss Navy programs and procedures and the responsibility areas of both the Assistant Secretary of the Navy for Research, Engineering and Systems and the Assistant Secretary of the Navy for Manpower, Reserve Affairs and Logistics in particular, as they relate to NATO rationalization, standardization and interoperability.

The current organization of the Navy Secretariat is presented in Figure 1. My position is in the Office of the Principal Deputy Assistant Secretary of the Navy for Research, Engineering and Systems, Mr. Gerald Cann, who in turn reports to Dr. Mann, the Assistant Secretary of the Navy.

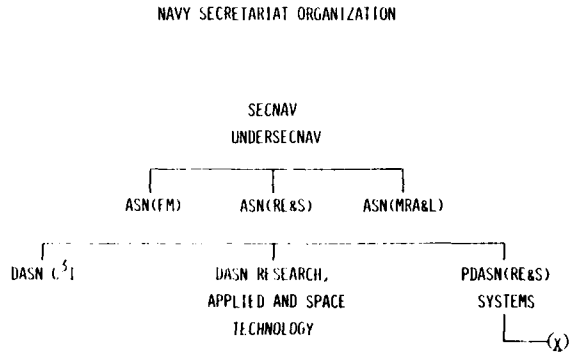


Figure 1

This organization has been in existence for approximately three years and was designed to focus the expertise of the Assistant Secretaries on particular areas. This organization has allowed the individual ASN organizations to identify and address problems rapidly and effectively.

The Navy Secretariat organization is unique from the standpoint of systems acquisition. There are two Navy acquisition executives. The Assistant Secretary of the Navy for Manpower, Reserve Affairs and Logistics, MRA&L, is the sole Navy acquisition executive for all programs funded for shipbuilding and

conversion and for all Navy programs beyond the Defense Acquisition Review Council, DSARC, Milestone Three Decision which is the production and deployment decision. I will be using the term DSARC throughout this presentation. Again, it is Defense Acquisition Review Council.

The Assistant Secretary of the Navy for Research, Engineering and Systems, RE&S, is the other acquisition executive and is responsible for all other Navy programs through and including Milestone Three. This includes all research and development programs through the production decision milestone. It should be noted that the acquisition program embraces just about every product line of systems acquired by the Department of Defense.

The third Assistant Secretary, Financial Management, serves the Comptroller function in the Navy.

The Navy contracting organization is shown in Figure 2. The policy and implementation of that policy are indicated in the picture. The major areas of responsibility at the Secretariat level are; for Research, Engineering and Systems: international agreements, research and development funds, technology in general and the lead to a first production decision. That is for all systems except for our shipbuilding. For Manpower, Reserve Affairs and Logistics: implementation of international agreements, production, logistics and business and contracting.

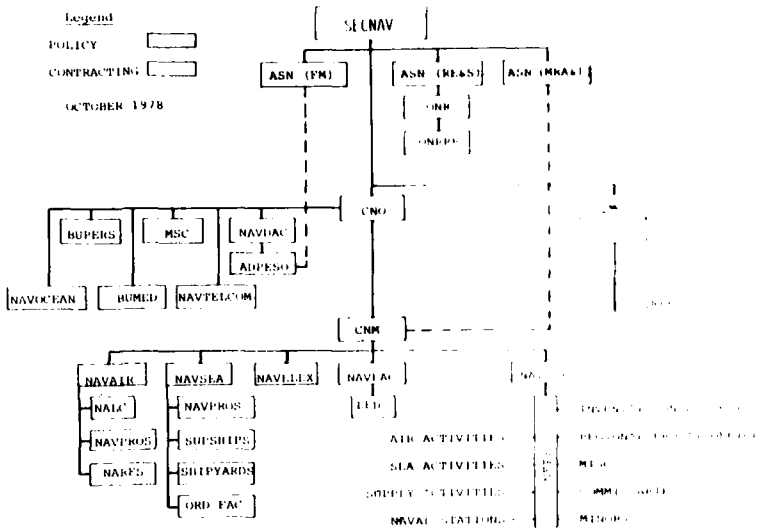


Figure 2

At the level of Chief of Naval Operations, the CNO, and the Commandant of the Marine Corp, CMC, rests the responsibility for establishing needs, recommending technology transfer and executing security reviews.

At the Chief of Navy Materiel, CNM level is the responsibility for technology analysis and it is the focal point for coordinating contract policy. The implementation of the Chief of Navy Materiel policies is carried out by the various system commands, who report directly to the Chief of Navy Materiel and in turn provide requirements definition, contracting and most importantly, program management.

The four major procuring commands in the Navy are NAVAIR, NAVALEX, NAVFAC and NAVSEA. Each has a specific charter from the Chief of Navy Materiel which specifies their areas of responsibility. It should be noted that contracting for most Navy equipment and support is done at or below the Systems Command levels. There is contracting done in the field activities, the research laboratories and the centers. However, the major systems development and production contracting is done at the Systems Command.

MAJOR NAVY REQUIREMENT ACTIVITIES

ACTIVITY	RESPONSIBILITIES
NAVAL AIR SYSTEMS COMMAND	NAVY AND MARINE CORPS AIRCRAFT AND ENGINES AIR LAUNCHED MISSILES AVIONICS AIRBORNE ORDNANCE AND ASSOCIATED LAUNCHERS AND ELECTRONICS SONOBUOYS TARGET DRONES PHOTOGRAPHIC, ASTRONAUTICAL, AND METEOROLOGICAL EQUIPMENTS
NAVY ELECTRONIC SYSTEMS COMMAND	SHIPBOARD AND SHORE-BASED ELECTRONICS: COMMUNICATIONS, ELECTRONIC COUNTERMEASURES, NAVIGATION FIXED UNDERWATER SURVEILLANCE SYSTEMS SATELLITE COMMUNICATIONS LANDING AND AIR-TRAFFIC CONTROL AIDS
NAVAL FACILITIES ENGINEERING COMMAND	NAVY AND MARINE CORPS PERMAMENT FACILITIES CONSTRUCTION, MAINTENANCE, AND REPAIR CRANES, POWERPLANTS, FLOATING PILEDRIVERS, BOILER PLANTS, ELECTRICAL GENERATORS
NAVAL SEA SYSTEMS COMMAND	SHIPS AND SUBMARINES BOATS AND WATER-BORNE CRAFT SHIPBOARD ORDNANCE AND ASSOCIATED LAUNCHERS AND ELECTRONICS SURFACE LAUNCHED MISSILES, PROJECTILES, TORPEDOES, MINES SHIPBOARD RADARS AND FIRE CONTROL SYSTEMS MARINE CORPS AMPHIBIOUS VEHICLES DEMOLITION, SWIMMER VEHICLES, AND WEAPONS

Figure 3

The specific responsibility areas are shown in Figure 3 and these responsibilities include the testing, evaluation, production and support of all the related systems and subsystems. There exists Memoranda of Understanding between the Systems Command concerning equipment which is multiplatform oriented. Note that conventional ammunition for Navy and Marine Corps guns is not procured by a Navy command. The single manager for conventional ammunition, the SMCA, under the Department of the Army has that responsibility.

The following discussion is organized around these topics. I will address the current acquisition policies in the United States Department of Defense, the necessity for foreign collaboration and the Memoranda of Understanding in areas of agreement. I should address the mutual technology and production

agreements, comments on the classified data exchange and its inherent problems and a brief overview of the Navy Fiscal Year 1980 budget and funding for R&D.

I will very briefly outline a few programs in which the Navy has a deep interest and may be of interest to your country and industry representatives.

In summation, I will offer a few comments on where we need further interchange to work together to improve the international system acquisition process utilizing our combined capabilities and assets and how international cooperation can help, if directed towards specific needs.

Acquisition policies in the Department of Defense and the Navy have been evolving over many years. Many changes have taken place in the past several years and currently there are revised drafts and coordination at this time on the two major systems acquisition procedure Directives and the standardization and interoperability policy Directive.

Currently, agency head approval is required for all Mission Element Need Statements known as MENS (Figure 4). This document replaces the older OR, the operational requirement. The MENS must be approved before a major program can proceed and is now considered to be Milestone Zero in the DSARC process, although no DSARC decision is required at the Milestone Zero point. As you recall, DSARC is the acronym for Defense Acquisition Review Council.

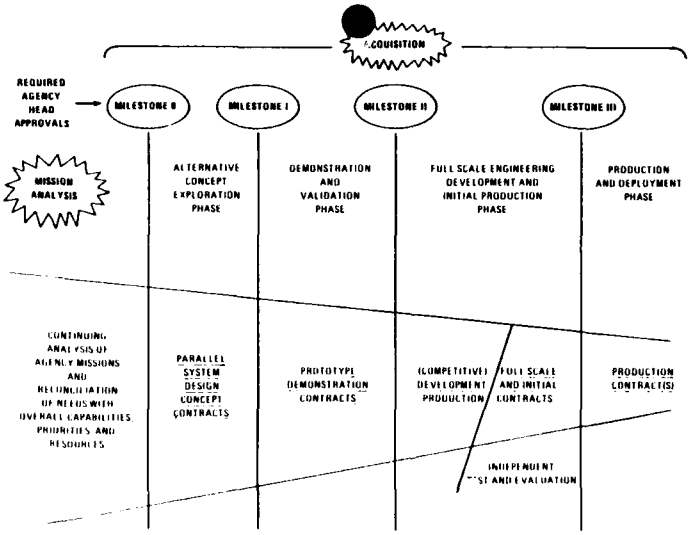


Figure 4

Approval of the MENS allows for budgeting for the program, for the establishment of a program manager and associated staffing and shortly thereafter

the development of the acquisition strategy, which must be updated at each subsequent milestone and presented at the DSARC. Between the time the MENS is approved and the first milestone (DSARC-1) the program manager will develop a program around the utilization of industry for concept formulation of systems, to meet the specific MENS requirements and to develop his acquisition policies around these concepts to endeavor to continue competition as long as possible prior to Milestone Three, the production decision.

In the latest policy Directives, whenever a program has international implications NATO RSI must be considered and reported at each milestone, including progress and efforts made to insure foreign participation.

From the very beginning of the program, NATO doctrine and NATO threat assessments must be used in the MENS development and the mission need of the NATO member should be considered. If there is no statute on national disclosure policy against the solicitation of foreign participants, NATO member contractors should be solicited for bids and proposals for the system and components.

During the pre-feasibility or concept formulation phase the program manager should consider existing or developmental NATO member systems that might meet the mission need. Identification of reasons for not using NATO systems must be provided. Also, plans should reflect any cooperative development feasibility and possible co-production or subcontracting may be appropriate.

During all subsequent phases of the DSARC cycle the planning for international participation should be re-evaluated and plans redefined.

The U.S. position on third country participation, sales, R&D cost recoupment or sharing and the release of any new technology shall be identified. Included in the plans should be possible host nation support requirements for the weapon system.

Several Directives currently exist which recommend and encourage the collaboration with NATO countries and other Allies. In this vein the designation of major systems is automatically attached to any acquisition which involves a second country. Additionally, the Office of Management and Budget Circular A-109 concerning major systems acquisition which is implemented within the Department of Defense by DoD Directive 5000.1, specifically requires vigorous pursuit of alternative system solutions. It states that alternative system design concepts will be solicited from a broad base of qualified firms. It further states that in order to achieve the most preferred system solution, emphasis will be placed on innovation and competition, concepts will be primarily solicited from private industry, and when beneficial to the Government, foreign technology and equipment may be considered.

In order for the successful implementation of DoD Directive 5000.1, the U.S. and European contractors must begin collaboration early in the concept stages. If they wait until full-scale development, it is often too late.

Also, the elements which must be considered in the life cycle costs of the conceptual systems and revised at each milestone are the estimates of the

impact of foreign military sales, cooperative development or production, planned production rates and learning curves for each alternative proposed.

As mentioned earlier, the program manager must summarize at each DSARC milestone the NATO RSI considerations and the ramifications of using NATO equipment. The DoD Directive on standardization and interoperability establishes the policies for implementation in the areas of highest priority.

These priorities are established by the Joint Chiefs of Staff and endorsed by the NATO Military Committee. These areas are: Command, Control and Communication Systems, cross-servicing of aircraft, ammunition and compatible data field, surveillance, target designation and acquisition systems.

The fifth area, interoperability and standardization of components and spare parts are goals in all programs. This Directive also defines the responsibilities of the Office of the Secretary of Defense for NATO Affairs and the Under Secretaries and Deputies concerning standardization and interoperability requirements and goals.

For several years attempts have been made to improve the cooperation in research and production on both sides of the Atlantic. The two-way street concept led to misinterpretation of goals and intents, and there is disagreement on how much military equipment should be procured from one another.

Requirements for 100 percent offset of all procurements remain a stumbling block to the success of this concept. Another concept is the family of weapons concept, which involves the division of development of new systems. At the end of the development each country makes available their developments to the other participants for licensed production.

When operating in collaborative agreements, the applicability of the laws and statutes of the various countries is cited as a major stumbling block. In general, each country's laws are made to protect its industries and contractors. Therefore, the thorough knowledge of these regulations is essential to doing business internationally.

In the U.S. there are several laws, such as the Buy American Act, Balance of Payments Program, and Special Metals Act, to name just a few. However, many of these laws are waived for NATO countries.

Auditing of records for appropriated funds used requires collaborative effort. Opposition to the audits have been voiced by several foreign governments and steps have been taken to overcome these problems. These audits have been viewed as inroads into the sovereignty of the foreign governments in some cases.

In general, there are many procedural and economic areas which must be addressed and resolved which are precursors to becoming involved in the technical areas peculiar to the acquisition of major systems.

There are several means already available which allow for more collaboration. The use of Memoranda of Understanding between our governments covering

the areas of mutual interest is a key step in collaboration. Programs to institute dual production agreements have been considered by some as too costly because of the establishment of two identical production lines. There are advantages and disadvantages to this concept, and they must be addressed on a case-by-case basis.

Cost cannot be the only controlling factor considered in a dual production decision. It may be militarily more advantageous to build lines even if the costs are 50 percent higher or more. As mentioned previously, the family of weapons concept which is currently under consideration within NATO is another fruitful area for further discussion.

It should be remembered that the ultimate goal of any collaborative agreement within the United States and European groups is to increase our collective combat force effectiveness and to exploit all our combined resources for the defense of the United States and Western Europe.

The Memorandum of Understanding is one of the tools available to increase the cooperation and collaboration between government and industry. The MOU is a negotiated agreement between government's defense agencies and signed by a member of the Executive Branch of government.

It is important to remember that these are Executive understandings only, and do not override any existing laws or regulations of the agreeing countries. However, waivers to certain laws and regulations may be forthcoming provided they are properly processed within the United States Government and are identified in the MOU.

Generally it is encouraged that each country's respective industries attempt to establish their own agreements or licensing rights with United States companies rather than executing MOUs for equipment, technology or systems not covered by current MOUs.

The purpose for the use of the general MOU is for the facilitation of competition by the NATO defense industry in the defense market of the various NATO countries. The MOU waiver of the buy national restrictions are on a reciprocal basis. We have negotiated agreements with Norway in May of 1978; the Netherlands, July 1978; Belgium, July 1979; and Portugal, March 1979.

Each is somewhat different depending on the current national needs of each country. One of the direct benefits which should be forthcoming from the expanded collaboration between NATO countries is the establishment of international business practices which will facilitate the implementation of licensing, proposal preparation, and bidding procedures.

MOUs are not generally written to address any one specific system or component, but speak of cooperation and collaboration in general terms. The basic premise of these agreements is that the governments and industries of the respective nations will acquire the necessary information and stay abreast of the developments and needs so that they can respond to the other country's research, development and procurement requirements. Also, they and their representatives will maintain current working knowledge of the other country's acquisition policies and regulations and be prepared to respond to requests for proposals and information in the competition for new systems.

The overlying concept of the MOU is to allow for free competition for all relevant procurements of defense related systems and equipment. Included in the MOU is reference to restricted list items which are generally those items on the emergency mobilization list, or items which are critical to the operational use of some particular system.

The MOU allows for the use of the acquisition policies of the countries involved, and generally includes clauses allowing for removal of the cost differentials and permitting duty-free entry of the product, thereby allowing for bid evaluation on a more equal basis.

For example, all equipment under the particular proposal submission or contract will be priced without using price differential, and would enter the respective country duty-free.

It is a goal of the MOU that the industries of the agreeing countries be considered on an equal basis with one another. If there are fully qualified producers or government resources in their country, they are allowed to bid on similar equipment or systems in the other country.

Generally the MOU is in effect for a period of ten years, and will be extended for five year periods unless neutrally decided otherwise. To terminate the agreement prior to the ten years, six months written notice of termination must be provided.

The intent of all MOUs is to increase cooperation in the fields of research, development, production, procurement and logistic support, in order to make the most cost effective and rational use of all the resources available for defense, insure the widest possible use of standard or interoperable equipment, and finally, to develop and maintain an advanced industrial and technological capability for NATO, and particularly with respect to the parties which are included in the particular MOU.

Addressed in the MOU are the use of technology transfer and follow-on production contracting when applicable. There are reams of data concerning the various types of agreements and what can and cannot be included in the development and sale of systems and equipment.

In the NATO initiatives introduced by President Carter in 19[illegible] and further reaffirmed at the Washington Summit in 1978, a plan has been developed by the Department of Defense for cooperative development and production of elements in NATO.

This plan includes the three basic areas I have been discussing -- the general MOU, dual production, and the family of weapons concepts. The Under Secretary of Defense is committed to a vigorous execution of these plans. It is considered essential to pursue these efforts in order to compete effectively against the impressive modernization programs being carried out by the Soviet Union.

The U.S. Congress had continually backed the rationalization, standardization and interoperability program, and has directed efforts to continue in this area. The basic guidelines for all offset agreements is in the Military

AD-A169 519 PROCEEDINGS OF THE SEMINAR ON US-ITALIAN ARMAMENTS COOPERATION HELD IN WA..(U) AMERICAN DEFENSE PREPAREDNESS ASSOCIATION ARLINGTON VA 2/3

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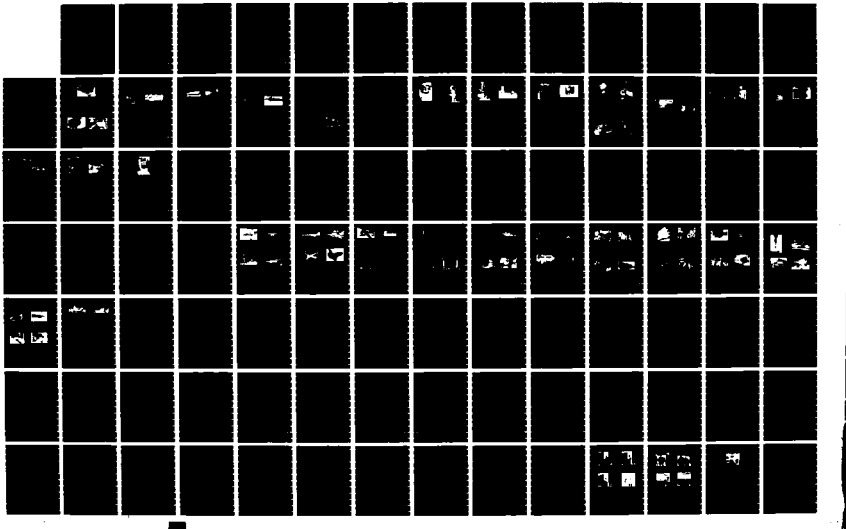

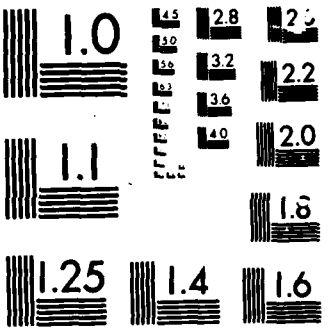
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Assistance and Sales Manual, the MASM which provides the guidelines for offsets and reciprocal purchase arrangements with foreign countries in connection with foreign military sales.

There are many statutory restrictions, logistic problems and other constraints which might restrict the availability of the Department of Defense to meet all the commitments under the offset agreements.

Another type of agreement is the coproduction and offset agreement, which allows for production of the same components by both countries. Areas for concern are the use of production quotas and possible misunderstanding as to the quantities which each country will produce and sell to the other. Many pitfalls could exist in these agreements, and caution in their use is recommended. Clear, concise wording is essential in the contract.

The policy of the United States is to promote trade and commerce with other nations, and to control the export of goods and technology which would significantly contribute to the military potential of other nations, when it would prove detrimental to the national security of the United States.

There are many Directives, Instructions and Memoranda convering technology transfer. I will mention just a few here, which should be of interest to any country intending to do business with the United States Navy or the Department of Defense.

Many of the impediments to better and more meaningful cooperation and collaboration between our countries relates to the classified technical data exchange. The real need for adequate information exchange is exemplified by our reduction in duplicative efforts.

The more data we can transfer, the less time and money we expend on reinventing the wheels. The U.S. Navy and the Department of Defense are making considerable efforts to open industry and Department of Defense sponsored symposia to foreign contractors and defense personnel on a more regular and timely basis.

Notification to the foreign defense community when pre-solicitation conferences are being held and reducing the classifications to more realistic levels are two areas which are being actively pursued and have shown some positive indications of progress.

The providing of the MENS, statement of work and requirement documents to representatives of the foreign governments, and in time for the submission of a credible response is being pursued within the Navy whenever appropriate.

Inherent in this action is the presumption that the foreign governments and industries already have acquired an understanding and are aware of the policies and procedures which must be followed by the Navy and Department of Defense in execution of a weapons system acquisition strategy, as well as what is expected of them in providing the proposals.

Familiarity with the proposal preparations, submission and evaluation procedures utilized by the various contracting agencies in the Navy is invalu-

able if you are to present a competitive bid, along with some knowledge of those items that cannot be procured from other than U.S. sources.

There are program areas open today and there is every indication that more opportunities will be forthcoming for international participation in Navy programs, such as the Navy Advanced Trainer System, the VTXTS.

Due to the abundance of classified data which is involved in any military defense system, it is necessary to know that there are very explicit procedures and directives to follow concerning the requests for classified data. It is the policy of the United States that all classified military data be treated as a national security asset which must be conserved and protected.

Disclosures and denials of such information to any foreign government or organization are made only when authorized by those officials having the required authority and after determining that all the requirements of the National Disclosure Policy are met. A common standard for disclosure and denial is also contained in DoD Instruction 5230.17.

Release of strategic war data can only be approved by the Secretary of Defense, the Deputy Secretary of Defense, or the Joint Chiefs of Staff. Despite its ominous tone, the need for security is well known throughout NATO. A significant amount of the classified data is already available to the NATO alliance.

Threat data, scenarios, and so forth are generally well known concerning the NATO areas. In all security exchange agreements, the minimal areas which are agreed to with the United States are that no third party will be given access to any of the classified data covered by the agreement, that essentially the same level of physical security will be given to the documents, and that the use of such data is restricted to the specific areas included in the agreement.

These areas are not controversial, but must be identified and included in the documents covering transfer of classified data. The current Foreign Disclosure Automated Data System, known as FORDAD, is available to be utilized whenever appropriate. It is designed to allow for improved management of the disclosure program through centralizing information storage and retrieval for classified military information to be transfered to foreign governments and international organizations.

The basic sequence of events which occur in the acquisition of all systems with the Navy are depicted in Figure 5. It should be noted that prior to the solicitation appearing in the Commerce Business Daily, there are many events that have occurred.

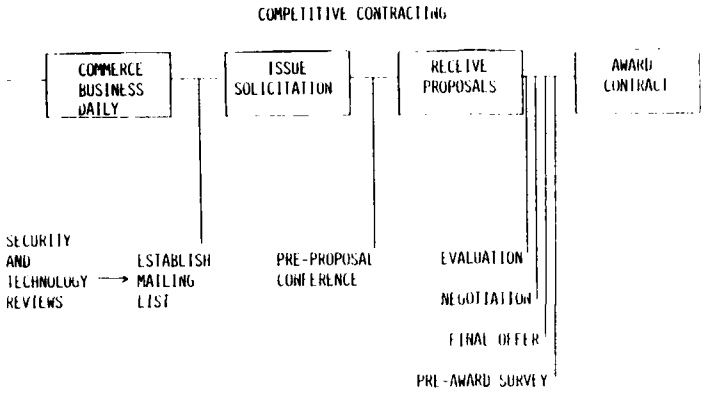


Figure 5

As discussed earlier, the Mission Element Needs Statement, the MENS, and the requirements and statements of work for the concept formulation phase of a major weapons system development has already been produced and probably distributed to industry.

In the competitive arena, generally a request for information is issued requesting companies to provide data on their capabilities in the particular area of interest so that a list of credible, capable contractors is established by the Navy. These contractors will receive the follow-on request for proposal or request for "the so-called RFP or RFQ."

The issuance of the solicitation is to qualified bidders. However, any company can request a copy of the RFP. There may or may not be a pre-proposal conference. However, questions concerning the proposal can be asked during the period up to the submission date. They are answered by the assigned contracting officer only, and all questions are summarized and replies sent to all the RFP holders.

After the submission of the proposals, they will be processed in accordance with the evaluation procedures outlined in the request for proposal. The grading procedures for the technical approach, the cost, and so on, will be employed for the comparison of the presentor proposals.

After the evaluation teams and the Acquisition Selection Board have determined the best proposal, a negotiation with the winner or top several contractors will take place, and a final offer will be presented. This is the final price.

In production contracts, there is a requirement for a pre-award survey of the production facilities which the offeror has proposed to use in conjunction with the production work. This survey must be successfully completed prior to contract award.

Figure 6 shows a comparison of the DSARC scheduling and milestones as they relate to the recommended Periodic Armament Planning System, the PAPS, which is utilized by most of your European countries. They are very similar and have related identifiable milestones.

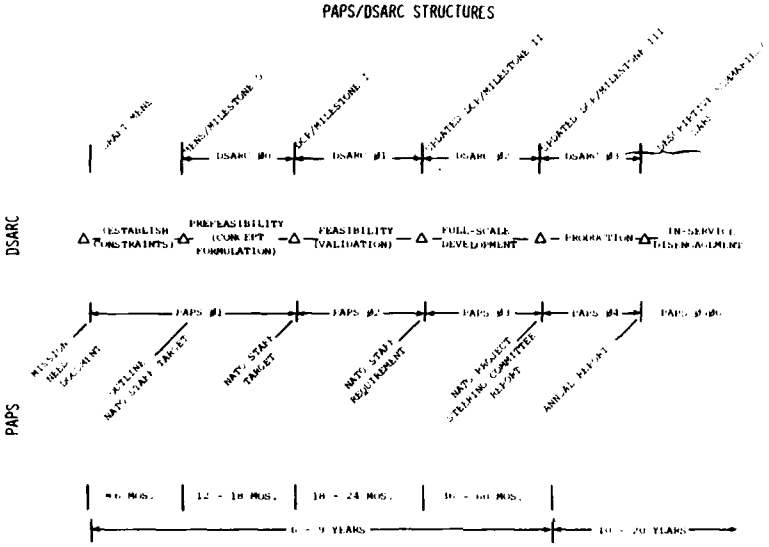


Figure 6

The initial efforts focus on the development of mission needs and the early life cycle of the weapon system when cooperation between partners can most effectively be achieved. This recommended framework, the PAPS, has been developed and recommended by the Conference of National Armament Directors, who have as their goal an institutionalized process for planning and programming within the Alliance. This goal is substantially the same as the goals established for the rationalization, standardization and interoperability program.

Figure 7 shows the fiscal year 1979 and the fiscal year 1980 Navy funding and procurement category. Most of the increase has been in the general purpose area. The research and development budget, as you can see, is essentially the same.

PROCUREMENT NAVY
($ MILLIONS)

	FY 79	FY 80
COMBAT FORCES		
STRATEGIC	4,200	4,300
GENERAL PURPOSE	19,200	21,100
RESERVE	900	800
INTELLIGENCE AND COMMUNICATION	1,000	1,100
BASIC SUPPORT		
TRAINING, ADMIN., ETC.	8,000	8,700
SPECIAL COSTS		
RESEARCH AND DEVELOPMENT	4,600	4,600
TOTAL NAVY	37,900	40,600

Figure 7

More pertinent to our discussions today is the Navy portion of the research and development funding for fiscal year 1980. This is broken down in Figure 8 by the warfare area. The Naval warfare area is $4.4 billion for fiscal year 1980. The Navy has allocated a significant portion to the systems and technology program or the technology base, approximately $.9 billion.

NAVY R&D FUNDING BY WARFARE AREA
($ MILLIONS)

	FY 79		FY 80	
TECHNOLOGY BASE	782		916	
RESEARCH AND EXPLORATORY DEV		555		650
ADV TECHNOLOGY DEMONSTRATION		196		229
NAVY ENERGY PROG AND OTHERS		31		37
AIR WARFARE	942		841	
AIR STRIKE		555		495
ANTI-AIR WARFARE		311		278
VSTOL		19		17
AIR DEFENSE		57		51
SURFACE WARFARE	441		316	
TOMAHAWK		152		103
OCEAN SURVEILLANCE		30		22
ANTI-SURFACE WARFARE		85		62
SHIP DEVELOPMENT		174		129
ANTI-SUBMARINE WARFARE	524		675	
GENERAL				
UNDERSEA SURVEILLANCE				
LAMPS				
MINE WARFARE	265		76	
STRATEGIC WARFARE	533		433	
U.S. MARINE CORPS	95		92	
COMBAT SUPPORT	725		870	
TECHNICAL INTEGRATION		426		513
AMPHIBIOUS WARFARE SUPPORT		22		26
ELECTRONIC WARFARE		116		139
SUBMARINE DESIGN		116		139
COMBAT SUPPORT		45		53
COMMAND AND CONTROL	158		191	
NAVIGATION		24		29
GLOBAL COMM		24		29
TACTICAL COMM		40		48
TACTICAL COMBAT SYS INTEG		70		85
TOTAL	4,465		4,434	

Figure 8

Several key, near-term technology needs should include a fresh perspective of international cooperative armaments development programs and could be expected to generate some synergism. There are several problems representing persistent, long standing technology problems which prevent the fleet from achieving its full potential to wage war. Let me now describe each of these problems in turn.

Historically, the ability of naval combatance to concentrate their fire power has been limited by their ability to see. First, by the optical horizon and in the current era, by the slightly farther horizon of radar returns.

Carrier task forces employ sophisticated and costly airborne platforms to extend the horizon. Surface battle groups, to a lesser extent, achieve some capability in this regard through the use of organic aviation such as helicopters, less capable than the aircraft which can be embarked on the large deck carriers. The over-the-horizon problem and the technology to solve it is excitingly unique depending on whether the threat platform is moving by air or by sea.

Space-based censors provide new and promising opportunities, but also carry unique penalties for partial problem solutions. In large measure, all solutions and naval problems represent performance, technological and economic compromises.

I do not know today what the best solution to the over-the-horizon problem is, only that it's fulfillment represents an extraordinarily important need. A host of solutions is under investigation, each embodying innovative technology and concepts -- flight into air naval platforms, new communications networking and data processing techniques, and combinations of fixed-wing maritime patrol aircraft mission capabilities, with the need of surface naval platforms, just to mention a few.

What is important to this conference and to the interest of its participants is not so much a solution, which is not yet known, but the identification of the opportunity for the generation of a cooperative solution.

We face the same problem in the NATO Task Groups in that the use of all NATO assets, including land-based and space-based, must be addressed in the development of a solution to over-the-horizon detection and targeting problem.

Few technological innovations in the history of naval warfare have so profoundly effected the survival, indeed the viability of the surface fleet as have recent advances in Soviet naval aviation, with the air launched anti-cruise ship missile and their supporting electronic countermeasures equipment. I refer, of course, to the growing fleet of backfire bombers and their associated systems where most important military mission potential has, in my view, been overshadowed by strategic debate.

In America, I believe that we have been slow to recognize the profound impact of the anti-cruise ship missile on naval warfare. After abandoning the early operationally cumbersome anti-ship missiles developed in the 1950's, we fell at least two system generations behind the Soviets in offensive fire power capability in this area.

Almost reliance on carrier-based aviation has created a problem of damaging proportion unless quickly solved. Fortunately our European allies have kept the pace with the Soviets in offensive design, and new U.S. systems such as HARPOON and TOMAHAWK are now operational or are completing development.

Also, our new air defense radar and computerized combat management system, the EGAS system, is about to enter its fleet.

The backfires are a challenge to the EGAS system and other systems and must be addressed with advanced technology. F14 aircraft on combat air patrol represent an extradordinarily thin margin of viable defense under most weather conditions. The surface based anti-air warfare systems, such as Standard Missile, guns, and the close-in weapons system could have large numbers of targets to engage and very little time in which to engage them.

If any problem is of interest to our European allies, it should embrace those capabilities essential to maintaining our sea lines of communication. In the last two great wars involving the continent, American shipping has helped to eventually tip the balance in favor of the Allied forces.

Unless a complete solution is found to the stand-off jammer problem which degrades the effectiveness of our ship defenses, that contribution in a future conflict is in some jeopardy. A Mission Elements Needs Statement by which the stand-off jammer problem will be addressed is currently being staffed. I must point out, however, that the Congress recently deleted the fiscal year 1980 R&D fund for systems development.

A better definition of this problem area by the Department of Defense will be required and is being pursued through generation of the Mission Element Needs Statement.

The objective of the battle group anti-air warfare coordination program is to provide the naval battle groups which improved the AW defense capabilities by exploiting and employing the potentials of all anti-air warfare assets in a naval battle group. You can see in Figure 9 that there are many assets in a U.S. Naval battle group.

BATTLE GROUP ANTI-AIR WARFARE COORDINATION

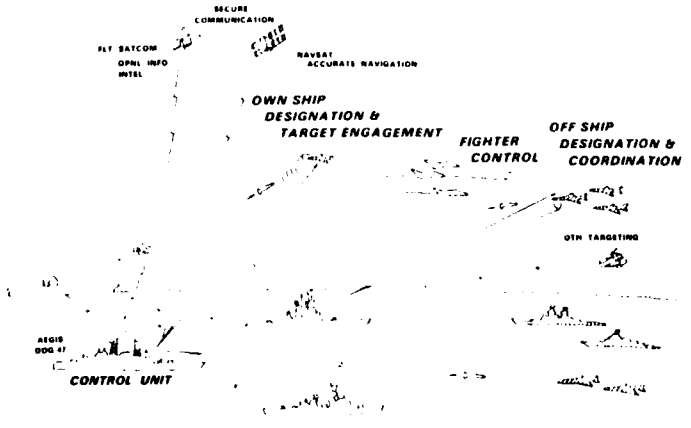


Figure 9

Airborne threats to the force must be engaged and destroyed with a minimum expenditure of battle group ammunition and other embark assets and minimal risk to battle group elements.

Figure 9 illustrates the concept of battle group anti-air warfare coordination and the elements and operations involved in anti-air warfare coordination. The major non-EGAS system elements involved in the program are: surface-to-air configured missile combatants, such as the CGs, CGNs, and DDGs; aircraft, including fighters, surveillance and early warning aricraft; weapons, including the proposed stand-off jammer intercept missile; and other fleet support systems, such as communications, navigation, and intelligence satellites and other sensor systems.

The battle group anti-air warfare coordination program will exploit the potential of the new EGAS combat system to accurately collect, process, display and disseminate its information to other AW combatants in order to provide real time battle management which is the essence for more effective AAW coordination.

The program will identify battle group AAW requirements and develop any required equipment or computer program elements for inclusion on participating units in order to effect real time coordination of sensors and weapon assets. It will address the means to transfer and correlate weapons data among units of the force, and the grid lock process necessary to accomplish this correlation.

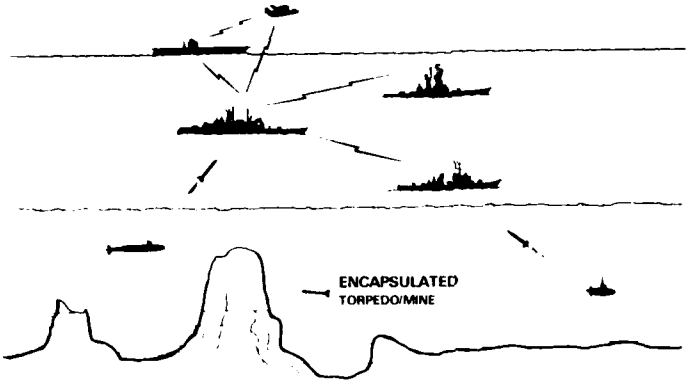
It will further provide computerized displays and controls for the battle group AAW coordinator to release saturation of the evaluation and decision process at the battle group level.

Battle group coordination will include the sharing of EGAS radar data with other elements of the battle group on a timely basis. Battle group coordination will result in increased fire power and improved efficiency by improving forced threat evaluation and target-to-weapon pairing and scheduling.

Improved data exchange, together with automated procedures and doctrines will allow reduced battle group reaction time against an AAW threat. The program will develop a system to improve coordination of all the AAW functions. This program is to be developed in three phases. Phase 1 concentrates on a near term improvement to battle group coordination and utilizes battle group elements and systems that will be available in 1983. Phase 2 is intended to integrate systems development such as JTIDS in the GPS -- these are satellite netting programs -- into battle group coordinations. Phase 3 planning provides an opportunity for battle group coordination needs to be considered in the design requirements of future systems. Battle group AAW coordination must, in addition, relate the forces where EGAS ships are either not available or have been damaged or sunk.

In almost every war game our macroanalysis of our capability against that of the Soviets indicates that torpedoes become one of their most dominant weapons. This is not only because their submarine fleet so greatly outnumbers ours and taxes our ability to counter it, but because of the fact that for many operational scenarios, the torpedo becomes the weapon of choice.

Despite this, only a relatively small amount of resources have been applied to hard kill surface-ship torpedo defense (Figure 10). Most of our work and yours has gone into counter measure efforts which may or may not work. More disturbing than the anti-platform scenario dominance of the torpedo, and the almost wholly countermeasures focus as our means of countering it has been the technological trend of the past decade or more, which has tended to meld the mind with the torpedo.



SURFACE-SHIP TORPEDO DEFENSE

Figure 10

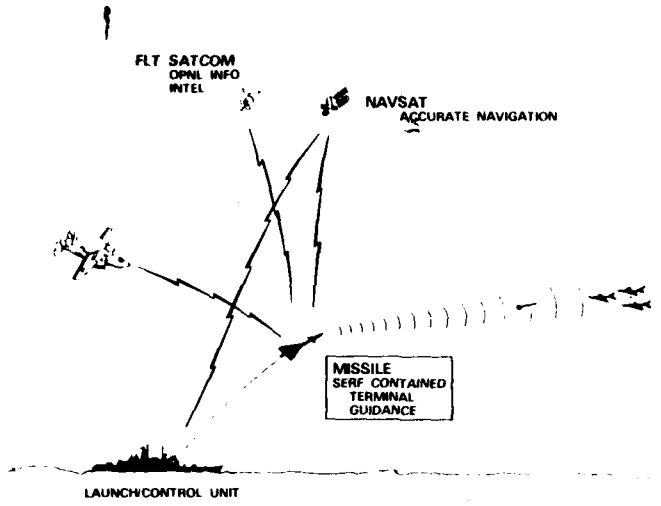
In effect, the present and future threat is an underwater propelled destructive device against which current defensive methods are wholly ineffortable. The device itself must be destroyed or effectively countered.

We recently redirected the anti-ship torpedo program because analysis and concept formulation showed this program to be a particularly difficult technology problem. This is an area where the inventiveness and cooperative competition of an international program might produce some results.

In any event, it is clear that a broader industrial and scientific base than our own way may be required if a deployable capability is to be attained in the near future.

Despite the extensive technology and operational payoff intrinsic to the multi-mode missile guidance approach, few such systems have reached operational use. Perhaps the reason lies in the cost conservative approach to weapon selection or the way we go about the teaming process in harnassing our industrial sources to do the job.

The majority of active/passive radio frequency approaches fail to embody anywhere near the wealth of technology available in our anti-radiation missile system designs. The technology is here today to develop threat responsive, next generation multi-mode guidance systems, particularly in the extensive advances made through micro-processor technology (Figure 11).



MULTI-MODE MISSILE GUIDANCE

Figure 11

I will leave to you the task of defining and marketing innovative solutions. My recognition of this area of special interest is primarily to indicate that even in a field or product line where the investment research has been most extensive, opportunities exist for the country or industry with the new and innovative approaches.

Research and development capabilities and your knowledge of the needs of the Navy, and becoming more acclimated to the Navy contracting process and the Department of Defense acquisition policies, such as DoD Directive 5000.1 and other controlling documents can insure the Navy and U.S. industry becoming aware of your product.

A total awareness of the U.S. Congress and Department of Defense perspective on the use of foreign contracting and equipment is essential to your success. In the recent years, great strides have been made in identifying the problems. Now the solutions must be forthcoming.

Any impediments which I have discussed are not immovable. It will take time, perserverance and a lot of give and take before they are all removed. The establishment of your industrial defense capability on equal basis with corresponding industries in the United States is essential.

One means is to have the systems or equipments and components tested and qualified against U.S. standards and military specifications for those types of equipment, and secondly by entering into teaming agreements with like industries in the United States. Ultimately the realignment of company discretionary research and development funds toward the satisfaction of the research and development needs of both the United States and your country as perceived by representatives and government agencies are required.

I am delighted to have been able to address such a large and very cross section of industry and government representatives at this seminar. My final comments concern some areas where I believe international cooperation and collaboration can help us all in achieving our defense goals.

In proposing conceptual designs for new Naval weapons systems, increased funds and attention to the total system and the total environment in which it is to function is essential. Conceptualization of systems operation in various scenarios and the expected impact of the environment and operated on a system must be considered.

Knowing the Navy user and the fleet is only a portion of the problem. The system and its interrelationship with all other elements of the weapon system and its environment is critical in determining its life-cycle-cost and operability.

More focus is required on the downstream effects of current designs and more innovation in the approaches to assure our ability to grow to system is necessary to allow for increased flexibility in configurations to be utilized against new or revised threats.

More attention and flexibility in software application is needed, as well as considerations which will ease modification and allow for interoperability in software systems.

Finally, we need to maintain closer working relationships and have a direct and continuous interest and active participation by our respective countries in attempting to find ways to work together more efficiently and effectively.

CHAPTER 11

ITALIAN INDUSTRY CAPABILITIES IN NAVAL SYSTEMS

DR. PIETRO ORLANDO

Italy has been building ships for many thousands of years; sometimes quite successfully. However, we do not want to go that far back. Traditionally, with Italian unity between 1860 and World War II, Italian naval industry had completely fulfilled the requirements of our Navy. The pattern of development of our industrial capability in this field was then typical of a major European country with colonial interests, as we were in those years. Italian ships were employed in many different waters and the country entered World War II with a very large and powerful fleet, all of Italian origin.

After World War II, production was stopped for a few years as a consequence of both wartime destructions and economic distress and of the implementation of policies in accordance with the Armistice and Peace Treaty clauses. However, starting from the early fifties, the Italian Navy resumed the past policy of supporting an independent naval ship building capability in the country. Thus, capitalizing on already existing skills and know-how, production started again in reorganized and modernized shipyards.

At an increasing pace, the necessary collateral industry was also redeveloped for the supplying of the whole range of naval systems required for the assemblying of a modern ship: sensors, weapon systems, navigational equipment, propulsion, etc. A significant portion of this work was performed in cooperation with foreign industrial complexes, particularly American. As a result, the Italian naval industry regained its traditional capability to design and supply the most sophisticated types of naval vessles required by modern warfare, fitted with fully Italian originated equipment.

As a significant boost to this capability, in 1974 a program was launched to modernize the Italian Navy equipment, in accordance with a so-called Naval law passed on by the Parliament to provide financial support for this modernization.

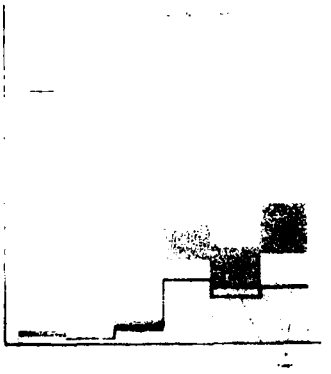
A coordinated and well-balanced ship production plan was established and a number of new classes of ships were put into production. In particular, the program called for new minehunters, conventional SSK submarines, fleet support vessels, frigates, destroyers, and a new type of through-deck helicopter carrier cruiser.

Besides being in parallel to and as a consequence of the increase in activity for the satisfaction of internal requirements, the export of naval ships received a significant impulse. Thus, in the last four or five years, the export components of our naval shipbuilding and naval systems turnover has covered more than the 50 percent of the total. On the one hand, this may be interpreted as a sign of the favor encountered by the Italian products in the world.

markets; on the other hand, it shows that the existing structures of our naval industry are, to a great extent, designed to support a hopefully ever-expanding activity of international collaboration.

In order to give an idea of the overall size of the Italian naval industry, we have plotted the naval shipyard output from 1972 to 1978 (Figure 1). The diagram includes the combat systems belonging to the ships built in Italian shipyards and the spares but excludes the supply of ammunition (rounds for guns, missiles, rockets, torpedoes, etc.). The export portion is also shown. The heavily marked line represents the total output at constant 1973 prices.

Figure 1



The trend in Naval shipyard output from 1972 to 1978 is quite favorable, particularly if considering that in the export market the shipyards are facing the fiercest competion in history, originated by the current merchant shipbuilding crisis. The export results would be even better by adding the value of the naval equipment exported for assembling on foreign-built ships.

The technological level of our naval industry can best be seen by giving you some examples of modern ships currently produced by our shipyards in accordance with the Navy Special Law, and by describing the most significant systems (sensors, weapons, command and control systems) assembled on Italian-built ships or exported to other countries.

However, we believe that a word should be said about the very centers where the ships are built, the shipyards (Figure 2 is an example). Italian shipbuilding has a diversified structure that may be synthetically quantified as follows:

- about 35,000 employees, distributed on small, medium and large-size shipyards

- 11 major shipyards, 5 of which are involved in naval shipbuilding; in particular, two of the major shipyards, Riva Trigoso and Muggiano in Northern Italy are entirely dedicated to naval shipbuilding.

Figure 2

The production system has been elaborated on the basis of the following concepts:

- ship production by "blocks," whereby a block is a tridimensional ship section complete with outfittings and machinery (Figure 3).

- rythmical block processing lines, operating on elements which, though necessarily different, are made homogeneous in work contents (Figure 4).

Figure 3

Figure 4

The blocks, geometrically compatible and completely outfitted, are finally assembled on the shipbuilding dock (Figures 5 and 6).

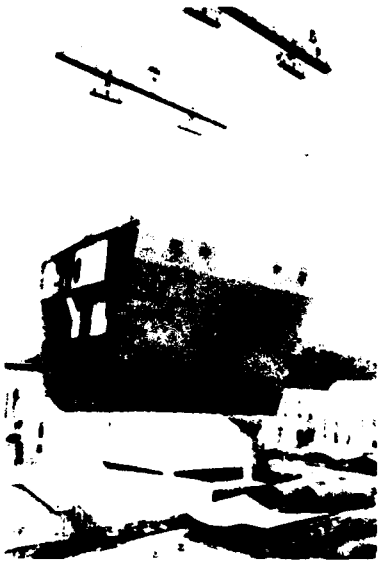


Figure 5

Figure 6

Among the ships built under the Italian Navy modernization program, we shall mention five classes that are, we believe, good examples to evaluate the industry's technical and technological capability. These are the SPARVIERO class hydrofoil, the SAURO class conventional SSK submarine, the LUPO and MAESTRALE class frigates, twenty of which are being built for the Italian and other Navies, and the GARIBALDI class sea control ship. We might also mention a successful 600-ton standard corvette, ten of which are now under construction for foreign Navies.

The SPARVIERO type hydrofoil is the result of a collaboration between the U.S. and Italian Navies, the Boeing Corporation and the Italian shipyards. She is basically a development of the U.S. Navy prototype PG (H)-2 Tucumcari (Figure 7). The ship can operate at a 50 Kn maximum speed and represents a typical application of aeronautical technology to shipbuilding. Her most interesting features are the waterjet propulsion and the automatic stability control system.

The SPARVIERO combat system includes one 3-inch dual purpose compact automatic gun, two S/S missiles on fixed launchers, a fire control system for both the gun and the missiles with the associated radar and optical tracking sensors, a search radar also used for navigation and a complete electronic warfare system.

The SPARVIERO may be thus considered one of the most advanced versions of the modern fast patrol missile boat, particularly suited for hit and run operations in relatively narrow seas. The ship is built in a series of 7 for the Italian Navy.

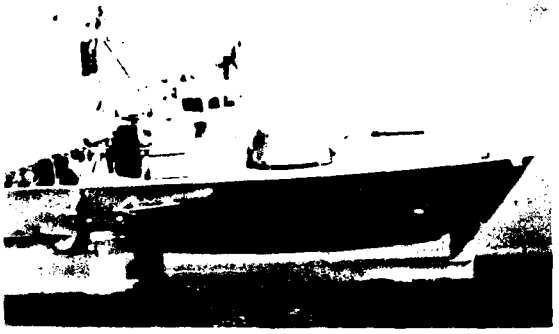


Figure 7

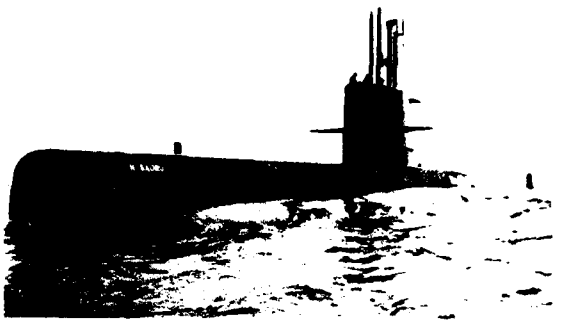


Figure 8

The 1450-ton SAURO class SSK submarine has been designed in accordance with the latest requirements of the evolution of underwater fighting techniques (Figure 8). Special stress has been put on those features and performances that, also in the near future, will undoubtedly be essential for efficient undersea combat, mainly in SSK and attack tasks.

The combat system includes 6 swing-out type bow tubes for 553 mm torpedoes, controlled by an automated fire control system. The torpedoes may be both wire-guided and non-guided, and are of the anti-submarine and anti-ship types. The ship is fitted with an integrated active-passive sonar. An advanced electronic warfare system is also provided. Great care was also taken in order to achieve a high level of optical and acoustical discretion.

The 600-ton standard class corvette has been particularly studied to concentrate on a limited displacement hull having many of the characteristics of a multipurpose frigate.

The unit, capable of a maximum speed of 34 Knots (37Kn with uprated engines), is supplied with alternative weapon system configurations to meet different operational requirements (Figure 9).

One of the configurations currently being produced consists of:

- 1 three inch automatic gun;
- 1 twin 40 mm gun;
- a surface-to-surface missile system with 4 single launchers;
- 2 triple torpedo launchers;
- an electronic warfare system;

- 1 search radar and a hull fitted sonar;
- a fire control system;
- a tactical command and control system.

On another configuration also under production, a helicopter deck is provided.

Figure 9

Figure 10

The 2500-ton LUPO class frigate (Figure 10) is a multipurpose unit designed to perform the following main missions:

- interdiction of maritime traffic lines;
- attack to surface ships;
- defense of naval forces and convoys from air, surface and subsurface attacks;
- shore support bombardment.

In order to accomplish all of these tasks the ship is equipped with a sophisticated combat system. The weapons include a 5 inch dual purpose automatic gun, two fully automatic short range anti-missile systems, one long range surface-to-surface missile system, one low altitude surface-to-air point defense missile system, torpedo launchers for anti-submarine warfare, a multipurpose rocket weapon system and one helicopter, equipped for both air-to-surface and anti-submarine operations; moreover, an electronic warfare system.

The sensors include a main surface and air search radar, a secondary surveillance radar, optical and radar tracking sensors associated with the gun and missle fire control systems, a navigation radar and a sonar.

A centralized command and control system for complete tactical evaluation and target designation is also provided together with telecommunication and data link equipment.

The propulsion plant, of the CODOG type on two shafts, is able to push the unit up to 35 kn maximum speed, the economic speed in Diesel mode being 20.5 kn.

The LUPO class frigates are being quite successful in the export market. Of the 14 units already built or being built, 10 have been ordered by foreign Navies. A number of other foreign Navies seem to be quite interested in this class of ships.

A derivative of the LUPO class is the 3000-ton MAESTRALE class frigate (Figure 11), 6 of which are being built presently for the Italian Navy. On the new unit, the anti-submarine operational capability of the LUPO has been increased, without decreasing the defensive components of the combat system and only limiting the S/S missile component.

Thus, the diesel engine power output was increased, a VDS, a torpedo tube launcher for long range anti-submarine torpedoes and a second helicopter were added, while reducing to four the number of LUPO S/S missiles on fixed launchers.

Consequently, the MAESTRALE, with a very limited reduction in her offense capability and performance (maximum speed is now reduced to 32.5 kn), provides a very significant additional warfare capability. Moreover, her larger dimensions mean further extra room for possible new weapon systems and forecast an excellent sea faring over and above what LUPO has already demonstrated.

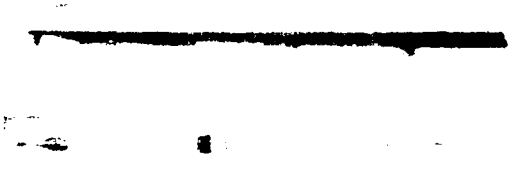


Figure 11

Figure 12

The Sea Control Ship GIUSEPPE GARIBALDI is a 13,240-ton full load displacement through-deck cruiser, designed to operate both independently and as part of a naval force, with full exploitation of her strong helicopter or V/STOL aircraft components (Figure 12). Her main design tasks are anti-submarine warfare,

command and control of naval and aero-naval forces, area survey, convoy escort, commando transport and fleet logistic support.

To these purposes, the GARIBALDI adds to the 18-strong helicopter or V/STOL aircraft force an unusual number of weapon systems such as 4 S/S missile launchers, two 8-cell S/A missile launchers for point defense, three close-range anti-missile defense system, six anti-submarine torpedo tubes and two rocket and chaff launchers. The combat system is completed by a large set of radar sensors (air surveillance radar, surface surveillance radar, tridimensional radar), IFF radio navigation systems, TACAN and an integrated command and control system for the whole range of combat functions. These also include an advanced electronic warfare capability.

Propulsion is provided by four gas turbines, driving two controllable pitch propellers through flexible couplings and reduction gears for a maximum continuous output of 80,000 HP.

The GARIBALDI is the result of the experience acquired by the Italian shipyards in the design and construction of naval vessels fitted with helicopter carrying facilities (cruiser VITTORIO VENETO, DUILIO, destroyer ARDITO, etc.). She may be defined as a good compromise between the necessity of reducing warfare costs and of satisfying the demanding requirements of modern sea operations.

Along with platform realization, the Italian naval industry has developed through the years the capability of supplying all the required systems for ships of significant size. The naval vessels that we have previously shown are Italian to a very large extent. The most significant non-Italian elements are, in general, components of systems designed, developed and manufactured in Italy.

Some systems, such as the NATO SEASPARROW, is produced in cooperation with other countries within the NATO framework. However, in these cases also, the Italian industry has in general developed alternative systems of similar performance.

Most of the systems are not only produced for the Italian Navy, but also exported to a number of countries. Our first export vehicles are the ships built in Italian shipyards for foreign customers. However, a very large flow of export contracts is related to the supply of single systems and ammunition thereof, where applicable, to other Navies, both of NATO countries and of the Third World.

On major surface ships, the equipment provided to implement the combat system command and control functions is designated IPN-10 (Figure 13). It is entirely of Italian design and manufacture. The equipment includes processing computers, horizontal conference-display type presentation consoles and subvertical single operator consoles, plus units actuating the distribution and conversion of data exchanged with the other elements of the combat system (sensors, weapon systems, operators).

The IPN-10 components are assembled in different configurations according to ship requirements and are equipped with the necessary operational software to provide short reaction times while handling large amounts of data.

Figure 13

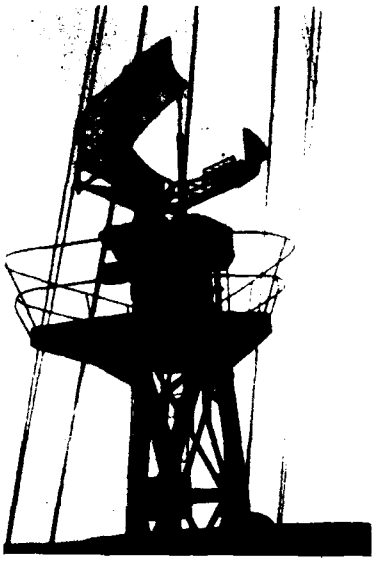


Figure 14

As the first input elements to the combat system we shall describe the radar sensors, in particular three surveillance radar mounted on the frigates and on the sea control ship in various configurations. They are all optimized for target designation to the weapon systems and for interfacing with automatic command and control equipment. They are:

The air search radar, RAN-10S, is an S-band radar using a coded waveform and digital signal processing in order to provide suitable target visibility even in heavy interference and intentional disturbance conditions (Figure 14). Due to code characteristics, this radar may simultaneously operate in frequency agility while preserving its interference cancellation capabilities.

The second radar, the RAN11L/X, is an integrated radar system consisting of an X-band transceiver for long range surface and low level air surveillance, plus an L-band transceiver for short range air surveillance and low and very low level target detection. The radar operates in simultaneous frequency diversity and interference cancellation and is endowed with good ECCM devices (Figure 15).

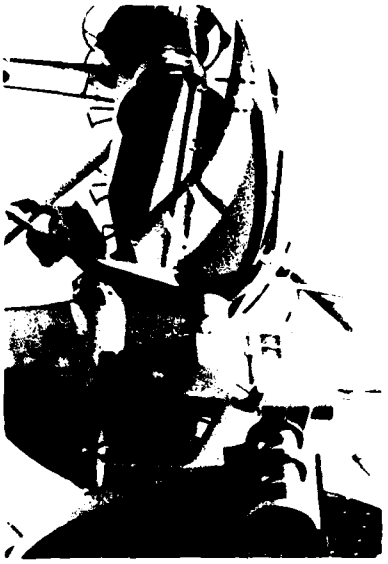


Figure 15

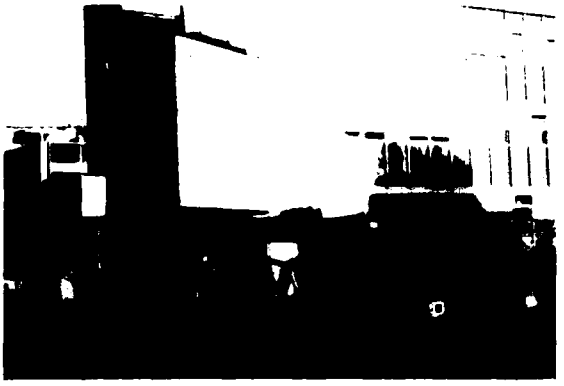


Figure 16

The third radar is a tridimensional S-band surveillance radar using a passive phased-array antenna with mechanical scanning in azimuth and electronic scanning in elevation (Figure 16). Beam stabilization to compensate for ship motion is also electronic. The waveform is coded with both phase and position modulation, allowing the monopulse extraction of the target elevation. Due to its design characteristics, the radar has good ECCM and anti-interference performance despite its low peak power and lightweight. In addition to the above sensors we would also like to mention a navigation radar used on our ships, designed and produced in Italy but also adopted in the U.S.A. for the PHM hyrofoil program with the designation AN/SPN-63.

Other input elements to the combat system are the sonar sensors. In the case of surface ships, these are one of the few elements imported from abroad. For instance, on the LUPO class frigates an American Raytheon sonar is used. However, the Italian industry has developed sonar for submarines, mounted on our SAURO class units. The device is called SISU (Figure 17) and integrates the functions of passive sonar, active sonar, passive range measurement, auxiliary interceptor, sonar emission interceptor, underwater directional telephone and own noise meter. This particular type of sonar allows the simultaneous tracking of one main target and three secondary targets.

Further elements providing, among other functions, inputs to the combat system are the telecommunication systems. The ones used on Italian ships are completely developed in Italy and are optimized for integration with command and control system (Figure 18). Their configurations are specific for each ship: they provide multifrequency transmission and reception in the modes required by national and NATO specifications (voice, data link 11-MTDS, crypto and pseudo-noise, etc.). They are generally automatically controlled by centralization sub-systems.

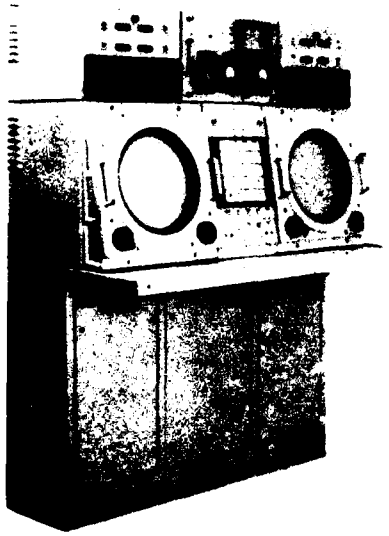


Figure 17

Figure 18

For the next generation of naval vessels, a new technology is being developed, this time in cooperation with American companies, that will make use of the advanced techniques such as the spread-spectrum, to provide high ECCM capability securing VHF/UHF communications against hostile electronic warfare such as interception or jamming.

Going now to the weapon systems and their fire control means, we shall first start from the anti-aircraft missile systems and multipurpose guns.

As elsewhere in the world, their functions on the Italian ships are generally controlled by a single fire control station; the Italian one is designated as the NA-10. In the MK-2 version, the NA-10 is particularly suitable for medium-to-large size vessels, from frigates to cruisers, while the MK-3 version is designed for light vessels with limited offensive and defensive armament. The NA-10 uses a tracking radar (Figure 19) backed-up by TV trackers (Figure 20) and may engage, upon designation from the ship's command and control system, a large number of airborne, surface and shore targets in a heavily disturbed environment, implementing fully automatic acquistion procedures. This also enables the joint or timed reaction of short and medium range guns and S/A missiles.

Figure 19

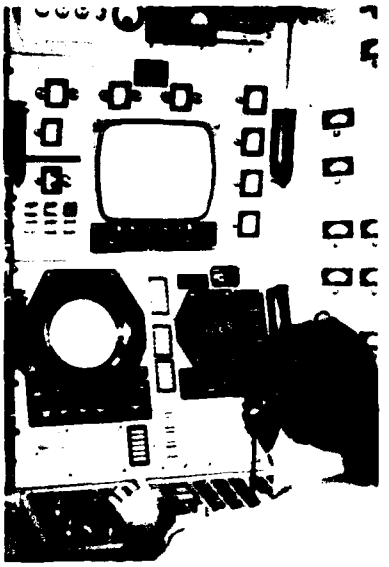


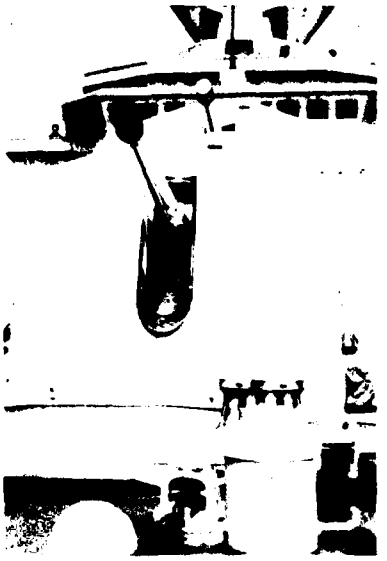
Figure 20

A first example of an Italian made naval gun is the widely known 3-inch "Compact" naval mount, also adopted by the US Navy with the designation MK-75 (Figure 21). It is a multipurpose, rapid fire, automatic gun whereby, for the first time in the world, light alloys have been used in the stress section of the mount.

The same technique has been adopted in the 5 inch gun of the LUPO and MAESTRALE class frigates, thus realizing an exceptionally lightweight weapon characterized by quick reaction, high firing rate and long endurance (Figure 22).

Figure 21

Figure 22



Besides these "Compact"-type naval guns, Italian industry is also capable of supplying what we may call "integrated naval guns," singularly provided with autonomous fire control means, equipped either with tracking radar for all-weather operations, or with TV or laser trackers for daytime and nighttime fair-weather operations.

The S/A point defense missile system is called ALBATROS (Figure 23) and is the Italian equivalent of NATO SEASPARROW. ALBATROS was entirely designed and developed in Italy and has enjoyed a large international acceptance. Its ammunition is the passive-radar-homing multirole missile ASPIDE (Figure 24), also developed in Italy to cover, as a second generation weapon, the ship-to-air, air-to-air, and surface-to-air roles previously covered by the American SPARROW missiles. These were also produced in Italy under license on an entirely independent production line.

Figure 23

Figure 24

Against the most recently developed anti-ship threat, the sea-skimming missile, we may mention two anti-missile systems of the "last-ditch" type.

The DARDO system may be compared to the American PHALANX. It is based on a twin barrel, 40 mm, 70 caliber compact gun (Figure 25). This is a completely automated lightweight gun using ammunition with proximity fuzes and characterized by high firing rate and long endurance. This is due to a peculiar ammunition feed system entirely developed in Italy, while the gun itself is of Swedish design.

The DARDO system operations are completely automatic from the first target detection to the completion of the firing sequence. The ECM resistance and very low level visibility of its tracking radar are of a peculiar significance for the specific system design tasks (Figure 26).

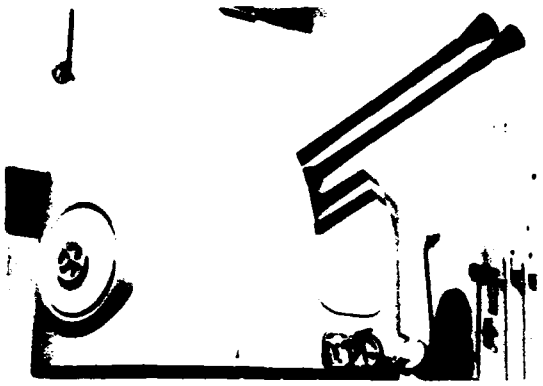


Figure 25

Figure 26

Along with DARDO production the Italian industry has also launched a noteworthy activity concerning an anti-missile short range naval missile system, designated as ATALANTA. After completion of the feasibility phase, the experimental campaign for the validation of its technical characteristics both in laboratory and in real operational environment was also completed. The system is expected to undergo engineering development in the near future.

We will now switch to two S/S missile systems produced in Italy, the OTOMAT and the MARINER. The OTOMAT (Figure 27) was entirely conceived in Italy and was developed in collaboration with French partners. It is now produced in both countries. It is based on a transsonic speed missile, sea-skimming in the terminal attack phase, capable of hitting naval targets at a maximum range of 100 n. miles, using inertial, radio link and active radar homing guidance techniques. The OTOMAT is also produced in versions adapted for mobile and fixed coastal batteries and for air launching, for instance, from helicopters.

Figure 27

Figure 28

The MARINER system is particularly suitable for installation on board the smallest naval crafts, given its limited size, weight and power requirements. It uses the SEA-KILLER MK-2 subsonic sea-skimmer missile (Figure 28), propelled by two tandem solid propellent rocket engines and guided by radar or visual command to line-of-sight guidance techniques. Its maximum effective range is about 20 Km. The system is completed by specific fire control equipment using a high revolution track-while-scan radar for target search and tracking and for missile guidance; moreover, the radar is also capable of satisfying the navigation requirements of the naval craft.

Italian ships are fitted with multipurpose rocket launchers able to launch both illuminating or destructive head rockets and chaffs. The launcher is remotely controlled, with a possibility of automatic selection of the rocket to be launched, according to the commands of a self-contained control computer, which allows automatic patterns and "aimed" launchings for both passive defense against missile threats and gun fire assistance through target illumination.

All of the surface ships we have mentioned before are equipped with one or more helicopters. These may perform a wide range of tasks from anti-submarine surveillance, missile midcourse guidance and anti-submarine attack to anti-surface-ship attack. For these purposes they are fitted with different equipment. We shall mention here a naval helicopter-borne air-to-surface missile system, now being developed in Italy. This is the so-called MARTE (Figure 29), designed to give ship-based (or ground-based) helicopters an anti-ship capability. The missile is the same 20 Km range, 70 Kg. warhead SEA-KILLER MK-2 used by the MARINER system. The auxiliary equipment includes a radar performing aircraft navigation, target search and tracking and missile guidance in azimuth up to the impact. In the configuration being developed for the Italian Navy, the system is installed on a SH-3D helicopter manufactured in Italy under American license. The first prototype of the MARTE system is expected to become operational at the beginning of 1980.

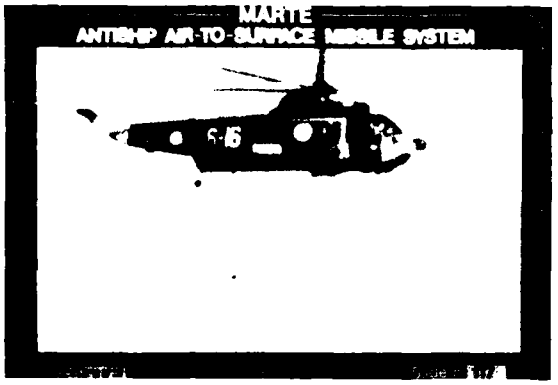


Figure 29

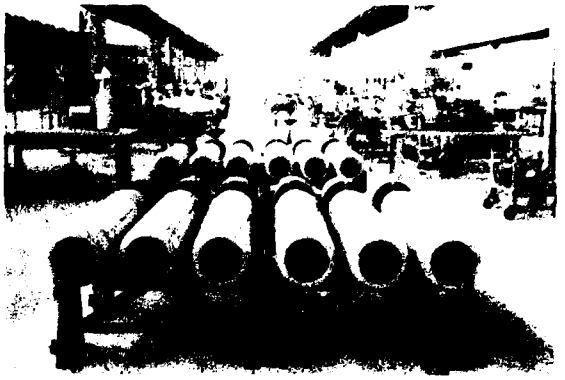


Figure 30

For anti-submarine and anti-ship warfare, Italy produces torpedo systems for fitting on both surface ships and submarines (Figure 30). In the largest configuration the system mounted on major Italian surface ships includes two types of torpedo launchers, a triple launcher for a lightweight acoustic head torpedo called A244/S and a single-tube launcher for a heavyweight wire-guided torpedo called A184. Both torpedoes are of entirely Italian design and manufacturing. The lightweight launcher is also compatible with the American-designed torpedoes MK-44 and MK-46. The A184 torpedo has both anti-submarine and anti-ship capabilities.

Other system elements are a general control console, used for the tracking of the target, for the presetting of the lightweight torpedo and for the wire-guidance for the A184 (Figure 31). A launching network connects the control console with the torpedo launchers (Figure 32).

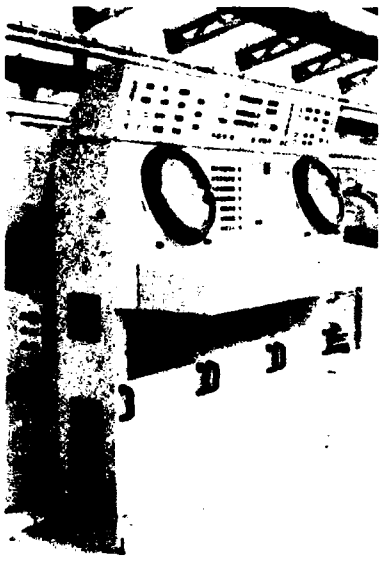


Figure 31

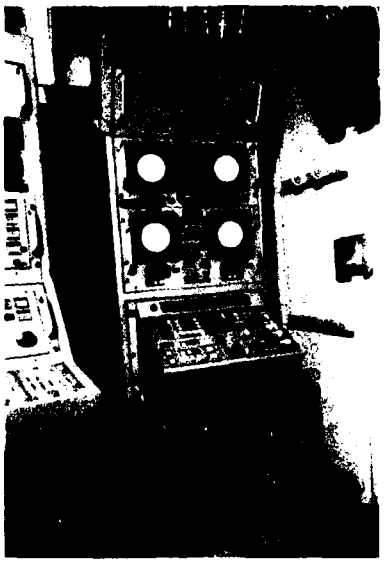
Figure 32

On the SAURO class submarine the system is based on the A184 torpedoes and includes a control system called CCRG, for computation, presentation and guidance of the A184, and a launching network. All the equipment is of the latest design and again, was completely developed by the Italian industry.

Italy also produces mines. We may mention the VSSM600 bottom mine, an influence device fitted with a set of sensors coupled to a highly sophisticated processing electronics. The mine can be accurately tuned either by a local setting or via a remote control, in order to be triggered by the passage of the selected type of vessel.

Any modern naval ship is equipped with some sort of electronic warfare system. Italy has a wide international reputation in this field: Italian designed systems are mounted on ships of several Navies, including NATO. The Italian industry actually produces a wide range of passive electronic warfare equipment for search, detection, analysis and identification of electromagnetic emissions, active electronic countermeasure equipment, integrated passive-active equipment and infrared passive sensors and countermeasure equipment. All EW equipment is completely integrated with the ship command and control system, though being capable of independent operation commanded by specific control stations (Figure 33). The control stations may also control the launching of chaffs.

Figure 33



This concludes our presentation of the Italian naval industry. Of course, the description of our production is not exhaustive. There are many initiatives, especially in the field of research and development, that have not been mentioned and would probably raise an interest.

In conclusion, we hope that we have been able to convey the idea of an industry that, in spite of the relatively limited size of its national market, is in a condition to participate in any level of partnership and collaboration with original ideas, know-how and skills. We are open to this collaboration with the American industry as we have always been in the past, and hope for a profitable prosecution of these talks.

CHAPTER 12

AIR FORCE R&D PROGRAMS

BGEN PHILLIPS

The Air Force fully supports the principle of allied contractor participation in its Program Management Directive and in the Air Force System Acquisition Review Council. We actively pursue and look for opportunities to have you participate with us in our programs. More to the point of this seminar, we are taking steps to ensure that the U.S.-Italian MOU on reciprocal defense procurement is widely disseminated, understood, and followed. There is potential for Italian participation in a number of our programs. Today, we have decided to focus on a few of these. The programs cover a broad range of missions and technologies, including the tactical strike mission, requirements for a new trainer aircraft, and navigation and communications equipment. I assure you that the Air Force is eager to work out the details of your participation in programs under this MOU. We would also like to consider your proposals for equipment that could help satisfy our many requirements.

The first briefing which we would like to present to you this afternoon is on the Precision Location Strike System, better known as PLSS. Lientenant Colonel Frasher, the program element Manager in the Air Staff, will tell you about it now, and then we will follow with three other programs.

I must leave shortly, but a good colleague of mine, Colonel Flynn, will stay to answer any questions you may have later.

Colonel Frasher: Thank you, General Phillips, and good afternoon, ladies and gentlemen. This afternoon I will introduce you to an Air Force development, the Precision Location Strike System, PLSS, which may find application and deployment by NATO, and which may offer the prospect for production by allied countries.

The PLSS is an electronic system designed primarily to detect and destroy enemy air defense systems. In particular, it is intended for tactical use against enemy air defense systems that depend on very accurate guidance and detection radar to control anti-aircraft artillery and surface-to-air missiles. In operation, PLSS will use specialized distance-measuring and other equipment aboard highly instrumented airplanes, to detect electronic emissions from enemy radar and relay those data to a ground-based, central processing center.

The center's computer will analyze the data, comparing inputs from multiple aircraft, to pinpoint precisely the type and location of the radar. This information will immediately be transmitted to a tactical air center, where a decision to attack can be made. PLSS can then direct the strike aircraft to perfectly computed points for release of guided or free-fall weaponry on the target. The ground beacons assist in accurately locating the multiple aircraft that are airborne.

We have completed nearly two years of design and development on the PLSS. The DSARC, or Defense System Acquisition Review Council, is the highest level of review in the Department of Defense. Currently a NATO group is evaluating this system for potential deployment. Italy is a member of this NATO group.

The government program is directed by the Systems Program Office, SPO, at Wright-Patterson Air Force Base, Ohio. The government Program Director is Colonel Alvin R. Turner. The prime contractor for the PLSS is Lockheed Missiles and Space Company in Sunnyvale, California. The Lockheed Program Manager is Mr. T. J. Anderson. That concludes my presentation, ladies and gentlemen. Our next speaker is Major Nance, who will present the next generation trainer.

MAJOR NANCE: It's my pleasure to be here. I'm going to talk about the Next Generation Trainer. We call it the Next Generation Trainer because it is to be a replacement for our first-generation primary trainer, the T-37. The T-37 airplane is the one that we use for the initial phase of pilot training, the very basic phases for those who have not flown jets before and have had perhaps a minimum of 25 to 30 hours in very light, propeller-driven aircraft. The T-37's that we own now were developed in the early 50's and were purchased in the late 50's and early 60's, so you can see that the airplanes are getting old. Our initial purchases are reaching 9,000 hours of use. The airplane was originally designed for 9,000 hours, has been extended to a lifetime of 12,000 hours, and it will be extended again to a lifetime of 15,000 hours. We are basing our next generation trainer program on a lifetime of 15,000 hours.

In addition to the fact that the airplanes are growing old, we have some operational deficiencies which we would like to correct at the same time we buy this new fleet of training airplanes. The T-37's are limited to generally daylight, visual flight rule conditions. They are instrument capable, but because of limited range, we are not able to use them as well in weather as we would like.

The T-37's have old, 1950's-type instrumentation, and instrumentation displays that are not consistent with our front-line airplanes. We would like modernized equipment and displays in the airplane. The excessive fuel consumption of the T-37 is perhaps the most important factor in our desire for a new airplane. Because of energy issues we need an airplane that is more economical to operate. Further, T-37 is noisy. People are becoming aware of environmental problems, so we need a quieter airplane.

The limited range and endurance of the current fleet is associated with the limited weather capabilities. If we had an airplane with a better range capability, we would be able to use it more effectively. The limited performance of the current T-37 holds our training to working air space at low levels whereas we need to be able to train at higher altitudes to improve our training efficiency.

All these deficiencies make the cost of training more expensive than it needs to be. We desire a twin-engine, side by side airplane, because it supports our training philosophy. But this is not a hard and fast requirement. A range of 750 miles is desired as is a minimum 300 knot air speed and 90 knot nominal landing speed. We want a pilot have to work a little bit and be able to smoothly transition from the next generation trainer to a higher performance trainer later on in the training program. We need a pressurized cabin so we can venture into the higher altutide blocks. The T-37, as currently configured, cannot go above 25,000 feet.

We need an initial operational capability, which has been difined as 50 airplanes on the ramp ready to fly, by mid-1987. We anticipate a total buy of 600 airplanes, and we would like to have those 600 airplanes in the early 1990's.

Our weight and cost goal for this airplane is 5,000 pounds or less in weight and $1 million or less in cost.

Continuing with requirements, we need a modern design because the T-37 replacement will operate into the 21st Century. It needs to be fuel-efficient. The T-37 requires 185 gallons per hour. We think that we can field an airplane that will do what needs to be done at no more than 90 gallons per hour. The maintenance requirement for the current T-37 is 6.7 maintenance man hours per flying hour. We think that an airplane can be built that will fly for 5 maintenance man hours per flying hour. If we could achieve that we could save 300,000 maintenance man hours per year in our training fleet. If we can get the desired fuel economy, we can save more than 14 million gallons of fuel in a year.

Now, even though I've been talking along the lines of a new airplane development program, there are other alternatives. Modifications or modernization of the existing equipment may, in the short term, be the least expensive solution. We could buy a new T-37 modification, or just buy additional T-37s as they are. We would like to find an off-the-shelf trainer, if it would fit our requirements. However, we may be forced to develop and build a new trainer specifically tailored to our requirements.

Regarding off-the-shelf airplanes, we have looked at many, including the MB-339. It's large, fast, and has high performance. It's more than we need and consequently may be too expensive for us. The S-211 looks like it might be a prime candidate. However, it is a single engine airplane with tandem seating, whereas we would like to have a twin engine airplane with slide by side seats.

The next-generation trainer is in its very formative stages. We intend to provide information to industry on an international basis, whenever that information becomes available. We welcome your participation. Major Paschall will now brief the NAVSTAR program.

MAJOR PASCHALL: Good afternoon. I'd like to introduce you to a program that is Defense-wide with a thrust toward NATO nations, in which Italy is now participating to consider using the system in the future.

NAVSTAR GPS is a program to provide navigation on a global basis from satellites. The system concept is based on radio navigation from satellites that are orbiting at about 20,000 kilometers. The constellation of 24 satellites in three rings around the Earth would provide continuous coverage of all of the areas on the Earth with high precision navigation signals which are unaffected by weather. The satellites represent one of the three segments of the system.

The other two segments are: (1) a large segment of users with the equipment necessary to receive the signals and (2) a control segment necessary to keep the satellites broadcasting accurate information to the users.

The program has been in existence since 1973 when we started the concept validation phase of the program. We have now completed this phase of the program, and decisions are being made at the Secretary of Defense level through a process which we call the Defense Systems Acquisition Review Council, or DSARC. We went to this Council on the 5th of June 1980, briefed the program to them, and we are awaiting the decision whether or not to enter into the next phase of the program, which is the full-scale engineering development and system test of the program [Note: This approval was granted in August, 1979].

To date, the United States has spent $365 million from all services to prove the concept, and we have validated the concept--that GPS is a workable, feasible, militarily useful program. In the next phase, which would last approximately four years, we will fully develop the operational satellites, the operational control segment, and the user equipment for many different types of users, looking toward a decision to start producing that user equipment around 1983. Then we would start equipping those users beginning around 1985 when this equipment would be available, installing sets in aircraft, ships and tanks. This period of production would probably extend for about seven to ten years, into the 1990's. In 1987, the system is planned to be operable worldwide, with latitude, longitude and also altitude information, to sixteen-meter accuracy positioning for US/NATO military forces. During the test phase we will have four to six satellites in orbit to provide enough test time over our test range in Arizona and over the Pacific test range and the Atlantic test range off the West and East Coasts of the United States. Then we would expand to 18 satellites for the initial capability.

We have compiled some of the results of our bomb testing at our proving ground in Yuma, Arizona. Bomb craters were made by 500-pound bombs with no explosive, just concrete in the warheads. We actually physically measured where those bombs hit to determine the effect of precise navigation on the weapons delivery.

We have, during this field testing with our aircraft, verified that we can position aircraft to within ten meters absolute position, in three dimensions. The prime segment of this program that I think would interest you most is the user segment, and I'd just like to take a little time to explain how this equipment operates. The signals emanating from the satellites are received with the user equipment in each of the platforms so equipped. Those signals are synchronized, using atomic time standards on

the satellites, so they are very precisely controlled. The user set measures position by accurately measuring the time of arrival of that signal from each of four satellites. Then that signal also has superimposed on it a code that tells you where that satellite is. Knowing where the satellites are relative to the center of the Earth and knowing where your are relative to those satellites, this equipment computes where you are on the Earth. And it is independent of altitude and independent of location on the Earth. It's very accurate.

Thus, the equipment in the aircraft or on a ship or for a soldier with a manpack tells him precisely where he is in three dimensions. It also gives him velocity information and it gives him precise time in nanoseconds, worldwide. Just to give you an idea of what some of this user equipment looks like in conceptual form, it is composed of a receiver which actually receives the satellite signals, plus a processor or a small computer which performs the computation necessary to determine position and displays this data to the operator or to the user on a control/display. A very small, omni-directional antenna is used. Next, let us discuss some current advanced development models that are relatively large. We have a manpack built by Texas Instruments in Dallas that weighs about 35 pounds. We anticipate that the operational unit will weigh about 12 pounds. The soldier operates the manpack with hand-held display/keyboard so that he can enter the location of the target and he can get range and bearing to the target with this instrument computing exactly where he is.

The aircraft equipment that we're using today is also relatively large. The set deveoped by Magnavox Research Laboratories in Torrence, California is what we call an X-set. It is a set for high dynamic aircraft, which can receive simultaneously from four satellites and compute a new position every half-second. It displays that position in a number of different formats, for instance in latitude and longitude. The equipment that we will build for operational use is about 1.6 cubic feet in volume, very small compared to this early equipment.

As I mentioned, there's significant interest in NATO concerning this program, just as significant interest has been seen in the Services in the United States. To manage the development and acquisition of this system, we have put together a joint program office, with the Air Force as the executive agent, or lead Service. We have included elements of the Army, Navy, Marine Corps, Defense Mapping Agency, Coast Guard, the Federal Aviation Administration, for potential civil use, and also a NATO project. Within this program office, which is in Los Angeles, California, we have 11 representatives of NATO nations who are implementing the provisions of a Memorandum of Understanding, which was signed in April of 1978 by the Ministries of Defense of nine NATO nations and the United Sates Department of Defense.

In the user equipment program, we are at the present time just about ready to award two contracts for full-scale engineering development of user equipment, so that we maintain a fully competitive program until the point

at which we have fully tested it and are ready to produce. Then our plan is to select one of those two contractors to produce this equipment.

We have four contractors competing for the two development contracts. We have made provisions within our contracts that we are negotiating with these four (of which we will select two), to include competition and sources from European and Canadian firms to further put teeth into the policy that we have of involving NATO in these programs. Some of these companies are more active than others in talking to firms in Italy and other countries. Some of you may have already talked to some representatives of these particular organizations. They are actively involved, and as I say, two of these four will be selected in the next couple of months to proceed into the full scale development program.

That's all I have on NAVSTAR-GPS. I'd like to introduce Captain Garofalo, who is briefing the digital non-secure voice terminal.

CAPTAIN GARAFALO: Good afternoon, ladies and gentlemen. I am Captain Ken Garofalo with Air Force Systems Command, and I will be providing a brief description of the Air Force digital non-secure voice terminal program, which is a program for a digital telephone.

The digital telephone nonsecure voice terminal program is a four-wire digital telephone set which transmits and receives digital voice at 16 and 32 kilobits per second. The program is for two types of digital telephones for use with our new generation of ground tactical communications switching equipment.

This program was established in order to develop low cost digital telephone instruments. The Department of the Air Force has responsibility for both the development and acquisition. One version of the digital phone is desk version. It's very similar to a telephone you might see on your desk at your office right now. The other version is a field phone and it has been described as a "ruggedized" telephone. It's a phone to take along in the field, where it is exposed to dirt, mud, rain, salt water, and other severe conditions. The first phase has been completed. This particular phase (the conceptual validation phase) was awarded to Electronic Communications, Inc, a U.S. company in St. Petersburg, Florida. The first phase lasted from July 1976 to October 1978. During this effort, the emphasis was on design tradeoffs for low unit cost. Some 30 models of these two types of telephone were built, delivered to the government and tested. The government then used the results of this phase to structure what we call the full-scale development phase. The full-scale development phase is one in which one or more contractors is involved, and it provides a more competitive effort.

These two types of telephones, desk top and the ruggedized, would be built in 42 models of the desk top and 44 models of the ruggedized or field version. The contract length is 25 months, will begin about November 1979 and run until 1981. The objective is to provide fully producible, logistically supportable equipment which meets performance and which offers the lowest possible life-cycle cost. Presently the request for proposal to

potential sources is in the process of being released and contract award for the full-scale development program is scheduled for November 1979. This will be a two-year effort, and it would have the production contract award scheduled for November of 1981. Because of the simplicity of the two devices, both the desk top and the militarized version we anticipate a fairly rapid production and delivery, with production deliveries beginning one year after the production contract award.

We also consider this program to have a very low technical risk. In addition, this is a very low cost item, since it will be bought in significant quantities in production. At present we are looking at quantities estimated through 1985, but they are initial estimates and subject to change. The field version will be approximately 24,000 units, and the desk top telephone will be about 41,000 units. Several nations have already expressed a desire to participate and right now the Air Force Systems Command is completing a review to determine the eligibility of this program for such participation. Our latest indications are that it should be a candidate for Allied participation. This concludes the Air Force presentations.

COL FLYNN: In this short period of time, we've described four selected programs in varying stages of development or production. If you have any questions on these programs or other items of interest, we'd be happy to respond to them at this time.

QUESTION: We in the Army generally consider your Air Force programs as having much higher security clearances, from your point of view?

COL FLYNN: Generally not, but we have to judge each program on its own specific issues.

QUESTION: You can see participation by people on classified programs, however?

COL FLYNN: Yes, sir.

GENERAL BOWMAN: One of the problems we've been addressing with each of the services is, how does an Italian company find out what is going on so that they can apply, show their security clearances, and get the information they need to start thinking about the problem? We wonder if there might be any Air Force publications to help out. I guess what we really need is some kind of unclassified document first, which could be followed by classified documents that could be made available on a case by case basis for a company that has the right qualifications and security clearances.

COL FLYNN: I don't have any personal knowledge of that, General Bowman. I will certainly look into it and see what documents or information can be made available.

QUESTION: I'm General Santucci, the Defense Attache in Washington. Approximately in March 1979, it was announced that there was supposed to be an initial briefing at Wright-Patterson AFB on the next general trainer. Our factories naturally had a very high interest in this work. Since then, the conference was postponed, and I did try many times to get new information. Would it be possible to have more information on this specific program?

COL FLYNN: This program is in the formulation stage. With any new program we can have fiscal problems in getting started, and that may be part of the answer. Major Nance, can you expand on that?

MAJOR NANCE: The reason that briefing was postponed was because of fiscal problems that arose in the program. We had plans of getting the program underway much quicker that we were able to. We hope that the meeting can be held sometime in the Fall. There will be a Commerce Business Daily announcement, similar to the one you saw in March. I'm the Program Element Monitor within the Pentagon, and I will be more than happy to talk to you whenever you need to, sir.

CHAPTER 13

ITALIAN INDUSTRY CAPABILITIES IN AEROSPACE SYSTEMS

DR. RINALDO PIAGGIO

It is a pleasure to be able to speak to you on behalf of the Italian Aerospace Industry Association, of which I am President. Our Association includes some 70 firms which operate over the entire range of aerospace activities. I plan to provide only a brief overview of their activities this afternoon.

The second half of this century is marked by a tremendous and rapid technological development which represents the prerequisite to maintaining the technical and economic lead of the industrialized west.

Aerospace production contributes in large measure to this technological supremacy, from which derives, of course and on which thrives a wide range of related activities. This supremacy makes it among the most important agents for the introduction of revolutionary advances either in our defense or in the western standard of living.

In this respect the Italian Aerospace Industry acknowledges its duty of contributing to the improvement of the economic and defense strengths of our country and the West.

As recently reported by industry trade journals, the Italian aerospace industry is moving forward with plant modernization programs and ambitious national and multinational aircraft projects which are expected to establish firmly Italy's position as one of the largest aerospace producers in Europe.

Italy is among the few industrialized countries capable of designing and manufacturing advanced aerospace systems and components.

The Italian aerospace industry manufactures:

- aircraft and helicopter airframes;
- engines;
- general and avionic equipment;
- missiles;
- equipment for space programs,

and covers the whole range of activities from design and development to production.

Since the main purpose of this Seminar is that of exploring pragmatic approaches to concrete and realistic MOU implementation, I would like to stress the many common aspects - particularly with regard to standards of production - which our industry shares with its American colleagues and competitors. As many of you know, these common aspects, these similarities flow from the post-war development of the Italian aerospace industry.

In fact our present capabilities are the result of a process which began in the early 1950's to meet the Italian Air Force operational requirements under its NATO committments.

Initially, Italian industry was involved, and still is, in the production under licence of various aircraft, aircraft engines and components mainly developed in the U.S..

Typical products are:

- the F-86 and the F-104 fighters;

- various military helicopters built under licence from Bell, Sikorsky and Vertol;

- several aircraft engines such as the General Electric J.85, J.79 and T.64, Avco Lycoming T.53 and T.55, General Electric T.58,

and a large number of aircraft and combat systems components.

From these activities, the industry has acquired from the U.S. design and production philosophies, and all the relevant procedures such as MIL, FAA specifications, quality assurance criteria and STANAG requirements which are currently implemented on a routine basis.

In a parallel fashion, as design resources were strengthened, the industry participated in coproduction programmes and later developed its own independent capabilities which gave birth to a family of:

- jet trainers (MB-326, 339);

- tactical fighters (G-91);

- tactical transports (G-222);

- civil and military helicopters (A-109);

- civil and military utility jets (PD-808).

At present the Italian industry has initiated the development of the AMX tatical fighter, the 129 attack helicopter and is participating in partnership with West Germany and the U.K. in the Panavia Consortium for the production of the MRCA Tornado aircraft, for the RB.199 engine and several subsystems and components installed on this aircraft.

With respect to sharing design and production responsibilities, the Italian industry considers significant its participation in multinational aerospace programs both for military and civil applications such as, for instance:

- European quadrilateral helicopter activities;

- the agreement for the B-767 commercial aircraft program.

In the last 30 years our industry has progressed steadily and has increased its employment by about 20% in the last 5 years. Currently it employs 36,000 persons, has sales of 1.1 billion dollars and ranks as the fourth largest European aerospace industry. An overall breakdown would show a balanced production of:

- airframes 61%;

- engines 17%;

- related equipment 15%;

- space products 7%.

The financial and technological magnitude of current aeronautical projects, has brought the Italian aerospace industry - since the post-war plant reconstruction and reconversion - towards a production which is mainly the result of a joint effort of all national aircraft manufacturers. This kind of activity has enabled us to attain managerial skills and an industrial structure capable of and eager to participate in extensive multinational programmes.

The most recent production includes a wide range of fixed-wing aircrafts and helicopters, each of them in many and versatile configurations. I can mention:

Fixed wing aircrafts:

G 222 / MRCA Tornado / F 104 S / MB 326 / MB 339 / P68 B / PD 808 / P66 C /

P 166 / S 205 / S 208 / SF 260 / SM 1019

Helicopters:

A 109 / AB 205 / AB 206 / AB 212 / HH 3F / SH 3 D / CH 47 / AS 61 A4

With respect to engines, besides the production related to the development of the MRCA Tornado Engine RB 199, our activity is still largely based on a wide range of licensed-production where we can mention the most recent production of some 18 engines. Italy contributed to the improvement of some of those. A few examples:

- GE J 79

- GE J 85

- GE T 64

- GE T 58

- Bristol Orpheus

- RR Viper

- Lycoming T53 - T 55 - GSO-480 IGSO-540.

The sector of equipment is equally developed and its importance is steadily increasing as it now accounts for 35-40% of the aircraft's total cost.

A growing number of Companies are operating in the largest fields of specialization:

- avionics

- aircraft equipment (flight and navigation instruments, hydraulic systems, electro-mechanism, pressurization and air conditioning systems etc.)

- engines

- precision engineering

- tires

- airport installations

etc.

In the missile and RPV fields I could mention the:

- Multirole radar-guided Aspide missile

- Air-to Air radar-guided SPARROW III missile

- Antiship Medium range heliborne Marte missile system

- Multipurpose advanced technology RPV systems MIRACH 70, Andromeda and the Rigel infrared reconnaissance system.

In the space field Italy is involved in national and multinational programs.

National programs are:

- Telecommunication Satellite SIRIO

- Space launcher ALFA

Multinational programs are:

- Spacelab ESA
- Test telecommunication Satellite - OTS
- Maritime telecommunication and navigation Sattellite - MAROTS
- Meteorological Satellite - METEOSAT
- New generation telecommunication Satellite - INTELSAT V
- European Communication Satellite - ECS
- Maritime European telecommunication Satellite - MARECS
- European launcher for operational Satellites - ARIANE
- Apogee motors for various launchers and space crafts.

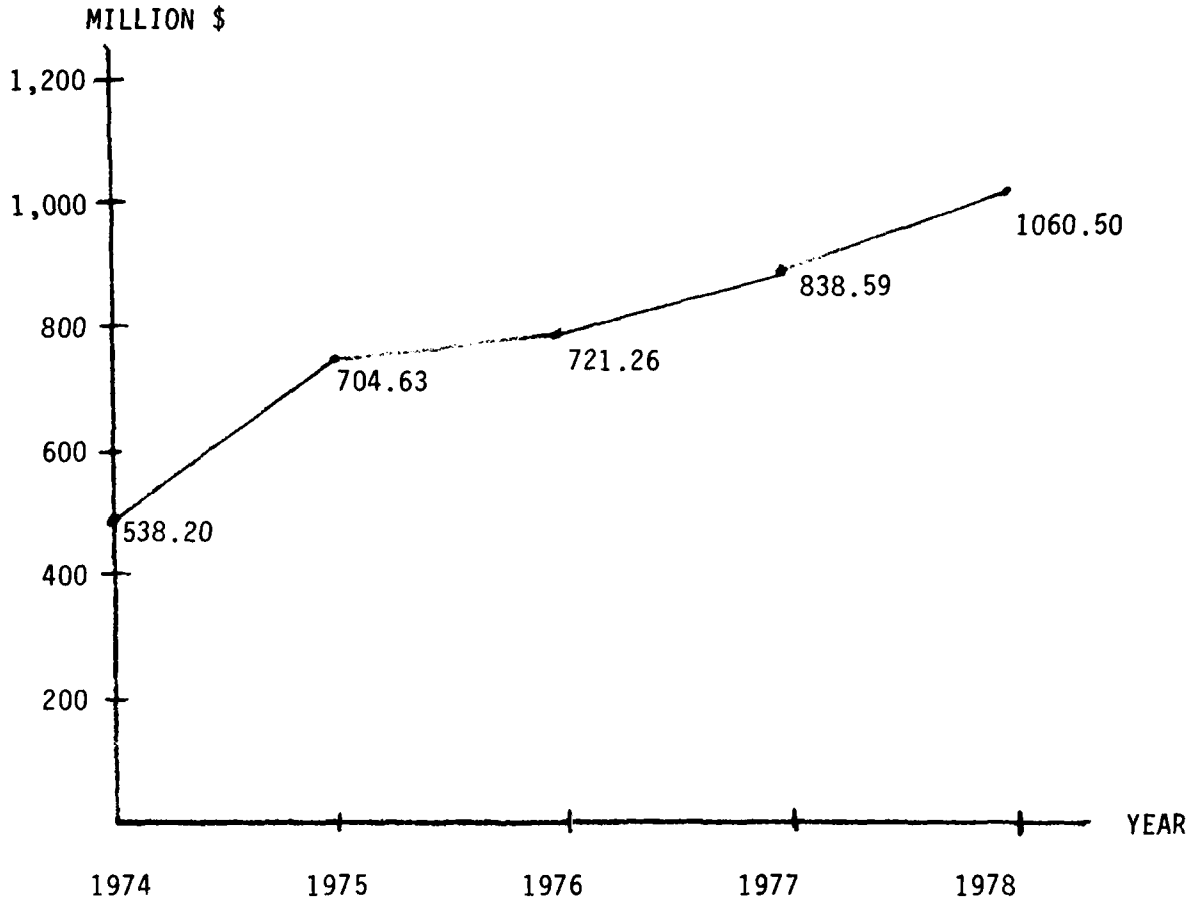
The following figures are intended to give a present view of the design and development capabilities which lie behind the rise of the Italian Aerospace Industry to a position capable of undertaking challenging multi-national cooperative programmes on new aerospace products.

Our presentation has been necessarily limited to some of the most significant products. Directories summarizing the complete range of our production are available.

To conclude, I can only reiterate the Italian expectations and concerns that Dr. Mustacchi has already expressed in regard to the MOU implementation, and thank all of you, Gentlemen, for your kind attention.

ITALIAN AEROSPACE INDUSTRY

GROWTH TREND SALES



Million lire				
350.000	460.000	600.000	740.000	900.000
Exchange Rate lire/$				
650,31	652,82	831,87	882,43	848,65

Source: Bollettino Banca d'Italia

Figure 1

SPECIALIZED GROUPS WITHIN THE

AEROSPACE INDUSTRY ASSOCIATION OF ITALY

1) Hovercrafts.

2) Internal combustion, nuclear energy, liquid, solid, and mixed.

3) On board equipments.

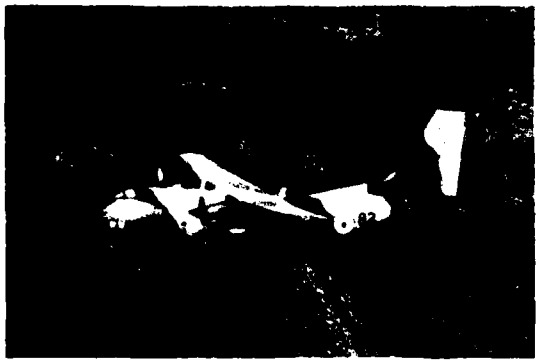
4) Missiles, rockets, spacecrafts and launchers.

5) Avionics and telecommunication systems.

6) Space propellents.

7) Ground support equipments.

Figure 2



G 222 is a medium range transport aircraft, capable of operating from semi-prepared fields in all weather conditions. This aircraft powered by two G.E. T64-P4D turboprop engines, has a maximum take off weight of 61,130 LBS and max Payload of 19,820 LBS. It can carry 42 paratroopers or 52 fully equipped solders.

Figure 3

G 222.

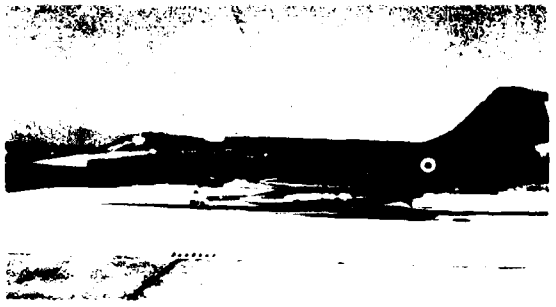
Figure 4

The Tornado produced by the PANAVIA Consortium, is a multi role combat aircraft. 809 Tornadoes have been ordered by the armed forces of West Germany, Great Britian and Italy. Series production has already started. Italian Industry is responsible for design development and construction of the wings and other significant parts accounting for the 15% of the programme. It will also manufacture the 100 Tornadoes ordered by the Italian Air Force.

Figure 5

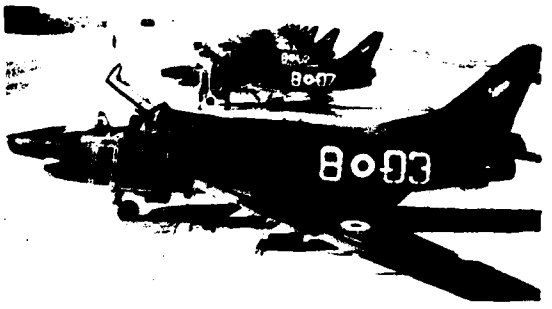
AMX is the new tactical fighter successor of C 91Y presented by Italian Aircraft Industry during the Paris Air Show - June 1979. The first flight is scheduled in 1982.

Figure 6



F 104/S is the all weather mach 2 interceptor fighter in service with the Italian Air Force and the Turkish Air Force.

Figure 7

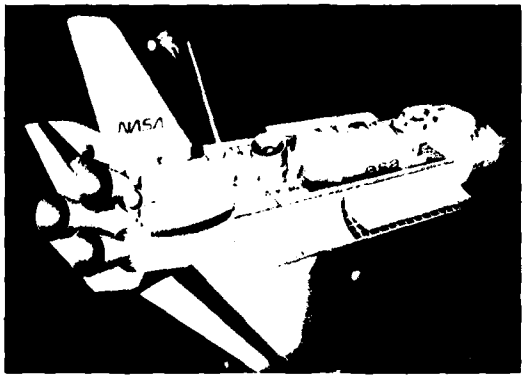


G.91/Y is the light attack fighter bomber and tactical reconnaissance aircraft in service with the Italian Air Force.

Figure 8

767 Boeing Company has started, with Italian cooperation, the production of a new air-liner: the 767. Italy is responsible for the construction of wings surface control, Fin, Rudder, Elevator, Radome.

Figure 9



SPACE LAB.Italy is responsible for the design, development, production and tests of the Module structure and management of the relevant program.

Figure 10

AP-68TP is a versatile, low cost and reliable light aircraft which meets various requirements.

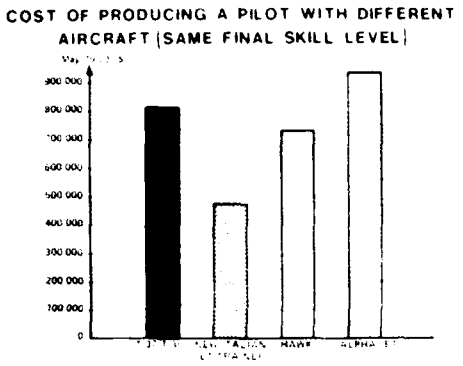
Figure 11

The jet trainer shown in this picture has been recently selected by the Italian Air Force to fulfil their requirement for basic and advanced training and it is now in full production. A previous model which could be considered the forefather of the modern jet trainers has been sold in 13 different countries around the world in more than 800 units. The aircraft has been developed with the following design targets: 1) optimisation of the cost effectiveness in the basic and advanced training roles; 2) single aircraft for basic through advanced training; 3) performance levels adequate to ensure smooth pupil transition to supersonic operational aircraft; 4) maximum design and manufacturing simplicity, leading to reduced maintenance work load and to minimum acquisition and life cycle cost (what is not needed is waisted). The result is a basic and advanced jet trainer which represents the best cost effective solution in these days.

Figure 12

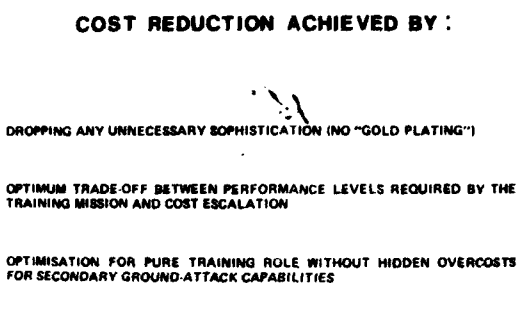
Jet Trainer.

Figure 13



This diagram shows the cost of producing a pilot with different aircraft assuming: a) attainment of same final skill-level (direct transition to supersonic operational aircraft); b) initial use of prop type (piston or turbo) aircraft for selection of primary training; c) 50 graduates per year (in case of much bigger number of graduates the total costs are lower but the ratios remain substantially unchanged).

Figure 14

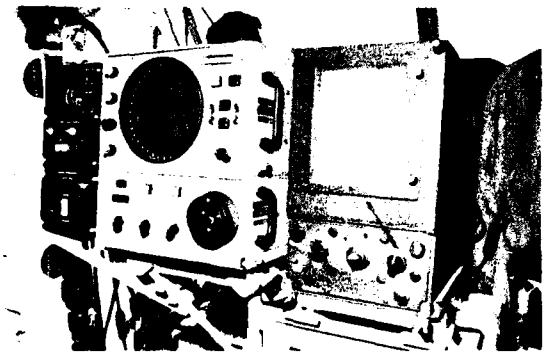


This cost reduction is achieved by: 1) dropping any unnecessary sofistication (no "gold plated"); 2) optimun trade-off between performance levels required by the training mission and cost escalation; 3) optimisation for pure training role without hidden overcosts for secondary ground-attack capability. In particular this aircraft is the basis of a potential version to fulfil the U.S. Navy and Air Force requirements for a new jet trainer.

Figure 15

The AB 212 ASW is a naval helicopter - developed in Italy on Bell original design - to meet the Italian and other Countries Navies' requirements. The AB 212 ASW has been employed on board warships since 1975 for the following roles: ASW (anti-submarine Warfare), ASV (antisurface vessel), ASMD (anti ship missile defense), EW (electronic warfare) and SAR (search and rescue).

Figure 16



AB 212.

Figure 17

The 109 A is a multirol eight-seats helicopter, wholly designed and developed in Italy. With certification for IFR operations (instrument flight rules), single-pilot and equipped with double redundancy of all the main systems (propulsion, hydraulic, electric, fuel and lubrificating), it can fly on a high level of safety and in all weather conditions. Its four versions (civil/paramilitary, anti-tank, military, naval) are now in full production.

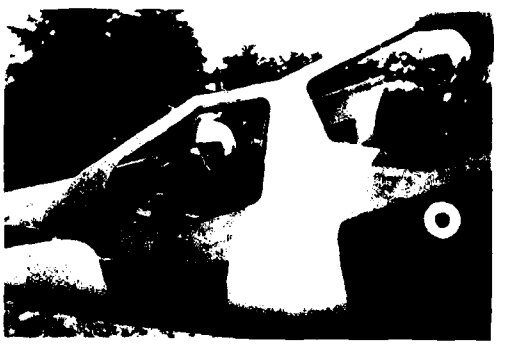
Figure 18

The 109 A.

Figure 19

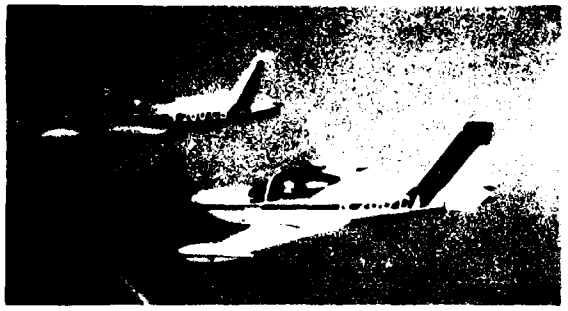
The A 129 "Mongoose" is a military helicopter for specific ground defence (anti-tank, attack, reconnaissance). It is an entirely Italian design, in an advanced stage of development, based on the most advanced technologies and equipped with sophisticated armament systems. It fulfils precise requirements in this field for the '90's.

Figure 20



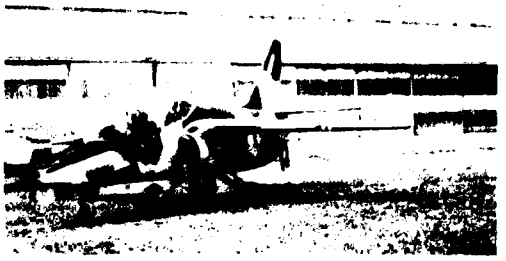
The A 129 "Mongoose".

Figure 21



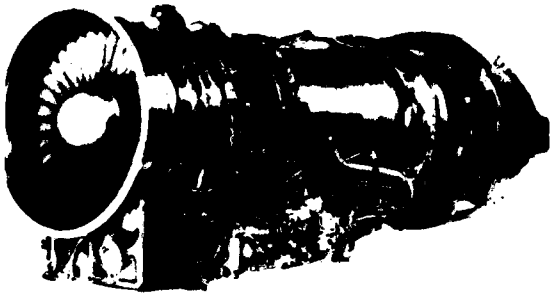
The SF 260 is a three places all metal airplane with rectractable landing gear and reciprocating engine of 260 H.P. produced in civil and military versions. 800 of these aircraft have been sold to 16 countries mainly to fullfill their training requirements.

Figure 22



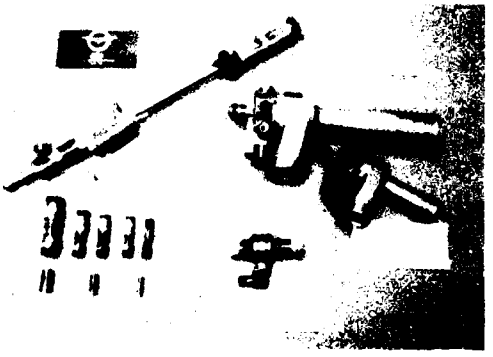
The S 211 is the follow up model which should respond at the lowest costs to the world market demands for the next decades in the same area of the basic training. It will weight about 3000 LBS and will be equiped with the turbofan JT 15 D - 1 of 2200 LBS trust. The project is now at an advanced stage of development.

Figure 23



The RB 199 engine is a turbofan developed for the Tornado plane. The Italian participation in the programme includes responsibility for the design and development of the following components: 1) Low Pressure Turbine, relative shaft for Fan actuation and rear bearing support; 2) Turbine Exhaust Cone and Jet Pipe Rear; 3) Variable geometry Exhaust Nozzle; 4) Nozzle Control System.

Figure 24

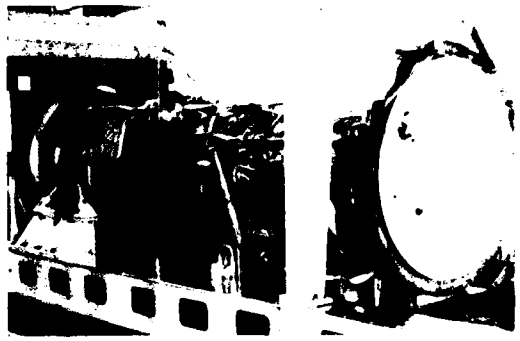


The Italian companies involved in the programme have carried out all necessary component research and development testing both aero-thermodynamic and mechanical.

Figure 25

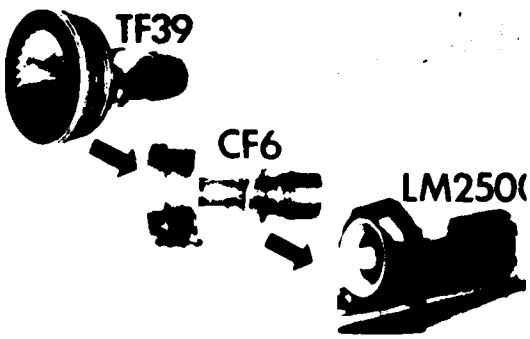
The Italian industry also shares the responsibility for the development of the whole engine; allocated to this task is a test bed plant capable to read, control and analyze by computer more than 600 engine parameter during engine running. Both investigation and endurance tests are carried out in the plant.

Figure 26



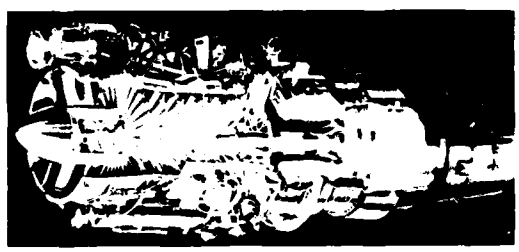
Derived from the CF6 engine in collaboration with G.E., the LM 2500 is directed to marine and industrial applications in the range of 25,000 HP. All design conversion work has been done in Italy. Also the "Base Enclosure" has been designed and built in Italy. At present 335 engine units have been ordered for the 175 Navy ships of twelve different countries. The Italian industry, as follow-up of the LM 500 programme, is now proceeding, with General Electric, to convert the FT 34 engine into a marine/industrial version with a power output of 5000 HP.

Figure 27



The LM 2500.

Figure 28

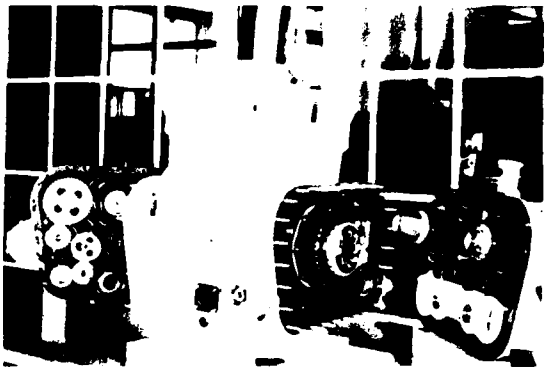


Viper Engine - Series 600 for Executive and trainer aircraft

Figure 29

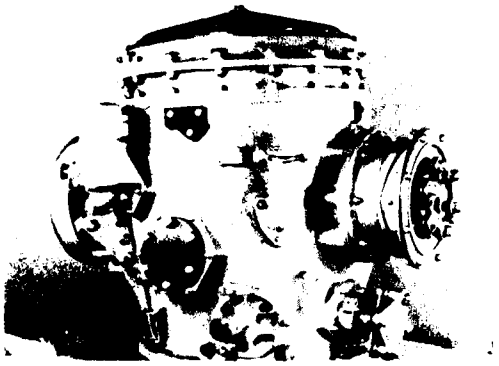
Viper Engine - Series 600 for Executive and Trainer Aircraft. The Italian industry collaborated with Rolls-Royce, in the reason of about 30% of the total spend, to develop the engine in the "Series 600" version. The Italian share of work included design and development of the compressor nozzle guide vanes, combustion chamber, turbine shaft, jet pipe and exhaust nozzle silencer.

Figure 30



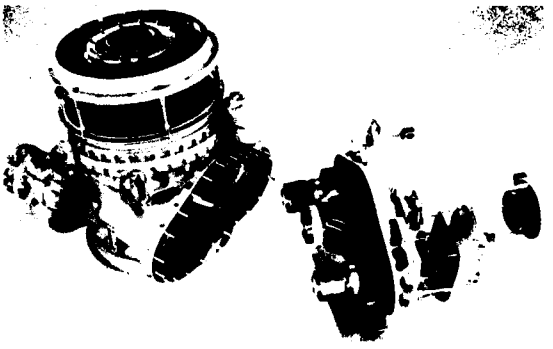
Main Gearbox for Helicopter 330 PUMA.

Figure 31



Main Gearbox for Helicopter Superfrelon.

Figure 32



Main Gearbox for Helicopter Dauphine. Italy holds a strong know-how on gearboxes design and development. This has put our industry in the position to design and develop, on behalf of Societe Aerospatiale, the main gear box for the helicopters PUMA, SUPERFLON, DAUPHINE etc. With regard to the PUMA helicopter, also the intermediate and rear gearboxes have been designed in Italy.

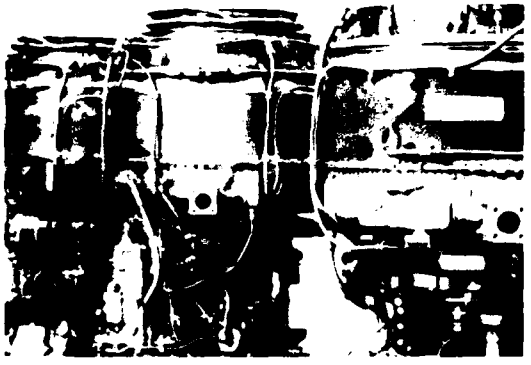
Figure 33

PD 808. 6/10 seat light jet utility aircraft designed and produced in Italy and certified by FAA. Suitable for both civil and military roles it can accomodate up to 9 persons and 2 pilots in the military transport version. From the basic version two military configurations have been derived as trainer and as electronic counter measures aircraft Radio calibration.

Figure 34

P.166-DL 3. Is a light transport aircraft, powered by two turbo-prop engines, capable of carrying up to 10 people or 2800 LBS of payload and suitable for military and civilian roles such as maritime reconnaissance, aerophotogrammetry, paratrooper dropping and ambulance service. The aircraft has a range of 1400 nautical miles, a maximum cruising speed of 200 knots and a take-off distance of less than 1600 ft.

Figure 35

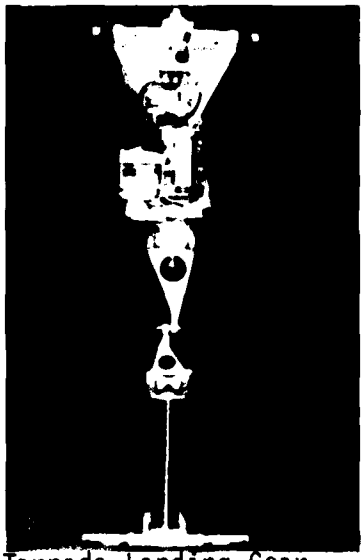


Production of aeroengines ranges from jet-engines up to 4000 LBS thrust to turbo-shafts up to 3700 SHP, and includes integrated logistic support functions for customers and operators. The technological know-how achieved provides a sound basis for the participation in co-development activities related to aero-engines research and development programs.

Figure 36

Experience in the aerospace industry has been put to good use in the development and manufacture of non related products. An example in this line is the Electronic Equipment Shelters built in strict adherence to the latest NATO military Specifications and Standards. These shelters have been adopted since 1966, in Italy and abroad as field communications, command and Control Centers by a large variety of military and civil operators.

Figure 37

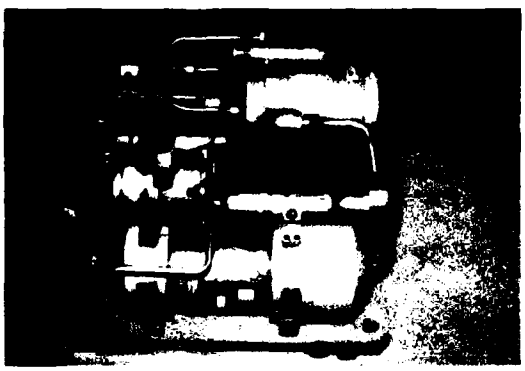


Tornado Landing Gear.

Figure 38

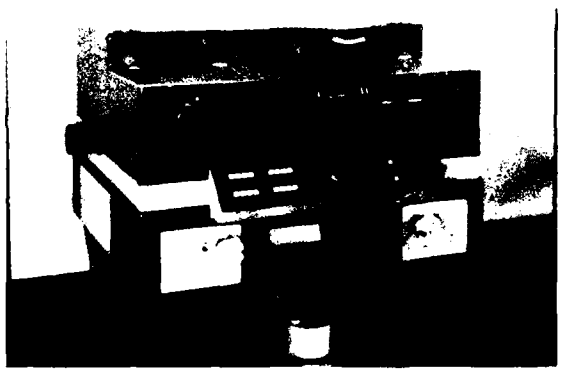
Bomb and Rocket Dispenser.

Figure 39



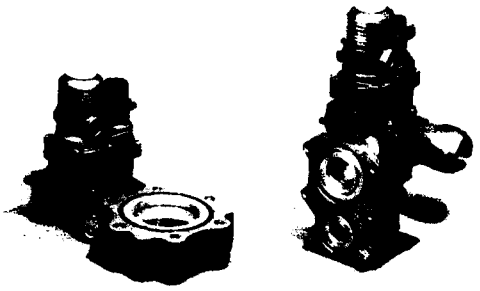
Integrated Hydraulic Unit Missilery Applications.

Figure 40



Special purpose analytical plotter mod. Nesap.

Figure 41

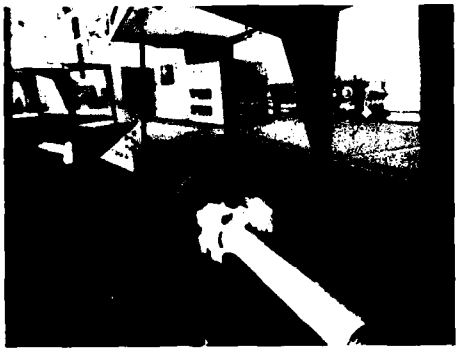


Fuel and Oil motorized valves.

Figure 42

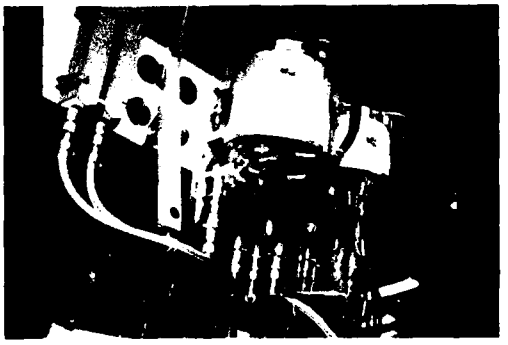
Test stand of a complete wing-sweep actuation system for variable geometry aircraft (MRCA "Tornado").

Figure 43



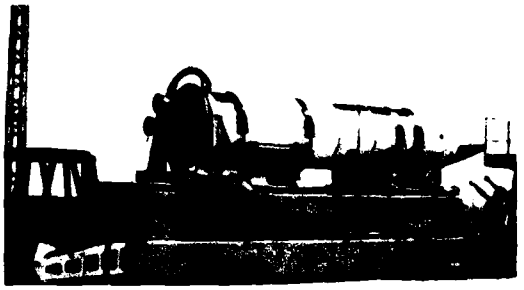
MRCA "Tornado" wing/sweep actuation system.

Figure 44



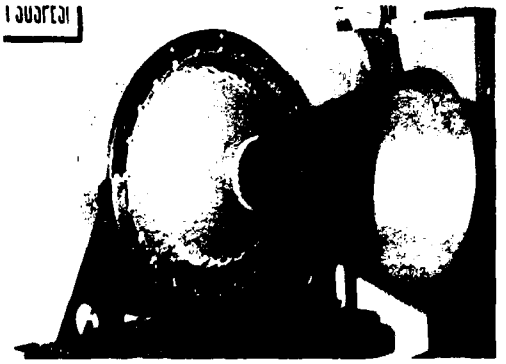
The active Thermal Control System being installed on the European "Spacelab" module.

Figure 45



The ALFA programme has been an experimental interforce programme aimed at creating in Italy the basic technological knowhow required to develop launch vehicles for missile and space application. The propulsion unit is loaded with 6 tons of solid propellant; was successfully tested in 8 static tests and 3 flight tests.

Figure 46



Mage engine in kevlar is one of the many apogee motors developed by Italian industry itself, or in cooperation with other European firms, to support European space programs.

Figure 47

CHAPTER 14

GENERAL ACQUISITION PROCESS

MR. WILLIAM LEVITT

SomE of you may recall that last November, in Rome, we presented a seminar on how to do business with the Defense Department and its contractors. Subsequent to that, we were very pleased with your reaction, and this seminar and your presence here demonstrates your interest in getting on with doing business with us, and implementation of the MOU.

I will present an overview of how our acquisition or buying process works, and how it applies across the whole Department of Defense. Actually, the three services operate in a very similar manner.

Some of you may already be aware of what we say -- some of you were present at the last seminar, but most of what we said bears repeating. We're going to update some of the information. In order for you to compete successfully for our business, you should become intimately knowledgeable of how we operate. You should be aware of our procedures and the organizations that do the buying. This is where we're going to try to assist you today, in making that fully knowledgeable to you.

Things don't happen fast. It will require some effort on your part to determine just which sectors of our buying community you'll have to do business with. The best suggestion I can give you is, don't try to do it all at once. Try to highlight those capabilities of yours which you think best meet our requirements. I call those -- zeroing in on targets of opportunity.

Don't try to bite off everything that we possibly buy. You should concentrate on the things you feel you can compete with, and then slowly expand into other areas. Each of you should, however, suggest that each of your companies develop some sort of a market strategy as to how you approach this big mass of Department of Defense procurements.

As you know, we spend some $30 billion a year. We at the Defense Department, Office of the Secretary of Defense, don't do any of that spending. All of these funds go to the military departments, who in turn use many, many buying offices, each buying different commodities, and employing thousands of people to do the buying. What we're trying to do is facilitate your access to that market through advising you of who they are, what they buy, how to go about making inroads into that market, and also giving you some assistance.

I hope you understand some of our problems inherent in managing such a large organization. It is always difficult to ensure the instructions get down to each and every one of them. Some of the things we are doing, I will recap for you in may closing remarks.

However, I do want you to know that we have designated points of contact by name, telephone number and address in every one of the buying communities. These individiuals are your point of contact for making inroads, if you will, into those organizations.

Too often, and I know this has happened to some Italian representatives, you've gone to these places and you've gotten "the idiot treatment." People just don't know the procedures or they don't recognize that you have, and should be offered, the opportunity to compete on an equal basis with any other producer in the world, especially on an equal basis with U.S. companies.

As Mr. Church highlighted, and I think it bears repeating, this offers you that opportunity to compete on an equal basis. We have really gone out of our way to obtain deviations and exceptions to several regulations, which have been in effect for many, many years, one of which is the Buy American Act. This Buy American Act still applies to all other government activities, and it still applies to anyone who tries to sell anything to us from a foreign nation, except those with an MOU. So the MOU gives you that.

In addition, we in the Department have imposed something we call a balance of payments differential, which is over and above the Buy American Act. It's plainly stated -- as a foreign bidder, for comparison purposes, your bid would be reviewed on an equal basis.

We also, under the MOU, in the last year or two, have gotten Congress' approval to waive a clause, which has been part of our appropriation bill -- the appropriation bill is one that states how much the Congress will, each year, give the Department to buy equipment.

As part of that appropriation bill, there is a clause stating that anything the Defense Departments buys which contains special metals, must be bought domestically. Just by that one line, this would eliminate your eligibility to compete for most of our business. We've gotten a waiver of that from the Congress. Thus, we have gone out of our way to obtain these waivers, so that you can compete on an equal basis.

This does not mean that you compete for everything. There are certain items which are still restricted to domestic producers. This is done primarily to preserve a base capable of functioning in a mobilization environment, in a wartime environment. We do this on a very selective basis. It is just a small number of items, and it is not done arbitrarily.

For a foreign item to qualify as being excluded from foreign competition, in order to maintain our mobilization base -- it requires the personal signature of the Secondary of the Department. We will let you know what those items are, because we feel that in most cases you'd be wasting some of your effort and time -- your marketing effort, if you tried to make inroads in those markets.

We do have some deviations, if you will, in that category. If we have a very large procurement money one year, where we can split the procurement

and still maintain our mobilization base, an end quantity over that minumum sustaining rate is subject to competition by you.

These items represent a very small part, dollar-wise, of our total procurement budget. When we have spent $7 billion, it's a large amount of money each year.

We should also recognize that the bulk of these monies that we spend are spent for large, major weapons systems. You're going to have to recognize that airplanes, submarines, Navy ships and a tank could consume much of that $30 billion. You're competing with us for things like that, but a new fighter aircraft is, I'll have to admit, rather difficult.

This doesn't mean, however that you are cut out form all of that big business. Most of these monies go to major prime contractors. In your buisness and ours, these prime contractors, in many cases, are primarily assemblers, and they in turn use thousands and thousands of subcontractors, to make very large parts and components of the weapons system itself. That market is also open to you on an equal basis with U.S. companies.

What I'm trying to highlight is that the big portion of our procurement is in two different places, one sending directly to the Defense Department, and the Army-Navy-Air Force -- we'll explain how to go about doing that, and the other is to become a subcontactor to one of our prime contractors. We will identify those for you, and this is one thing in your market strategy you're going to have to address. Determine -- and we will help you do this -- who gets all these big contracts I alluded to, and do your marketing with them.

For our part, we are advising these prime contractors of our support of your competing for their buisness. Some of them may be reluctant, and I've got to admit this to you. However, I think in time they will begin to recognize that they should make available to themselves the full resources of the whole NATO alliance, and not just subcontractors.

When you think that these three Departments and their primes use something like 200,000 subcontractors, we think there's room for some of yours. It's a big market, and that's another area that you should zero in on.

The time allotted to us here does not permit me to get into great detail. We did, however, when we were in Rome, go into quite a bit of detail on the procedural aspects of it. I will highlight some of those procedures, and if any of them are questionable to you, you can ask questions. When you go back home, if you're concerned or troubled by anything I've mentioned, please don't hesitate to write back; we will get information for you. In fact, if you don't know who to write to, we are here, and you'll get names and addresses.

We have attempted to establish, within the U.S. Embassy in Rome, some point of contact for you as well. Even in Rome, you can pick up a telephone. I'm not saying that the people in our Embassy are fully

knowledgeable on how we do our business. They probalby aren't, but use them as a conduit, or a point of contact, and I'm sure they will be willing to get you the information you need.

We're a very structured organization. You have to recognize that we employ thousands of people and deal with thousands of contractors, therefore about the only way we can operate is through a set of rules, or procedures. If I had them with me, and put them here on a counter, you wouldn't see me behind them.

Don't be scared by them, because our contractors have to know that they contain, and be aware of them. It's something called the Armed Services Procurement Regulations, and you may have heard of them as ASPR -- we recently renamed them, but just because we renamed them doesn't mean they've changed to any extent. It's how called the DAR -- Defense Acquisition Regulation. It does the same thing. We attempt to what we call institutionalize, or to make standard, or uniform, how we do business, so that Army, Navy and Air Force approach industry in the same way. It's a set, structured procedure on how to do business with us.

It'll scare you the first time you look at it because it's rather complicated. It normally requires an attorney to determine what it says, and I assure you that most U.S. companies do employ attorneys to interpret, and to work their way through these regulations. My advice to you is, if you're going to work in our marketplace, become familiar with these regulations. I don't mean each and every one of your companies has to acquire them.

As a minimum, I suggest that perhaps, through your industry associations, you may want to acquire that. I know some of you have taken on some consultants here in the United States -- that's another approach. I'm not going to recommend any one way, I'm just going to offer you various alternatives, or options, on how to approach this.

One thing I do say is you should become very familiar with how we do business. The successful U.S. companies have become familiar with how to work in our system, and I don't know how anyone else can become successful, unless they know how the system works. Just as U.S. companies, in doing their marketing worldwide, and trying to sell things in the Italian marketplace, have had to learn how you do business --you in turn are going to have to learn how we do it.

I'm not that blind not to recognize that you will represent some of the largest companies in the world. You have marketing organizations, have had them since before I was even born, probably, and you've been very successful in the world marketplace. I recognize all this, but I do want to say that selling to the military is somewhat different.

It's very structured method. It is a very formal method, and everything has to be done in a particular way. If you don't follow the rules and do it just so, you normally will be considered nonresponsive, and therefore not

considered. It's not going to be easy for you to learn these things. It's going to take time, but please be patient.

One of the things I must emphasize to you is to persevere -- persist. Each time I mention something I've got, you immediately think you're going to have to employ people, you're going to have to spend time, you're going to have to make some investments. I don't mean investments in machine tools --I mean investment in time and people to do this. Yes, you're going to have to. You never get anything for nothing. U.S. companies employ staffs just for this purpose. You're going to have to learn how to prepare a proposal for us, and you're going to have to do it our way, not your way, because everybody else who comes to use has to do it in that structure.

You're going to have to continue to make contacts with the U.S. buying community. Don't think, because you mail something in, that they're immediately going to read that and act on it -- it isn't so. You're going to have to maintain some kind of contact.

This doesn't mean you have to contact all these thousands of people. If you're making inertial navigation systems or landing gear or something like that, there are just a few people within our buying community that are specialists in buying these things. So the Italian company and the American buyer need to maintain some kind of contact.

You're at a disadvantage being across the ocean, but you could always do it by writing to them, and occasionally visiting. A lot of you have distributors and agents here. If you don't want to come over yourselves, you can work through your already existent agents or distributors. Some of the advice I can give you, from experience in dealing with some of your companies before, is that there are things you're going to have to address and consider when you do business with us. I'd like to start by how we first determine a requirement. You've heard the term need, or mission need -- it's a rather complex procedure, and the departments do it in conjuction with the Secretary of Defense office, to decide if we need a faster airplane or a rifle that will shoot further, or anything that will fly higher.

The need has to be determined. The decision is handled in a mission area -- an anti-tank area, or an air defense area. There's always the raging argument, how do you kill enemy tanks? Does the Army do it with other tanks? Does it do with artillery? Or do you rely on the Air Force to kill tanks?

When the decision is reached as to which target system they will employ to meet that mission need, they're already thinking of what candidate they might have -- what idea do I have, to meet that mission need?

This is all prior to getting contracts, but it's only an addendum -- and it's marketing intelligence you've got to be aware of. A lot of this information is shared. Some of the information is classified. Of course, you would have to go through the regular channels and procedure to see whether or not you are eligible to obtain some of that information.

Many of the Departments hold seminars in which they describe their future needs. You should try to attend some of those. Some of those are barred to foreign nationals, unfortunately. However, keep asking to attend seminars. Some you will be admitted to, some you will not.

At least you will try to gather information of what our requirements are downstream. Some of these things have been highlighted for you. If not, I think it bears repeating, because this then leads into the procurement of the acquisition thing. When we buy things, we do so initially under the contracts. We end up buying prototypes, we test and evaluate systems before we make any decision as to on what we're going to go into production.

Do not think, because we have an R and D contract with somebody, that he has it locked in. In many cases, it proves that way, but not always. In many cases, we then compete to production, so we do have access to that production.

You've heard the term DSARC mentioned several times here yesterday --Defense Systems Acquisition Review Council. This is the final group of high-level officials in our department, who decide whether an item goes into research, then goes into development and then into production, step by step.

I will assure you that the very highest officials in our governments, especially in our Department, and particularly the people who are on this committee, are insistent that the Departments, before they come to us with candidate systems or want to proceed from one phase to another, have some real content in their systems. We are really serious about standardizing the equipment, and this is one way of controlling and demanding that things like that be done.

To emphasize this, the Council is a very limited group, but they've recently added two members. The two members are Ambassador Komer, who is Secretary Brown's advisor on NATO affairs, and Assistant Secretary McGiffert, who is Assistant Secretary for International Security Affairs.

They've been placed on that Council for one purpose -- to ask the question I've just cited, what are we doing with NATO on this system? You can then be assured that at the very highest levels every system has been scrutinized to make sure there is some NATO content, or some very good justification why there is not.

As a system proceeds from the mission needs and the requirements all the way through the DSARC until it finally gets through production, there are other problems that you will encounter. They're not easy -- I can't solve them, but we wrestle with them every day.

One of them deals with a very real concern of U.S. industry represented here today, and that is the area of technolgoy transfer. Some of it is proprietary data, where a private company has invested its own money, and asks why it should share with U.S. competitors, let alone Italian competitors? There is technology all over which is U.S. Department of Defense-funded.

Those where we own the technolgoy, I can assure you that we will be in your court in trying to expedite or facilitate the transfer of that technology. You have to recognize how U.S. industry views you when we talk technology transfer.

There's one overriding reason for all this, and this is just a personal opinion -- perhaps all of this is worth it if we can make NATO more effective, which is really the goal of this whole program.

Thus, we've got all this planning process, and I told you about technology transfer -- and also the security aspects of much of the work we do, since we are in the military business. You have to recognize that a lot of our information and data are security classified. I'm not going to say we're going to give you everything, because it all has to be handled on a case-by-case basis.

We have a very strict policy -- it's called National Disclosure Policy, and we, even in the Defense Department, cannot deviate from it. We must adhere to it, and you and the U.S. companies who want access to classified information must adhere to it. So, don't think that we're setting up rules or barriers just to you, the Italians, or anyone else --we're not. We have to be very cautious and strict in the way we're living today on the security issue.

However, I want you to know that we will give expedited treatment to some of these. We handle hundreds and hundreds of cases. I know General Bowman and his office gets involved with some of these. There are specialists in this area, and there's a certain set way of doing business, so please, just follow the rules. In this area, we need 30, 60 days -- give it to them. If you want something overnight, in five days or a week, a visit approval, or some information, for instance, you're not going to get it.

Now, be careful when you address an R and D requirement of ours, or a procurement requirement. Read the rules carefully. There's usually a statement of work, a statement of what we require, whether it's in production or not. There's a whole set of specifications -- follow them. Rarely do we grant deviations. If you want a deviation, in most cases, they'll declare you nonresponsive, and you're out of it before you start. Therefore, you must do it according to what the buying office requests. There is a way, however, of easing that. Let me give you an example:

Many of the machine tool builders in Italy and Europe are aware of these metric measurements -- I'm using a very common example, but you can make it more complicated later. Of course, we haven't gotten there yet, so we probably have our specs. in inches. If you quote a metric machine tool against an inch specification, they won't even look at it.

However, we're beginning to get our people to ask for both because of our MOU's, so that you can compete in that area. What I'm saying is, we're beginning to tailor our specifications. This is one way you can influence

specifications on the shelf, which can be one of our needs, before we go through some expensive R and D effort. Get with the people who have this requirement, and before they're locked into a set of specifications, or a set of statement of work, let them be aware of what you do. You described here your capabilities, in just a general overview, and that's good. From here your particular company has to get, I say, one on one, with the man who has the requirement.

Now, if that statement of work, or that request for proposal or whatever you want to call it, comes out with something that you cannot meet, it's almost too late. You have to make your contacts early, maintain those contacts, and make sure that at least you can compete.

I'm just telling you how the U.S. companies do it -- I'm just sharing this with you. One overriding thing we have in the way we do business -- it's very unlike anything that's done in Europe, at least to my knowledge -- we're required by our Congress and just by good business practice to compete in everything possible, and competition or opportunity to compete is what we're asking you to pursue. U.S. companies are probably some of the best marketers in the world, and that's why they're successful.

Therefore, I suggest that you begin to beef up or perhaps add a little stress to your marketing activities. There are all kinds of solicitations. I'm not going to go into them in any detail, because you gentlemen are executives in your companies, and you have people working for you, who worry about things like that. We go out and do formal advertising. Sometimes we use a negotiating technique, and we put out, as I said, requests for quotes, requests for proposals. These words I'm using all have a definition, and they are contained in this good series of books and regulations I told you about.

What we did was we went for quite some detail, explaining every one of those aspects, and this doesn't mean that you have to take notes now and try to remember them. We are always here to explain those for you, and you always have other advice that you yourselves would require.

After companies respond to our requests, we then go through something which we call source selection. We have to make a selection of a source, and we do not do it in the dark, or do not do it blindfolded. We have many, many approaches to this.

If we're going through a fixed-price contract, then it's primarily price-determined. But many, many of our contracts are competed on what we call a negotiated basis, in which we actually examine the books of the company involved, to make sure you're not trying to make undully high profits. There are limitations on profit, or limitations on overhead expense. There are limitations and restrictions, in many cases, on advertising costs, gratuities, and many such things.

We've attempted to see where we can get an easement of it, but you have to recognize that if we did an easement for you, why shouldn't we do the

same thing for the U.S. contractor? He indicates, and rightfully so, that if we gave you an easement from some of our regulations, he should have it too.

This is rather difficult, because many of these are in the law. However, your laws of your country are sometimes different. Thus, we have to look at each country to country case somewhat differently. I want you to recognize when we're dealing with our buying community, or dealing with many of the people here, that these thousands of people, and these major buying activities, are actually the contracting officers.

They have this set of rules, and they're going to adhere to this set of rules, along with the law -- so that you can deal with them, when you're costing and pricing an item. You also have to have what we call a qualified product. It may be that you might have to send samples, so people could test, so we know that you can make the thing. We just cannot risk, in our business, dealing with contractors who, maybe a year after they have the contract go bankrupt because they are not financially viable, or it they don't have the physical plant, the machine tools or the intelligence to make that item.

We cannot risk denying our forces that weapons system for a year or two, because we made a bad business decision selecting our contractors, so we have to be very critical in that area. We have to make sure we get the right contractor. You've got to meet our specificaions, and above all, you've got to be what I call responsive.

If you're going to sell to us, or to our contractors, you've got to adhere to what they want. Sometimes you may consider them unrealistic and I'm sorry, but that's the way the marketplace works. This means that if you'be got a request for a bid or proposal, and it says that that bid has to be in on 1 August, and you get it in on 2 August, you're not responsive.

All that work you put into that bid and proposal -- maybe 500 man-hours, goes in the wastebasket, or it's returned to you. If there's a date, you'd better meet that date, because that's the way we do business.

Then, even after you're successful on a contract, we just don't turn our back on you. We have very elaborate and extensive -- what we call post-award, after the award is made, administrative services. We'll audit the contract, making sure that we're getting good value for what we're paying.

We have a rather extensive organization that is just contract administration. We recognize, however, that we're not the inventors of all this. We're only 200 years old. You're been in this marketplace a lot longer than we have. And you have, within your government, within your industry, some similar procedures -- we know this.

What we are attempting to do is to get approval within our government on certain aspects that we would bid on. As an example, when we did contract

administration after the award for you, and you did it for us, we had to pay each other for that. We have asked for a relief from that in the legislation, stating that we would exchange these services on a reciprocal basis without charge. We're very optimistic that that will go through.

We're also working toward a reciprocal basis contract audits. That is, contracts you place here in our country, our audit people will audit for you. Contracts we place in Italy, your audit people could audit for us.

Of course, it requires an examination of both audit systems to see if they're compatible, and to see if the audit system meets the rules of each of the respective countries. These are some of the things we do. There's something else you also have to look into, and that is it may require some investment, capital investment, in new machine tools or facilities, et cetera.

This is recognized in our system, and we do this for our own companies -- we have something called progress payments. After you've gotten the contract, you don't have to wait two years until you deliver it to get paid. We make progress payments in the interim. These are things you are allowed to examine.

I've attempted to just synopsize some of the things that I think we should be aware of, and should address. Let me tell you some of the things we're further doing to help.

We have recently written two sections in this DAR -- the Defense Acquisition Regulation, which covers only how to deal with foreign companies, how to handle foreign purchases under the MOU, so that all contracting officers will know how to do do it, and do it in a uniform manner. We hope to get that published in just a few months.

We have had it for over a year. We have established a new course within our Defense Systems Management College, which is a college where we train all our senior civilians and military people who are our program management officers -- this new course is called Multi-National Programs, to explain to them and get them to recognize not only the importance of these programs, but how to go about working with them.

We're constantly putting out publications. We made available to you, in the room, maybe 20 different publications and many copies, which many of you took home. Hopefully, you won't do with them what we sometimes do with your publications, put them in the bookcase or in the desk. These publications are important to you, to know how to do business with us, and for points of contact.

There is one particularly valuable publication I'd like to mention. It's a guide to foreign firms, telling you how to do business with us. It is a little shorter than others, because it isn't a stack of all the regs. It's a condensed version.

Let me end by saying, find targets of opportunity, and try to match your capabilities with our requirements. Don't try to bite it all off at once, and please be patient. In this business, nothing happens overnight. You know, from when we first come up with a mission need until we finally let a production contract, could take sometimes as long as ten years. We're very concerned over that length of time -- of course, that includes research and development and engineering and testing, and all that, in the interim.

Our companies have learned to be patient, and as a result they've become successful in this business. So please, be patient. But, in spite of being patient I don't mean to be complacent, and just sit back and wait for it to come into your lap -- be persistent. Do your marketing.

CHAPTER 15

ARMY PROCUREMENT SYSTEM

MRS. SALLY CLEMENTS

I appreciate this opportunity to participate with such a distinguished group in discussing the practical aspects of making the US-Italian MOU work.

Mr. Levitt has briefed you on the general acquisition process of the Department of Defense. I will tell you about the Army's organization and acquisition process and how to do business with us.

There are primary agencies and organizations within the Army responsible for materiel management. The Secretary of the Army has four Assistant Secretaries, two of whom are primarily concerned with materiel acquisition and management. I am Sally Clements, Deputy for Materiel Acquisition Management in the Office of the Assistant Secretary of the Army (Research, Development, and Acquisition).

The Chief of Staff directs the Army Uniformed Staff and has four deputies, three of whom have roles to play in materiel management.

1. The Army Deputy Chief of Staff for Operations and Plans has general staff responsibility for overall force development, requirement determinations, and establishment of priorities for the development and procurement of materiel.

2. The Deputy Chief of Staff for Logistics has general staff responsibility for the movement and maintenance of forces, the logistical planning and support of Army and Joint Service operations, and supply and maintenance management for materiel. He is also responsible for Army support of international logistics activities, transportation, and Army inter-Service supply operations.

3. The Deputy Chief of Staff for Research, Development, and Acquisition has general staff responsibility for the management of Army Research, Development, and Test Evaluation. He is responsible for materiel life cycle management from concept phase through acquisition. He also manages the planning, programing, and budgeting for the acquisition of materiel obtained by the procurement appropriations for the Army.

In addition the Army has five large major Army Commands involved in materiel management.

1. The Commanding General, United States Army Forces Command, commands all assigned Active Army forces in the Continental United States, the Continental United States Armies, and the United States Army Reserve within the United States.

2. The Commanding General, United States Army Training and Doctrine Command, is responsible for the training of individuals in the Active Army and Reserve Components. He also formulates and documents concepts, doctrine, materiel requirements, organizations and appropriate systems for the Army in all environments, tactical and non-tactical. He is the "user's voice" for the Army.

3. The Commanding General, United States Army Materiel Development and Readiness Command, or DARCOM, develops and provides materiel and related services to the Army and to other United States and foreign agencies.

4. The Commanding General, United States Army Communications Command, is responsible for the engineering, installation, operation, and maintenance of the Army portion of the Defense communications system and other assigned Army communications.

5. The Commanding General, United States Army Corps of Engineer Command, is responsible for the management of Army engineering, construction, installations, family housing, real estate, facilities' requirements and stationing, and real property maintenance activities including environmental preservation and improvement.

As you can imagine, Army acquisition is designed to procure for our Service the goods and services which meet defined requirements. Be it a test for one person or thousands of tanks, every Army procurement action starts when some user defines his requirement, budgets for its acquisition, identifies precisely the product or service which will meet the requirement, and causes the solicitation of suppliers and the consummation of the procurement.

The process by which the Army establishes requirements, budgets to meet them, and procures to budget can be as complex or as simple as the products or services to be procured. With major weapons systems, it is not unusual that decades pass as doctrine is developed, requirements formulated, budgets prepared, specifications and standards defined, prototypes constructed, and final production initiated.

In its procurements, then, Army procurement officers at the various procuring agencies generally solicit suppliers on their bidders' lists, specifying in the solicitation the standards and technical specifications which must be met. Suppliers desiring to compete for the products must provide articles for testing, or if other evidence of qualification is appropriate such other proof or documentation of qualification which is acceptable.

In addition to qualifying on each individual procurement solicitation, suppliers of manufactured products may volunteer items for pretesting at their own expense and inclusion on the qualified products list. Such prequalification is especially advantageous for those types of items which are repetitively procured.

Because of the great variety of the products and services that the Army procures and the diverse nature of specific procedures applicable to various classes of procurements, the point of contact within the Army for any supplier hoping to do business with us is the procurement officer at the various procuring commands.

Though contact can be made in any form, it is essential for potential suppliers to apply for listing on the bidders' list applicable to his product line, for only listed bidders are assured of receiving timely information on solicitations. For suppliers desiring advance information on the development of new Army requirements, the procurement officer is in the best position to refer inquiries.

In order to facilitate the special program we have implemented under the US-Italian MOU, the Army has designated special points of contact for you, in most cases the very procurement offices you would normally deal with. These points of contact are familiar with the provision of the MOU and the requirements of their Commands and are available to assist you.

The US Army Europe and Seventh Army is of particular interest. Mr. Bennett is the Deputy in the Procurement Division that is responsible for procurement of supplies and services used by the US Army forces in Europe not otherwise supplied by the appropriate commodity commands.

The bulk of the Army research, development, and acquisition, in which we anticipate you will be interested, is handled by the Materiel Development and Readiness Command (DARCOM) and its sixteen major subordinate commands.

There are also more than 60 program, project, and product managers located at the various DARCOM subcommands. They are known as PM's.

There are major or critical weapon systems and equipments the PM's manage. Several of them you have expressed an interest in. For example, at the missile commands we have TOW/DRAGON, STINGER, and GSRS, and at the Armament Research and Development Command, the DIVAD Gun and COPPERHEAD.

Individual points of contact are responsible for procuring production end items and repair parts for Armament, Troop Support and Aviation, Missiles, Tank-Automotive, and Communications and Electronics Materiel.

Finally, my office is available to you also for information, guidance or assistance in resolving difficulties which can't be handled at lower levels.

At this point I would like to reiterate and recommend for your consideration some steps you can take in doing business with the Army.

First, call, write, or visit at the agencies with which you desire to do business. The agency can save you valuable time by putting you directly in touch with the proper procurement or technical person involved with your specific area of interest. Discuss your capabilities, interests, and capacities.

Second, obtain and complete the application forms to get on the Bidders' Mailing List and return them to each appropriate buying agency office. Your forms will provide the information necessary for each buying agency to place your company on the Bidders' List for those items or services in which you have indicated interest and capability.

Don't rely entirely on automatic receipt of IFB or other solicitation. Maintain contact with the Project Manager and/or buyer at the installations concerned.

Third, read the Commerce Business Daily. This publication carries notices of forthcoming solicitations for bids or proposals and notices of awards of contract. Thus, information is available on both prime and subcontracting opportunities. For persons located outside the Continental United States, the timing of these notices may not always permit adequate response. With regard, however, to subcontracting, the notices of contract awards give potential subcontractors the information necessary to contact prime contractors with a view toward participation.

Fourth, be alert to announcements of federally attended or sponsored industrial liaison meetings pertaining to your interests.

There is a wealth of information available through non-Governmental entities and organizations. Common interest groups such as the American Defense Preparedness Association and the National Security Industries Association, along with professional organizations such as the American Institute of Electrical Engineers, hold frequent seminars and other gatherings at which information relating to the future course of the Army and indeed other aspects of the Department of Defense are discussed. Organizations such as these also sponsor courses designed to impart to industrial participants improved methods of marketing their products to the Department of the Army and the Department of Defense as a whole. Make it a point for you or your representative to participate whenever possible.

On a somewhat more detailed level, there are two programs within the Department of the Army designed to communicate to industry the Army's needs in specific areas during a range of future periods. The first is the Army's advanced planning procurement information program administered at Headquarters, Department of the Army, by the Director of the Office of Small and Disadvantaged Business Utilization and at each of the buying activities by an Army/Industry Materiel Information Liaison Officer. This program is designed to make available to industry advance planning procurement information on Department of Army planned materiel programs on a continuous, direct contact basis at the earliest practicable time in the planning cycle.

The other program is the quantitative requirements information program administered principally in the Army by the Technical Industry Liaison Office at Headquarters, US Army Materiel Development and Readiness Command in Alexandria, Virginia. This office administers and provides for advance

planning briefings to industry in each of the several commodity areas such as Electronics, Missiles, Aviation, Automotive, and the like.

Now let us turn to some illustrations of opportunities to compete and/or cooperate in Army procurements.

Dr. Yang has mentioned the Aerial Scout Helicopter program in which your A-129 helicopter is competing. The associated Target Acquisition Designation System (TADS) and Pilots Night Vision System are currently under development with competing prototypes from Northrop and Martin Marietta. Contract award is anticipated in the first quarter of next year.

The prime contractor for STINGER is General Dynamics. STINGER is scheduled to be fielded in Europe in August 1980. This past December the FRG chose STINGER for their future MANPADS and it has been discussed as a common NATO weapon.

The General Support Rocket System has two competing prime contractors, Boeing and Vought Corporation. Contract award is scheduled for May of next year. The Army FY 1980 Budget submission included the funds necessary to start Low Rate Initial Production beginning in FY 1980.

The COPPERHEAD is in engineering development by Martin Marietta Aerospace, with a production decision scheduled for September of this year.

A bilateral MOU with the UK on COPPERHEAD was signed in June 1978. This MOU provides for the acquisition of COPPERHEAD by the UK, at their option, through FMS or coproduction. The UK subsequently requested and received permission from the US to provide copies of the MOU to Italy and the FRG, their trilateral partners on the FH-70 and SP-70 howitzer development. This request was based upon an expression of interest in a quadrilateral MOU by the FRG and Italy. Earlier this year, after a briefing by the project manager, Italy requested coproduction rights of COPPERHEAD from the US. This action is currently being processed with OSD.

COPPERHEAD is funded to complete research, development, test, and evaluation in fiscal year 1981.

TOW Heavy Antitank Assault Weapon is currently produced by Hughes. Ten NATO Allies possess or have ordered more than 50,000 missiles. The product improvements that Dr. Yang mentioned are funded at $3.5 million in FY 1979 and $26.2 million in FY 1980.

The Fighting Infantry Vehicles, the IFV and the CFV, are being developed by Food Machinery Corporation.

The first prototype vehicle was received on December 1, 1978, and after DT/OT testing, a production decision will be made in January 1980. Under a Statement of Accord, the UK is conducting a study of the IFV/CFV and derivatives, comparing them against the UK General Staff requirements and procurement options. Italy has indicated an interest in coproduction of the IFV/CFV.

Hughes Helicopter is the contractor for the 25mm cannon.

Congress has provided $39.0 million for long-lead time item procurement in FY 1979 for the IFV. Development is funded through FY 1982; and initial production begins in FY 1980 with 208 IFV/CFV's with delivery starting in May 1981.

The Remotely Piloted Vehicle program has been approved for entry into full-scale engineering development and contract award is scheduled for August 1979.

The Standoff Target Acquisition System (SOTAS) engineering development contract was awarded to Motorola, Inc., and fielding is expected in the mid-1980's.

The advanced development model, known as Interim Interim (I^2) SOTAS, has been demonstrated to British, FRG, and Canadian forces. All three have expressed interest in further opportunities to evaluate or observe the system. Two I^2 SOTAS are now in Europe so that concept evaluation by NATO allies should be facilitated. The I^2 SOTAS has participated in REFORGER 76, 77, and 78 and will participate in REFORGER 79 this September.

The Single Channel Ground and Airborne Radio is in advanced development with three contractual efforts: two slow frequency hopping (SFH) contracts, one with ITT and one with Cincinnati Electronics with Marconi of the UK as a subcontractor, and one fast frequency hopping (FFH) effort awarded in April 1978 to Rockwell/Collins.

A decision will be made in the April-June 1982 period whether to go into Engineering Development (ED) or to bypass ED and go straight into production.

The 10 Ton Truck program is planned for competitive acquisition of a commercial vehicle with contract award scheduled for May 1980. American, German, British, and Italian firms have shown in interest in the program.

The Army has programed $23.1 million in FY 1980 for procurement of 10-ton vehicles to transport conventional ammunition.

Administrative-Use Vehicles. Since 1976, the US has been studying an RSI program for a cost-effective source of low-density, non-tactical, administrative use vehicles (AUV) from European manufacturers for US forces in Europe. Projections are that approximately 15,000 vehicles will be processed over the next five to seven years at an estimated cost of $190 million.

During FY 1978 the AUV program was implemented in Germany with the Army procuring 125 Volkswagen vehicles at approximately $0.8 million, and the Air Force procuring 100 vehicles at an estimated cost of $1.4 million.

Once total program conversion has been achieved, the Services will spend $10-$15 million annually for replenishment assets in the FRG. Logistical

support for the vehicles is being accomplished in-house and under local support contracts with the respective vehicles manufacturer and his dealerships.

Such a program has been approved for the UK area and feasibility studies are being conducted by the Services for possible expansion into Italy, Spain, Greece, and Turkey. Approximately 2,000 AUV are involved in the UK program, with an estimated 3,500 vehicles for the remaining four Mediterranean countries. The initial program in Italy is estimated at about $10.0 million over five years with $1.0 million annually for replacements.

Modular Infrared Equipment. The US has developed a family of forward-looking infrared common modules (MOD FLIR) which are in production for target acquisition and fire control systems, e.g., the TOW Night Sight (AN/TAS-4) and Tank Thermal Sight (AN/VSG-2). These systems will be fielded in USAREUR beginning in 1979, and the same modules are used in Navy and Air Force airborne FLIR's. These passive FLIR systems provide imagery from the natural heat radiation of targets in spite of darkness. They suffer only limited degradation from smoke, haze, dust, and fog.

A Memorandum of Understanding (MOU) with the FRG for sale and coproduction of MOD FLIR became effective in April 1978. Pilot production of German-made common modules is scheduled to begin in 1981.

Within NATO, the US is preparing an MOU for presentation to Project Group 15 of the NAAG for the sale and coproduction of MOD FLIR among interested memer nations. Current participants are the US, the FRG, Italy, and The Neherlands; Belgium is an observer.

MOD FLIR is fully funded for FY 1979-1984. Full-scale production of end items using the common modules began in October 1978.

New Industrial Production Equipment for Watervliet is programed during the 198 through 1984 timeframe for approximately $118.0 million. Mr. Serafini, Minister of Commerce, at your Embassy in Washington, obtained information from the contracting officer on the types of equipment they are buying.

As you can see from these examples, the US-Italian MOU has already led to increased interestin exploring coproduction possibilities. As we progress with our joint efforts, we anticipate additional business for Italian firms. This will contribute simultaneously to increased standardization of materiel between our two nations.

CHAPTER 16

NAVY PROCUREMENT SYSTEM

EDWARD WILLIAMSON

I'll discuss the Navy organization regarding what kind of information you should be interested in and how, perhaps, you ought to look at the Department of the Navy with regard to your corporate management interface and marketing activities.

Navy Contracting Organization

The head of the Navy organization is, of course, the Secretary of the Navy. In general, the Secretariat offices are policy and management oriented and are not directly involved in contracting or requirement generation. Within the Secretary of the Navy's office, we have three Assistant Secretaries.

The Assistant Secretary for Financial Management has reporting to him the Automated Data Processing Evaluation Support Office which is primarily concerned with the acquisition of commercial computers. It is also primarily involved with the General Services Adminstration in its acquisition activities. Therefore, I do not expect it to be of direct interest to you.

The Assistant Secretary of the Navy (Research, Engineering, and Systems), is responsible for all international matters. His is the lead office in the Navy for staffing the Memorandums of Understanding and is the interface with General Bowman's office in ISA and with Dr. Perry's International Programs office. This responsibility also includes all R & D up through the decision for production and production matters of a technical nature, even thereafter. However, this program responsibility excludes shipbuilding.

Thus, if you have programs that are in research and development or a program that has technical decision involved, such as an improvement, they would come under the ASN(RES). An example of the latter that was mentioned earlier is the product improvement program for the 76 mm projectile for the Oto Melara 76 mm (MK 75) gun. Such a program is normally funded with production money which is not under the ASN(RES); but, since it is a technical requirement, the technical lead will actually still be under the ASN(RES).

The Assistant Secretary of the Navy (Manpower, Reserve Affairs, and Logistics) is responsible for the production and logistic aspects of programs and for the implementation of the Memoranda of Understanding. He also has procurement policy underwrites the publishing of the Navy Contract Directives as well as providing the Navy Policy Member who sits on the Defense Acquisition Regulatory Council for the Department of Defense.

Mr. Hidalgo, who heads this office, is also the lead Assistant Secretary for all shipbuilding matters. This is primarily for the planning, contracting, and business aspects of the construction of the hulls, not the systems and technical decisions as to what goes into them, as gun systems and things of that nature, but the ship construction itself.

The next management level below the Secretariat consists of the Chief of Naval Operations and the Commandant of the Marine Corps.

The Marine Corps headquarters staff is very limited with regard to procurement. Their procurement and contracting policy comes out of the "Navy" side. They do effect some direct buying, but most of their equipments come from Navy activities or from the Army. The Headquarters, Marine Corps combines requirements generation, contracting, and administration of field activities.

Most Navy programs have their requirements initiated within the Office of the Chief of Naval Operations. There are two offices there with which you should be familiar.

The first office is the Research and Development Office (OP 98) which works directly with the Assistant Secretary (Research, Engineering, and Systems). It develops and essentially executes, through the rest of the Navy, the majority of Navy research and development programs. To some degree, it also gets into other technical matters under the present Navy organization.

The other office with which you will have to become familiar to participate in Navy programs is our Security and Technology Disclosure Office (OP 62).About a year and a half ago, when we started processing visit clearances and technology transfer requests resulting from the various Memoranda of Understanding, we recognized that the process was taking too long; there were too many separate offices and people involved, and things were not getting done. As a result, the Secretary of the Navy directed that the Chief of Naval Operations establish a single office for processing technology transfer and security requests. This office is now centralized as a single Department of the Navy contact point for the Navy and also for the Marine Corps. As a result of the ASN(RES) role in international matters, any appeal of decisions made concerning technology or security goes by way of the ASN(RES) to the Office of the Secretary of Defense, if necessary, on those types of matters.

What the Chief of Naval Operations does not have in the Navy organization is a procurement policy office. They do have a foreign military sales office (OP 63), but they do not have a procurement or contracting policy office.

When the Navy Department was reorganized in the early 1960's, the Navy procurement and material policy office, then working directly for the Assistant Secretary, was shifted under the Chief of Naval Operations and retitled as the Naval Material Command. That office remains under the Chief of Naval Operations and the Chief of Naval Material, a four-star admiral, now is the head of the Naval Material Command. This is the major procuring group in the Navy and the primary group with which you will be interacting with regard to your product lines. The Chief of Naval Material, for procurement and logistics matters, continues to be authorized to deal directly with the Assistant Secretary of the Navy (Manpower, Reserve Affairs and Logistics) on such matters.

Recently, there has been established within the Office of the Chief of Naval Material an office to review technolgoy transfer requests and to provide a single office for evaluating those requests on behalf of the Naval Materiel Command MAT 08D. It will be dealing with its counterpart and liaison offices in the Office of the Chief of Naval Operations. That office exists now but is only a few months old.

When we get down below the Chief of Naval Materiel level, we get into what can be termed the Navy's "requirement activities." When we talk about the "hardware" commands, we are primarily talking about the Naval Air Systems Command (NAVAIR), Naval Electronic Systems Command (NAVELEX), Naval Sea Systems Command (NAVSEA), and Naval Facilities Engineering Command (NAVFAC).

Each of these has various field organizations, some of which you will be dealing with, depending upon their size, location, and how the particular program you're interested in is actually handled by the Project Manager.

The Naval Supply Systems Command has almost all of the field contracting activities. I differentiate between what I would term a requirement activity, such as the hardware commands which also do purchasing, and a pure contracting activity which is essentailly put together as a means of economizing resources within a functional area. For instance, the NAVAL Regional Contracting Offices. The Regional Contracting Office in Naples, for instance, is the Navy contracting office for the Mediterranean area; they also have a subsidiary office in London. Some of you who are in shipbuilding may have done some shipbuilding repairs contracted for through that (the Naples) office. They also do the Navy regional buying for the European area.

That is a brief contracting and "business" overview of the Department of the Navy. One point I would like to touch on are our inventory control points: The Aviation Supply Office in Philadelphia and the Ship Parts Control Center in Mechanicsburg, Pennsylvania these, from the standpoint of marketing, are fairly large activities. If you get into a program for which you ar either the prime or a large subcontractor, or where you are involved in the logistics end of the business, and you are interested in being contracted with directly spare parts and for logistic elements, you will eventually.

These, the primary inventory control points They do about 1-1/2 billion dollars of business a year. Both of these inventory control points, however, handle other than what we would consider classic spare parts. They do make some equipment buys and large replenishment buys. For instance, the Aviation Supply Office buys altimeters for airplanes. Almost all their competitive business is formally advertised.

Let me talk now about the Navy requirement activities, which are identi fied as the "hardware commands." I'll also discuss briefly some of the types of programs. It isn't possible to speak to all of them but, out on the table this morning, I put a Navy booklet of commodity listings by contracting activity which does list, for major contracting activities, the

various types of products together with that list -- and I notice they were both gone when I went out there during the break -- there was also a listing for each of these contracting activities giving a central contact point, with a telephone number and address to assest you in contacting those particular activities.

I will briefly go over some of the programs that fall within these various commands, starting with NAVAIR. You're familiar with the Sidewinder missile -- that is a NAVAIR program. In Europe, now, Germany is the lead, but Italy is one of the participants with regard to the coproduction program. NAVAIR, by way of potential, also buys the P-3 anti-submarine warfare aircraft. It's fairly widespread, with regard to foreign military sales: Netherlands is buying some, Japan has bought some. It's also integrated into the NATO-ASW program, which Italy tracks through the auspices of NATO.

I've mentioned the P-3 program because NAVAIR is currently in the process of defining the follow-on program to the P-3. It's called the Advaned Maritime Patrol Aircraft. I mention it because it's a very large program for the 1980's and 1990's, and it will have a lot of internal equipments involved in it with potential, perhaps, at the prime level but, certainly, at the subcontract level. I mention it also because there is currently a British firm that is attempting to sell some electronics to that program. They are actively marketing at this time over in NAVAIR. It might be well to look into this program, from the standpoint that you're early enough that you'd be able to make the appropriate contacts, determine what kind of equipments you're capable of furnishing and, perhaps, establish either a relationship with a potential prime here in the States, or investigate the potential of you yourself becoming a prime, for either minor or major equipments.

I would like to caution you, however, with regard to that program --the British, and I expect for any other foreign company that shows an interest -- there are security problems associated with that program. We have, however, promulgated guidance from Secretary of the Navy Claytor with regard to restrictive specifications on the Navy's programs that could be cut out, not hurt the program, and allow foreign participation.

We are looking at that program very hard. We have gone back to it at least twice at the requests of British firms, and it looks like one of the British firms may have found a way to get into the program. It's not certain yet, but it's possible. They haven't given up, and I think that's the key particularly to that type of program.

Sonobuoys fall under NAVAIR and have been shown to be inter-operable in some exercises. The U.S. does buy them under mobilization base exceptions, with the result that our production is excluded from the MOU. However, I don't know what potential there would be for any kind of co-production because of various security matters but it is an inter-operable type of equipment.

A program that was talked about yesterday, also under NAVAIR, is the trainer program, the VTX, which the Navy is now calling the VTXTS to show inclusion of the training system and to show that it is not just the airframe.

The VTXTS program is now is getting underway and, it was mentioned yesterday, the Air Force also has a new trainer program going. You have already had one of your Italian firms interested in this program. The hardware solicitation is supposed to be going out this coming year. Right now there are, I believe, four American contractors with small study contracts, but that shouldn't be determining with regard to future competition, given the potential value of the program.

Let me move now to the Naval Electronic Systems Command. Some of the programs which you may have heard of for them are: NATO SEA GNAT, which is primarily a UK-US program; there are also electro-optical devices available through NAVALEX, one of which is the Infrared Tracking System (IRTS) which is a US-Canada program and has been for several years. ITRSis being tracked by Italy and is potentially one of the NATO countries to be involved. As to whether or not IRTS will be opened up to competition, I don't know. There has been talk about it. I don't know exactly what they have in mind, but certainly there is some potential there, particularly if there are any kind of formal agreements established for this program among Canada, the US, Italy and any other countries.

NAVFAC is the Navy counterpart of the Army Corps of Engineers. It has very little to do in Italy. We do have some activity in Spain. They have also been obtaining some cement through the Navy Regional Contracting Office in Naples, but that has been strictly a competitive operation, although it totalled several million dollar's worth.

Let me now talk about the Naval Sea Systems Command. NAVSEA is the largest of our requirements commands, and is also the most complex. They buy everything except airplanes and avionics. They also have probably the largest number of programs of potential interest, at least at this point in time, to the NATO community, for various reasons.

We talked yesterday about shipbuilding restrictions - we touched on that briefly. There are a number of shipbuilding restrictions and, like most countries, the shipbuilding industry in the US is no less political than it is in any other country. however, for other than hull construction. We have contracted to European firms for reduction gears, stabilizers, trash incinerators, and shafting.

Thus, there is prime contractor potential in the shipbuilding program, but it is primarily as a subcontractor. When we buy a ship, we generally buy it complete, except for electronics and weapons. Other than that, everything comes through the shipbuilders. So, if you're looking to provide any type of hull machinery or interior communications, you will probably be looking to a U.S. shipbuilder as the potential prime, with yourself as a potential subcontractor.

One cooperative program NAVSEA has and I'm sure we're all familiar it, with is the very successful NATO SEASPARROW Surface Missile System. I mention that with a warm feeling, because I was the original contracting officer for that program over 10 years ago.

We talked very briefly yesterday about intellectual property. Let me just say this on intellectual property -- we will continue to try to establish, I'm sure, policies on intellectual property between NATO countries. As a result of experiences that we've had with various countries, with programs subsequent to NATO SEASPARROW using MOU's as well as contracts, it seems that the solution to intellectual property is almost on a case by case basis rather than by generalized policy. It has been very difficult to generalize. We run into differences in terminology, in custom, and in law, all contributing to an extremely complex area. I'm not entirely sure we've solved it even within the United States, and if that's the case, I'm not sure we will ever solve it on an international basis. I don't think we've failed to resolve intellectual property on a case-by-case basis, but we have had policy resolution problems. I feel that will continue to be the problem as far as we can see into the future, or at least as far as I can see on behalf of the Navy.

The Rolling Airframe Missile (RAM) program, which we recently signed up for under a Memordanum of Understanding with Germany, will interface to some degree with the NATO SEASPARROW launcher. You (as contractors) may well be involved in that program or, at least, Italy (as a government) may be involved in that program.

We're also familiar with the NATO hydrofoil, which we are now building through Boeing Aircraft and which was originally a multinational program. Currently it is only being pursued in production by the U.S. You probably also know that the radar on th PHM is of Italian production. Also, that particular radar is bought as a subcontract item under Boeing. It is not now bought as a prime item by the U.S., although, if we have requirements for other ships, we may well break it out and buy it directly.

Let me touch briefly on another program in NAVSEA, which is the Penguin. Some of you approached me in Rome and suggested that there may be Italian systems that could compete, and for those of you who are not familiar with the Penguin, this a Norwegian Surface Missile System on which the U.S. Navy has agreed to do some testing, and for which we will buy one system for this purpose.

The situation I'm trying to point out by reference to the Penguin is that if you're agressive in your marketing, that same possibility exists for you. It can be done government to government or perhaps through an unsolicited proposal from a company subject to whatever approvals the Italian government need give. If you do an agressive marketing approach, that is one possible way of having us look at one of your systems, but it's a long-term approach. For instance, it has taken several years for the Penguin to get where it is. As a matter of fact, this week the contracting people are in Norway trying to negotiate the contract. I just point that out as a potential marketing initiative, whether it be a missile system or anything else.

NAVSEA also has the MK-75 Oto Melara 76mm gun, which certainly is a well-known topic at this conference, and that is co-produced in this country

by Northern Ordnance under what we call an Exception 16 as a mobilization base requirement. This year we decided, for reasons of our own, to break out and subcontract parts of the gun mount in order to try to relieve the production impact at Northern Ordnance. We did award to them (Northern Ordnance) this year or, rather, we will award to them -- and some of the parts for it will be broken out and placed overseas. We're taking this look now because of the production impact and the schedule slippage at Northern Ordnance. We hope the breakout will be able to include those critical items which are contributing to the production impact so that we can get back on schedule because the delay is costing us quite a bit of money and time.

Also, by buying these parts overseas, we'll get a better idea of our configuration control since we will be buying from, probably, Oto Melara subcontractors or Oto Melara itself.

We have had some inquiries recently on a small ship radar, also out of NAVSEA, out of the radar group there. This is a Class B radar. The radar, by way of size, is essentially what is used in the PHM. There has been international interest in this program. The competitive specification is being written to make it available to foreign countries and their contractors in order to compete. We've had interest in this program so far from the UK, Italy, and Canada. The solicitation will probaby go out this coming year, and we hope to award the contract next year, with production by '81 or '82. This is a program that has a lot of potential. You're timely, and it would be a good one to look into if you think you're competitive in this particular radar field.

There is one other program -- and let me touch on it briefly --that Dick Metrey mentioned yesterday, the SSURADS (Shipboard Surveillance Radar System).

This particular radar is to be a smaller version of the Aegis. I don't mean that RCA is going to build it, but it will have similar capabilities, and it is intended to control the SM-1 and SM-2 type missiles as part of its capability. It's going to combine 2-D and 3-D radar capability into a single, integrated system, and will probably go on DD (destroyer) or FF (frigate) size hulls.

For those who might be interesred, let me just offer the following schedule. Later this year, there will be a solicitation sent out by NAVSEA. There will be a validation phase in 1980, which will be competitive. Full-scale development will be in 1982, and we hope the first production will be in 1985.

I caution you on one thing with regard to this radar, I didn't know Dick Metrey was going to bring it up, and I caution you in this respect: to my knowledge, the specification has not been reviewed for security, national disclosure policy, or for technology transfer. My suggestion is that, if you are interested in this radar, you express your irterest by a letter either to Mr. Metrey or to NAVSEA. If you prefer, you can send it to me, and I will see that it gets to the appropriate office which, in this case, is the security office in The Chief of Naval Operation's Office (OP-62), because they will have to review it and make a decision on the matter.

On the other hand, there's certainly subcontractor potential, if not prime. It is sometimes easier to handle security matters at the subcontract level, as we've found with other contractors, than coming in as a prime contractor, but that's something you can look into on your own.

Colonel Richardson mentioned earlier the DoD rationalization report that was published in January of '79. That makes very good reading. I think the front portion gives you a good overview as to the problems that we in the DoD face, policy-wise and regulatory-wise, in contracting with non-US contractors, and what we're trying to do about them. The program listing is also very good. Another thing you might want to look at, from a marketing standpoint, would be the reports that are sent to Congress, and also the Congressional Records.

The Navy, for instance, has over 500 programs in which you could have potential involvement. It's very hard to publish a list of each of these. Some are large system contracts, with potential subcontractor involvement. Others are contracted for at the subsystem level. Thus, it is very difficult to provide a listing to you of each of these program managers. Some are combined programs with more than one program under a program manager. Others are spread out among various Naval activities as well.

One example of the "spread out" system is the new trainer that NAVAIR is about to go out and solicit some proposals on this coming year. The requirement and specifications are generated in NAVAIR. However, the contracting office at this point in time is the Naval Air Development Center up in Warminster, Pennsylvania. The next phase will be brought back into NAVAIR. With regard to marketing, it is a fairly complex operation.

Your best approach, in my view, is to approach the hardware command, find the program manager or whatever group happens to be in charge of the area you're interested in, develop some sort of rapport with him, and through him you should be able to track the areas of your interest, wherever he happens to be contracting them.

In fact, that's the reason we gave you a list of contracting offices and contacts there, as opposed to program managers. It's easier for us, because our procurement structure goes from the Secretariat all the way down to the contracting office in the field and is more of a vertical structure. It's easier for us to contact them than to go out to 500-plus program managers at various echelons with no functional vertical structure. It's strictly a communications and management problem for us, and we took the simple way out.

Let me talk next about competitive contracting. The programs I've been talking about are primarily competitive. They may be competitive at the prime level; and the MOU, in general, anticipates competition. The competitive process is essentially common to all the Services. Dick Metrey explained yesterday with regard to the programming process that the programming process and contracting process are common among the Services. Let me follow on to that theme and, since he talked about programs, I'll talk about contracting.

There are several primarily internal checkpoints available to whomever is issuing the contract. They're steps that we have to take, and that we recognize internally. Some of these steps are legally imposed, some of them are regulatory, some of them are adminstrative, and some of them are developed as a result of the type of program.

We talked earlier about the value of the Commerce Business Daily. Don't overlook it! I handed out in Rome a copy of the page that provided an advance synopsis for last year, of some of our research and development requirements at NAVAIR. We publish those when we can group the requirements together.

Usually, what you see in the Commerce Business Daily is a notice of a solicitation being issued. If you see that, and it's a large program, there's a good chance that you're late. A solicitation would stay on the street for maybe 60 or 90 days for a big program, and it's almost impossible on a major program to put together your technical, cost, and management proposal in that time frame. It's possible, but very improbable.

The Commercce Business Daily is a good place to look, and in some types of programs it is very helpful, primarily in the advanced synopsis type of arrangement.

We talked a little bit about security and technology transfer clearance, and of centralization in the Chief of Naval Operations' Office. This is something that you should get done as soon as possible. If you identify a Memorandum of Understanding as applicable to a particular solicitation, our expedited review process will take about 30 days -- sometimes less, sometimes more. The normal process usually runs about 60. We have had complaints, in this case concerning the UK, that some of the contractors were not identifing the Memorandum of Understanding that we had with them. We ran into a problem -- there was a delay, and we said, we told you to have them identify the MOU and you didn't do it. They understood the problem, and it has now basically been solved.

The Secretary of the Navy, in a memorandum in April, established technology and security reviews as a critical point in our program review, particularly with respect to establishing the bidders' mailing list. Right now in the Navy, if we have foreign interest in a program, demonstrated at either the prime contractor or subcontractor level, not completing these reviews will preclude the issuance of a solicitation, unless the head of the contracting activity authorizes its release. We recognize from the Secretariat level that it is a very difficult thing for a contracting activity to have to go through. We talked earlier about NAVAIR, NAVSEA, NAVELEX, and NAVSUP. NAVAIR and NAVSEA are headed by three-star Admirals. I don't think too many program managers would want to go up to a three-star Admiral and tell him they didn't do their homework, that they can't release the solicitation, and would he please let them do so.

We hope that we got their attention. We do know that this is a very criticial point, and we established management attention at that point by taking that particular step. We have also institutionalized this through other Navy policies to insure that the review cycle picks up this kind of a review, and it's starting to. I mentioned the reorganization in the Naval Material Command -- to provide a central technology review office. Their function in that office was, to a great degree, driven by Secretary Claytor's memo on this subject.

Let me now discuss the major checkpoints you will identify in the negotiated contract process. First we establish the mailing list, then we issue the solicitation. If you're not on this list, you won't get it. There are two ways to get on this list: (1) you can submit your name and qualifications in advance to the particular office that issues the solicitation, which is why it's important to go to the particular contracting office, not just the requirements people, and/or (2) in response to the Commerce Business Daily Notice. If you're cleared, you would receive the solicitation. Thus, you do have two chances to get on the bidders' list.

By the way, with regard to mailing solicitations overseas, we send them air mail. At least, our standing rules are to send them air mail. We did have one that took two months to get to England, and we tracked it back and found out that the Post Office had sent it by boat.

Pre-proposal conferences may occur prior to the Commerce Business Daily notice for the solicitation. It can be established independently, but it's somewhere in the chain of events. The model way is probably a couple of weeks after the solicitation is issued. The requirements and buying offices will get the various contractors on the bidders' lists together and go over the program requirements in some detail. It's important to be there. You get to meet the people, and you get to ask questions, both verbally and in writing.

A very key area is that where we receive the proposals. Ms. Clements pointed out that receipt of proposals in a timely fashion is very critical. Last week, we were doing some studies, and received some proposals for a negotiated contract. The third contractor showed up 10 minutes after the closing time. We could not open his proposal, and he spent about six weeks preparing it. Timely receipt is very critical!

The government (the contracting office) gets very busy between receiving the proposal and awarding the contract. As a company, obviously, you're first looking to be on the list of companies to be evaluated. For this, your proposal has to be received on time.

Once we receive the proposals, we have to evaluate all of them. Those that we select (for negotiations) are in what we call a competitive range -- those which could be brought into position for award of a contract -- and we would call them in and negotiate with them. After we finish negotiating

the various contract elements, we would then give those remaining a chance to submit a final offer, based on the negotiations and their perceptions of any changes.

The Final Offer is also critical. If you miss this date you're also not looked at any further. It's just as critical as the date for receipt of proposals.

Following the final offers -- and if the process to this point still leaves us unsure with regard to your finances or technical capabilities, or plant capacity, or anything of that nature -- we can go out and make a physical survey of your plant. We normally do this only with respect to primes. It has been done with respect to subcontractors on a case-by-case basis. Mr Levitt mentioned the Defense Contract Adminstration Services Organization, and the Field Contract Administration Organization that the respective Services have. This survey is normally done through them. In the Navy's case, we would coordinate it through the Navy Regional Contracting Office in Naples.

After all these checks, there is an award of a contract.

There's one point I didn't mention here, and that's selection of a contractor, which would occur somewhere between the final offers and the actual award of the contract.

The total contracting process could run anywhere from six to nine months. It's a long process. You will normally have six or eight weeks to do your proposal after you receive the solicitation -- that's roughly two months. If we do a full review of your cost and pricing and technical proposal, there is another six to eight weeks involved. There's the negotation process, and there is the time after the final offers, which can run for several weeks. Thus, six to nine months is probably a good time frame for you as a manager to look at this process, with regard to personnel assignments, how long they're going to be there, and what you're going to have to do as part of that process. It's very expensive.

I'm not able to cover everything and I'm not sure you'd want me to. I tried to cover the highlights that you as managers would be involved with in dealing with the Department of the Navy, both from the standpoint of organization, the requirements activities, and the competitive process, and how it's viewed. This is the process you would see reflected, even if you were a subcontractor, on a major program. It's not an unusual process -- it has a number of management checks that would be necessary, regardless of how the system were actually run, but this would be the government's system.

CHAPTER 17

AIR FORCE PROCUREMENT SYSTEM

MR. PAUL JAMUSHIAN

One of the things that we have learned is that U.S. industry and NATO industry are not the same. That is we have learned -- and I think you have heard that today -- that they market in different ways.

U.S. industry, of course, is here; however, they market more aggressively than do the industries from NATO. I think this is a very important point to stress, because with our system we are trying to bring someone with a requirement, the Department of Defense, together with someone's capability who may fill the requirement.

This seems simple but isn't. We are disseminating our policies to our buyers and we are disseminating our policy to our technical personnel saying, "Buy NATO." They are providing feedback -- "I don't know what they sell." They are telling us -- "I never see NATO industry at our base."

This is something we must work on and we must overcome the lack of marketing by NATO. If I can communicate one thing to you, it is that without our activities knowing what your capabilities are, they can't solicit from you. That is very important, gentlemen. If there is any way to communicate this to your sales people, please do. Moreover, it is not going to happen with one visit, I wish you would do whatever you can to communicate these points.

We would appreciate your feedback, your experience. If you have feedback, or any way that we can make this happen or to improve the system, let us know. Some of the things you will hear today are those things we have learned in putting programs together.

You will hear us mention, and some of the others have also mentioned, the British. It is because they have been at it longer, they have the most experience. We signed the MOU with them in 1975 and it is just now that they are mounting a significant -- with the Air Force -- a very significant marketing program where they are going to go to the Air Force Logistics Command (AFLC) and the Air Force Systems Command (AFSC) nearly every week in different industries, starting -- if it goes as scheduled -- in September and going through mid-December.

I think, after much experience, they have finally seen that this is something that will pay dividends for them, and this is what will lead to contracts, which is what I think you all are here for. I will leave this subject and go on with the briefing. If you have questions, I would appreciate your asking them as I discuss the topic. I think this will be better for everybody to understand the subject discussed.

You heard how the Navy has a centralized contracting organization. We are going to discuss where you should go, who to contact, and some of the things you have already heard me say about what we would propose, from our experience, for Italian contractors to do and how the Air Force is intending to implement the MOU.

This will be a quick view for where some of our contracts are awarded. I would like you to focus on the $17 billion for systems. If you are looking for technology in the Air Force, AFSC is where most of these contracts are awarded.

In comparison to the Navy, if you are going to market with the Air Force, you should understand that our contracting authority is decentralized. It is not in the Pentagon, it is not here in Washington, D.C., it is at the commands located throughout the U.S.

Our two major commands, as I mentioned to you earlier, are the Air Force Systems Command, which is responsible for our development and acquisition of new weapons systems, in contrast to the Air Force Logistics Command, which supports these weapons systems -- and they are worldwide in their logistics support. Based on our past experience we have found that the Military Airlift Command (MAC), the Tactical Air Command (TAC), Strategic Air Command (SAC) -- and our other operational commands -- do not have contracts which you would be interested in. My focus will be on AFSC primarly and then followed up by AFLC.

I am going to go into a bit more depth on AFSC so it will provide you a better understanding. As we talk about these AFSC areas, if you hear some point that is of interest, you might annotate it and tie it together with your points of contact. Again, I hope to give you some feel where to market, depending on what you sell. Aeronautical Systems Division (ASD) is at Wright-Patterson Air Force Base, Ohio. Armaments are at Eglin Air Force Base, Florida. I think this will provide you some feel of where to market and what activities you will have to see.

In addition to AFSC buyer divisions, we have laboratories located at the same bases. ASD has one half of the budget for aircraft development. That is where our funds are. If there is something in the areas at ASD you feel you would be interested in, Mr. Michaels is our point of contact, I suggest you set things up with him initially. He is on the list, Air Force Points of Contact. ASD is the heart of our aircraft structures and components acquisition. I would strongly recommend you go to ASD if this is your area of business.

With regard to the electronics and intelligence areas, we have in Massachusetts, Hanscom Air Force Base. This is where our AWACS is being worked on, together with communications systems. If this is your area of interest, market there. Our intelligence-gathering and information systems are a subsidiary of Hanscom and are located at Griffiss Air Force Base in Rome, New York.

On the opposite coast, in California, our space and missiles systems organization is located. Here is where the MX missile is being worked. We have complications with classification and disclosure policy, but basically this is where these type items are managed.

Florida is where our armaments programs are acquired and in Tullahoma, Tennessee, Arnold Engineering handles our wind tunnels.

Something that people tend to overlook are the laboratories. Once you get scientists together, many things can happen. I am not spending a lot of time on this subject because our laboratories are discussed in the brochure which I hope you all have.

An important part of the contracting function takes place once the contract is awarded, that is, the administration of it. The Headquarters for this type of effort is at Kirtland Air Force Base, New Mexico. We had to set up a special contract administration organization in Europe for the F-16, because this is of such significance (i.e., quality assurance programs, pricing and costs, and things of that nature).

Something that you should be aware of is a special organization to administer contracts. It is the Air Force Contract Management Division (AFCMD), this is also a part of AFSC.

In changing the focus from Systems development, I am going to move into areas of AFLC. We have five bases in this command. You will hear them referred to as ALCs (Air Logistic Centers). Again, these are located throughout the United States. Once the weapons system is acquired, the acquisitions to support them -- the spares, et cetera -- are acquired by this command. So, we have two basic commands: one who buys the design, development and production and the other one who acquires the logistic support for these systems, once operational. These are some of the things you can expect to be bought by the ALCs. This is a very lucrative area, and it is also an area where we can see more competition. We see competition once we get the reprocurement data, this is a large-dollar area. This is an example of some of the items that are in that one brochure that highlight some of the projects and where they are. C-130s are basically managed by Warner Robbins Air Force Base in Georgia. The F-4 is managed by Hill Air Force Base in Utah and the J-79 engine by Oklahoma City Air Force Station, Oklahoma.

As some of you are aware, there is a liaison officer located in Europe, if you don't want to send your marketing personnel into the United States. Colonel Tillson is located at Ramstein Air Force Base in Germany.

In the brochure you will find what we call a Standard Form 129, you will hear that discussed by personnel in our contracting activities. It is nothing more than an application to get you on a bidders list. Very simply, it is something that needs to be done to get you into the program for bidders. AFLC has their own form which is in the brochure also.

One of the areas that we have had experience with is Australia. They put together a beautiful booklet, but what they forgot is -- I am sure this is the same with your defense items -- everything is done by numbers. Whatever the item is, it has a stock number and without that information, when it is available, it may be detrimental to your sales program. If there is a NATO stock number or any stock number that it may be identified by, incorporate that with your information on the bidders list. We have learned that this helps a lot. We have also found that some of the people have said, "we sent in our Standard Form 129 but we didn't get any business". Gentlemen, if you are going to mail

in a Standard Form 129 and leave it to that, nothing is going to happen. Have your marketing representative take it to the requirements people and take it to the buying activity and say, "Here's what I can do". To mail it in is not going to pay dividends.

After our visit in Rome, we had some contractors who tried to come here. Mr. Ablard, one of your representatives, tried to arrange a visit, and we found that we had not communicated one valuable bit of information. A NATO contractor may not simply come to an Air Force Base. There are disclosure and classification problems. Ann Kennedy, a point of contact at the Italian Embassy, can help you obtain a Visit Request. It is a simple process, but it must be done.

What the Air Force is doing to implement the MOU basically is, we have sent a copy of the Air Force procedures to each and every major command and each and every contracting and requirements organization. We have found that this has not been as successful as we wanted. Thanks to Mr. Levitt and some of the others, we are now going to publish this into the Defense Acquisition Regulation. It should be in there, we hope, within a few months.

The basic thrust of Air Force policies are similar to that of OSD. We are trying to put the products manufactured by Italian industry on an equal basis with those manufactured by the U.S. In other words, there are no penalties added to Italian products. So Italian products, once they bid, are evaluated on the same basis as U.S. products. I come back to this point because it is something which I think is very important -- market aggressively. We have found that some contractors have gone to a base and on the first visit expected a contract to be awarded. We have not been able to communicate that it doesn't happen that way. We felt that they were leaving with a sense that the MOU was being tested and not valid. This is not a valid test, so I just want to communicate this and I will leave that subject alone.

I would like to close with a couple of comments. I think that for me to say that we are committed to the programs is something we have heard from everyone, but, I would like to give you a couple of illustrations. That we have put this brochure out, I think, is indicative of our intent. We have just worked -- and I think some of you may be aware of it -- a program on behalf of the Defense Department for vehicle buys from Italy. Vehicle buys, over a period of about five years, should amount to approximately $10 million. There has been, as you might guess, a lot of political lobbying done on this program, but as it appears now we should be shortly consummating the MOU -- Colonel Reidy was just in Italy and it appears the MOU has been signed.

I have here a solicitation. It is for the development of a wide-area anti-armaments munitions program. It is called the WAAM. It is the WASP mini-missile. It is in what we call the validation phase. This solicitation is now out for proposals. I would like to read one paragraph to you, it reads as follows:

"In addition, WASP is a candidate for the NATO family of weapons concept. Offerors are expressly encouraged to seek out an involved NATO concern of prospective subcontractors as early as practicable. To the extent that competing offeror proposals might be essentially comparable in all other respects, this general consideration could evolve into a discriminator in the award of

the validation phase contracts. No price differentials shall be paid and no degradation technical performance shall be accepted solely to facilitate NATO RSI in contravention of the new factors to be evaluated. All other things being equal, the Government will select those offerors who best demonstrate actual accomplishment or the potential for a meaningful and active participation of NATO concerns for the subcontractor."

This is already in one of our solicitations, I think that the MOUs are reflected in these types of documents. We also have another clause in a program that you heard briefed yesterday. This is also a solicitation:

"Competition for the subcontracting effort will most likely be international in scope since there is expected to be strong NATO interest."

I won't elaborate on it, but we are identifying in our solicitations the whole concept that we have been addressing to you today.

QUESTION: One of the viewgraphs that you had spoken of concerned visiting authorities in U.S. Air Force facilities. One of the problems we have in industry is when visitors come over from Italy or anywhere else, I think basically the same thing holds true in visiting the U.S. Air Force facility as visiting a defense contractor in the states here, that they must file clearances thirty days ahead of time.

It must be very embarrassing many times when they come over for a visit with us, and we don't have the proper clearances filed, and we can't go to the levels of discussion that we would like.

MR. JAMUSHIAN: That is an excellent point. You are here, and many of the people in DoD, including myself, say that the best potential for business is the subcontractors to U.S. industry, and this has been our experience. Just as we need a visit clearance to visit a DoD facility or an Air Force facility, the same holds true for visits to U.S. contractors with whom we work. It is simply to work with them -- they may be the principal as far as disclosure issues go, but, nonetheless, you need to get these visit clearances. The same people that I highlighted to you should be contacted for that type of thing as well, but let me make a comment here. It is not all that bad. We have learned you can't expect to have a visit clearance for each and every visit; that is too cumbersome. Once there is a reason for visiting -- a contract, a potential contract or something -- we have what we call an extended visit authorization which can be for six months to a year. Once we can tie a visit into some program or some contract then we don't need to have a visit request each and every time, rather, one extended visit authorization such as six months to a year.

QUESTION: If an Italian firm files a clearance to visit another company to discuss supplying forgings or parts of that nature and then we wish to give him drawings of that forging to take home to study the costs and such, does that then require a separate export license for that drawing to leave the country?

MR. JAMUSHIAN: I don't think I can address that. That is a disclosure issue, to be honest with you. I can try to find out or give you a point of contact, but that I can't address.

QUESTION: The extended visit or authorization point that you made is certainly a helpful development. However, I am advised -- and I wonder if someone can confirm it -- that the Army and the Navy, as opposed to the Air Force, do not follow that. If that is the case, would it be possible that there be developed a Department of Defense--wide effort to adopt an extended visit or authorization system?

MRS. CLEMENTS: In the little brochures that I handed out to you it says U.S. citizen only. That is a mistake. That is under change because of the MOUs, and it also says in that brochure that we follow this extended time clearance six months to a year.

GENERAL MALLEY: It applies, I think, to all three services because we have had visitors who have received Defense clearances, and that requires a job on the part of the Air Force, the Navy or the Army for a six month period. Then they renew them at the end of six months. I have seen that with Dutch visitors, as an example.

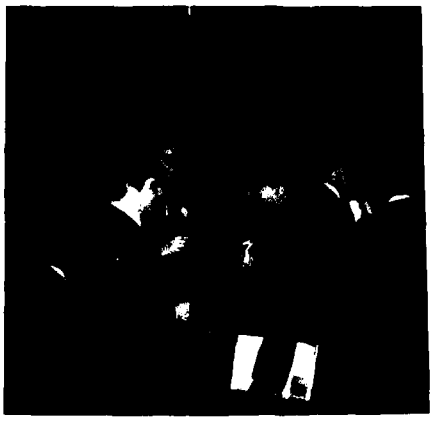
U.S. REPRESENTATIVE: I came in late and I may have missed something, but some people may not realize becuase I have just recently learned in this experience that the U.S. is broken up into three geographical areas, and requests for visits with those geographical areas are processed by either the Department of the Navy, the Air Force or the Army for that region, regardless of whether you wish to visit an installation involved in Army, Navy or Air Force within that region. So the ground rules are the same, as pointed out earlier.

MR. JAMUSHIAN: May I advise again the necessity to request the visa at least thirty days before. We are in a continuous problem because requests for visa for organizations are coming ten, twelve and fifteen days before, which makes problems for us. We have an embassy and the Air Force Systems Command there for assessing the requests. I might add one other point on that. Not only is it thirty days, but you don't only have to talk about calssified or unclassified, you still have to have that authorization, and that is a point of some misunderstanding with a lot of visitors. Unfortunately, this was our experience. We felt badly about it and we don't want to repeat that mistake. A number of people here already have representatives that have been here for a while and are aware of it. For those who are not, we wanted to make that point. This is a little point, but I think it is beneficial. That way you have the right person to talk to when you get there, too, because they are aware of your coming and they have the right people lined up to discuss the budgets with you.

Dale Church on Acquisition Policy

MGen Bowman discusses the needs for arms cooperation

Gen Moizo provides insights on Italian views



Participants discussing the mornings presentations

Members of the staff of the Italian Embassy

Participants discussing the mornings presentations

Luncheon at the Capital Hilton

Luncheon at the Capital Hilton

Col Richardson clarifies an earlier remark

APPENDIX A

AGENDA

MONDAY, 25 June

0900	Registration	COL Richardson
0915	Greeting	RADM Capone
0920	Opening Remarks	LTG Moizo
0945	Need for Armaments Cooperation	MGEN Bowman
1045	Break	
1100	Cooperation Under the US-Italian MOU	Mr Church
1200	Luncheon - Capitol Hilton (Congressional Room)	
1400	USG Policy on Third-Country Sales	Mr Marsh
1450	Break	
1505	Italian Industry Perspectives	Panel
1600	US Industry Perspectives	Panel
1900	Cocktails	Italian Embassy

TUESDAY, 26 June

0900	US Policies for Improving Armaments Cooperation	Dr Perry
1000	Army R&D Programs	Dr Yang
1100	Break	
1115	Industry Capabilities in Land Warfare Systems	Dr Ricci
1200	Luncheon - Sheraton Carlton (Chandelier Room)	
1400	Navy R&D Programs	Mr Metrey
1445	Industry Capabilities in Naval Warfare Systems	Mr Orlando
1530	Break	
1545	Air Force R&D Programs	BG Phillips
1630	Industry Capabilities in Aerospace and Other Systems	Dr Piaggio

WEDNESDAY, 27 June

0900	General Acquisition Process	Mr Levitt
1000	Army Procurement System	Ms Clements
1050	Break	
1100	Navy Procurement System	Mr Williamson
1200	Luncheon - Flagship (Captain's Table)	
1400	Air Force Procurement System	Mr Jamushian
1450	Break	
1500	Wrap-Up Discussions	US-Italian Industry Panel
1600	Wrap-Up Discussions	US-Italian Government Panel

AD-A169 519 PROCEEDINGS OF THE SEMINAR ON US-ITALIAN ARMAMENTS COOPERATION HELD IN WA..(U) AMERICAN DEFENSE PREPAREDNESS ASSOCIATION ARLINGTON VA 3/3

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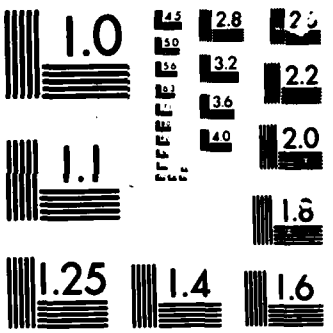
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MECCANICA PER L'ELETTRONICA E SERVOMECCANISMI (MES)
SIG. AUGUSTO GREGORINI
ING. IGNAZIO ORSO
DR. GUSTAVO LOMBARDI (ALTERNATE)

MONTEDISON SISTEMI & OFFICINE GALILEO
MG. (RET) LUIGI D'ERRICO
SIG. IGNAZIO FRIGERIO

NARDI 3/
SIG. ELIO NARDI
SIG. EMANUELE NARDI

OMI
SIG. GIUSEPPE BERTOLAZZI
SIG. FERNANDO BAGLIANI

OTO MELARA 4/
ING. GUSTAVO STEFANINI
ING. SERGIO RICCI
ADM. (RET) GLICERIO AZZONI

PIAGGIO
DR. RINALDO PIAGGIO
ING. GIANMARCO PERLO

SEGNALAMENTO MARITTIMO E AEREO (SMA)
ING. SERGIO BERTINI
DR. GUIDO CALAMAI

SELENIA
DR. LEONE MUSTACCHI
ING. FRANCO BARDELLI
ING. PAOLO PIQUE

SISTEL 3/
ING. ANDREA FRANCAVILLA
ING. ROBERTO GIURIATI
DR. MANLIO LOCASCIO

SIT SIEMENS
ING. GIULIANO de NICOLAI
DR. GIUSEPPE CAPODICI

SNIA VISCOSA 3/
ING. SILVIO ANGELUCCI (AMERICAN CITIZEN)

TELETTRA
ING. ISERO MEDICI

WHITEHEAD MOTO FIDES
ADM. UGO GILLI
ING. BENITO PETRUCCI (ALTERNATE)

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1600	Wrap-Up Discussions	US-Italian Government Panel

APPENDIX B

PARTICIPANTS

GOVERNMENT OF ITALY

MINISTRY OF DEFENSE (Rome)
GEN FABIO MOIZO
MG FRANCESCO SAVERIO GALA
BG ALESSANDRO D'AMBROSIO
COL GIANCARLO CECCOTTI

MINISTRY OF INDUSTRY AND COMMERCE (Rome)
DR PIETRO SILVESTRINI

EMBASSY OF ITALY (Washington, DC)

SIG MARCELLO SERAFINI	- Charge d'Affaires a.i.
LUIGI COSTA SANSEVERINO	- (Alternate - First Secretary, Commercial)
BG GIORGIO SANTUCCI	- Defense and Air Attache
LTC PIETRO MOJA	- Assistant Defense and Air Attache
COL LUIGI RAMPONI	- Military Attache
LTC GIAN PAOLO GIANNETTI	- Assistant Military Attache
CDR GIUSEPPE MAZZOLI	- Naval Attache
CDR GIANCARLO MARIANI	- Assistant Naval Attache

ITALIAN TRADE ASSOCIATIONS

ASSOCIAZONE INDUSTRIE AEROSPAZIALI (A.I.A.)
CDR UGO RUBERTI

ASSOCIAZONE NAZIONALE INDUSTRIE ELECTRICHE (A.N.T.E.)
CDR (RET) ENZO BRANCACCIO
CDR (RET) GUISEPPE DE MICHELI

CONFEDERAZIONE DELL INDUSTRIA ITALIANNA (CONFINDUSTRIA)
SIG BRUNO DELLO STROLOGO

SOCIETA DI ELETTRONICA IER L'AUTOMAZIONE (S.E.P.A.)
ING ROBERTO MATTEUCCI

UNIONE COSTRUTTORI ITALIANI MACCINE UTENSILI (U.C.I.M.U.)
DR CARLO MISCIA
ING GIUSEPPE BAUDO

U.S. REPRESENTATIVES

1/ MG. (RET) CHESTER V. CLIFTON
2/ MR. STEVEN NAGEL
3/ MR. CHARLES ABLARD
4/ MR. T. MURRAY TOMMEY

SECRETARIES OF THE EMBASSY OF ITALY

MS. ANN KENNEDY
MS. PINO BOYER
MS. SUSAN WRANIK
MS. CONNIE SCHMIDT
GIACINTO FORTE
FIANCESCO RIZZI

APPENDIX C

PARTICIPANTS

GOVERNMENT OF THE UNITED STATES

DEPARTMENT OF DEFENSE

DR WILLIAM J PERRY	-	Under Secretary of Defense for Research and Engineering
MR DALE W CHURCH	-	Deputy Under Secretary of Defense, Research and Engineering (Acquisition Policy)
DR VITALIJ GARBER	-	Director, International Programs (Office of the Under Secretary of Defense for Research and Engineering)
MR JAMES V SIENA	-	Deputy Assistant Secretary of Defense, International Security Affairs (European and NATO Affairs)
DR ELLEN L FROST	-	Deputy Assistant Secretary of Defense, International Security Affairs (International Economic Affairs)
MGEN RICHARD C BOWMAN	-	Director, European and NATO Affairs (Office of the Assistant Secretary of Defense for International Security Affairs)
MR WILLIAM LEVITT	-	Special Assistant for Acquisition (Office of the Deputy Under Secretary of Defense for Research and Engineering - Acquisition Policy)
MR JERRY SULLIVAN	-	Staff Assistant, International Programs (Office of the Under Secretary of Defense for Research and Engineering)
COL NORMAN B WALKER	-	Office of the Assistant Secretary of Defense for International Security Affairs (European and NATO Affairs)
COL CHARLES W RICHARDSON, JR	-	Office of the Under Secretary of Defense for International Security Affairs (European and NATO Affairs)
MR EMILIO G TAVERNISE	-	Office of the Assistant Secretary of Defense for Research and Engineering (International Programs)

DEPARTMENT OF THE ARMY

DR JOSEPH H YANG	- Deputy Assistant Secretary of the Army, Research, Development, and Acquisition (Research and Development)
MS SALLY CLEMENTS	- Deputy for Material Acquisition (Office of the Assistant Secretary of the Army, Research, Development, and Acquisition)

DEPARTMENT OF THE NAVY

MR GERALD CANN	- Deputy Assistant Secretary of the Navy, Research, Engineering, and Systems (Systems)
MR EVERETT PYATT	- Principal Deputy Assistant Secretary of the Navy, Manpower, Reserve Affairs and Logistics (Logistics)
MR EDWARD HIDALGO	- Assistant Secretary of the Navy, Manpower, Reserve Affairs and Logistics
MR RICHARD METREY	- Assistant for Systems
MR WILLIAM WILLIAMSON	- Assistant for Anti-Submarine Warfare
MR E J WILLIAMSON, JR	- Deputy Director, Acquisition and Contract Policy (Office of the Assistant Secretary of the Navy, Manpower, Reserve Affairs and Logistics)

DEPARTMENT OF THE AIR FORCE

DR ROBERT KAHAL	- Deputy for Tactical Warfare Systems (Office of the Assistant Secretary of the Air Force, Research, Development, and Logistics)
LTGEN THOMAS P STAFFORD	- Deputy Chief of Staff for Research, Development, and Acquisition
BGEN RICHARD W PHILLIPS, JR	- Deputy Director of Operational Requirements
MR KARL L WEIGAND	- Director, Plans and Programs
MR PAUL JAMUSHIAN	- Contract Specialist

DEPARTMENT OF STATE

MR WILLIAM H MARSH	- Special Assistant to the Under Secretary of State for Security Assistance, Science and Technology

MR EDGAR J BEIGEL	-	Office of Western European Affairs, Bureau of European Affairs
MR NEIL A SEIDENMAN	-	Language Services Division (Office of the Deputy Assistant Secretary for Operations, Bureau of Administration)
MR ANTHONY S KOCHANEK, JR	-	Director, Office of Security Assistance and Sales

UNITED STATES TRADE ASSOCIATIONS

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA (AIA)
MR PETER SMITH

AMERICAN DEFENSE PREPAREDNESS ASSOCIATION (ADPA)
GEN (RET) FRANK HEINRICH

ARMED FORCES COMMUNICATIONS AND ELECTRONICS ASSOCIATION (AFCEA)
VADM (RET) JON L BOYES

ELECTRONICS INDUSTRIES OF AMERICA (EIA)
MR WALTER O'NEILL
MR JEAN CAFFIEAUX

NATIONAL SECURITY INDUSTRIAL ASSOCIATION (NSIA)
MR JOHN JORGESON

UNITED STATES INDUSTRY

PANEL PARTICIPANTS

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MR DEREK TURNER

MARTIN MARIETTA AEROSPACE
MR LAURENCE J ADAMS

MCDONNELL DOUGLAS CORPORATION
MR ALEXANDER MARSHALL
(ALTERNATE) MR MILTON SHREPEL

NORTHROP CORPORATION
MR ROBERT GROVERT

U.S. INDUSTRY

AVCO CORPORATION
MR G HARRY EWERS

BELL HELICOPTER/TEXTRON
MR ROBERT R RAMSEY

BOEING
MR CHARLES HUTTON
(ALTERNATE) MR JOSEPH PICA

CHAMBERLAIN CORPORATION
MR ROBERT MALLEY

EMERSON ELECTRIC
MR JERRY REIDER

FMC
MR JOHN MACROSTIE

GARRETT
MR WILLIAM B ARNOLD

GENERAL DYNAMICS
MR MOSE E LEWIS

GENERAL ELECTRIC
MR CHANNING DICHTER

GTE
MR WALTER EDGINGTON

HAZELTIME
MR ARTHUR J STANZIANO

HONEYWELL
MR ED CARLSON

HUGHES AIRCRAFT
MR DAVID M BENTLEY

HUGHES HELICOPTER
MR JAMES HYDE

MARTIN MARIETTA AEROSPACE
MR GEORGE H. PERLMAN

LITTON INDUSTRIES
MR JAMES THOMAS

LTV/VOUGHT
MR JOHN MYRAH

MOTOROLA
MR PERCY RAYMOND KENDALL

RAYTHEON
MR GEORGE H WHITNEY

RCA
MR CASE ZWART

ROCKWELL INTERNATIONAL
MGEN (RET) ROBERT D TERRY

TEXAS INSTRUMENTS
DR HY LYON

TIMEX
MR STEPHAN HAYE

TRW
MR JULIAN BARONI

UNITED TECHNOLOGIES
MR ROBERT R COREY

WESTINGHOUSE INTERNATIONAL
MR WILLIAM H HULSE
MR R SEIDEL

INTERPRETERS

MS ELVIRA LEWIS-BONACCORSI
MR CHARLES GIUGNO
MR NEIL A SEIDENMAN

SECRETARIES

MS CYNTHIA SZWED
SGT ESTHER CLINTON
YN3 ANTHONY SETTLE

END

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