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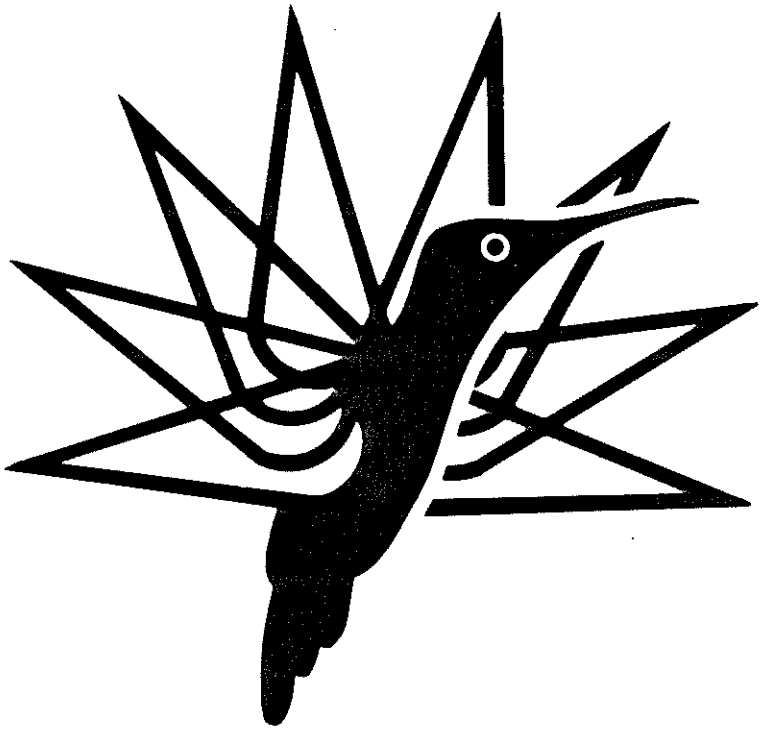

THE A–129 ANTI–TANK PROGRAM OF THE ITALIAN ARMY
REALITY AND FUTURE PERSPECTIVES

BY

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ABSTRACT

1. FORWORD

The A-129 program is finalized to satisfy requirements regarding:

- at short term, the introduction into service of an airmobile anti-tank system;

- at medium-long term:
  . the updating of the combat configuration of the anti-tank helicopter,
  . the realization of derived versions to meet other requirements (concept of "helicopter family").

Purpose of the lecture is - together with a general presentation of the program - to expone the activities that the Italian Army's General Staff has started for the introduction into service of the A-129 from 1987.

2. ORIGIN, STATUS AND PERSPECTIVES OF THE PROGRAMME

a. Operational Requirement:
   - basic exigencies
   - possible solutions
   - basic concepts

b. Synthesis of characteristics and performances of the A-129 anti-tank helicopter.

c. Status and perspectives of the development program.

3. ITALIAN ARMY'S ACTIVITIES DURING THE DEVELOPMENT AND INDUSTRIALIZATION PHASE

a. Objective:

Constitution of the first anti-tank helicopter unit in 1987.

b. Parallel activities:

- training and qualification of the personnel (pilot and mechanics) to be employed for the test activities;
- participation in the experimental activities for testing the capability of the helicopter, as weapon-system, to meet the operational requirements;
- study, definition and preparation of the integrated logistic support;
- definition of the personnel selection criteria;
- planning of the personnel recruitment according to the envisaged increase of Army Aviation force;
- configuration definition of the anti-tank helicopter units and the supporting reconnaissance helicopter units;
- infrastructures;
- flight instructor training and qualification;
- employment doctrine definition;
- transformation of existing helicopters in interim scout helicopters.

1. FORWARD

a. The Italian Army Staff, has constantly devoted much attention on the European Rotorcraft Forum because of the high degree of expertise demonstrated by the participants and the keen interest shown by them on airmobility problems, which from both the technical and operational viewpoint are best served by the helicopter.

b. It was with this in mind that in the past the Forum has been attended by qualified Representatives who have voiced the position of the Italian Army in respect of:

- Military requirements seen as a guideline for the development of rotary wing aircraft, capable not only of accomplishing military tasks but also capable of fulfilling the ever increasing needs of the civil market, in an effort to ensure that the specific military requirements are correctly interpreted as technological challenges to the design for increased performance, cost/effective and safer aircraft.

- The importance of European collaboration in the rotary wing field seen as an essential factor for the promotion of technical and economical progress, as well as a primary element for the consolidation of the principles of rationalization, standardization and interoperability of the armament systems within the Atlantic Alliance.

- Eventually, the trends of the Italian Army in respect of the material policy for the 90ies, with reference to the rotary wing sector.

c. At each Conference a hint has been made about the development programme of the A-129 anti-tank helicopter, as a qualifying reference in support of the concepts set forth, thereby illustrating the technical and operational aspects of the project and the phases of its development, which on one hand is expected to meet specific operational requirements and on the other hand is intended to secure the qualification of our national Industry in the face of the most advanced technologies.

d. As a matter of fact the A-129 programme, which from the outset was aimed at the development of an airborne anti-tank weapon system, has now assumed a broader and more extensive perspective finalized to fulfill near, medium and long term requirements such as:

- The acquisition of an actual and effective airborne anti-tank capability destined to integrate with ground defence units, thus rapidly filling the gap existing in the specific sector.

- The progressive updating of the above capabilities in relation to the changing requirements and to the feasibilities provided by the technological progress.

- The possibility of best fulfilling other requirements in the basic segment of airmobility, with specific reference to:

. intelligence and protection
. command, control, liaison and light transport.

e. More in detail, the actual objectives of this extensive programme will be:

- In the near term: the deployment in service and full operability of the A-129 helicopter anti-tank version.

- In the medium and long term: the development of derivatives:

. Scout and support, essentially destined to provide adequate intelligence and protection backup to anti-tank helicopters before and during the action, with possibility of intervention against threats from ground and from the air.

. Light multi-role, to fulfill all other requirements of the basic airmobility field, from command to control, from liaison to light transport and with the installation of the necessary equipment, be able to perform tactical roles such as observation, fire control, armed intervention, in compliance with the principle of the helicopter multirole operational thrust.

f. Part two of the A-129 helicopter programme, namely the development of the derivatives, is consistent with the concept of "a family of helicopters" which, if correctly adhered to, may contribute in reducing the diversification of the Army Aviation helicopter fleet, thereby achieving standardization, interoperability and a substantial reduction in operational costs.
Of course this principle may not be applied to the total fleet which in order to meet the varied requirements of aeromobility, must be diversified into at least three classes reflecting three different weight configurations:

. One in the region of 4,000 kg for the basic anti-tank, scout and light multirole task.

. One in the region of 7,000 kg for the tactical transport role.

. One in the region of 20,000 kg for the heavy duty role.

Prospects are that in the future the 7,000 kg class may be integrated with or replaced by a class in the region of 10 to 12,000 kg in order to retain a determined basic helitransport capability, thereby reducing the number of aircraft and consequently the personnel, logistics and infractructural requirements.
This may also result in the adoption of a light multirole helicopter derived from the A-129, as a replacement for the great number of current light helicopters, the validity of which does not seem confirmed in the future from the cost-effectiveness view point.
However, within and through the different types of helicopters, the standardization may be pushed to its maximum resorting in the most extensive possible adoption of common equipment and a common maintenance philosophy.

g. Currently the anti-tank version of the A-129 helicopter, as previously stated, is at an advanced stage of development and the primary objective of the Italian Army Staff is the deployment in service and the operability of this aircraft in 1987.
This is an heavy commitment which implies the concurrent launching of quite a number of various complex activities, which must be strictly coordinated.

The topic of this address is in fact the presentation of these activities in order that the programme becomes a reality in the planned target time.

2. ORIGIN, STATUS AND PROSPECTS OF THE PROGRAMME

a. Operational Requirement. The thought and the specific requirements of the Italian Army in the segment of anti-tank defence by means of airborne weapon systems, have been based on the military requirement for an anti-tank helicopter and have become the basis and guideline for the technical specifications covering this project.
The Italian Army Staff has defined the requirement after an extensive process of evaluation of the problem, both autonomously and through the participation in studies made at international level, which have led to the identification of the top priority need for an airborne anti-tank helicopter destined to fill the gap in the national anti-tank defence. This gap has been determined by the environment and by the inbalance of strength with our potential opponent, thus requiring the adoption of actual corrective factors to bridge the difference in its favour.
However prior to launching the programme which was subsequently designated A-129, several possible solutions on the basis of the technical/operational trends of the moment had been investigated.
More specifically it seemed possible:

- To arm existing helicopters of the multirole class, with anti-tank weapons, repeating what had already been achieved in practice by the Armies of Allied Nations and Warsaw Pact Nations.

- To launch the development of a new helicopter on the basis of the experience indicated by the U.S. Army: the COBRA and the CHEYENNE.

b. The first of these two solutions, namely the arming of existing helicopters, could appear attractive besause of the relatively low cost involved, and because of the fact that it was inspired by the repeatedly claimed operational flexibility of the helicopter.
Nonetheless from even a superficial examination of the possible aspects of a future hypothetical battlefield, it appeared evident that the technical /operational limitations of a system which combined an effective anti-tank weapon, the TOW, with a vector lacking the required features and the ancillary equipment which might have enabled it to perform the anti-tank mission role with acceptable chances of success and survivability.

c. The second solution, namely development of a dedicated aircraft, even if valid from an operational viewpoint, since it would heve provided the development of an actual integrated weapon system, seemed at that time to lead towards a heavy and large aircraft, actually a flying cruiser, featuring a very high cost inconsistent with our economic resources.
The only experience to which we could refer was the development of the U.S. CHAYENNE helicopter which, although anticipating challenging tehcnological solutions, did not offer features applicable to our requirements.

d. A quick response to the need of the Italian Army would have been the adoption of the COBRA helicopter, purchased in the United States or built in Italy under licence. But this aircraft too, in the final analysis is a derivative of the UH-1 helicopter and therefore we found it inadequate to perform a fighting role on a future battlefield, it would also have implied a financial burden for which we could not find coverage under the financial planning of that time, because this was allocated to fulfill higher priority requirements.
Yet the need for postponing to the 80ies the implementation of the programme has favoured the definition of the light anti-tank helicopter concept, this is to say an aircraft specifically dedicated to this combat role, though retaining the capability of flying diversified fire actions.

e. This concept later received a European "patent", as it represented the only way of meeting a specific requirement by Armies which were unable by adopting the same parameters, to comply with the airmobility criteria of the United States Army.
In the meantime the Italian Army attempted to comply with the aforementioned requirement thereby repeating the COBRA experience, namely to derive a light anti-tank helicopter from a light multirole helicopter which appeared to have the required basic features and performance.
This helicopter was identified in the A-109 which, while the conversion project was being adapted to the Italian Army military requirements, has been immediately utilized to conduct a technical/operational verification of its compatibility with the TOW anti-tank missile system.
The excellent results proved that the A-109 in the range of its possible applications, can boast a very high degree of multirole capability in logistics and combat duties.

f. Yet, the progressive consolidation of the features concerning the future medium/high intensity battlefield and the anti-helicopter threat concept, along with the ever increasing survivability and operational capability requirements, rendered unfeasible and inconvenient the utilization of the basic A-109 structure, mainly in respect of its weight limitations.
The decision was made to launch from the outset a new development for an aerial platform, which was limited in weight to reduce costs but was better equipped and more adequate to met the planned requirements, and featured the extensive application of advanced technologies.

g. The basic concept which inspired the final definition of the military requirements for the Italian Army, was to achieve in the near term an actual and effective anti-tank capability, wherein the technical risks associated with the development would be confined to the aerial vector, through the utilization of already existing, proven and fully reliable components, such as the engines and other operational equipment.

Concurrently however, with an eye to the future, the requirement called for an aircraft capable of adaptation to possible emerging requirements and of accepting new equipment, relative to an inherent and steady growth potential and thanks as well to a central computerized management system of the various functions, which would facilitate the updating of the operational configuration.

h.. The military requirement has placed a special enphasis on the survivability issue examined in real terms, in a sense that both the performance of the weapon system (in particular the possibility of operating from a stand-off position) and the specially developed and tested operational procedures for anti-tank warfare, have been considered inseparable features, along with the required active and passive protection measures, for surviving in a future battlefield environment.

i. It should be noted that in the process the logistic problems have not been neglected and for the anti-tank helicopter a maintenance philosophy was defined which would remove the complex periodic inspection procedures, the calendar replacement intervals and the components mandatory retirement service life, which are features typical of the earlier generation of helicopters.

l. The Italian Army requirement has found full and prompt response in the project developed by the national Industry which has been turned into reality by the development and first flight of the A-129 helicopter. The characteristics and performance of this aircraft are well known. In the course of this Forum, Representatives of the AGUSTA Company will illustrate the design criteria for an anti-tank helicopter as the results of this design study have in fact materialized into the features and performance of the A-129.
I will therefore emphasize only a few aspects of our requirement and state the reasons that support our position.

- WEIGHT LIMIT. The establishment of the weight limit at 3,700 kg has meant for the Italian Army Staff, the guarantee of acquiring individually and in the planned quantity, aircraft compatible with our financial resources. However the imposition of such a limit without renouncing operational capabilities in terms of performance and equipment would have represented, as it has, a challenge to the Industry in the form of a technological breackthrough towards new generations of rotary wing aircraft.
The implications thereof have led to the adoption of new design criteria, extensive use of composite material, the installation of a central computerized management system for the board systems and subsystems.

- ARMAMENT. The helicopter is essentially required to comply with its primary role, namely anti-tank warfare. To this end and because of the short lead time available, has been confirmed the TOW wire guided missile system, as it is already in service with the ground Forces in the "extended range" configuration, and because of its current validity proven by extensive operation and prospects of expected near term improvements.
However there is the option of carrying out other fire actions against targets of a different nature by way of an advanced-concept free rocket system which offers a guarantee for maximum effectiveness.
The problem of a subsidiary weapon system essentially for defense purpose has been investigated and debated.
Initially the imposed weight limitation caused some difficulties for the installation of an automatic, adequate-caliber weapon mounted in a swinging turret.
Yet these difficulties can easily be overcome thanks to the extensive growth potential of the aircraft.
But the probable temporary rejection of such a weapon system was dictated by operational considerations linked to the now acknowledged requirement that the anti-tank helicopter must operate with the support of another specialized aircraft which would provide intelligence and protection prior to and during the intervention, specifically protection against air threats (air/air missiles), medium and long distance ground threats (anti-aircraft rockets) and even against short distance ground threats (heavy automatic weapon).

Incidentally we can say that these considerations have given the first indications for the requirement and need of developing a future scout and support helicopter deriving it from the A-129 anti-tank helicopter which would confirm the broad perspective for the application of the concept of a family of helicopters.
In the meantime the basic operational features of such a helicopter have already been defined, especially as regards some operational equipment, for example:

- The anti-aircfrat system obtained by the adoption of the air/air version of the individual self-defence system that will be deployed by the Italian Army, more specifically the STINGER system;

- The observation and telemetry system, with night and day capability, mounted on the main rotor head (MMS: Most Mounted System).

- PERFORMANCE. I would like to stress that the operational philosophy of attack helicopters has been defined over a period of many years, as a result of realistic and experimental operational cycles and with the incorporation of the most advanced simulation and operational research methods.
In a few words, the basic concept for the operation of these aircraft may be termed as follows:

"maximum exploitation of the capability to operate from the maximum stand-off distance, taking advantage of any protection provided by the terrain, with the possibility of performing evasive manoeuvers and rapid changes of position".

Apart from the capability of operating from a stand-off distance which is essentially determined by the equipment adopted, this concept reduced into terms of protection, shall mean:

- excellent flying capability in ground effect;
- excellent acceleration capability;
- high manoeuvrability and handling features;

combined of course with the speed required in the armed configuration and a range adequate for the desired mission profile.

The A-129 is fully responsive to these requirements. Currently, new operational concepts seem to emerge which are likely to require some increase in performance, especially speed.
The position of the Italian Army Staff in this respect is that this subject deserves a careful study, both as regards the aspects connected with our operational and environmental situation and also with a view to assessing whether for the helicopter to switch from a ground to a more aeronautical role is both feasible and convenient. In any case we believe that the A-129 with the incorporation of some improvements and with no need for major modifications to the basic concept, will surely be able to exceed the current limits and in the medium term be in a position to adjust to a realistic increase in requirements.
The pictures that follow provide a schematic view of the required and guaranteed performance in severe environmental conditions as well as the basic anti-tank mission profile for the Italian Army.

- PROTECTION. If we consider the anti-helicopter measures that are currently being studied, and we examine the problems connected with protection we are tempted to follow one of the following principles:

- develop a flying armoured tank;
- deploy "heli-robots" and leave the crew at home.

Maybe neither of these solutions would prove valid operational terms because the man directly deployed on the battlefield still constitutes the most valid "piece of equipment" for a weapon system to achieve its maximum effectiveness.
In respect of the helicopter the protection concept has therefore been seen as the sum of various integrated elements which together with the operational requirements, would ensure the highest chance of mission success with an acceptable margin of risk.
The operational criteria which involve protection are:

- integrated action in the frame of ground Forces operation;

- intelligence and protection support provided by the other aircraft.

The specific protection elements required by the Italian Army and which have formed the basis for the design criteria and the selection of the equipment, are:

- performance;
- capability of operating from max stand-off distance;
- low optical, acoustic and instrument detectability;
- sensors and countermeasures;
- passive strength and ballistic tolerance;
- resistance to crashes;
- fire protection.

m. In conclusion, the fact of having imposed a weight limitation and the definition of different features and performance which have proven not easily reconcilable has resulted in a severe commitment for the Industry and the need for resorting to extensive advanced technologies.
The outcome is an aircraft that is flying and which now seems to be in a position to respond fully to the expectations of the Italian Army.
The development programme calls for the fabrication of a total of four helicopters for the flight tests and one helicopter for ground testing.
These aircraft along with the most advanced equipment will enable the technicians and pilots from the Industry in joint cooperation with military technicians and pilots, to implement a wide-ranging programme which on the reasonable assumption of a normal development without the insurgence of particular problems, will provide for the deployment in service of the A-129 starting from early 1987 and completion by 1989.

3. ITALIAN ARMY IMPLEMENTED ACTIVITIES DURING THE DEVELOPMENT AND INDUSTRIALIZATION PHASES OF THE PROGRAMME.

a. As it has been said before, the first anti-tank helicopter operational unit of the Italian Army will be set up in 1987.
We are only two and a half years away from this target date which will constitute the bridging of a considerable gap by the Italian Army, because of the lack of an airmobile component for anti-tank warfare.
A long time has elapsed from the initial studies, from the examination of the first developments in other Countries, from the original perceptions which have led to the birth of the A-129 helicopter, the first real combat helicopter in Western Europe, the first helicopter capable of best combining performance, operational capability, high degree of survivability with a limited weight and consequently falling in a class of cost which is compatible with the financial resources of Countries which are confronted with the severe costs of defence in relation to their budget restrains.

b. However in order that our efforts and expectations are not going to be disappointed at the time when the new anti-tank helicopter units will be deployed in service, the Italian Army Staff has started a far reaching sequence of activities which will be implemented according to phases and adequately established timescales and will converge towards the prime objective.
I will briefly illustrate the principle activities that will ensure implementation in the next years, but for which the necessary conceptual bases have already been laid, so that we will be in a position to proceed expeditiously.

- Training and qualification of the personnel - pilots and specialists - for the implementation of the test activities. In Italy the responsibility for the performance of the technical tests in respect of the certification of a new aircraft rests with the Flight Experimental Department, a celebrated Division of the Air Force which avail themselves of the necessary human and technical resources.

Yet the final certification which ratifies the operational suitability of the weapon system is an Army task. The Army will directly assess the responsibility of the system to fulfill its requirements.
This is to say that after the technical tests, operational tests cycles shall be implemented by personnel from the Army. To this end, some highly experienced and skilled pilots and specialists will be selected and seconded to the Industry where they will follow the fabrication and rigging of the prototypes with a view to achieving, after a special training, "on the job" a full familiarization with the aircraft.
More specifically, the pilots will receive specific training at the Flight Experimental Division of the Airforce in order to acquire the methodologies which are necessary for the flight testing.
Each of the Organizations mentioned above will provide own representatives for participating in the experimental phase activity of the programme and collect the necessary information not only in respect of the verification of the system technical/operational respondency, but also for the implementation of the data cross-feeding flow which will be utilized for the definition of the overall-human, operational, logistic, infrastructural picture, in the frame of which the new aircraft will be required to operate.

- Definition and setting up of the logistic and training support.

It would seem premature to demonstrate the importance of providing for the implementation of the necessary provisions in respect of maintenance and didactic aids before the deployment in service of a new weapon system in an effort to achieve a ready qualification of the personnel to the highest levels of skills.
Yet in respect of the A-129, the Italian Army, since as early as the definition of the basic military requirement and during the subsequent finalization phase of the contract, has devoted the highest priority to these aspects. The flight line of the Italian Army Aviation in respect of helicopters, mainly consists of aircraft built on licence, for which the original logistic regulations have been adopted, although in the near past a process of adaptation to our requirements has been started.

For the A-129, an aircraft which is projected well into the future because of the most advanced technologies adopted, has been required a different technology with a view to achieve a drastic reduction in the maintenance to flight hour ratio, to the advantage of:

. operational dispatch;
. low personnel requirement;
. overall operational cost.

- Participation in experimental activities. The technical-operational experimental activities implemented by Defence will certainly not be exhausted in one cycle, but these activities will develop in subsequent phases with the purpose of obtaining:

. The preliminary basic essential indications as a confirmation of the expected performance and validity of the adopted operational configuration which are necessary elements for ensuring the continuity of the activities associated with the full production of the helicopter;

. In a process parallel with production, the data relating to the aircraft technical reliability and logistic requirements with a view to turn into reality the logistic support concepts derived from the current "philosophy" in this specific field and from the particular aspects linked to the weapon system as a whole, which constitutes a substantial innovation for the flight line of the Italian Army Aviation. These activities will be closely followed in a joint collaboration effort by the various Defence Organizations, each within its sphere of responsibilities but with an overall view of the problem:

.. the Italian Army General Staff, programme contractor, for monitoring the programme progress in the different implementation phases;

.. the Italian Army Light Aviation Inspectorate, for the operational aspects;

.. the Material Command of the Italian Army Light Aviation for the logistic requirements;

.. the Air Force General Staff, through their Flight Experimental Division, for the portion of flight testing they will be required to conduct;

.. the Aeronautical Constructions General Directorate, responsible for the technical/administrative aspects relating to contractual performance and for the final technical certification of the material.

The results appear quite encouraging not only because of the specific design concept, but also thanks to the close collaboration between the Company and the Army Aviation Material Command. One of the key points, maybe the most important, in achieving the desired results, was the adoption of the central management system by computer of all board equipment and systems - the so called MULTIPLEX BUS SYSTEM - which provides for the verification and history recording of all the principal functions before and during the operation of the aircraft.
One aspect which has received a special consideration was operation from the field and thus avoid resorting to excessively sophisticated solutions which are incompatible with the environment in which the aircraft is expected to operate.
As regards the training support the Company has been requested to work out a proposal covering the didactic aids necessary either in the initial phase of training of the personnel - pilots and specialists - and for the maintenance of the operational capability.
In light of the above, the Manufacturer is committed to identifying the best solution in terms of cost effectiveness with a view to ease the familiarization with:

. the construction and functional features of the aircraft in its individual component parts and as a whole;

. the location of failures and relevant corrective actions;

. the flight and operational procedures under as far as possible realistic conditions.

To this purpose mock-ups and schemes will be implemented of the individual components, systems, power plant assy, cutaway views of groups and systems, as well as a series of audio-visual equipment to assist in in-depth specialist training.
In this respect the Italian Army has already logged a positive experience having already implemented a similar training system for the CH-47C helicopter.
Yet as regards the A-129, the innovation will consist in the design of a complex flight and operation simulator, which will be developed in behalf of AGUSTA, by one of the most advanced world Companies and a leader in this field. This simulator, among other features, will be provided with an advanced exterior vision system as regards both flight and operation.
In this sector the Italian Army is perfectly aligned with the most advanced trends, because we are firmly convinced that resorting to the extensive use of simulation systems - and not only in respect of flight - we can achieve quite satisfactory and realistic results in terms of:

- training level of individual personnel and crews;

- reduction of cost, as a result of saving in fuel and ammunition;

- partial solution of the problems associated with the availability of training area.

As regards Army Aviation, simulators are already in service for the SIAI-MARCHETTI SM 109 aircraft and for the AB 205 multirole helicopter.

- Personnel selection criteria and staff upgrading plans.

The issue of requalification of the staff which shall form the crews of the anti-tank helicopter has been extensively investigated.
Two trends are emerging:

- one, that of placing at the controls a pilot of proven experience with thorough piloting capability, with the task of Commander, and a gunner specializing in anti-tank missile firing.

The gunner will also be required to have a basic piloting skill in emergencies and in the event that the pilot is not in a position of controlling the aircraft;

- the other, that of qualifying both crew members to the same level, thus ensuring full interchangeability.

This latter solution has been eventually adopted for as a whole it seemed the most convenient, both under the operational and safety aspect and also with a view to ensure a higher operational flexibility of the personnel within the units and in case of natural turnover.
In light of the above, among the pilots that are currently in service, those which seem the most suitable for a prompt and ready adaptation to the new functions, are the reconnaissance helicopter pilots, which in achieving their operational qualification are subjected to a particularly severe training, especially in respect of tactical flight.
From a quantitative viewpoint, the adaptation of the personnel to the various requirements will pose no particular problems, either because yearly increases in staff have been planned and implemented in the past and also because of the foreseen deployment in service of the A-129, changes have been studied to the current Organization of the Army Light Aviation with the purpose of limiting to the max possible extent the increase in personnel.

- Manning of Anti-tanks units.

In the current situation, the manpower requirement for the future anti-tank helicopter units which also include the essential scout and support helicopter, has already been outlined.
These units shall be strategically located over the national territory in relation to our operational requirements. In the near future the manpower requirements will be defined more in detail as regards logistics and control, in relation with the specific experimental activities conducted and on the basis of the indications emerging from the rigging and adjusting of the weapon system.

- Infrastructures.

This aspect does not constitute a major problem. The reorganization of the Army Aviation according to new criteria, will also provide for a better utilization of existing infrastructures which require only some adjustments.

This aspect prompts me to underline a specific criterion adhered to by the Army in implementing the procurement of the anti-tank helicopter, namely the commitment to contract to the maximum possible extent the additional financial burden relevant to logistic support, training and ammunitions.

The restructuring of the Army Light Aviation has therefore been implemented with a view to retain or even improve the current airmobility levels relative to the functions being presently performed by this Organization, at a reduced overall in order that the deployment in service of the A-129 shall not imply a rise in management costs which would not be consistent with our financial resources.

- Qualification of the Flight Instructors.

The full responsibility covering the training of the anti-tank helicopter crews will rest with the Italian Army. To this end skilled and experienced flight instructors will be qualified for flight on the new aircraft, with the assistance of personnel engaged in the experimentation phase and resorting, if necessary, to the support that the manufacturer will be required to provide.

- Definition of the Operational Doctrine.

At this stage the overall operational concept of the anti-tank helicopter for the specific Italian Army requirement has already defined along with the special intervention procedures of these aircraft in conjunction with their back-ups, the scout helicopters.

These are however temporary though partially consolidated elements, which will receive full endorsement when a first unit will be ready for carrying out various training cycles, either autonomously or in combination with the ground Forces.

The Italian Army believes the anti-tank helicopter will constitute a valuable and extremely mobile reserve, to be specifically deployed - in conjunction with ground units - in the frame of a manoeuvre aimed at progressively slowing down, wearing down and eventually halting hostile armoured units.
These principles - reserve and integrated action - emerge from the need for keeping the number of helicopters at a level compatible with our resources and consistently with other general requirements of the Armed Forces and their associated priorities.
In this connection and for the time being the possibility of autonomous intervention by airborne anti-tank formations is considered an exception, this is to say only when the severity of the situation or particularly favourable conditions justify this mode of operation.

- Scout Helicopter.

Another complementary activity during the final phase of the A-129 helicopter development, will be the development of a helicopter capable of providing at least the intelligence back-up necessary to facilitate the operation with the anti-tank helicopter in the phase preceding the attack.
To this end as temporary solution, waiting for the actual scout and support helicopter to become available, which will be derivative of the A-129 and for which the basic military requirements have already been drafted, is being evaluated the possibility of deploying after the required modification, the present AB 206 scout helicopters.
This assessment is still in progress and the decision will be made if and when the validity and cost-effectiveness of such a solution is confirmed.
Otherwise other possible alternate solutions will be considered such as resorting to another already existing type of helicopter, or the earlier than planned development of the A-129 scout version.

4. CONCLUSIONS

Once more as it has been for the past five years, the address delivered by the Representative of the Italian Army at this FORUM has focused on the A-129 programme, of which we think we have the right to be proud since, through the identification of a new formula we have provided to our national Industry the opportunity to make a consistent step forward the technological capability.

Our requirement has taken into due account all inputs deriving from studies conducted jointly with our Allies and more specifically with the Representatives of European Armies integrated in workgroups highly qualified to deal with airmobility issues.

The A-129 even if Italian by development, is certainly European in its original concept and consequently suitable to fulfill European requirements.

This is an aircraft of today which is planned to expand into the future and it incorporates a growth potential as required to derive an entire family of helicopters capable of covering a broad range of airmobility requirements.

This programme undoubtedly constitutes an heavy comitment, yet the Italian Army has launched its implementation with no reservations and with an extensive participation, in the firm belief of achieving a full success in the planned timescale on the ground of the reality that has materialized with the first flight of the prototype just one year ago at the time the IX FORUM was being held.