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EH-101: CIVIL DEFENSE SYSTEM

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## FOREWORD

Civil Defense, a relatively new institution in Italy, has the task of protecting life, property and the environment from catastrophes, natural and industrial disasters and other harmful events.

Civil Defense, whose role has limited in the past to rescuing disaster victims, has evolved and now embraces a wide range of tasks:

- forecasting and prevention of the various types of risk;
- rescue of disaster victims;
- action to ensure the socio-economic recovery of the disaster area.

As a confirmation that the value of the lives of persons in danger is considered as occupying first place in the scale of human values, the DL n. 829 of 12/11/82 converted into Law 938 on 23/12/82, gives the Minister of Civil Defense the authority to take emergency measures, even if they restrict the force of existing regulations, State financial provisions included.

Consequently, in the light of a wide range of potential disasters, we have the moral and civil duty to safeguard citizens in practical ways and to make all necessary funds available.

Of the three cardinal point of the Civil Defense organization, the two operative ones, **FORECASTING** and **PREVENTION** and **RESCUE** of victims, can be interfaced with the use of the **HELICOPTER**. The reasons, which will only be mentioned briefly, so as not to seem redundant, can be summed up thus:

- flexibility
  - ease of use in unprepared areas
  - ability to hover
  - ability to operate in any meteorological or visibility conditions in contact with the ground area requiring relief.
- Let us briefly analyze these two points: Forecasting and Prevention of the various types of risk.

This task involves the surveying of the area and the atmosphere above it. This need not necessarily be limited to the national territory but can extend to maritime Exclusive Economic Interest Zone (EEZ). Protection can be afforded against damage caused by men (industrial damage, water pollution, forest fires, deforestation, etc.) or natural disasters (hydro-geological, volcanic, seismic, etc.).

Obviously, part of this survey must be performed using aircraft capable of processing data either with specialized equipment or personnel aboard and of transmitting/receiving information by means of computerized systems, capable of all-weather operations and of entering high-risk areas (radioactive, toxic or bacteriological contamination).

If one adds the need to stop in certain areas to study the phenomena more closely, either by taking samples or by following up air reconnaissance by a surface survey, it is obvious that the helicopter once more comes into the limelight because of its operating speed and flexibility of use.

#### RESCUE OPERATIONS

To talk about helicopters in rescue operations is almost superfluous. No other means of transport is as fast, as indispensable in this very delicate operation where speed is synonymous with safety and the use of the appropriate rescue procedure can mean the survival of the population.

Floods and earthquakes are the theatres in which the helicopter best demonstrates its superiority over other means but it obviously excels in rescue missions of any nature, be they at sea or in the mountains, airplane crashes, shipwrecks, hydro-geological disasters, etc.

#### CRITICAL FACTORS

The success of a large-scale operations depends on:

- the correctness of the information arriving at the Center of Operations;
- the co-ordination of the numerous centers created;
- the co-ordination of the various military and civil organizations involved;

- the correct use of available resources.

The ideal vehicle would be able to take a coordination team to the spot and offer the possibility of direct monitoring of the situation and a wide range of communication and information processing facilities.

Another critical factor is the ability to provide on-the-spot medical treatment. In fact it is often necessary, when sophisticated treatment or surgery is required, to transport victims to hospitals with the equipment needed to save them. The ideal would be a means capable of transporting to the disaster area a more or less complete and self-sufficient operating theatre or reanimation facilities. Some time ago containers or trailers transported by aircraft or helicopter were considered for this purpose. Today the candidate is a helicopter with an interior equipped for the emergencies encountered in disaster areas.

The next important stage is the flow of equipment and personnel for large scale rescue operations and the evacuation of the wounded and other victims to safer areas. During the first few hours after a disaster when road and weather conditions are bad, the helicopter remains the ideal vehicle.

If this description represents the requirements a Civil Defense organization must satisfy as efficiently and rapidly as possible, the Aeronautical Industry is ready to supply a suitable vehicle, or at least the best that is available today to amply satisfy all the requisites mentioned above.

The helicopter is the most suitable vehicle for rescue operations. Today a helicopter can be designed for a certain range, payload, all-weather capability and communications/information handling, constituting a quantum leap in the realm of Defense.

The problem of cost as a function of the probability of an action makes it necessary to seek an optimal level of cost-effectiveness. Without detracting from the fact that the civil duty of safeguarding human life makes its cost a secondary matter, the law, in addition to budgeting a certain sum for Civil Defense, also provide for, we repeat, operations which derogate to existing provisions, including the State's general accounting regulations, it is opportune to comment on the most effective use of the helicopter.

## OPTIMIZATION OF OPERATION

Helicopters, in order to amortize the investment and maintain flight and maintenance crews in training, must be flown regularly throughout the year and this can only be ensured by the Armed Forces.

The hypothesis is therefore that the Armed Forces purchase these helicopters which they would maintain and operate with mixed Defense/Civil Defense funds. They would then be used for Civil Defense application when necessary. Thus the machines would be used on a continuous basis for training and transport roles but would be on call when required, with well-trained crews.

The distribution of these forces must take two fundamental aspects into account:

- areas of industrial, seismic, hydro-geological and volcanic risk and with high airport density;
- existing bases, whether by the NAVY, ARMY or AIR FORCE.

Helicopter typology must be minimal, i.e.:

1. **Command and Control**, that is equipped with communication systems suitable for the co-ordination of all the forces in the field and with computerized scenario display systems. Capability of transporting a certain number of operators in areas of high toxic and radioactive risk.
2. **Hospital Helicopter**, in the sense that it must have on board all the equipment required to supply the initial on-the-spot assistance and to make it self-sufficient (electrical power, water, food supplies).
3. **Helicopter for the evacuation of wounded**, equipped with stretchers and first aid kits etc.
4. **Helicopter for transport of rescue personnel and materials.**

In normal situations (not emergencies) such helicopters could be used:

1. Heli COMMAND/CONTROL used for VIP service;
2. Heli HOSPITAL as SAR (by removing the medical apparatus)
- 3-4. Heli EVACUATION and TRANSPORT OF MATERIALS by helicopter for BASIC TRAINING, IFR, UTILITY ETC.

Obviously, for budget or Armed Forces requirements the helicopters referred to in points 3-4 could be integrated with others of type already flying (AB-212/SH-3D/HH-3F/CH-47).

#### DEVELOPMENT POSSIBILITIES

When deploying such helicopters two factors must be taken into account:

1. Danger concentration point of industrial, seismic and high hydro-geological/volcanic risk areas, airports;
2. Existing military airfields at which the aircraft could be deployed for civil defense purposes.

It must be stressed that immediately an emergency breaks, such helicopters would be transferred to the operational control of Civil Defense, while still keeping their military or mixed crews.

#### CHOICE OF THE TYPE OF HELICOPTER

The choice of the helicopter which best satisfies all these requisites cannot but fall on a helicopter of the new generation which is big enough to hold a co-ordination and control team, a medical team capable of performing certain operations on board or a team of persons which can subsequently, using a heli-borne vehicle, make the necessary surveys of the surface already begun with the aid of on board sensors during the flight.

If one adds the need to cover great distances to bring aid where necessary, leaving from existing bases and with sufficient endurance to remain in the area long enough,

and even the capability of operating in areas of nuclear, bacteriological and toxic risk, the EH-101 is the obvious choice.

OPERATIONAL SCENARIO (see Enclosure 1)

- Deployment of a COMMAND and CONTROL helicopter at:

ROME (AM) Air Force

CATANIA (MM) Navy

UDINE (EI) Army

- Deployment of HOSPITAL and EVACUATION helicopters at:

ROME - CATANIA - UDINE - LA SPEZIA - BRINDISI

- TOTAL: 13 helicopters thus distributed:

AM - 5

MM - 5

EI - 3

(.) EI already possesses CH-47 for evacuation of wounded

(.) MM must also be able to support HARBOUR MASTERS and perform operations at sea

(.) AM also requires a helicopter in ROME for the MINISTER (command/control).

The range of an EH-101 (about 550 nm or about 1000 km) covers all of Italy starting from any of indicated.

The command/control helicopters from CATANIA and UDINE could be reached by the Minister from Rome by means of a General Staff jet (FONTANAROSSA/RIVOLTO). For Central Italy the C/C helicopter is already deployed in Rome.

### EH-101: CIVIL DEFENSE SYSTEM

The EH-101 Civil Defense System is suitable for industrialized countries because at a national and cultural level there is:

1. a higher value placed on the life of the citizen for ethical, moral and political reasons;
2. existence of economic and technical means to acquire and maintain it;
3. similar problems such as:
  - \* environmental degradation
  - \* industrial installations (toxic substances)
  - \* high population density
  - \* intense airport traffic
  - \* nuclear power stations
  - \* genetic engineering centers
  - \* transport of highly toxic material
  - \* marine pollution from land and sea
  - \* monitoring of the state of health of the EEZ (Exclusive Economic Zone)

and because it is the only helicopter which possesses or can possess:

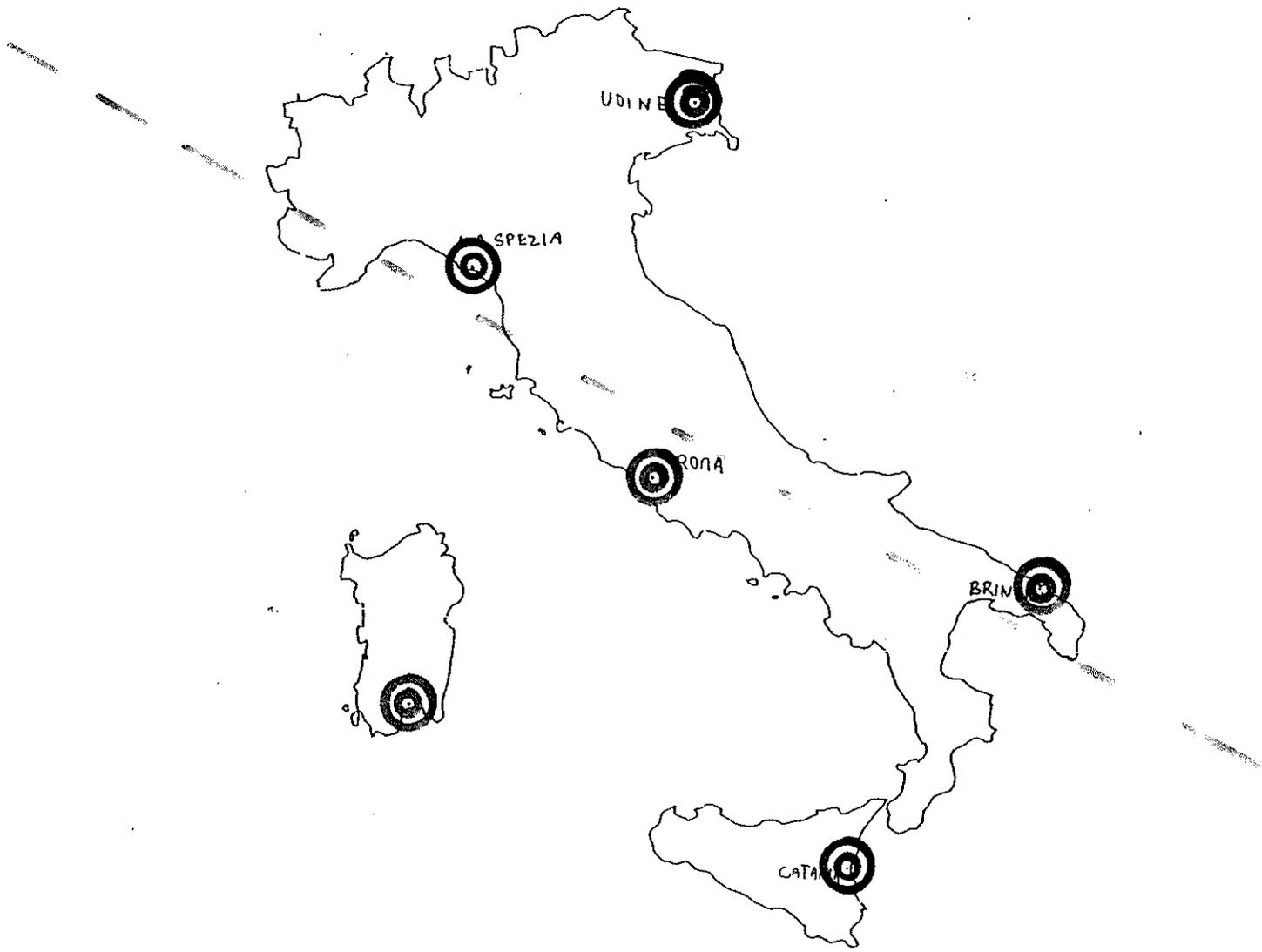
- all-weather flying capability (FLIR system);
- NBC-equipped cabin (penetration of high-risk areas);
- long range and endurance to cope with any emergency, even at sea;
- possibility of embarking and managing a command and control system with associated communication and data processing apparatus (even via satellite) in addition to the personnel required;
- possibility of embarking sensors to detect any type of water, air, bacteriological and radioactive pollution etc. in addition to vehicles, which can be off-loaded by means of an aft ramp, for land surveying (cross-country motorbikes, RPV, jeeps, special equipment etc.);
- ability to transport a complete, self-sufficient operating theatre to the scene;

- capability of evacuating disaster victims, wounded, flood victims and shipwreck victims with adequate assistance;
- capability of prompt, effective intervention in the event of marine disasters with search and rescue even at night (FLIR) which has been absolutely prohibitive up until now.

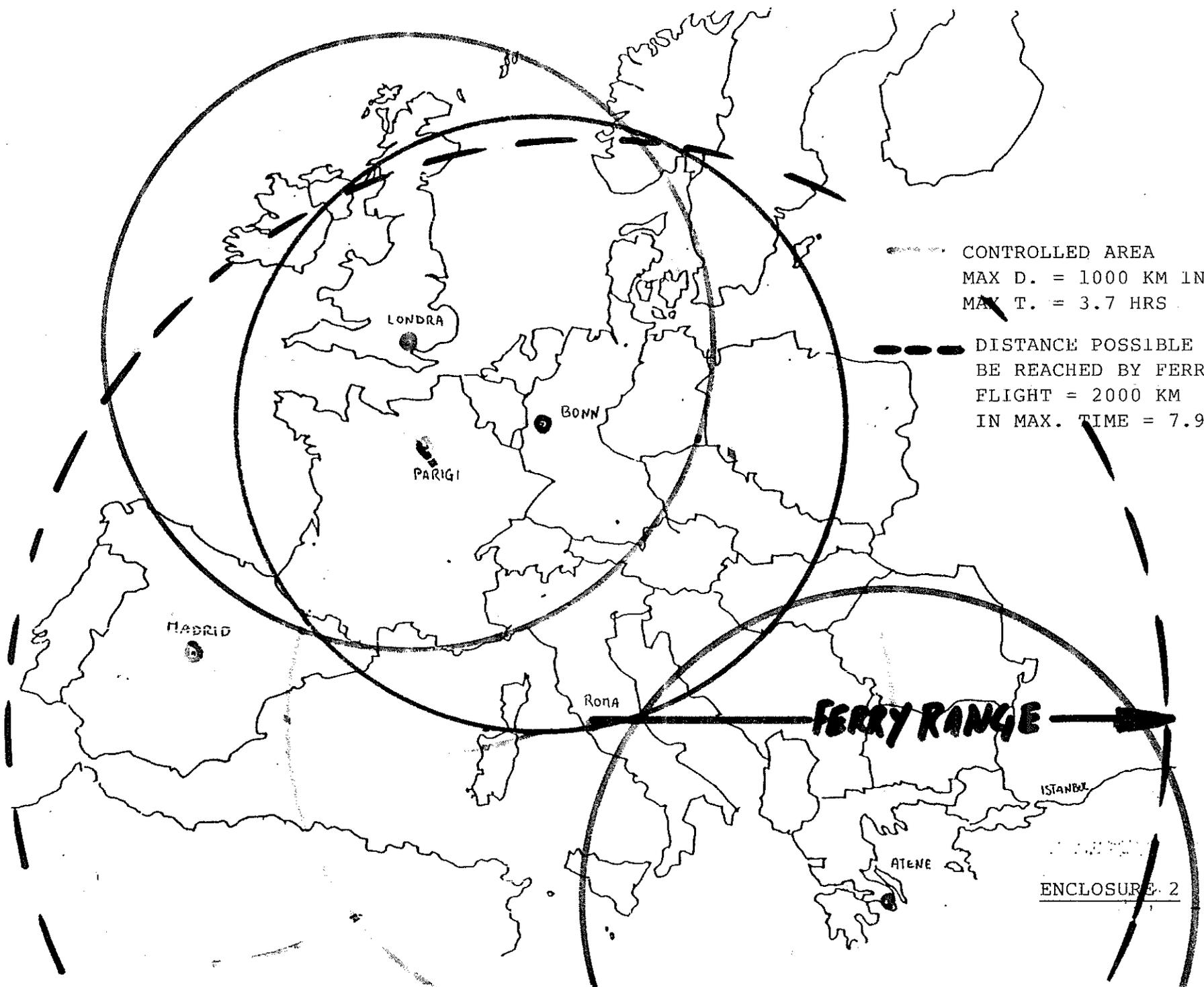
POSSIBLE AND DESIRABLE FUTURE EVOLUTION (see Enclosure 2)

The existence of an European Outline Law, and the creation of a European Economic area with all barriers removed in 1992, opens up the possibility of a standardized Civil Defense system in which prompt, effective mutual AID becomes not only feasible but also a further means of high level political and civil integration.

The Civil Defense organizations of the various EEC countries would thus be able to promptly deploy the appropriate units to any area of the Community, and the intereffectiveness of the intervention would be increased considerably by the availability of greater resources and experience.



ENCLOSURE 1



CONTROLLED AREA  
MAX D. = 1000 KM IN  
MAX T. = 3.7 HRS

DISTANCE POSSIBLE TO  
BE REACHED BY FERRY  
FLIGHT = 2000 KM  
IN MAX. TIME = 7.9 HRS

**FERRY RANGE** →

ENCLOSURE 2