

# **DOCUMENTI**

**IAI**

## **PROLIFERATION OF NON-CONVENTIONAL WEAPONS**

*by Yves Boyer*

Paper presented at the International Conference on "The Mediterranean: Risks and Challenges"

*Rome, 27-28 November 1992*

**ISTITUTO AFFARI INTERNAZIONALI**



**"THE MEDITERRANEAN : RISKS AND CHALLENGES"**

**NATO - IAI**

**ROME, NOVEMBER 27-28, 1992**

**PROLIFERATION OF NON-CONVENTIONAL WEAPONS**

**Yves Boyer\***

In any aspects by which military power can be measured, countries from the south side of the Mediterranean, with the noticeable exception of Egypt, Israel and Turkey - three key allies of the West - do not possess significant military forces. The aggregate defence budgets of Morocco, Algeria, Tunisia, Libya and Egypt is 1/5 of the combined defense budgets of France, Italy and Spain. In term of trained manpower or sophisticated equipments such as AEW planes, electronic warfare suites, reconnaissance satellites, force multipliers such as refuelling aircrafts without mentioning nuclear weapons there is also a definite advantage in favor of the three countries of the EC. They have also developed, at the level of the Mediterranean theater, force projection units (air, naval and ground forces) unsurpassed by any countries or group of countries in the theater.

Proliferation of non-conventional weapons in the area is however heavily debated by many commentators or observers. What are the symptoms which originated such prospects ? What are the potentials for proliferation in this geographical area? What measures can be defined and implemented to avoid an arms race particularly in mass destruction weapons ?

**I - Technical limitations for proliferation of non conventional weapons.**

Lessons drawn from the investigations of the Iraqi nuclear program revealed that a country willing to invest a huge amount of money, having researchers and

---

\* Deputy director, CREST-Ecole polytechnique.

technicians in a sufficient numbers, all being committed to work on nuclear research can get closer to producing a nuclear weapon. Without attracting attention and violating the regulations defined by the NPT regime. The NPT regime does not, in fact, forbid research on fissile materials or control research on activities such as detonic indispensable for designing the mechanisms required to activate the fissile materials through a conventional explosion. Irak did choose for producing a nuclear weapon to utilize the same process employed by the USA between 1943-45 ( uranium enrichment by electromagnetic separation). which was since then declassified as a process estimated economically without interest (great consumption of energy, a fraction of which being utilized) and allowing production of a first generation of nuclear weapons when the state of the art is concerned with the 6th generation. Therefore, Irak was able to buy on the world market almost all the tools needed without real obstacles since most of the equipments were not subject to a particular regime of surveillance. From that example one can draw the conclusion that surveillance and control of materials and technologies necessary to proliferate shall be focus on very specic items which are still out of reach from many potential candidates to non conventional armaments.

a - nuclear weapons.

Some key components or materials are still out of reach of many countries and a tougher control can contribute to slow down proliferation. In research and development some domains are not fully mastered by proliferating countries (manipulation of tritium, etc...), some others are still totally inaccessible (detonic). In the field of producing materials the phenomenons are equivalent and request a far more sophisticated regime of control.

b - Ballistic missiles.

In the mid-70's only the 5 permanent members of the UN Security Council possessed nuclear weapons and the means to deliver them by ballistic missiles. Since then, either by indigenous efforts or by improving purchased missiles more than 15 others countries are able to develop ballistic missiles in the range of 100/300 km; five of them are located in the Mediterranean area : Algeria, Libya, Egypt, Israel and Syria. Despite the MTCR (Missile Technology Transfer Regime), an array of regulations which deny export licences for equipment used to produce rockets capable of delivering at least 500kg of payload to at least 300km, fewer and fewer technologies remain out of reach of potential proliferating

countries <sup>1</sup>. This is by example the case of homogeneous blocs of solid propellant, of materials able to resist highly corrosive ergols. In the area of guidance, inertial guidance platforms are very complex to develop and the beryllium, a key component, is very difficult to handle and to buy. Finally, mecatronic (interconnexion between real time control and hydraulic guidance system) is far from being possessed by countries others than the most advanced in the West and in Russia.

c - Chemical and biological weapons.

It can be said that for vesicant (lewisite, trichlorethylamin) and suffocating (phosgen) agents there are no longer any possible limitation. The chemical industry can easily be utilized for military purposes. Regarding the neurotoxic (Tabun, Sarin, Soman) the technical know-how for development is sophisticated but here too chemical industry is able to handle the problem. One of the last remaining possible control is about the militarization of a given toxic component. In the field of biological weapons, many of the research made for civilian use have indeed a military application. This duality makes very hard to control this area moreover progress in genetical manipulations increase the potential risks of masked progress in this field even if the sophistication and the costs of the research are considerably limiting proliferation.

## **II - Geographical evaluation of proliferation in the south part of the Mediterranean.**

a - Algeria.

Algiers has not signed the Nuclear Non-proliferation Treaty. According to reports Algeria could acquire nuclear weapons by the end of the decade. This was however denied by comments emanating from the official algerian press agency (APS) which stressed the peaceful character of the reasearch made in Draria (nuclear research reactor of 2MW supplied by Argentina in the mid 80's) and in Aïn Oussera with the Chinese-built heavy-water reactor (15MW). Discovered in 1991, the Aïn Oussera reactor has a power which far exceed needs fo reasearch activities and could produce 3Kg of plutonium per year. Upon American insistance, Algeria agreed to open the door for inspection. Algeria later, on 27 February 1992, signed an inspection agreement with the IAEA which allow

---

<sup>1</sup> The MTCR was agreed in April 1987 by seven industrialized countries : Canada, France, the FRG, Italy, Japan , the UK and the USA. It s membership increased to 18 countries (1992)..

inspection of the reactor, the nuclear fuel and the heavy water, in addition, the spent fuel should be shipped back to China. Clandestine production of very small amount of plutonium to study the techniques of extraction in laboratory is however still possible. Regarding the means of delivering chemical or nuclear devices, Algeria did bought a small amount of Scud missiles to Russia in 1991. Algerian aviation (12000 men) is far from possessing enough relevant aircrafts (10 SU-24, 17 MiG 23BN/MF) to represent a potent threat to its neighbours.

**b - Libya.**

Libya under colonel Qadhafi has shown a constant interest to nuclear weapons. China, Argentina, India, Brazil, the USSR and Belgium have been asked to provide technological know-how on nuclear research. All have declined Libyan offers. A soviet-built reactor (10 MW) in Tadjoura remains under the control of IAEA .

In the field of chemical armament, a chemical plant had been built with German help in Rabta. Indices show that this plant is producing precursory agents for chemical weapons.

The military means to deliver mass destruction weapons are surpassing the need for defense and include an array of fighters-bombers (Mirages, MiG-23, Tu-22) and SSM (40 FROG-7 and 80 Scud B). However the poor standard of training and the disastrous management and maintenance of those rather sophisticated equipments cast doubts on their military potential.

**c - Egypt.**

Egypt did buy thirty years ago to the USSR a small nuclear research reactor (2MW) and since have limited to research its ambition in this area.

**d- Israel.**

Israel built a nuclear reactor with the help of France in Dimona at the end of the 50's. Its official power is 26MW but informations indicates this power was increased to 50 if not 150 MW allowing Israel to produce enough plutonium to built at least 50 bombs. In addition a secret underground reprocessing plant would have been built<sup>2</sup> at the end of the 70's. Israel probably possesses a certain amount of enriched uranium as well as lithium<sup>6</sup> which contribute to enhance the quality of

---

<sup>2</sup> *Revealed : the Secrets of Israel's nuclear Arsenal.* The Sunday Times, 5 October 1986.

the weapons produced. The highly enriched uranium would have been probably stolen from the Nuclear Material and Equipment Corporation (Pennsylvania)<sup>3</sup>. In ballistic missiles Israel built the Jericho I SSM (450km range and 280 kg of payload), the Jericho II (750km, 450kg). The development of the Shavit satellite launcher gives Israel a ballistic missile capacity of 500 kg on 5000/7000km.

e - Syria.

Syria bought in 1991, from China, a nuclear reactor of 30 KW<sup>4</sup>. Damas is heavily suspected to have chemical and biological weapons. The Syrians would have been able to produce neuro-toxic agents and fit chemical warheads to their SS-21 and Scud B SSM. The North Korean variant of an improved version of the Scud (Scud PiP) with extended range have been recently bought by Damas. In the mean time, Syria's several billions dollars in debt to the former USSR for past arms purchase and its low level of industrialization limit considerably the potential for Syria to develop significantly mass destruction weapons and their associated means of long-range delivery.

### **III- Measures for enhancing stability.**

a - Development of the IAEA activities as well as others arms control regime.

The adhesion to the NPT has to be a goal for increasing stability in the Mediterranean area. Countries which have not yet signed or ratified the treaty shall be encouraged to do so. In parallel, events such as the Arab conference on the peaceful use of atomic energy (February 1992) with the participation of IAEA director Hans Blix shall be developed. Plans to develop arms control agreements have to be promoted such as the US initiative on May 1991 or the French plan (June 3rd 1991) which underlined the growing role that can be played by the UN in those matters.

b - Development of a partnership between the two sides of the Mediterranean particularly in its western part. A Western Mediterranean Council could be set up with annual meetings of Heads of States accompanied by the creation of structures in order to develop all kinds of cooperations for the purpose of creating the conditions for stability in this area.

---

<sup>3</sup>Joseph Yager. Nuclear Nonproliferation Strategy in the Middle East and North Africa? CNSN Paper vol.1 nb1, February 1989.

<sup>4</sup> Pékin va vendre des mini-réacteurs à la Syrie et au Ghana. Le Monde, 12-13 April 1992.

iai ISTITUTO AFFARI  
INTERNAZIONALI - ROMA

n° Inv. 12397

3 DIC. 1992

BIBLIOTECA